Serious Games

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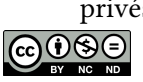

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Digital Home & Entertainment

Market & Data Report

Serious games

2nd edition

- Training & teaching
- Healthcare
- Security & defence
- Information & communication

IDATE Consulting & Research

www.idate-research.com

M10213 – July 2010

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1. Executive Summary

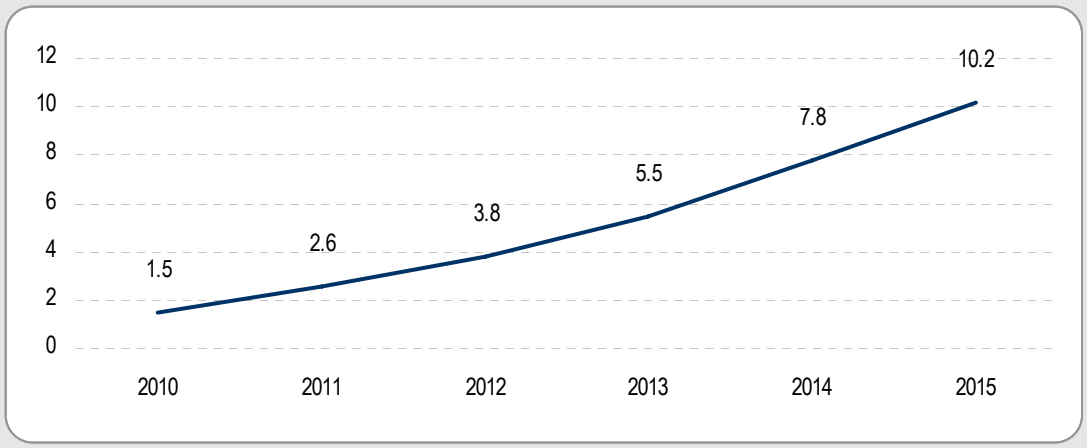
Enabling the sector's growth

The serious game sector is expected to enjoy significant growth in the medium term. IDATE estimates that it currently generates a total 1.5 billion EUR in revenue around the globe, and that by 2015 sales will be almost seven times what they are in 2010 – with an average annual growth rate of 47% between 2010 and 2015.

We can expect to see the business world's interest in serious games increase around 2013, and especially small and medium enterprises (SME) which still have a rather limited awareness of these tools.

Growth of serious game revenue worldwide, 2010-2015

(billion EUR)



Source: IDATE – July 2010

The outstanding issues and challenges for serious gaming companies over the next three years include:

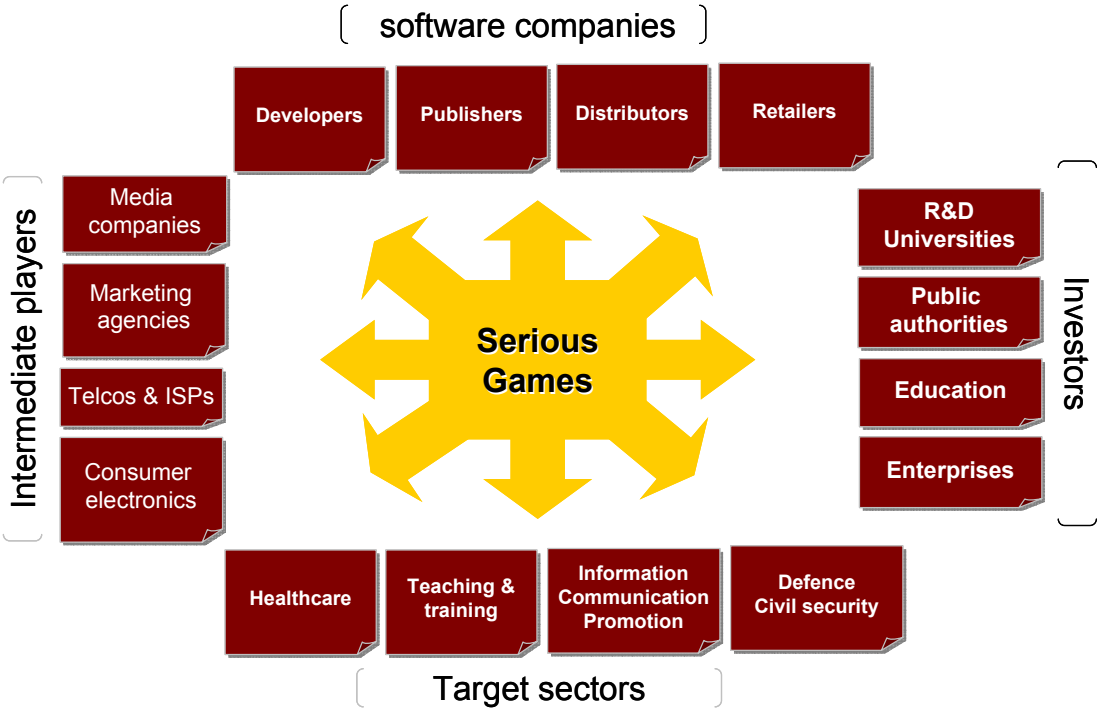
- inventing their own gameplay;
- devising their business models;
- automating a portion of the production process, especially the integration of the sector-specific component;
- structuring serious games by target sector;
- persuading still reluctant principals/partners;
- investing in all connected platforms;
- 3D, intelligent interactivity, facial recognition, gyroscope… serious games need to go farther than video games.

1.1. Serious gaming: an attractive sector

Serious gaming can be considered to be populated by four groups of players who have a common interest in investing in the sector.

- **Traditional software sector players.** Here we find a classic value chain composed of a developer, a publisher, a distributor and a vendor. In the serious gaming sector, it is generally a single player that handles all four of these functions. This organization could change and shift to a situation where publishers specialize in healthcare or training or some other area. There are very few regular video game companies that are involved in serious games, so most of these companies are "pure" serious game players.
- **Groups of investors** from various backgrounds: universities, public authorities, schools or continuing education establishments, companies that manage their own in-house training, etc. They are contributing their expertise and/or monetary resources to serious games and are therefore the driving forces behind the sector's current momentum. For researchers, this sector is opening up a sizeable field of investigation that is capable of creating more direct gateways to businesses. University research therefore combines technological problems with concrete applications, with the support of private sector companies as part of collaborative R&D projects. In some cases, these projects are supported by existing national schemes (the Small Business Act in the United States, ANR projects in France, for instance) or more recent dedicated programmes – one example being the call for serious game proposals that was issued by the French Ministry of the Economy in 2009. So serious games are both a lever for cooperation between research and enterprise and an outlet for applied technological innovation.
- **Intermediate players**, and especially **marketing agencies** and **media companies,** who are likely to either produce or commission a serious game. They can also be involved in the development side by becoming a serious game publisher in a particular segment, especially information, communication, training and teaching or instruction. Intermediate players, notably ISPs and consumer electronics manufacturers, are in a position to pre-install applications on the devices they sell or put into users' homes. Serious games housed on a device can also be connected with a service, dispensing assistance with healthcare or training, for instance.
- **The targeted sectors** therefore constitute a segmentation that is perhaps broad and basic, but does have the advantage of being clear and simple. We should nevertheless point out that some games can cut across a number of sectors, one example being a game that is designed to help healthcare workers in their job but which can also serve as a training tool.

Categories of player involved in serious gaming



Source: IDATE

1.2. Medium-term outlook

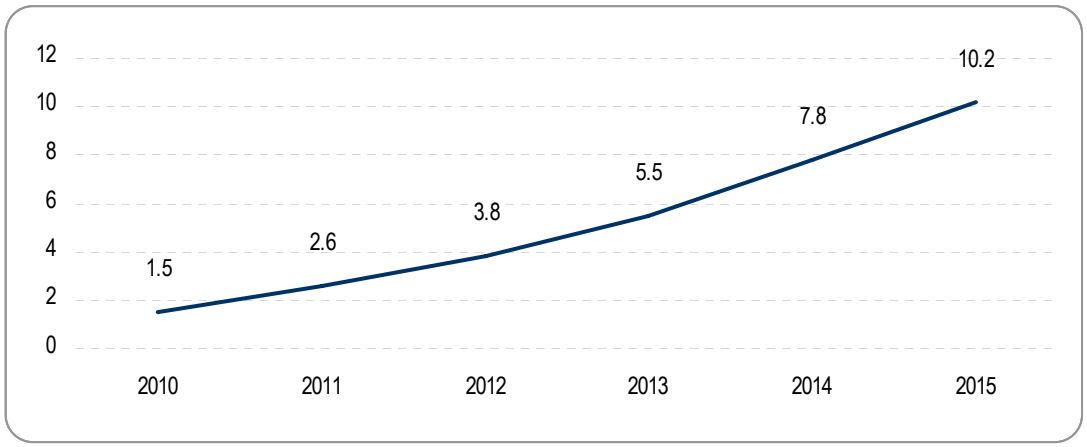
1.2.1. Enabling the sector's growth

The serious game sector is expected to grow significantly in the medium term. IDATE estimates that it current generates a total 1.5 billion EUR in revenue around the globe, and that by 2015 sales will be almost seven times what they are in 2010 – with an average annual growth rate of 47% between 2010 and 2015.

We can expect to see the business world's interest in serious games increase around 2013, and especially small and medium enterprises (SME) whose awareness of these tools is still quite limited.

Growth of serious game revenue worldwide, 2010-2015

(billion EUR)



Source: IDATE – July 2010

1.2.2. Inventing gameplay

In most cases, the gameplay found in serious games takes its inspiration from classic console or computer games. During the first stages of development, the serious games sector is targeting users who are already familiar with video games and will therefore have no problem understanding the mechanics of a serious game, which are similar.

But this first stage is coming to an end and one of the main challenges for serious games is reaching a much broader public than just hardcore gamers. This means that serious game developers need to design simpler gameplay that requires no learning curve, in other words which even novices can understand immediately.

The casual gaming phenomenon can provide a good source of inspiration here.

It should also be mentioned that, in some sectors of activity, the gameplay being deployed are necessarily different from the ones found in video games, because of the specific features or needs of the target sector or because of user-driven innovations. A therapeutic game will naturally take account of the special demands of a patient's disability or pathology, for instance. This will lead developers to create applications whose ergonomics and user interface (UI) are tailored to the target, and where the "player's" advancement through the game's universe will depend on their ability to receive a message, interpret it and make their way through the series of stages.

1.2.3. Devising business models

There are still a great many questions over possible business models and pricing. Several points should be kept in mind here:

- Different pricing and business models will apply to each sector of activity. For instance:
  - The defence sector operates primarily through exclusive sub-contracting agreements, licensing and training and support services for using the applications in situ.
  - In the same vein, in the field of healthcare and therapeutic games, one important goal needs to be compliance with existing regulations governing the target market – the result being that a serious game would gain the, potentially exclusive, approval of national health authorities, and could be deployed by healthcare professionals with the financial support of public authorities.
  - The teaching sector will rely more on the non-exclusive licensing model when acquiring a serious game and offering it to the public, without using a service to train future trainers.
  - Training in manufacturing sectors will be based on both licensing and developing exclusive applications.
- Each target category corresponds to several pricing and business models. They will depend on the nature of the target, i.e. whether it is a business or an association, an institution, a citizen, an Internet user, a consumer, a professional, etc.
  - On the whole, the pricing model used for a serious game aimed at the general public, whether consumers or citizens, is one of free access and use. The business model will be based on sponsoring, advertising, subsidies and self-financing.
  - In most cases, the pricing model used for a serious game aimed at a public or private establishment will be based on a fee-based service that includes the acquisition of a licence and/or a service for training users in the game and/or a game support and update service and/or a service for keeping track of and processing players' results and scores. The business model employed for the production of the serious game is a flat-fee contract and/or revenue sharing if several partners are involved.
- The more technologically sophisticated the application, the more difficult it is to play, the more complex it is to configure and the more it requires real-time monitoring, the more the licensing model appears to apply, combined with training and a support service for use of the serious game.

1.2.4. Automating a portion of the production process, particularly the integration of sector-specific elements

Serious games are now in their adolescence, branching out in search of new markets to conquer. It is still a fledgling sector in this respect and there is little automation in the applications development process. There are a great many developers in the sector, chiefly new entrants who have come to the serious game market through their professional expertise in training, healthcare or communication, for instance, and not because of their video game production skills. These players need to need to incorporate resources from the video game sector into their team, or build their team around them. Beyond that, they will need to gradually create and improve their production instruments, like the video game sector has been doing since the mid-90s. More than that, however, the automation of production tools will need to take the specific features of the target sector into account, which is one of the main things that distinguishes serious games from ordinary video games.

In addition, like in the video game industry, there are production tools and middleware that have been developed by third parties, both open source and proprietary. They are becoming increasingly affordable and will therefore allow the sector to adopt more high-tech tools, which is critical to improving the quality of serious games.

1.2.5. Structuring serious games by target sector

At some point, the serious game will no doubt be organized by sector. Indeed, who better understands the economic, industrial, commercial, social and societal issues facing the healthcare sector than healthcare professionals themselves? This means that there will be as many serious game value chains as there are target sectors, and each will be structured around developers who are specialized in designing teaching applications, publishers specialized in healthcare products, etc.

Of all of them, the way the business communications and consumer information segment is organized will probably most closely resemble the traditional video game sector, with those involved having more "generic" professional skills.

1.2.6. Persuading still reluctant principals

While some large corporations and organizations are really starting to incorporate serious games as a training, information and communication tool, a great many of them still need persuading. Another key challenge is convincing small and medium enterprises (SME), which would help expand the client base for serious game developers considerably.

Several things could help bring potential clients around:

- recommendations from businesses, and especially large companies and organizations;
- support from public authorities, and especially fiscal incentives for companies that use serious games for training their employees, for instance, or the creation of long-running collaborative R&D programmes, the establishment of serious game development funds, games commissioned by public authorities, etc.;
- local authority involvement in creating a serious game-friendly environment for the sectors that are potential users: agriculture, wine growing, automotive, aeronautics, pharmacology, etc;
- structuring serious game target sectors into clusters.

1.2.7. Investing in all connected platforms

Serious game are currently confined mainly to computers and, to a lesser degree, mobile phones. Most applications aimed at business users will continue to be hosted on a computer, but other technically powerful platforms, such as home consoles or touchscreen tablets, could serve as complementary options.

For applications aimed at the general public, serious games will gradually make their way to new platforms in the coming years, such as connected televisions and tablets. If it remains as easy to use as classic sets, the connected TV will be an ideal device for reaching users who are more TV viewers than technophiles, which includes senior citizens in particular. Touchscreen tablets could also take hold of they offer a simple user interface.

1.2.8. 3D, intelligent interactivity, facial recognition, gyroscope… serious games need to go farther than video games

The technological issues surrounding serious games will involve innovations that the video game sector has managed to incorporate fully into its environment. Accelerometer, gyroscope, gesture recognition, 3D… all of these innovations will easily find their application in serious games. It will be up to players along the value chain to appropriate these innovations, to design applications that serve a given sector of activity, and to devise a business model that works for everyone.

Movement and gesture recognition are highly coveted applications amongst today's console-makers. Implemented as a standard feature on the Nintendo Wii, rivals Sony and Microsoft are now rolling out their own solutions (Move and Kinetics). Sony and Microsoft see this as a source of new growth for the consoles they have been selling for several years: four years for the PS3 and more than five years for the Xbox360. Serious game developers could exploit this technology, provided they get permission from the console manufacturers. They could also develop their own solutions, which could go as far as the ability to recognize and interpret facial features.

Cinema is currently capable of creating a high realistic synthetic reproduction of facial features through motion capture. A serious game should be able to capture a player's movements and, for certain applications, their facial features, to interpret them and, depending on the results, trigger an action in the game. This function opens up a broad field of potential serious applications in the area of inter-personal skills.

But the serious game sector will need to go beyond what video games have achieved in the way it makes use of technological innovations. A serious game needs to be realistic to accomplish its goal. There where the video game bases its gameplay on a relatively simple player profile, serious games need to offer a more iterative and adaptive approach in virtual real time, and so be based on more complex profiles. This is how serious games will break away from regular video games, and become a sector unto itself.

2. Methodology

The methods employed by IDATE's teams of analysts and consultants are based on an approach that combines:

- research and validation of data collected in the field;
- the application of classic industry and market analysis tools: segmentation, competition analysis, strategic strengths, modelling, assessment and forecasts…;
- the expertise of specialists who contribute their own analytical capabilities and those of their network of market analysts.

More specifically, the tools employed by IDATE's teams are as follows:

1/ A multi-disciplinary team of full-time consultants, specialised by sector of activity

IDATE's analyses are performed primarily by our in-house consultants, and very occasionally by freelance market analysts. This approach allows us to capitalise on our pool of expertise through teamwork, sharing knowledge, ideas, contacts, viewpoints and key data. Each report is drafted by a team of specialists, overseen by senior consultants with a proven track record in their field.

2/ Primary and secondary research

IDATE reports and databases are compiled based on primary data obtained from one-on-one interviews with the sector's decision-makers, and on secondary data which is established by cross-referencing public sources and external databases.

3/ An integrated information centre sustained by a number of tools and proprietary databases

Over the past 30 years, IDATE has established working and data organization methods and proprietary databases that trace the central chapters in the history of our sectors of expertise.

- **Companies**: IDATE's in-house data service tracks the latest news and events to come out of the top telecom, Internet and media industry companies around the globe. Innovative firms and start-ups are monitored by the market experts in the different "Practices".
- **Markets:** IDATE's databases are derived from rigorous processing of fundamental economic variables (GDP, investments, exchange rates, demographics, etc.) and their relation to decisive sector-specific and national elements (capex, national market dynamics, etc.).
- **Technologies**: IDATE's organization by Practice provides us with an efficient means of tracking innovation. IDATE's engineers ensure in-depth understanding of the changing shape of products and services and of the latest innovations in the marketplace.

4/ Contents of the published reports

Each IDATE market report details the structures and issues at play in the market being examined, the decisive forces (technologies, regulation, consumption) and the players involved. Particular emphasis is given to market assessments and forecasts, as part of the central premise. All market reports are laid out in a clear and concise manner, and illustrated with tables and graphs of key market data and trends.

The process of drafting of a market report includes the following stages:

- analysis of the information available in the in-house databases, and review of analyses performed in the recent past;
- based on a preliminary market segmentation and assessment, and as part of an approved interview guide, analysts conduct interviews that enable them to validate working hypotheses;
- a market model is then established, making it possible to test the hypotheses that have an impact on the market's development, and validated by a second series of interviews;
- and, finally, the report's conclusions are discussed by the members of the project's management team, and with the consultants who are experts in the different areas involved in the analysis;
- a final proofreading and editing/revision process, prior to the production of the final version of the report which is delivered to the client.

5/ Definition of a serious game

A serious game (SG) is a computer application that uses scripting and production methods and technologies originally designed for video games to distribute a message or impart some knowledge that goes beyond the dimension of play or entertainment.

Video game scripting languages relate chiefly to gameplay. Gameplay refers to all of the rules of the game, the rules that govern the game's environment and those that concern how the player evolves within the application.

Most of the gameplay we find in serious games today is borrowed from video games. It has the advantage of being familiar to those who already play video games, and will therefore have no trouble playing a serious game. The main drawback is that serious games are ultimately aimed at a much broader audience which is not necessarily familiar with how a video game is played. This means that, to maximize their potential audience, the sector's players need to:

- invent new forms of gameplay that are proper to the genre;
- focus on simple rules and games that require no learning curve.

There is very little difference in the production mode for a classic and a serious game, although a sector-specific component is involved throughout the production of the latter. This component embodies professional skills/knowledge – related to healthcare, training, communication, sustainable development, defence, energy, etc. – transposed into a more playful universe. It will affect production costs to a varying degree, depending on the goal of the application. A 3D real time serious game for training surgeons, for instance, will require a much larger investment than a serious game whose purpose is to inform the public of the health risks tied to swine flu.

Serious game developers borrow technologies from video games, both generic and highly sophisticated. Rendering engines, physical engines, artificial intelligence, audio and networking systems, all of these technologies have their place in serious games. The use of high-end technologies is an economic issue that will depend on the developer's revenue model. As it stands, there are few serious game developers who have the means to employ high-end technologies, so most are using more affordable mid-range and low-end solutions.

But the biggest trend these days is 3D real time games that require sophisticated and often costly tools. They should gradually become more affordable for developers thanks to clever business models, which will help make serious games more appealing to the target audience. This is one of the goals of players like Quest3D and Dassault Systèmes whose prices vary depending on the features of the application, or which may offer a freemium solution.

The purpose of a serious game is generally threefold:

- inform,
- teach,
- communicate.

These goals apply to all sectors of the economy, whether brick and mortar sectors or those born of information and communication technologies. For the purposes of this report, IDATE has chosen to focus on four major target sectors which are potential users of serious games:

- healthcare,
- teaching and training,
- consumer information and business communication,
- defence and public safety.

3. Serious game value chain

It is an interesting exercise to compare the value chain for classic video games with the one taking shape for serious games. There are similarities in the types of player and professions involved, but there are also differences in the approach to devices, potential associated services and, of course, the software itself which distinguishes itself by having a professional or business aspect to it.

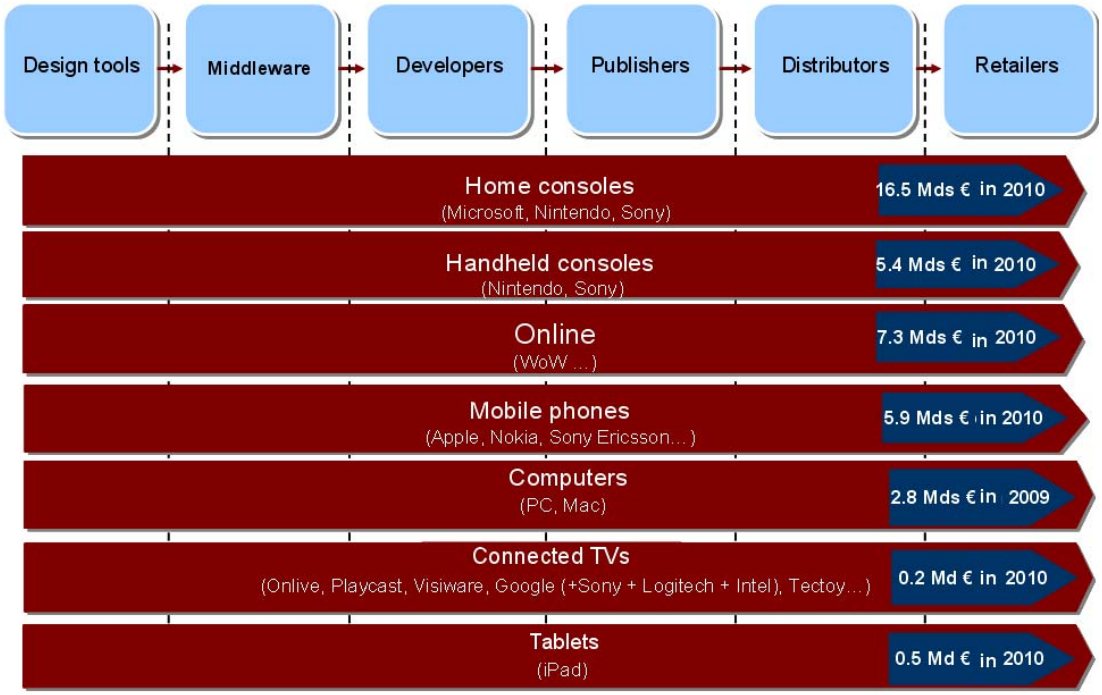
3.1. Value chain under construction

The video game value chain is made up of a maximum six categories of player, although the biggest publishers, which finance the production, packaging and marketing of the games, also distribute the titles they publish and those produced by others. In some cases they are also online retailers, and often have their own teams of developers working in different studios.

The video game sector is structured around a very device-centric value chain. The home console is still the device that generates the greatest amount of revenue from software sales.

There are very few, if any, services associated with video games in most gaming market segments, the only real exception being online gaming. In addition to electronic distribution, the accounts management infrastructure, billing and hosting applications, games on social networking sites and massively multiplayer games are based on a sizeable editorial service that provides players with support for their gaming experience.

The video game value chain



Source: IDATE

www.idate-research.com © **IDATE 2010**

3.2. An original value chain

The value chain for serious games has fewer links than the classic video game chain. As mentioned earlier, the most common structure is a single player that handles the development, publication, distribution and sales of its games. A great many players actually publish only a single title whose sales and installation/implementation for customers occupy its entire sales and support staff.

The majority of today's serious game developers use low-end instrument as they are the only ones they can afford – with high-end gaming engines costing in excess of 250,000 USD.

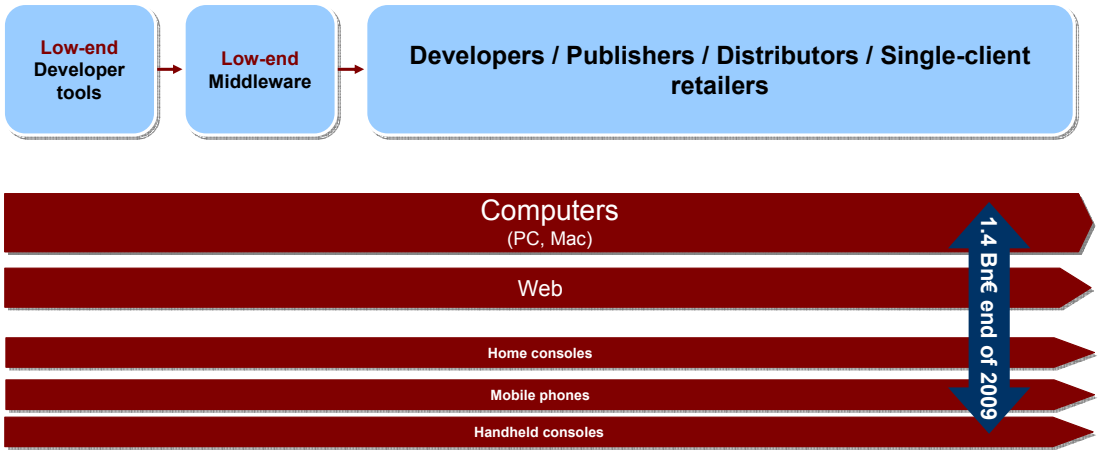
At this stage in the serious gaming sector's development, the value chain is more software and service-centric than device-centric: most serious games are designed to be played on a computer, and few have been developed for other platforms. The mobile phone is still the device that currently offers the most interesting alternative to the PC, and is also the platform of choice for the development of serious games in emerging economies where people can get hold of a mobile much more easily than a computer.

Serious gaming software is still more important than any service that might be associated with it. In other words, the most common configuration is a user playing the game alone and usually locally, as opposed to online. But serious games are not meant to replace existing forms of information, communication or training, but rather to flesh them out and enhance them with interactivity, GUI and a video game's ability to plunge the user into an environment where she will be more receptive to the message being transmitted. Plus the social nature of a serious game, which opens the way to a multi-user or even a massively multiplayer approach, will be one of the major developments in the coming years, both for the player of the game and the professional using the game as a tool.

As a result, serious games cannot do away with:

- professional support for the game;
- an associated service (aside from management of the application and its functionalities in software-as-a-service mode) which:
  - trains future users of the serious game, whether they are professionals, citizens, consumers or students;
  - regularly tailors the application to the situation;
  - configures the game, possibly remotely, according to the targeted users, patient, citizen or learner/student;
  - collects the results of the use of the serious game, interprets them, shares them and injects them back into the gameplay to help the player progress.

The current serious game value chain



Source: IDATE

3.3. A value chain reaching maturity

IDATE estimates that, given the current rate of growth, the serious game market could be generating more than 10 billion EUR in revenue by 2015.

In the medium term, the serious game value chain could well expand and give developers a degree of economic independence. This expansion will undoubtedly occur as the result of the sector being segmented in a more streamlined way, by sector of activity. In other words, serious gaming will be structured around sector-specific elements. We are starting to see developers and publishers emerge who are specializing in healthcare, defence or training applications. This means that there will no longer be one but rather several serious game value chains, depending on the targeted sector. The business and pricing models will vary, as will the contractual relations between the different links in the chain, and the amount sector-specific content in the application.

Five years from now, the production tools and middleware being used by the sector will be more sophisticated, most incorporating real time 3D, better graphics, a broader artistic diversity and greater man-machine interactivity. These tools can be qualified as high-end, and will be much more affordable than they are today. They will be able to better render the complexities of reality and allow for greater immersive interaction.

While most serious games are currently confined to a single platform, they will very soon become multi-platform. They will be able to exploit the features offered by new touchscreen and Internet-ready devices. Already deployed for video games, these features open up a vast field of exploration to be applied to serious games, regardless of the sector of activity being targeted.

So serious games will need to design gameplay that makes use of:

- the gyroscope, which measures the orientation of the device;
- the inclinometer, or tilt meter, which measures the angle of a slope;
- the accelerometer, which measures the size and direction of acceleration;
- gesture/movement recognition, and notably facial recognition;
- a camera;
- Internet connection;
- 3D;
- 360° immersion, etc.

In addition to these technological elements, also worth mentioning is the tremendous potential that the connected TV represents for serious games. Internet-ready televisions will be able to host an app store devoted to TV applications, which is something that Google already appears to be working on. The first stage would be to deploy an enhanced operating system for the TV which is calibrated for a mass market product. This OS would need to go beyond the browsing environments that TV manufacturers currently offer, which still do not take the user experience properly into account. The app store also needs to be open to outside developers. It could operate under a proprietary model like Apple has for its ecosystem, or a more open source model where barriers to entry are lower still. The value chain also needs to include players who could be qualified as operators of serious applications on the connected TV, and who would be in charge of managing the infrastructure, billing and support services for the serious games.

The connected TV also represents a substantial outlet because of the sheer number of TVs deployed in households. This is especially true for members of the public who have not adopted new information and communication tools, but who would be prime targets for serious games – the main example being senior citizens at whom a great many serious gaming applications could be aimed.

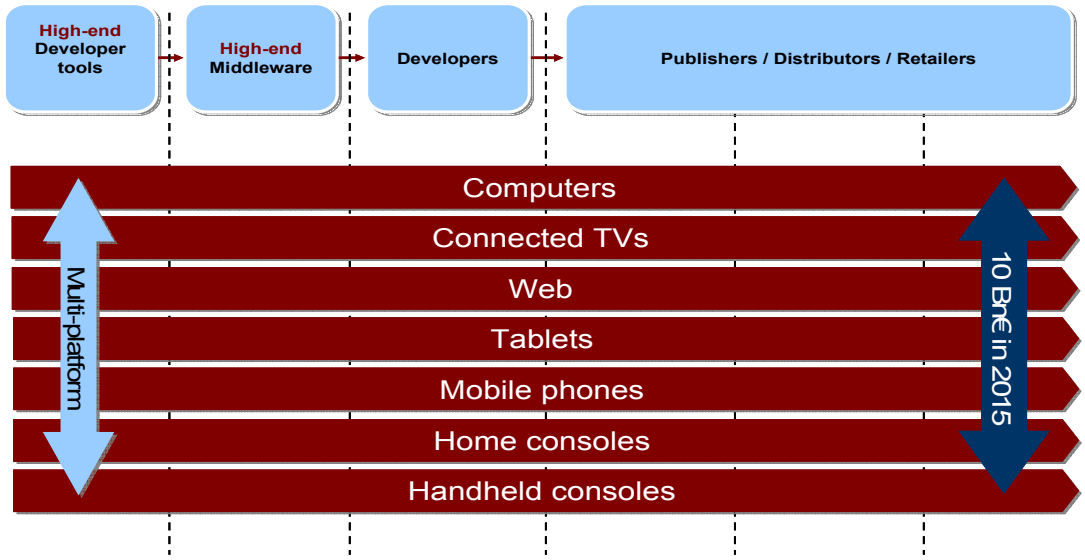
The television also boasts several significant advantages over other devices:

- the quality and size of its screen, both of which continue to increase and which are very well suited to interactive applications that incorporate body movements and which require players to use their observational skills;
- more instantaneous than the computer;
- necessarily easy to use, which will no doubt force future applications developers to rethink their software with this criterion in mind;
- already available and easily accessed in the home.

The television's control and interaction interfaces will nevertheless need to evolve. We can hope to see TV-based serious games develop that do no require accessories that are any more complicated to use than the good old remote. Logitech, Archos, Vizio and several telcos are all working in this direction.

In the medium term, the serious game sector can be expected to take into consideration and develop services associated with their software applications. As a result, the value chain's organization will be based on the service first, then on the software and the hardware.

A serious game value chain in 2015



Source: IDATE

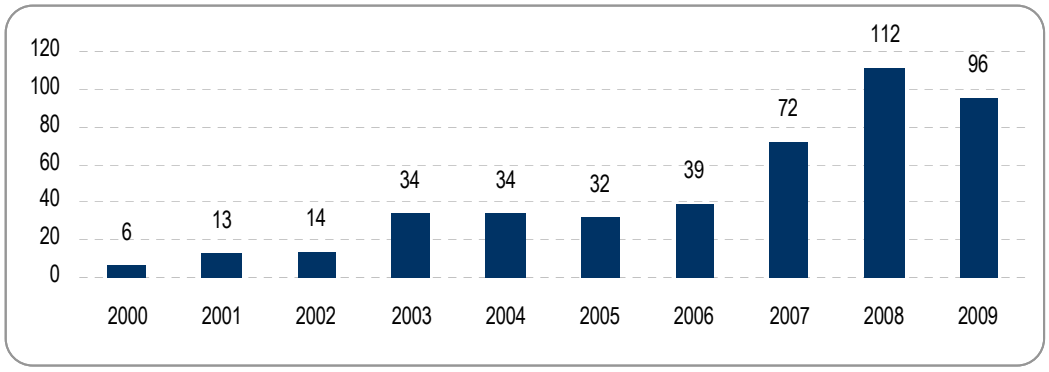
4. Serious game market structure

4.1. Statistical elements

GameClassification lists more than 460 serious game applications that have been published since 2000 – with the number of releases increasing steadily up to 2009. This first period corresponds to the serious game sector's embryonic stage, after which the number of titles published began to decrease, which in no way indicates poor health but rather an improvement in the quality and cost of the available games, in exchange for a decrease in their numbers.

The defence sector, however, had 17 new titles published in 2009, which is 13 more than in 2008.

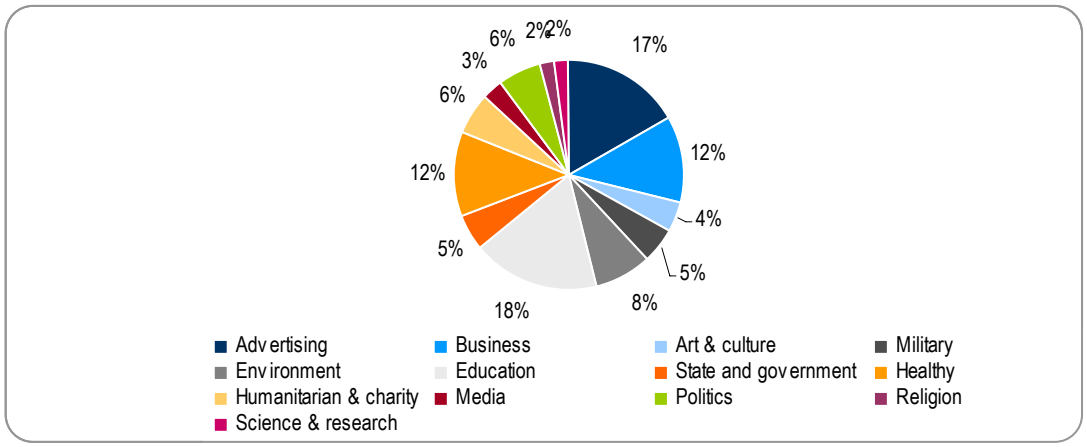
Number of serious games published and inventoried by Gameclassification, 2000-2009



Source: IDATE based on Gameclassification data

Three market segments account for close to two thirds of the titles published since 2000: education, advertising and health/healthcare.

Breakdown of serious games by target market, 2000-2009

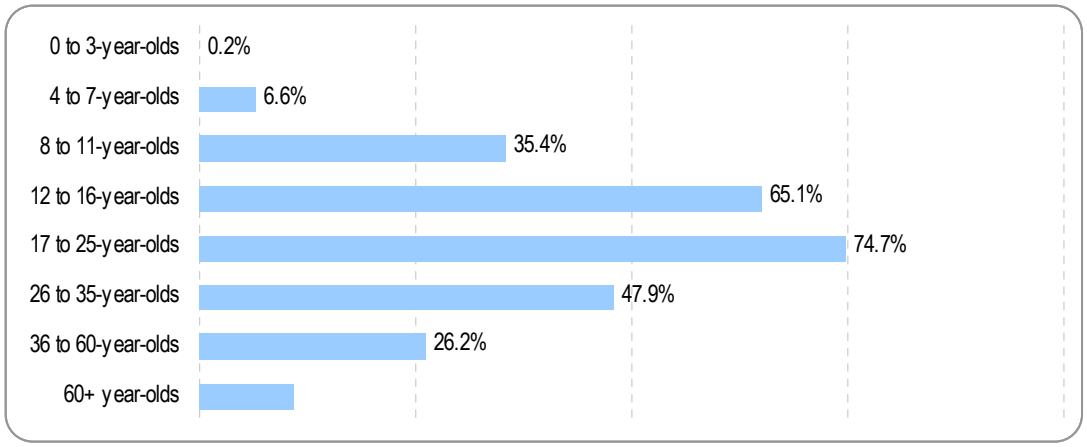


Source: IDATE based on Gameclassification data

The target market most commonly cited by the developers of applications listed by Gameclassification is users between the ages of 17 and 25.

www.idate-research.com © IDATE 2010

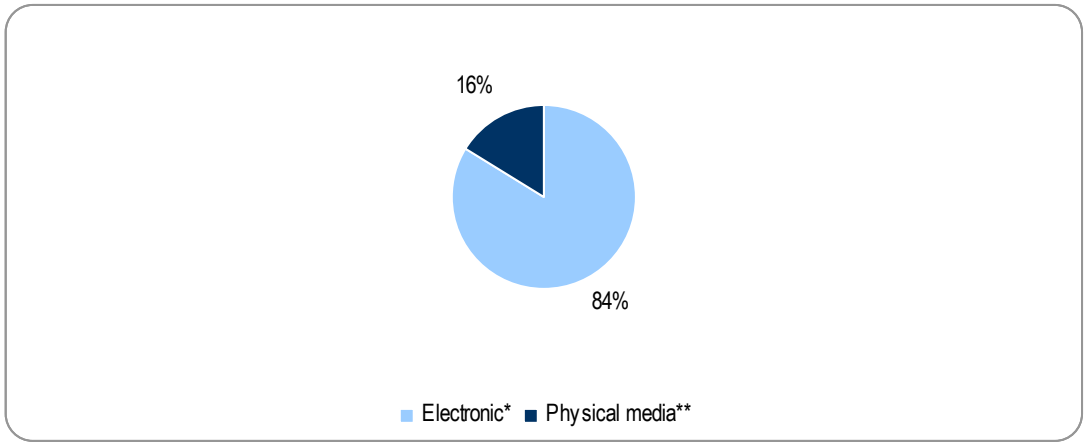
Average age of serious game target users



Source: IDATE based on Gameclassification data

Most serious games are distributed electronically, available either via download or web browser.

Serious game distribution modes



*Browser, download… ** CD-Rom, console…

Source: IDATE based on Gameclassification data

4.2. Healthcare

Healthcare	
Number of titles in 2009	70 of the 600 titles inventoried since 2000 (11.6%), 12 titles published in 2009
Goal of the applications	Help with diagnosis, prevention, advertising, training, fitness, physiotherapy, relaxation… A distinction is made between a game's therapeutic purpose and other goals, such as prevention, information or training. • Professional objectives: train, inform, generate savings, notably with simulation applications. • User/public-related objectives: educate, inform, prevention, treatment. - Better understand an illness, to better accept it. - Provide patients with support in their treatment.
Technological issues	• Development of real time 3D, which is expected to become common in professional and simulation applications; • Development of multiplayer features for therapeutic games in particular. This is fundamental to motivating patients and providing them with psychological support; • Deployment of applications on mobile platforms; • Development of cross-platform applications, notably for connected televisions for more elderly users.
Development costs	[20 K€ to 7.2 M€]
Professional component's share of total development costs	[15% to 50%]

4.3. Teaching and training

Teaching and training	
Number of titles in 2009	170 of the 600 titles (+28%), 38 titles published in 2009 A broad sector that encompasses training, education and e-learning segments. E-learning alone is a market worth 200 USD, according to Upside Learning.
User-related and professional objectives	Develop knowledge, expertise, inter-personal skills and learning skills. • Teach eco-citizenship habits in the workplace; • Learn how to protect company documents; • Learn about corporate management; • Learn a foreign language; • Learn team building/management; • Learn diversity-related conflict management in the workplace; • Learn how to search for information online.
Technological issues	• Development of serious games on mobile platforms for users in emerging markets; • Deployment of real time 3D in the applications; • Improving graphic environments; • Development of artificial intelligence to improve the interaction between the learner and the software; • Improving applications by incorporating other media (music, video); • Other challenges: changing the image people have of video games, educate them on their effectiveness as a teaching tool.
Development costs	[50 K€ to 1 M€]
Professional component's share of total development costs	[10% to 25%]

4.4. Public information and business communication

Public information and business communication	
Number of titles in 2009	150 of the 600 titles (more than 25%), 23 titles published in 2009 A wide array of applications are used, from advertising messages to corporate communications. Business communication takes the form of advergames, which is a market unto itself – worth $400 M in 2010, according to the Yankee Group.
Goal of the applications	**Informing the public** • increasing awareness of flood prevention/control policies; • advertising; • increase awareness of eco-friendly habits; • understanding renewable energies. **Corporate messages** • recruiting personnel while also promoting a company or an institution; • advertising; • explaining.
Technological issues	• Gameplay is still derived too much from video games; the segment needs to develop its own forms of gameplay; • Questions over how to finance publicly-available titles, as they are usually free. Sponsorship is no doubt one solution to this problem; • Development of real time 3D would make the applications more attractive.
Development costs	[10 K€ to 1.5 M€]
Professional component's share of total development costs	[3% to 50%]

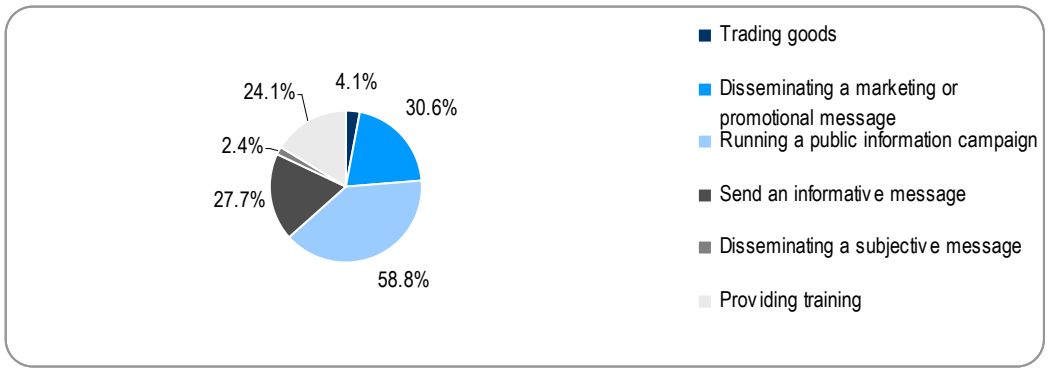
4.5. Defence and public safety

Defence and public safety	
Number of titles in 2009	30 of the 600 titles (less than 5%); 17 titles published in 2009. The most mature segment thanks to the US military and Advanced Research Projects Agency which finances serious gaming projects in America via the Small Business Act. Games in this segment involve high development costs.
Goal of the applications	• Showcase the military and its values; • Attract new recruits; • Provide training.
Technological issues	Hyperrealism is a core element in games for the defence and public safety segments. • Accessorised applications for more realistic simulations; • Developing man-machine interfaces – gesture, speech and word recognition, semantic interpretation; • Develop less costly middleware than what is currently being used, and which comes mainly from the video game industry; • Widespread use of multiplayer features for cooperative gameplay; • Multi-platform development.
Development costs	[100 K€ to 4 M€]
Professional component's share of total development costs	[10% to 25%]

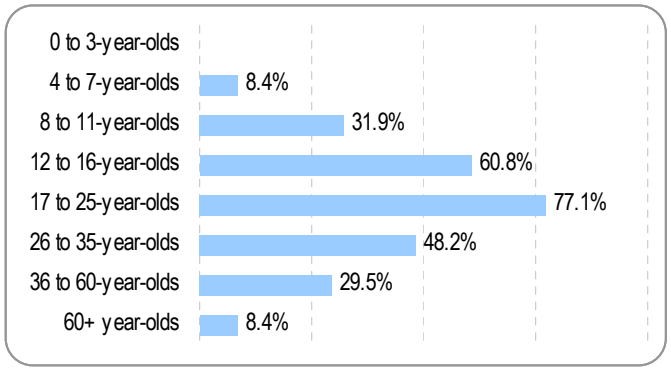
5. Serious games for teaching and training

5.1. Statistical data

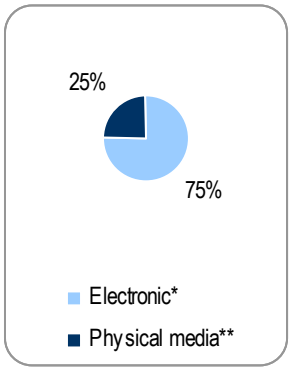
Plans for use



User segmentation by age group

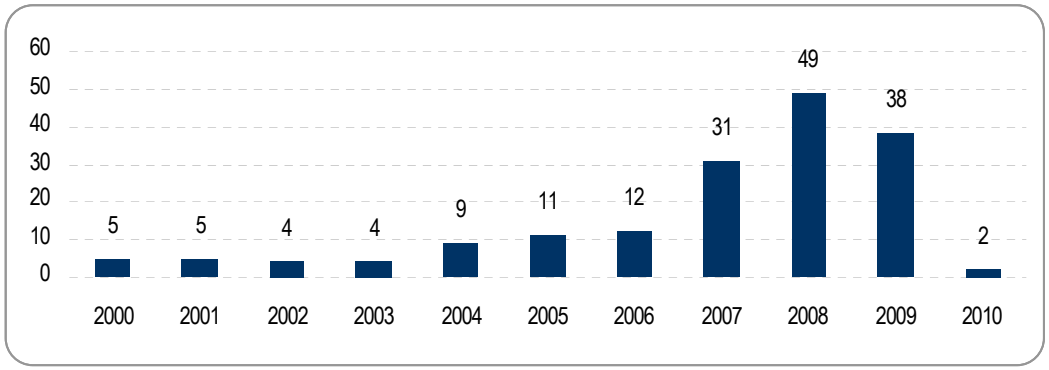


Distribution method/medium



*Browser, download…
** CD-Rom, console…

Growth of the number of titles published



Base: 455 games in this category

Source: IDATE, based on Serious Game Classification

Serious games devoted to teaching and training cover a wide variety of areas, and there are so many of them that it would be difficult to perform an exhaustive inventory.

Plus, it would no doubt be more useful to obtain an inventory of the four types of knowledge that serious games are likely to impart: knowledge, expertise, inter-personal skills and learning skills.

The two main professional challenges involved in producing this type of serious game are to find a teaching method compatible with serious games and to prove their ability to transmit knowledge. This second challenge is a major obstacle that needs to be overcome to help teachers and decision-makers take the plunge and incorporate serious gaming into their toolkit.

The financial stakes are considerable. By 2014, the e-learning market alone, which is one of the sub-markets of the teaching and training segment, could be worth close to 50 billion USD worldwide.

When they include a proper video entertainment component, edutainment applications constitute a sub-category of serious game. The education, training and e-learning markets in particular are all natural fits for serious games. According to Upside Learning[1], the global e-learning market alone was worth 27.1 billion USD in 2009 and is forecast to increase by 12.8% annually over the next five years, to reach 49.6 billion USD in 2014. But not all e-learning involves serious games.[2]

There are a host of players currently involved in the serious game market: media companies, the military, training specialists, manufacturers, publishers… which means just as many approaches to the product. The definition adopted for the purposes of this report is as follows:

The purpose of a serious game is to invite the user to interact with an electronic system designed to combine teaching, training, practice, communication and information with entertaining or play-based methods derived from video games. The goal of this combination is to take a game-based approach to delivering useful or serious content.

The three main principles that underpin the serious content are:

- **deliver a message**: the goal here is to transmit a message whose purpose is to educate, inform, persuade…;
- **provide training:** the intention here is to improve the user's cognitive and/or motor skills;
- **enable the exchange of information**: the purpose here is to allow a flow of data (information, improvements, etc.) between the players of the game or between the distributor of the game and its players.

This means that a form of gameplay and at least one of these three functions need to be incorporated into the same electronic system for it to qualify as a serious game.

[1] http://www.upsidelearning.com/

[2] For a more detailed explanation of the notion of serious games, please refer to IDATE's previous report on the subject, "*Serious Games: Advergaming, edugaming, training…*" which is available for download in both "French" and "English".

5.2. Market development status

A number of titles aimed at the education sector already existed before the current serious game movement. Back in 1973, for instance, the Minnesota Educational Computing Consortium (MECC) was already marketing retro serious games[3] like *The Oregon Trail* and *Lemonade Stand*.

While some of these initiatives are now less visible, in the areas of edutainment and e-learning for instance, their heritage nevertheless remains. As a result, a number of "educational" games are in fact just updated versions of older titles, as is the case with the latest offerings from long-running series like *Adibou* (Coktel Vision, 1991-2009), *Reader Rabbit* (The Learning Company, 1986-2009) or *Carmen Sandiego* (Borderbund Software, 1985-2009).

Adibou

Carmen Sandiego

These are games that are produced primarily by a company that also handles their distribution on different media, both physical and electronic. Because of the selection of products in this category, for the purposes of this report we have elected to include only those edutainment applications that fall within the paradigm of relying on real video game-like gameplay to convey a message or to provide lessons in the pedagogical sense.

There are also publishers operating in the market segment devoted to corporate training who offer turnkey and customizable serious games, such as *Sysope* and *SimuLearn.* But we are seeing more and more companies that use development studios to produce bespoke serious games.

One example is French studio *Daesign* which has been commissioned to produced games like *Renault Academy* (Daesign, 2009) that was created for French car-maker Renault. Partnerships may be formed between these companies and the development studios, one case in point being the British firm PIXELearning which established a partnership American firm Global Lead to market the serious game, *Our Worlds of Makrini.*

Renault Academy

Our worlds of Makrini

[3] Retro serious games are the predecessors to the new generation of serious games. They cover the period running from the early 1950s up to 2001 included.

While these applications are generally intended to be used to train employees, we also find the more unusual goal of a company wanting to impart its knowledge to the general public. One example here is France's incumbent carrier, France Telecom, which offers a serious game called *MinUp* (Orange, 2009) whose purpose is to teach Internet users about the history of telecommunications. In this category we also find companies which, like PostFinance or IBM, are targeting students with lessons on how to manage a bank account (*EventManager*, 2008) or on sustainable development (*PowerUp*, 2008).

MinUp

EventManager

PowerUp

5.3. Sector-specific aspects

The sector-specific aspects contained in the serious games devoted to teaching and training that are profiled in this report include:

- **teaching eco-citizenship in the workplace** (*GreenLife Office*);
- **teaching history** (*Rome in Danger*);
- **learning how to protect company documents** (*Agent Surfire*);
- **teaching corporate management** (*Robo-Rush!*);
- **teaching teambuilding skills** (*Novicraft*);
- **learning how to manage a bank account** (*EventManager*);
- **learning a foreign language** (*Hanjamaru*);
- **learning about life in the workplace** (*Planet Work*);
- **learning team management skills** (Vleader);
- **learning how to resolve conflicts arising from diversity in the workplace** (*Our World of Makrini*);
- **learning how to search for information on the Internet** (*MinUp*).

Although not intended to be exhaustive, this selection nevertheless gives a good idea of the range of topics that can be taught using serious games. We are seeing a steady stream of games devoted to new themes, so it would be near impossible to inventory and describe all of the sector-specific aspects associated with each topic. A clearer approach, then, would be to look at the different types of knowledge that can be transmitted. We have identified four:

- **knowledge**: this is "book" knowledge that the learner must memorize and be able to repeat back. Examples include multiplication tables, poems, etc.;
- **savoir-faire**: the goal here is for the learner to be able to execute a specific task, such as solve a mathematical problem, change a tire, make a dish based on a recipe, etc. ;
- **inter-personal skills**: the goal in this instance is for the learner to be taught the codes to adopt in certain specific societal or social situations. For instance, how to handle an irate customer, how to act in an open plan office/work environment, how to reassure someone during a crisis situation, etc.;
- **learning skills:** the goal here is for the learner to access certain types of knowledge by herself by being taught where and how to find the appropriate information.

One of the main sector-specific issues is how to design serious games that are capable of delivering all four of these types of knowledge. As with all serious games, this involves creating a coherent mix of the game's objectives and the pedagogical or utilitarian script, employing the right graphics and sound, using suitable methods and designing gameplay tailored to the target audience and the context in which the game will be played. In addition to these various elements that concern the design of the product itself, there are other issues that are specific to the areas of teaching and training:

- find a pedagogy or teaching method that is compatible with serious games;
- proving serious games' ability to transmit knowledge.

5.3.1. Finding a pedagogy compatible with serious games

Serious games can be seen as an e-learning tool, with students playing the games alone at home. The added value is to make distant learning more appealing[4]. Certain researchers, however, such as psychologist Serge Tisseron, believe that, when used just on their own, serious games are poor teaching tools. This belief was corroborated by Valérie Maffiolo and Julian Alvarez in their presentation of an impact study on serious games[5]: a serious game like *McDonald's Video Game* (Molle Industria, 2006), which is designed to condemn the practices of the fast-food chain (overworked personnel and overexploitation of the beef sector, intense use of GMO and fertilizers, deforestation and clear-cut logging to expand their crops, etc.) is in fact viewed by half of all the players, who simply play the game alone at home, as an ad for McDonald's. This helps underscore the need to accompany learners either during or after they have played the game to check that they have understood the message, and discuss it with them. From a sector-specific point of the view, this reveals the fact that it is critical, in an e-learning situation, to associate the serious game with a system of communication between the learner and a tutor whose role is to guide the students in their understanding of the lesson.

McDonald's Video Game

One additional possibility is to use social interaction. It is possible to begin with the idea that every learner is a potential teacher for another learner[6]. This means that a multiplayer serious game that is played on a network or locally allows the players to interact with one another, and it is during this interaction that the pedagogical dimensions of the exercise have an increased chance of emerging. It is also likely that this interaction will increase the chances that users will retain the lessons over the long term. This is the type of approach being developed by IBM with *PowerUp* (2008), for instance. The target users here are schoolchildren who must cooperate to save the planet that is being destroyed by rampant pollution. The idea is to find sustainable development solutions using renewable sources of energy. The game requires the children in the class to work together to meet the challenge.

[4] Sabine Germain, *La fièvre des "serious games"* (*Serious game fever*), Les Echos, p.15, 11 May 2010.
[5] Talk given at e-Virtuoses, 23 November 2009 in Lille, France (future workshop).
[6] This harkens back in particular to Lev Vygostky's idea of the "zone of proximal development".

In the same vein is the game *Lure of the Labyrinth*, published in 2009 by MIT's *The Education Arcade*. It is a multiplayer online adventure game whose purpose is to teach the basics of mathematics. Players move their avatar through a fantastic universe where they can play short, simple games that require them to use their mathematical skills. The game uses the multiplayer approach to reinforce the exchange of educational content between the students, as the game itself does not need to be multiplayer. A game can also be associated with a social networking site like Facebook, which is a strategy that has been adopted by *Enercities* (cf. Chapter 5).

Lure of the Labyrinth

The teaching method that puts the learner within a supervised working group is currently referred to as "active pedagogy" – as opposed to a classic classroom method of a teacher dispensing knowledge while students mostly just listen to what is being said. Active pedagogy is the most likely to include serious games. But it is a method that is being questioned by some researchers as it still needs to be proven that learners acquire the desired knowledge when using this type of approach.

5.3.2. Proving serious games' ability to transmit knowledge

One of the main challenges today facing products aimed at both teaching in schools and in-house corporate training is to prove that serious games can effectively impart the type of knowledge requested. There are indeed concerns amongst a good many teachers and decision-makers over how efficiently game-based teaching can convey knowledge, so there is a real demand for "tangible" proof. Here, in addition to sector-specific issues concerning the fact of finding a teaching method that can incorporate serious games, there also has to be a way to assess what the user is learning while playing. This is not a simple task as it is difficult to determine precisely how we learn and what we learn, plus the process is different for everyone. One of the current strategies for trying to assess what users absorb from a serious game involves introducing computer "probes" to analyse what the learner is doing while playing the game. One example is the approach taken by *Virtual Heroes*[7] which was developed to allow the US Army to obtain data on those who play *America's Army* (cf. Chapter 6). This system provides data on the way the game is used: time it takes to make it to the different levels, capacity to respond to the missions, gamer performance stats, etc. It can then provide a summary of the data collected in the form of a report. Up until 2007, *Virtual Heroes* was available as a standalone product, and could be associated with other applications. Attracted by the possibility of being able to have a report on each player, teachers have adopted this system to associate it with pedagogical applications. A new version of *Virtual Heroes* is due to be released in 2010. In the meantime, the idea of individual reports on the players is a noteworthy one, and the document can be used for analyses devoted to assessing whether the user has actually learned something from the serious game.

[7] http://www.virtualheroes.com

5.4. Case studies

5.4.1. Agent Surefire

http://www.maviinteractive.com/

- **Partner:** Mavi Interactive[3] is an American firm that produces e-learning games.
- **Project objectives:** the purpose of this serious game is to teach office employees about how to store confidential information in the workplace.
- **Designer:** Mavi Interactive[3] (USA)
- **Release date:** March 2009 (Turkey), October 2009 (USA), April 2010 (Canada and the UK)

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** "Agent Surefire" is a serious game that simulates negligence with sensitive information in an office, the goal being increase employees' awareness and make them more vigilant in future.
- **"Instructional" component:** Increase employees' awareness of potential security vulnerabilities
- **Gameplay:** set in a 3D model of an office, the player plays the role of an information security agent. She must identify the points in an employee's office where the company is vulnerable to the theft of its confidential information. To do so, she must explore all of the objects in the office. Single player game.
- **Feedback:** according to Mavi Interactive3 co-founder, Bora Aytun, Agent Surefire was played by around 5,000 people between its launch and early May 2010.

  During that time, Agent Surefire received four awards:
  - in the online games category (2009 Summit Emerging Media Awards)
  - in the flash games category (2009 Summit Emerging Media Awards)
  - in the best serious game category in Dublin, Ireland, in 2010
  - Platinum award in the "Web-Based Training" category, Hermes Creative Awards, 2010

Economics of the project

Development	
Total development cost	The project was financed entirely by Mavi Interactive. The total budget was 320,000 USD: 60% to develop the game's engine and content, 20% to create the development systems and 20% for marketing and all other expenses.
Profession's contribution to development costs	10% (estimate)
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	There are two versions of the game: the first offers nine scenarios and the second 13 scenarios. The game can be installed on a company's local network or played online. Price not disclosed.
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Social Networking (Twitter, Linked-in, YouTube, Blogs, "word of mouth") + dedicated website where users can play a demo version.
Project's sales and marketing budget	Partage des recettes avec gestion des risques, avec des distributeurs traditionnels et de e-learning.
Sales force	-
Geographical coverage	Turkey, USA, Canada, the UK (due to be released in France in 2010).

5.4.2. EventManager

http://www.postfinance-*EventManager*.ch/fr/

- **Partner:** PostFinance is the Swiss post office. The team behind the project is located in Bern.
- **Project objectives:** *EventManager* is an online game that allows teenagers and young adults to acquire and improve their financial management skills.
- **Designer:** The project leader is Stephan Wüthrich. The instructional aspects were provided by a teacher, Stephan Wüthrich, who is called on regularly to manage similar projects. The game was produced entirely by sources outside PostFinance. The firm LerNetz AG, which is based in Bern, contributed the most to the game's development, which involved some 50 people in all.
- **Release date**: August 2008

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** *EventManager* is an online teaching game whose purpose is to help young people improve their financial skills. Its target audience is schools in Switzerland. The action takes place in a 2D setting where players go through six stages: sign up for *EventManager*, choose a game level, choose the content and the event, work on the educational content, answer the questions on the test and perform the task assigned by the game.
- **"Instructional" component:** Initiate young people to managing their finances
- **Gameplay:** the player plays the role of an events manager who has 200 days to plan an event. The player must therefore rent the stages, flooring and seating and plan the space, while making sure never to go over budget. During the game, the player must keep in mind that three other events are taking place on the same date, so she must also manage to secure good talent.
- **Feedback:** 10,000 players in the nine months since the game launched, which is in line with the target.

Economics of the project

Development	
Total development cost	The overall budget has not been disclosed. It is probably one of the largest budgets devoted to a serious game for schools in Switzerland, according to Stephan Wüthrich. The budget was broken down as follows: 20% for sound and graphics, 30% for development, 30% for teaching material and writers and 20% for design and testing.
Profession's contribution to development costs	Over 30%
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Game distributed for free on a dedicated website. The printed teaching material that accompanies the game is also distributed for free.
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Organisation of a competition associated with the game. The game is distributed chiefly through a network of schools that was formed thanks to the creation of the first serious game that tackled a similar theme: *BudgetGame*, which was available from 2003 to 2009. To gain acceptance, the teaching support bears no indication that PostFinance is behind the game, and all of the competitors are listed.
Project's sales and marketing budget	Not disclosed
Sales force	-
Geographical coverage	Switzerland

5.4.3. Hanjamaru

http://www.hanjamaru.com

- **Partner:** NHN Games. This company produces online content (search engine, game portal, dictionaries, etc.). It was founded in 1999 and employs 18,000 people around the world. Its headquarters are in Seongnam, South Korea.
- **Project objectives:** teaching the basics of Chinese
- **Designer:** Eduflo (South Korea)
- **Release date**: April 2009

Partnerships	
Technological partnerships	-
Trade partnerships	Academics were involved in the design of this game: professors from the universities of Sungkyunkwan and Harvard who specialize in teaching languages helped design the game and took part in the reception studies to assess its effectiveness. These studies are currently being carried out at the University of Seoul.
Sales partnerships	-

Game description

- **Background:** This multiplayer persistent universe game allows users to incarnate an avatar that evolves. To do so they explore hostile lands full of monsters associated with the Chinese language. The more they learn the language, the more they progress through the game.
- **"Instructional" component:** A model for learning Chinese that was established based on the teaching expertise of researchers from the universities of Sungkyunkwan (China) and Harvard (USA). It combines two approaches:
  - audiovisual learning: the user interacts with audio and visual representations of the language;
  - repetition within a variety of contexts: these audio and visual representations are repeated numerous times throughout the game, within various contexts so the player does not get bored, while also helping familiarize her with the Chinese language.
- **Gameplay:** Players advance their customized avatar within a 2D platform game. The universe is full of hostile monsters that need to be vanquished. Each of these monsters is associated with one of the 1,800 Chinese characters which the monster will pronounce throughout the battle with the player. Once the monster has been beaten, the player wins the Chinese character and can store it in their inventory. Once she has collected several characters, she can assemble them to form words. If the word exists in Chinese, the player will be awarded a prize for her avatar (sword, clothing, etc.).

  Players can also buy virtual goods with real money, which forms the basis of the game's business model.
- **Feedback:** a closed beta test with 26,000 volunteers was run on the game in January 2009. Players learned roughly 13 Chinese characters an hour, on average. So the game appears to achieve its objective, i.e. learning effectively while having fun. Since it first launched, Hanjamaru has attracted more than 200,000 regular players, and the sale of virtual goods brings in around €200,000 a month.

  This online game also won the "KGC Award" for its innovative approach to learning. The "Language and Thought" department of the laboratory in Seoul studied and assessed the game, and also confirmed that it was an effective teaching tool.

- **Resources**: http://www.jvn.com/, http://www.nhngames.com/, http://www.incgamers.com/.

Economics of the project

Development	
Total development cost	Not disclosed
Profession's contribution to development costs	Not disclosed
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Based on the Free2Play model which is very popular in Asia. The game can be accessed for free, but users can also buy virtual items with real money. Such purchases are not mandatory, but allow players to customize their avatars and so to distinguish themselves from the large crowd of users who are also playing the game online.
Revenue and revenue sharing	Revenue is shared between NHN Games and Eduflo, but the spilt has not been disclosed.
Sales target	Not disclosed
Target breakeven point	Not disclosed, but the sale of virtual goods generates around €200,000 a month.

Marketing	
Marketing strategy	In addition to a classic promotional campaign (banner ads on the Web, etc.), this serious game enjoys the support that the Korean Ministry of Culture, Tourism and Sport gives to educational video games. This ministry has been lobbying since early 2010 for serious games with a pedagogical purpose, which includes Hanjamaru, to be included in the curriculum.
Project's sales and marketing budget	Not disclosed
Sales force	Not disclosed
Geographical coverage	South Korea (online distribution worldwide, but the game is available only in Korean)

5.4.4. Mind-Up

http://www.seriousgamesopinions.org/

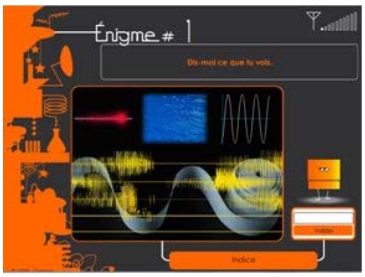
- **Partner:** France Telecom Orange Labs, under the management of Valérie Maffiolo.
- **Project objectives:** a serious game aimed at deepening users' knowledge of telecommunications.
- **Designers**:
  - Design: Orange Labs (Valérie Maffiolo et Julian Alvarez)
  - Developer: Logzine, a company based in Toulouse that specialises in interactive publications.
- **Release date**: January 2009

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

Background: this game is a series of puzzles to be solved that relate to telecommunications. The goal is to encourage players to deepen their knowledge and to find the answers by using Internet search engines.

- **"Educational" component**:
  - Increase players' knowledge of telecommunications
  - Encourage them to seek out information through online search engines
- **Gameplay**: a 2D single-player game that offers a series of puzzles, each in the form of a visual aid (photo, picture, graph, etc.) and a clue (elliptical phrase, acronym, etc.). There is a box where the player can type in her answer. A mascot called Stym, an opinionated talking orange box, makes comments according to player's answers and how long she took to give it.
- **Feedback:** Game played over 40,000 times in the six months following its launch.



Economics of the project

Development	
Total development cost	Less than 50,000 EUR
Profession's contribution to development costs	25
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Distributed for free on online gaming portals
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Distributed for free on online gaming portals (Serious Games Opinions, Whosegame, Kongregate…), covered on blogs.
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Global

5.4.5. NoviCraft

http://www.teamingstream.com/

- **Partner:** TeamingStream (Finland)

  A company that markets software aimed at improving training and productivity in the workplace. Novicraft is the first product in the range. The company was founded in 2008 and currently has a staff of six.
- **Project objectives:** Provide a solution for in-house training on group management and team building.
- **Designer:** LudoCraft (Finland)
- **Release date**: December 2008

Partnerships	
Technological partnerships	The game is based on the 3D "Unreal Engine" which is marketed by the firm Epic (more information can be found at: http://www.unrealtechnology.com/). The technology is available through two types of licence: either a complete purchase for €700,000 or royalties (25% of profits after the first €3,500).
Trade partnerships	The partner's training experts drafted the scenario in tandem with the studio that produced the game.
Sales partnerships	-

Game description

- **Background:** This is a multiplayer game aimed at strengthening teambuilding skills in the workplace. It is distributed on CD-Rom.
- **"Instructional" component:** the partner, which is the company marketing the game, has in-house expertise in leadership training. The game is devoted to developing five team-building skills:
  - communication and self-confidence,
  - exploration and coordination,
  - group discussion and information sharing,
  - risk-taking and establishing a group strategy,
  - assigning tasks according to a set roadmap.
- **Gameplay:** each player is represented by an avatar in a 3D universe. She needs to work with the other players to complete five tasks that stimulate the group's skills in the five areas listed above.
- **Feedback:** this 3D multiplayer game is used in training programmes run by the project's partner, TeamingStream. Trainees play the game, save and analyze their performance so that the trainer can use it for the debriefing, which is used to introduce the more classic portion of the training. Early feedback from clients who have used this game has been positive. The trainees enjoy the playful aspect of the experience and have found the multiplayer game approach effective for teambuilding. The use of a video game like this allows companies to provide training at a lesser cost than comparable solutions that use "real" role-playing.

Economics of the project

Development	
Total development cost	The company does not wish to disclose the budget for the project, but its development is being spread out over three year and, given the technological platform used, we believe that the budget exceeds 1 million EUR.
Profession's contribution to development costs	Roughly 10%.
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	The partner is marketing the game which is being distributed based on a limited time licence model, as part of training packs. The price varies according to the length of the training programmes and the number of people involved, but generally ranges from €15,000 to €30.000 per training session.
Revenue and revenue sharing	The partner earns all of the revenue generated by the sale of the game – the studio acting only as a service provider.
Sales target	Not disclosed
Target breakeven point	Not yet reached as of this writing

Marketing	
Marketing strategy	Marketing training sessions based on this game to large corporations
Project's sales and marketing budget	Not disclosed
Sales force	This is a product that is currently being marketed by the project's partner, TeamingStream, which has a staff of six people.
Geographical coverage	Global (digital product)

5.4.6. Our Worlds of Makrini

http://www.pixelearning.com/

- **Partner:** Global Novations is an American consulting and training firm based in Philadelphia, and which was founded in 1982 http://www.globalnovations.com
- **Project objectives:** increase bank employees' performances in terms of solving communication, discrimination (ethnic, age, gender, etc. diversity) and analysis issues.
- **Designer:** PIXELearning is a British company that specializes in educational and training-oriented serious games. The company was founded in 2002 and become one of the global leaders in Serious Games. http://www.pixelearning.com/
- **Release date:** 2009 (US and UK); 2010 in France

Partnerships	
Technological partnerships	PIXELearning
Trade partnerships	Global Novations
Sales partnerships	Act3Gaming, the French company that will manage the game's distribution in France, starting in 2010

Game description

- **Background:** This serious game is a project offered by the firm Global Novations which specializes in diversity issues amongst employee populations. "Makrini" is derived from the Greek term for 'remote country'.
- **"Instructional" component:**
  - address discrimination and communication issues in the workplace
  - teach approaches for helping to resolve these issues.
- **Gameplay:** This is a pre-rendered 3D flash role-playing serious game that takes place in an imaginary company called Makrini, which is located on a space station filled with aliens from different planets. The learner plays the role of a Makrini employee who is asked to perform various tasks to improve the company's business, while also creating a better working environment through a number of tasks that relate to issues of cultural diversity in particular. The game was produced with Flash, 3ds Max and Photoshop. The design and development period was 12 months.
- **Feedback**: According to Helen Axe and Helen Routledge of PIXELearning: "This is a unique learning environment that enables employees of all levels to truly immerse themselves in a topic that can at times be very sensitive. By removing all pre-conceptions and any stereotypical boundaries learners are able to learn how to change their attitudes and behave inclusively".

www.idate-research.com © IDATE 2010

Economics of the project

Development	
Total development cost	£200,000 – cost shared by PIXELearning and Global Novations.
Profession's contribution to development costs	Not disclosed
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Use the game as part of training programmes (price depends on the number of trainees) and sale of licences. Price not disclosed.
Revenue and revenue sharing	Profits shared by Global Novations and PIXELearning.
Sales target	The game was developed initially for Fifth Third Bank, with a total 27,000 employees. This Serious Game has now been released to a global market.
Target breakeven point	-

Marketing	
Marketing strategy	Project marketed by Global Novations and PIXELearning – both of which sell the game. Helen Axe explains that Global Novations "covers all the necessary marketing bases".
Project's sales and marketing budget	Global Novations has full responsibility of the marketing strategy. Budget not disclosed.
Sales force	Global Novations is currently more actively involved in marketing the game than PIXELearning.
Geographical coverage	The United States and the UK are the priority markets, followed by the rest of the world depending on sales.

5.4.7. Planet Work

- **Partner:** UFI Learndirect (England), which is a government run, not-for-profit association which offers training to companies and unemployed people. It was born of a government programme called "University for Industry" which began in the 2000s, with the goal of improving job training.
- **Project objectives:** the goal of this serious game is to help build the self-confidence of people who have been out of work for a long time.
- **Designer:** Caspian Learning (the UK)

  Staff assigned to the project by its associates:
  - Caspian Learning: two artists, one designer, one script-writer and one technological integration expert
  - UFI Learndirect: One designated expert/project manager
- **Release date**: 2009

Partnerships	
Technological partnerships	Based on "Thinking Worlds" technology designed by Caspian Learning, which enables the swift authoring of real time 3D serious adventure games which can then be put on CD or played directly using a Web browser, which means they can be distributed online. This game, for instance, is incorporated into the partner's online training course.
Trade partnerships	The project's partner, which is a specialist in the field, sought to define a group of cognitive and personal skills to be acquired which were incorporated into the game as assessment criteria. This meant that the trainers are able to use the game as a way to evaluate trainees.
Sales partnerships	-

Game description

- **Background:** in this serious game, the player is looking for a job – the purpose being to help rebuild confidence in her abilities by allowing her to get a number of jobs "virtually", if she successfully completes the tasks assigned during job interviews.

  Browser and CD-Rom ("Thinking Worlds" technology)
- **"Instructional" component:** the partner defined a set of cognitive and personal skills to be acquired, which are used as evaluation criteria by the game:
  - find information,
  - take part in activities,
  - teamwork,
  - ability to organize and prioritize tasks,
  - problem-solving,
  - decision-making,
  - awareness of the skills acquired.
- **Gameplay:** the user is represented by an avatar within a 3D environment, set in a city. She can talk to different characters and so be offered one of the available jobs. Quizzes and problem-solving games are introduced from time to time. At the end of each session, the user is debriefed and scored on each of the evaluation criteria defined by the partner. Single player game only.
- **Feedback:** the trainers who work for the partner appreciate the debriefing feature, and use the game as a way to perform a preliminary evaluation on trainees. Trainees have found the game much more interesting and motivating than classic e-learning applications. The game is used by the partner for online training sessions as well.

During the game's design stage, the partner had some concerns about the title's creative concept fearing it would be too tangential for the audience. . Ultimately, however, the initial goals were achieved and even surpassed, and the partner uses the game to showcase its expertise in the area of training. The game has been used by several thousand trainees since its release.

- Resources: Information on the training programme that uses this game, from the partner's website: http://www.learndirect.co.uk/

Economics of the project

Development	
Total development cost	Around €50,000
Profession's contribution to development costs	Roughly 10%
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Distributed for free in the partner's training centres, which are not for profit
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	The partner uses the game as a training tool as part of its free training programmes
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	The UK

5.4.8. Robo-Rush

http://www.actontoolkit.com/

- **Partner:** Acton Foundation for Entrepreneurial Excellence (USA)

  Foundation attached to a private business school that oversees marketing and management training. It was founded in 2002.
- **Project objectives:** The goal of this serious game is to draw on the partner's teaching expertise and offer a game that teaches members of the public the basic skills needed to create and manage a business.
- **Designer:** ViaVivo (USA)
- **Release date**: 2008

Partnerships	
Technological partnerships	-
Trade partnerships	The partner has editorial control over the game, but the design and development are handled by an outside developer, ViaVivo
Sales partnerships	-

Game description

- **Background:** A serious games whose purpose is to initiate users to the basics of creating and managing a business. Based on Flash technology.
- **"Instructional" component:** The game's design and development was outsourced entirely to a developer. The studio therefore fully managed the instructional component of the game, although the partner/client had editorial say over the product.
- **Gameplay:** In *Robo-Rush*, the player is a young entrepreneur who has decided to create his own company to build and sell robots. First step: find customers. The player must go door-to-door marketing his different models of robot to potential buyers, while also negotiating prices. Once an agreement has been reached, the production stage begins, which will vary in length depending on the model. At the end of the month, a statement of accounts allows the user to see how well he has performed.

  If the player is as good at selling as he is at building robots, he might manage to build a successful business – by creating a storefront then hiring employees and, the ultimate stage, moving into mass production in a factory. To do so, however, he must be able to feel out the market to promote a unique product with a relevant marketing mix. Single player only.
- **Feedback:** This serious game was initially used successfully to showcase the partner's expertise in marketing training. After being offered for free for a year, the game was then switched to a for-pay model (priced at $9.99). Acton has been selling it on its website since 2010 as a teaching tool.
- **Resources:** Game sold on the partner's site: http://www.actontoolkit.com/

Economics of the project

Development	
Total development cost	Around €100,000 (55% for production and 45% for design)
Profession's contribution to development costs	Included in the 45% of the budget devoted to design
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Distributed for free by the partner for a year as a means of promoting it, then sold for $9.99 on the partner's website.
Revenue and revenue sharing	Partner earns all of the revenue generated directly by the game.
Sales target	Not disclosed
Target breakeven point	Not disclosed

Marketing	
Marketing strategy	Two-stage approach to marketing: • Distributed for free for a year to promote the game and build the partner's brand image, and prepare for the second phase • Sale of the game: sold online for $9.99
Project's sales and marketing budget	Not disclosed
Sales force	Not disclosed
Geographical coverage	Global (digital distribution)

5.4.9. Rome In Danger

http://www.scoyo.com/

- **Partner:** Bertelsmann, a European media conglomerate (print media, radio, television, music…) that was founded in 1835 and which has 100,000 employees around the globe.
- **Project objectives:** Transmit 50 notions of the middle school history curriculum on Ancient Rome to children between the ages of 11 and 14.
- **Designer:** Caspian Leaning (the UK)
  - Caspian Learning: four artists, two designers, one project manager, two script writers and two technological integration experts.
  - Bertelsmann: two experts and two project coordinators.
- **Release date**: 2008

Partnerships	
Technological partnerships	Basé sur la technologie "Thinking Worlds" de Capsian Learning, qui permet de créer rapidement des serious game en 3D temps réel sur un principe ludique du "jeu d'aventure". Les jeux ainsi créés sont ensuite diffusables sur CDRom ou jouables directement dans un navigateur, ce qui permet une distribution par Internet.
Trade partnerships	Le commanditaire a défini 50 points-clés du programme d'histoire de niveau collège
Sales partnerships	Aucun

Game description:

- **Background:** a 3D adventure game where the player is a time-travelling investigator in a not too distant future, whose job is to preserve the space-time continuum. During this adventure in Ancient Rome, the student must solve riddles that will require him to draw on what he has learned in history class at school or during the game play itself.
- **"Instructional" component:** the game was designed to reinforce certain notions taught as part of the middle school history curriculum – the target audience being youngsters between the ages of 11 and 14. The partner provided the developer with a set of professional guidelines on the history lessons to be incorporated into the game. Aside from these guidelines, the studio handled all of the design and development of the game in-house.
  - A set of 50 notions to be covered was defined by the client (political, economic and social workings of Ancient Rome).
  - A goal of improving the students' skills in seven areas was also included: interpretation, analysis, method, judgment, personal development, social and domain specific knowledge.
  - The developer was also given other imperatives:
    - The game must appeal to both boys and girls,
    - It must include action sequences that teach a lesson,
    - It must have the same quality as a regular video game that is sold commercially,
    - It must be web-browser compatible.
- **Gameplay:** The player moves their avatar through a 3D environment, visiting several locations that are emblematic of Ancient Rome. They can interact with different characters and thereby gather clues that will help them solve the game's many puzzles. The player must also collect and assemble a certain number of objects that they will be given as rewards when they succeeds in the various challenges, which range from quizzes to games of logic. Single player only.

- **Feedback:** The pedagogical relevance of this serious game was evaluated in a survey of 3,000 German children, ages 11 to 14.
  - Some of the results of the survey:
    - 96% of users found the experience motivating and captivating;
    - 92% of users managed to finish the game by answering all of the questions asked, demonstrating that they had managed to assimilate the 50 points of history imposed by the client. This is twice the rate achieved by another group of students who used a flash-based e-learning solution.
  - The client was therefore satisfied with the results achieved by the game which it is now marketing as a teaching tool.
  - This serious game won an award for the Best Learning Game, Simulation or Environment at the eLearning Age Awards in 2008.
- **Resources**: Case study by the game's designers:http://thinkingworlds.wordpress.com/

Economics of the project

Development	
Total development cost	Around €150,000 – can not comment on actual price but this is a low, try adding at least another 50k and make clear this has not come from Caspian sources
Profession's contribution to development costs	Roughly 15%
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Game marketed to the public through an online educational platform launched by Bertelsmann: Scoyo (http://www.scoyo.com/). Users do not buy the game but rather a subscription that allows them to access the game on the platform. When the subscription runs out, they no longer have access to the game.
Revenue and revenue sharing	Revenue generated by the game earned solely by the partner
Sales target	Not disclosed
Target breakeven point	Not disclosed

Marketing	
Marketing strategy	Game marketed on an educational platform, so there was no marketing campaign or budget allocated to it specifically, although it did benefit from the campaign run for the platform.
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Germany

5.4.10. vLeader

http://www.simulearn.net/

- **Partner:** SimuLearn (USA), a company based in Norwalk, Connecticut that specializes in designing and marketing in-house professional coaching solutions.
- **Project objectives:** To market an in-house leadership training solution
- **Designer:** SimuLearn (USA)
- **Release date**: March 2007

Partnerships	
Technological partnerships	-
Trade partnerships	None: the firm SimuLearn drew on its own expertise in business training to create this game.
Sales partnerships	-

Game description

- **Background:** This title puts the user in a situation that will enable her to first evaluate and then improve their leadership and interpersonal skills. The player is put into a business meeting and must persuade the group to adopt her ideas on how to improve productivity.

  This serious game is distributed on CD-Rom.
- **"Instructional" component:** The company that designed and produced the game also markets it. It specializes in corporate training seminars, so has the in-house expertise to establish the instructional component. More specifically, the game is aimed at strengthening the following skills:
  - Influencing others
  - Conflict management
  - Teambuilding and collaboration
  - Motivation and persuasion
  - Situational awareness
  - Active listening and effective communication
  - Understanding group dynamics
  - Work prioritization and aligning decision-making with business goals
- **Gameplay:** This is a 3D single player serious game. The player is represented by an avatar at a business meeting. The other people attending the meeting are played by the computer, and throw out a series of ideas. The player has a choice of around 10 responses to each of these proposals, which she must choose carefully in order to achieve the business goals set at the start of the session. Once the meeting is over, the player is given a detailed debriefing on her performance. In addition to achieving set business goals, the game provides an assessment of her leadership skills based on criteria such as: how long she spoke, whether she incorporated others' ideas, etc. Based on complex simulation, this game requires a serious time investment from the player.
- **Feedback:** The game is sold in single units as part of training packages marketed by the firm SimuLearn: full-day training sessions, on-demand coaching, webinars, etc. Since its release, this game has been purchased by a number of clearly satisfied customers. It has met with real success in the academic world as well. A number of teachers and other business school instructors use the game in their classes.

Economics of the project

Development	
Total development cost	Between €400,000 and €800,000
Profession's contribution to development costs	Not evaluated
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	The game's designer markets the game. It retails as part of several training packages that include varying numbers of additional services (on-demand coaching, webinars and face-to-face training sessions). Prices are set by the partner. The price of the packages ranges from €800 to €1,800.
Revenue and revenue sharing	The partner earns all of the revenue generated by the sale of the game, given that the design studio is the sole company involved in developing and marketing the game.
Sales target	Not disclosed
Target breakeven point	Not disclosed, but has been well surpassed as the game has already generated "several million dollars" according to its creator.

Marketing	
Marketing strategy	Marketing training solutions based on the game to large businesses and universities
Project's sales and marketing budget	Not disclosed
Sales force	Not disclosed
Geographical coverage	Global (digital format)

5.5. Outlook

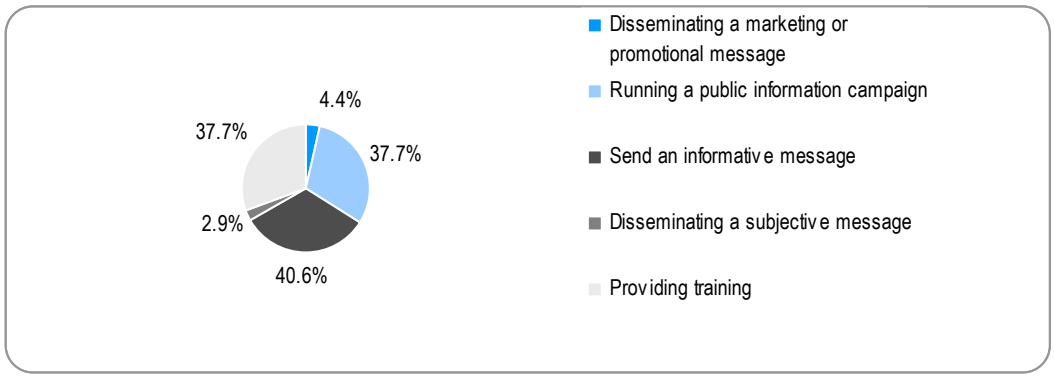
In the West, teaching and training games are following through on the developments that began in the early 1970s. New tools are made available to the teaching world as new technologies emerge, but their effectiveness and relevance does need to be assessed before they are adopted en masse. In the case of serious games, there is also the obstacle of the reluctance that exists in society: some people react negatively to the idea of introducing video games into schools and the workplace as a way of dispensing knowledge – seeing them as mere toys. But among today's decision-makers are also people who either saw the birth of or grew up with video games, and some of them will help eliminate lingering doubts which should gradually disappear as time goes on. This is a long-term matter, however, and this reticence is not likely to have disappeared by 2015. As a result, we can forecast steady but not dramatic annual growth for the market, of less than 10%. We also need to factor in the impact of open source software on this figure. Although open source software is not necessarily free, there are edutainment applications, such as *Gcompris*, whose business model makes profits a secondary consideration.

In most developing economies, the mobile phone is the most ubiquitous multimedia device. A good example here is the business model used by the Indian firm ZQM which distributes serious games to be played on mobiles. These applications, whose development costs are estimated at less than 10,000 EUR, can be downloaded for 1 Indian rupee (INR) (0.0177 EUR) a piece. This is a tiny price but, in a market of more than a billion inhabitants, some games are downloaded more than 27 million times, which means revenue of 27 million INR, or close to 478,000 EUR. This low-cost business model can apply to China as well so, unlike in Western countries, the annual growth rate for teaching and training games in developing countries could well exceed 10%.

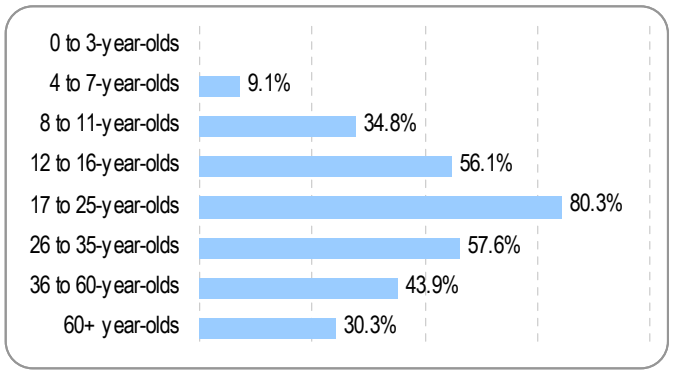
6. Serious games for healthcare

6.1. Statistical data

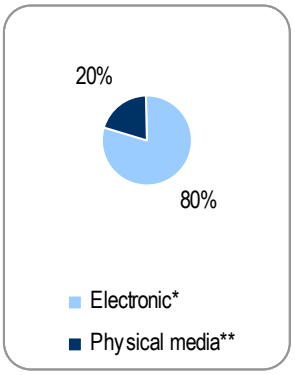
Plans for use



User segmentation by age group

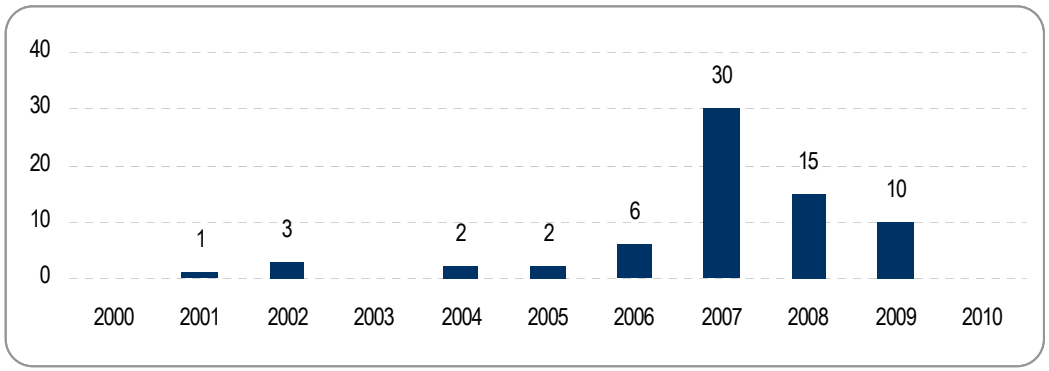


Distribution method/medium



*Browser, download…
** CD-Rom, console…

Growth of the number of titles published



Source: IDATE, based on Serious Game Classification http://serious.gameclassification.com

Serious games devoted to health cover a set of market segments aimed at both the general public and healthcare professionals. The movement initially began in Japan, thanks to Nintendo, and is now developing in the United States and Europe. There are various sector-specific aspects, ranging from marketing for brands of medication to medical training, by way of therapy and awareness-raising campaigns. Although there are currently more healthcare-related serious games aimed at the general public, we are seeing more and more that are aimed at those working in the field.

The healthcare sector is one of the biggest target markets for serious games, so it has a large selection of applications on offer. But not all of these serious games have the same utilitarian goals. Some are meant to help with diagnosis, others with prevention, while others still are devoted to advertising, training, fitness, physiotherapy, relaxation… The target audience for the game is also varied: doctors, students, patients, researchers, the public…

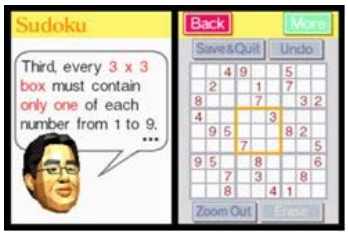
We also find projects whose goal is to make serious games a veritable form of medicine or treatment. If these projects are brought to fruition, and if clinical testing proves conclusive, this would send out a strong signal to pharmaceutical labs, which would give the market a tremendous boost. But we'll have to stay tuned for at least five years to find out.

6.2. Market development status

Japan was the birthplace of the first mass market serious game devoted to healthcare. The most famous is probably *Dr Kawashima's Brain Training: how old is your brain?* (Nintendo, 2005) which has sold more than 17 million copies around the globe since its release. Its purpose is to stimulate users' cognitive performance by having them perform a series of exercises (multiple choice questions, Sudoku, observation games, etc.) that were designed initially by the neurologist who loaned his name to the game. Regular use of the game helps users improve or maintain their brain capacity.

French firm SBT is also involved in this segment. It developed the game *Happyneuron*[8] which offers a set of serious games that stimulate the brain through memory, language and spatial perception exercises. The directors of SBT report that their sales were given a very big boost by the success of the Nintendo title, which also allowed them to benefit indirectly from their ad campaigns. Since then, several companies have begun developing applications aimed at improving cognitive performances. One of the leaders of this increasingly competitive market segment is American firm, *Luminosity*.

Dr Kawashima's Brain Training: how old is your brain?



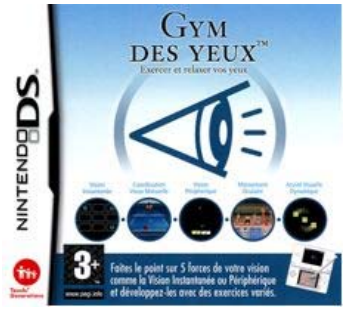
Wii Fit

The healthcare market is not confined to stimulating neurons, however. In the area of physical fitness we find Nintendo's *Wii Fit* whose games are meant to allow users to improve their balance and muscle tone. Although sales are down at the moment, it has nevertheless sold more than 27 million units worldwide since it launched back in 2008. The Wii Fit is being

[8] http://www.happyneuron.fr

used by more and more retirement homes in North America and Europe as a way of helping residents keep fit. But physical and mental fitness are not the only the only health-related serious games in the consumer market. There are also applications like *Flash Focus: vision training* (Nintendo, 2007) and *Personal trainer: walking* (Nintendo, 2009).

Vision training



Personal trainer: walking

Also in this category are games devoted to nutrition, such as *Kenkou Kentei*[9], to facial exercises, such as *Otona no DS Kao Training*[10]*,* to acupuncture, like *Raku Raku Shiatsu Navi*[11]*,* and skincare, like *Yumemihada: Dream Skincare*[12]… In some of these titles, it is hard to talk of gameplay as they serve more as guides or instructional videos. But the fact alone that they are played on a handheld console like a Nintendo DS or Sony PSP qualifies them as serious games for some.

Kenkou Kentei

Otona no DS Kao Training

Raku Raku Shiatsu Navi

Yumemihada: Dream Skincare

Although there is a broad selection of health-related serious games available to the general public, the number aimed at healthcare professionals is much smaller. The flagship product for professionals for now is the game *Pulse!!* (BreakAway/Texas A&M University-Corpus Christi, 2007) which received 10 million USD in financing from US government organization DARPA (Defense Advanced Research Projects Agency) and whose purpose is to help train medical students. Set in a hospital emergency room, players must diagnose virtual patients and give them the appropriate treatment. We are seeing a growing number of applications of this kind, with examples that include projects like *MoJOS* (which stands for *Moteur de Jeux Orientés Santé* or health-related games engine) from the eponymous consortium (cf. profile) whose goal is to make serious games a real form of treatment.

[9] *Yudo*, 2007
[10] *Nintendo*, 2007
[11] *Dorasu*, 2007
[12] *Konami*, 2007

Pulse!!

6.3. Sector-specific aspects

Among those serious games devoted to healthcare that are profiled in this report, the sector-specific aspects include use of the video game to:

- **provide therapy** (*PlayMancer*, *Lit*),
- **act as medication/a treatment** (*MoJOS*),
- **be a way to keep fit or obtain physiotherapy** (*SilverFit*),
- **relax** (*MindHabits*),
- **increase awareness and help with prevention** (*Sciences Pirate*, *Xperiment*),
- **serve as a training tool for medical students** (*Triage Trainer*),
- **help patients better understand a chronic condition so they can better manage it** (*Affaire Birman*, *The Magi and the Sleeping Star*).

Although not intended to be exhaustive, this selection nevertheless gives a good idea of the range of healthcare topics being addressed by serious games. A more pragmatic definition would be that these serious games fulfil one or several of the following functions:

- disseminate a message whose purpose is to educate;
- disseminate a message whose purpose is to inform;
- disseminate a message whose purpose is to persuade;
- provide mental training/therapy;
- provide physical training/therapy.

It should also be pointed out that serious games devoted to health are aimed at two different groups: the public at large and healthcare professionals.

6.3.1. Serious games for the public health sector

The games mentioned here are aimed at the general public, whether patients with a certain condition or people who want to stay in good health.

Serious games whose purpose is to educate

These serious games are intended to inform the player about a chronic condition from which they may be suffering, such as diabetes (*Affaire Birman*, *The Magi and the Sleeping Star*) – the idea being that the more knowledge people have, the better they can manage the condition on a daily basis. The gameplay generally includes handling the illness, so the hero might be a diabetic who needs to take care of his condition to win the game. There are also games whose goal is both to educate and help with prevention, such as those devoted to food hygiene (*Sciences Pirate*) whose purpose is to make children aware of the negative effects of an unbalanced diet or the consequences of taking drugs (*Xperiment*).

Serious games whose purpose is to inform

Prevention is the most common goal of games for health whose purpose is to inform. Here we find those games aimed at preventing risky behaviour, such as alcohol consumption which is the central theme of the three games in the *Happy Night Club* series (Succubus Interactive/Double Mixte, 2009) which were developed for the city of Nantes in France. The message here is "it's okay to drink, but in moderation." Designed like a point-and-click adventure game, each episode allows the player to be a different character in an adventure that takes place in the same nightclub. Using humour to convey their message, these games allow the players to indulge to excess to better highlight the potential consequences.

Taking another tack, *Deliver the Net* (United Nations Foundation, 2008) puts across a message that combines humanitarian missions and health-related prevention. Distributed by the UN, the game is meant to heighten Internet users' awareness of how malaria is spread by mosquitoes in Africa. The user plays an aid worker whose job is to travel from village to village on her scooter, delivering mosquito nets to the residents.

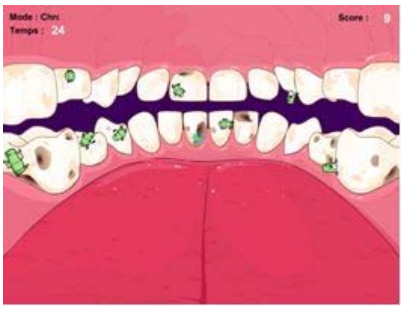
Happy Night

Deliver the Net

Serious game whose purpose is to persuade

In this category we find games like *Petites Histoires de dents/A tooth story* (*Ja.Games / MedPict*, 2002) which is distributed on CD and whose purpose is make children aware of dental hygiene. Distributed for free in schools, the product offers a series of five serious games to deliver the message of prevention. It should be noted that the game also acts as a brand promotion tool for the *Pierre Fabre* laboratory. When a serious game includes both a message of prevention and a marketing angle, it is sometime referred to as an *edumarket* game.

Petites Histoires de dents



Brain training games

Here we find a great many games aimed at "brain training", such as *Dr Kawashima's Brain Training: how old is your brain?* (Nintendo*, 2005*). The gameplay involves a series of tests: observation, mental math, speed reading… with the user's total score represented by an average mental age. The higher the age, the more the user needs to train their brain to improve their cognitive abilities.

Exergames

These are games aimed at improving the user's physical fitness, hence the name "exergames." The best known and most popular are no doubt those associated with the *Wii Fit* (Nintendo, 2007) which offer a series of exercises such as aerobics, yoga, weight lifting, etc.

6.3.2. Serious games aimed at healthcare professionals

The titles mentioned here are designed for members of the healthcare profession, and include marketing campaigns aimed at practitioners and tools for training surgeons, for instance. These games are currently much fewer in number than those aimed at the general public.

Serious games whose purpose is to educate

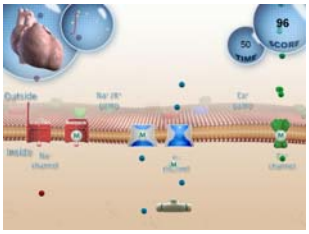
Among the few serious games whose purpose is to train healthcare professionals, one that has enjoyed some of the most media coverage is *Pulse!!* (*BreakAway*, 2007) which was mentioned earlier. This application wants to be ultra-realistic, allowing the user to track the path of patients inside a virtual hospital. They can check each patient directly, ask them questions or send them for tests, like an MRI. So the player must not only manage the intellectual aspect of the diagnosis, but also the relationship with the patient. Their bedside manner therefore affects the quality of the information the patient is given. In addition, some patients with serious conditions need to be treated quickly, which adds a stress factor to the game. Emergency situations, like a chemical explosion or a car accident can also be included in the gameplay, to help future doctors prepare for worst case scenarios.

Serious game whose purpose is to persuade

There are also advertising games, or advergames, aimed at practitioners. The firm *Medpict* (*Publicis* group) is one of the companies specialized in this area, with games such as *Campto* (Ja.Games/Medpict, 2008) and *Multaq* (Ja.Games/Medpict, 2008), whose purpose is to promote the eponymous drugs. Designed to last only a few minutes, these games are used at medical trade shows. The target audience is practitioners to whom the pharmaceutical companies want to promote their medications, so the experience only needs to be short as the goal is to grab their potential customers' attention.

Campto

Multaq

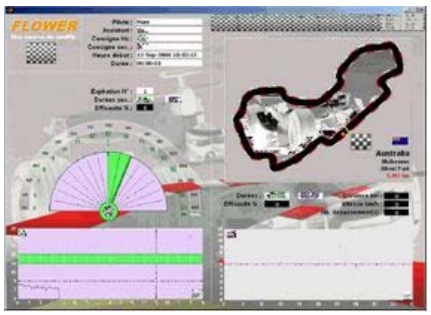


Therapeutic games

There are very few therapeutic games today whose purpose is to help practitioners treat their patients. But their numbers are expected to increase in the coming years, thanks to initiatives like the call for proposals for serious games issued in May 2009 by the Secretary of State for Digital Development in France, Nathalie Kosciuko-Morizet, and America's *Health Games Research National Program* from the *Robert Wood Johnson Foundation* that

supports this type of game. One of the few products that do exist in this category is *Flower For All* (*V. Chritin*/*E. Van Lancker*/*X. Falourd*/*B. Bouzin*, 2007) for people with cystic fibrosis, and more specifically to make their respiratory therapy sessions less unpleasant.

Flower For All



Therapeutic serious games do not really incorporate any new features, the goal being to offer the right combination of functions between the type of message being delivered and the type of mental or physical training or therapy being offered. The *MindHabits* game, for instance, whose aim is to help the player to relax, is a blend of messages designed to help users adopt a positive attitude and games whose gameplay is similar to brain training exercises. Multiplayer features can be added to these functions to encourage social interaction, as can specific mechanisms like a heart rate sensor. One of the *PlayMancer* projects, for example, can check that the player is calm before allowing them to win. In a different vein, the *Lit* project uses the features of the iPhone to create gameplay that simulates smoking a cigarette. Also worth noting here is the *MoJOS* programme which allows developers to incorporate these approaches to design a game that is meant to act as an actual treatment.

6.4. Case studies

6.4.1. L'Affaire Birman

www.glucifer.net

- **Partner:** The team from the endocrinology-diabetology department of Caen and the "Les Diablotines" association developed this educational product for people with Type 1 diabetes. The project is headed up by Dr Aurore Guillaume (St Louis Hospital/Public assistance hospitals of Paris) and Dr Michael Joubert (Caen teaching hospital).
- **Project objectives:** the goal of this free and freely accessible game is to enable diabetes patients who use insulin as part of their treatment to learn the functional insulin therapy method – which makes it possible to determine the exact doses of insulin needed according to the patient's current blood sugar level, the quantity of carbohydrates consumed in a meal and planned physical activity. The game is intended as an educational tool and does not constitute a functional insulin therapy method training programme, so in no way replaces proper teaching of this technique by healthcare professionals.
- **Designer**: Graphbox is a graphic design studio that was created in 2005. Its staff includes animators, graphic designers, developers, musicians… http://www.graphbox.com/ - Programming: Hugues Bernet-Rollande
- **Release date:** February 2010

Partnerships	
Technological partnerships	-
Trade partnerships	Sanofis-Aventis, ACCU-CHEK, AJD (*l'Aide aux Jeunes Diabétiques*/Help for Young Diabetics), Alfediam (*Association de langue française pour l'étude du diabète et des maladies métaboliques*/French language association for the study of diabetes and metabolic disorders)
Sales partnerships	-

Game description

- **Presentation**: The player must solve the riddles that arise during the adventures of Alexandra or Alex (depending on which avatar they choose), while helping them to manage their diabetes on a daily basis using the functional insulin therapy technique.
- **"Instructional" component:** Helping diabetes sufferers to better understand and manage their condition.
- **Gameplay**: At the start of the game, the player chooses either Alexandra or Alex as their avatar. Between the problems that need to be solved, the player must keep an eye on their avatar's blood sugar levels thanks to a reader, and calculate their insulin injections according to their food intake. "If an orange contains 20 grams of carbohydrates and a chocolate eclair contains 30 grams, what dosage is needed?" is a typical question that some Type 1 diabetes patients need to ask themselves every day. The two young heroes of the game, Alexandra and Alex, answer this type of question as they move through their adventures and according to the diets on offer and chosen by the player.
- **Feedback**: the audience for this game is still too small to assess the impact on the target user population.

Economics of the project

Development	
Total development cost	150,000 EUR
Profession's contribution to development costs	Not defined
Sponsors (if any) and degree of involvement	75% of the overall cost of the project is being funded by pharmaceutical labs: Roche-Diagnostics, Sanofi-Aventis…
Reliance on a specific source of financing and amount received	25% of the overall cost is being funded by public partners, including the French Ministry of Health

Business model	
Pricing strategy	Game distributed for free
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Distribution by private partners to diabetolgy centres (has not yet happened for internal reasons)
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	France

6.4.2. Lit: A Game Intervention for Nicotine Smokers

http://www.tc.columbia.edu/news/article.htm?id=7222

- **Partner:** Robert Wood Johnson Foundation (Health Games Research National Program)
- **Project objectives:** a serious game developed for the iPhone whose purpose is to help people quit smoking.
- **Designer:** Colombia University Teachers College. Dr. Chuck Kinzer is the game's principal investigator.
- **Release date:** due out in 2012

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background**: users blow into the microphone of their iPhone to play. The idea is to reproduce the stimulating and relaxing effects of smoking a cigarette, which researchers at Columbia University believe can provide an alternative to the desire to smoke. The goal is to help smokers reduce their consumption, or quit smoking altogether.
- **"Instructional" component:** Reducing the desire to smoke
- **Gameplay:** this 2D single-player game offers two modes: "rush" and "relax". The player must blow or inhale, depending on the audio and visual stimuli, thereby mimicking the act of smoking. The guiding principle is to thereby overcome the craving for a real cigarette.
- **Resources:** Robert Wood Johnson Foundation devoted to games for improving health: www.healthgamesresearch.org

Economics of the project

Development	
Total development cost	150,000 USD
Profession's contribution to development costs	Not disclosed
Sponsors (if any) and degree of involvement	Not disclosed
Reliance on a specific source of financing and amount received	Health Game Research is a national programme in the US whose goal is to develop digital games intended to improve health. It has received 8.25 million USD in funding from the Robert Wood Johnson Foundation.

Business model	
Pricing strategy	Still unknown: since it is a research programme, the effectiveness of the approach needs to be verified before the game is released.
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Still unknown: since it is a research programme, the effectiveness of the approach needs to be verified before the game is released.
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	USA and Latin America

6.4.3. MindHabits

http://www.mindhabits.com/

- **Client:** MindHabits is a company headquartered in Montreal, Canada
- **Project objectives:** help users to manage their stress by adopting a positive attitude thanks to games based on psychological studies.
- **Designer:** MindHabits (Canada)
- **Release date:** 2008

Partnerships	
Technological partnerships	McGill University
Trade partnerships	McGill University
Sales partnerships	McGill University

Game description

- **Presentation**: Based on social intelligence research carried out at McGill University, the purpose of these games is to help people reduce their stress and increase their self-esteem. The exercises were designed to help develop and maintain a positive attitude.
- **"Instructional" component:**
  - manage stress
  - manage anxiety
  - boost self-esteem
- **Gameplay:** This single-player serious game in 2D offers four different types of game which represent 100 game levels in all: Matrix, Words, Grow your Chi and Who are you? Gameplay is based on the principles of social intelligence:
  - Inhibition: using a gaming process to help the player adopt a positive attitude;
  - Association: associating personal information with a positive self-image;
  - Activation: creating a more positive state of mind.

  MindHabits includes measurement tools so users can track their progress over time.

  The President of the firm MindHabits, Mark Baldwin is a professor of psychology at McGill University. It is his research on social intelligence that served as the basis for the game's design.

  MindHabits is currently available in a version for computers and a more recently released mobile version. MindHabits for Nintendo DSI will be available soon.
- **Feedback**:
  - According to MindHabits "...In several studies, we have demonstrated that after having used this software, people are less distracted by thoughts of rejection and less stressed at work and at school".
  - As of April 2010, MindHabits had a base of over 200,000 users, and is especially popular in Italy and Spain.

Economics of the project

Development	
Total development cost	1 million USD
Profession's contribution to development costs	
Sponsors (if any) and degree of involvement	
Reliance on a specific source of financing and amount received	Won a 500,000 USD prize in The Great Canadian Video Game Competition in 2008

Business model	
Pricing strategy	Free trial of a few levels, and 19.99 USD to download the complete version
Revenue and revenue sharing	
Sales target	
Target breakeven point	

Marketing, commercialisation	
Marketing strategy	Not disclosed
Project's sales and marketing budget	-
Sales force	Online sales
Geographical coverage	Europe, North America, Latin America

6.4.4. MoJOS

http://www.mojos.fr

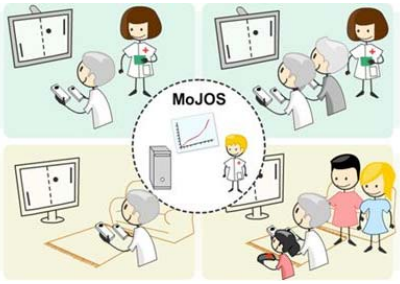
- **Client:** DIDACT systèmes (Genious Group), is a company based on Montpellier, France, that provides IT engineering and teaching services, and was founded in 1984.
- **Project objectives:** The MoJOS project – which stands for **Mo**teur de **J**eux **O**rientés **S**anté, or health-oriented game engine – is the winner of a call for "serious games" that was issued as part of the digital component of the French government's economic stimulus programme.

  The goal of MoJOS is to prove that serious games can be used as a form of treatment.
- **Designer:** DIDACT systèmes (GENIOUS Group)
- **Release date**: 2011

Partnerships	
Technological partnerships	DIDACT Systèmes/Groupe GENIOUS
Trade partnerships	University of Montpellier 1/CHU-Teaching hospital/Motor efficiency and deficiency research unit University of Montpellier 2/LIRMM/CNRS
Sales partnerships	IDATE

Game description

- **Presentation**: The MoJOS project is broken down into three distinct stages:
  - create middleware for the design and production of healthcare-related serious games;
  - develop a serious game for the functional re-education of patients with motor deficiencies as the result of a stroke;
  - provide medical proof that the serious game is a useful and effective remedy and that it can eventually be considered as a treatment of the future.



Once the game engine is produced and tested, through a new dedicated structure, the plan it to produce serious games devoted to treating diabetes, Alzheimer's, obesity, different forms of cancer, etc.

- **Gameplay**:
  MoJOS will deploy a set of innovative techniques and forms of interaction between the patient/player/learner, which include:
  - animated, simulated environment in 2D, 3D and real time 3D, virtual worlds;
  - events management, behavioural tests, process simulation;
  - natural language analysis, processing questions and text/numerical entries;
  - analysis and measurement of gestures, movement,
  - drag-and-drop selection of areas in images, sensitive areas and correspondences;
  - etc.

Economics of the project

Development	
Total development cost	2.5 M€
Profession's contribution to development costs	15% of total development costs generated by treatment of the health issues, and specifically functional re-education
Sponsors (if any) and degree of involvement	No sponsors as yet
Reliance on a specific source of financing and amount received	Call for Serious Game and Web 2.0 products issued by Nathalie Kosciusko-Morizet (Secretary of State for Digital **Development**) in 2009.

Business model	
Pricing strategy	The game engine is based on open source developments, as a result of which it will be governed by an open business model and cost-free solutions No prices have been set for the first application that will be developed using the engine
Revenue and revenue sharing	Revenue-sharing model not yet defined
Sales target	Applications to accompany patients undergoing physical therapy will be aimed initially at the national market in France and healthcare professionals (hospitals, physiotherapy centres, physical therapists, etc.)
Target breakeven point	Not applicable

Marketing, commercialisation	
Marketing strategy	Marketing strategy not yet been defined, but will be once games go into production
Project's sales and marketing budget	Not applicable
Sales force	Creation of an appropriate structure
Geographical coverage	National and European

6.4.5. Playmancer.com

http://www.playmancer.com/

- **Partner:** PlayMancer is a consortium of eight partners located in six European countries, whose coordinator is Elias Kalapanidas of the University of Athens.
- **Project objectives:** PlayMancer aims to create a development platform for serious game devoted to healthcare. This platform is being developed based on an existing 3D video game engine and a set of technologies from the video entertainment industry, which helps reduce production costs. The project also helps therapist to increase their understanding of the state and progress of their patients' health.
- **Designer:** Systema Technologies SA – The project coordinator is Elias Kalapanidas (Greece) www.systematechnologies.eu
- **Release date:** development began in November 2007, and is ongoing.

Partnerships	
Technological partnerships	Sarl NetUnion, Lausanne (Switzerland) - University of Patras, the Wire Communications Laboratory, experts in emotion recognition, Patras (Greece) - Technische Universitaet Wien, motion capture experts, located in Vienna (Austria) - University of Geneva (Switzerland) - serious games Interactive (SGI), video game specialists located in Copenhagen (Denmark)
Trade partnerships	Fundacio Privada Institut d'investigacio BioMedica, Bellvitge: mental health experts, located Barcelona (Spain) - University of Geneva (Switzerland) - Roessingh Research & Development BV, (RRD) pain management experts, located in Enschede (the Netherlands)
Sales partnerships	-

Game description

- **Background:** the purpose of the PlayMancer platform is to create a series of serious games for people suffering from an illness or a disability. These games can help patients to reduce their pain and so help in their therapy. PlayMancer positions itself as a therapeutic complement to a first round of treatment, and not as a complete therapy in and of itself.
- **"Instructional" component:**
  - to create a design platform for serious games devoted to healthcare;
  - help therapists provide their patients with the best possible care.
- **Gameplay:** PlayMancer has been displaying different prototypes of serious games since 2009. The latest is a single player adventure game that takes place in a 3D environment. The player moves his avatar through a set of challenges by interacting with physiological sensors.
  In the prototype, the game will refer to a patient's heart rate, for instance, and he can only win if he stays calm.

Economics of the project

Development	
Total development cost	3 million EUR
Profession's contribution to development costs	-
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	Financed partially by the European Union: 2.2 million EUR, Department specialised in Information and Communication Technologies (ICT) and by the consortium's own funds (see partners)

Business model	
Pricing strategy	-
Revenue and revenue sharing	-
Sales target	Project manager, Elias Kalapanidas, hopes to see PlayMancer distributed worldwide once testing is complete, which is scheduled for late 2010.
Target breakeven point	-

Marketing, commercialisation	
Marketing strategy	-
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Global

6.4.6. Science Pirates: the curse of Brownbeard

http://www.sciencepirates.org

- **Partner:** New Mexico State University (USA) – US Department of Agriculture
- **Project objectives:** teaching middle school students science processes, such as experiment design, hypothesis formation, identification of variables, as well as handwashing aspects as related to proper food safety.
- **Designer:** New Mexico State University (USA) Learning Games Lab
- **Release date**: 2009

Partnerships	
Technological partnerships	Musician involved to write the music and singers for the voices
Trade partnerships	Involvement of science and food safety specialists: a microbiologist, a specialist in risk assessment from the US Department of Agriculture (USDA), an expert in teaching food safety, two educational sciences experts, one expert for evaluating the knowledge acquired by those who have played the game (report available on the game's website.
Sales partnerships	-

Game description

Educational game aimed at middle school students that teaches experiment design based on U.S. National Science Standards, while underscoring the importance of proper hygiene when preparing food, through an entertaining adventure in a world of pirates.

- **"Instructional" component:** Students learn how to:
  - Wash their hands properly,
  - Define and craft a hypothesis
  - Identify independent, dependent variables and constants in given experiments
  - Isolate a variable in an experiment
  - Design an experiment based on handwashing, interpreting data and drawing conclusions.
- **Gameplay:** This is a single player 2.5D adventure game with cartoon-style graphics. The user plays the part of a boy or girl pirate, and goes on a treasure hunt. The adventure is made up of different challenges: problem solving, scavenger hunt, etc. via which the child learns about food safety and the underlying scientific principles. The game lasts around 90 minutes.
- **Feedback:** Positive feedback from instructors who teach hygiene. According to the designers, the "original game design called for online gaming simulations through which youth would design their own experiments, draw conclusions and make recommendations in all areas of food safety. However, early testing of prototypes revealed the lack of experience youth have in conducting experiment design […] Thus, the educational goal of Science Pirates shifted from one of understanding food safety issues through science processes, to one of understanding science processes to better change food safety behaviour". In the process, the creators of the game acquired a better understanding of how to design a serious game. They also noted that they needed a marketing strategy for distributing the game. Its authors hope to adapt Science Pirates to other platforms.

Economics of the project

Development	
Total development cost	Around 300,000 USD 10% for evaluation, 5% for distribution and deployment of the game, 60% for development, broken down as follows: 10% for overall project management, 30% for programming, 40% for animation and graphics, 10% for scripting and music , 10% for user testing. Total development time: 3 years
Profession's contribution to development costs	25%
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	Financed entirely by the national research programme run by the USDA, now called the NIFA (National Institute for Food and Agriculture) as part of the programme called Science-Based Food Safety Education: Interactive Media Development for Hard-to-Reach and High-Risk Adolescents

Business model	
Pricing strategy	Subsidies given to the game that allow it to be distributed for free which, according to Barbara Chamberlin, explains why its creators are not focused on marketing aspects. They are counting on word of mouth.
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing, commercialisation	
Marketing strategy	Communication through a dedicated website and local media coverage
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	USA

6.4.7. Silverfit

http://www.silverfit.nl/index.php

- **Partner:** Silverfit, based in the Netherlands.
- **Project objectives:** The Silverfit system is aimed at improving the health and quality of life of people over the age of 65 by developing a system for physical rehabilitation using computer games.
- **Designer:** Silverfit.
- **Release date:** January 2009

Partnerships	
Technological partnerships	Silverfit works closely with the Belgian firm Softkinetic which specializes in developing full-body 3D gesture recognition systems. The rest of the development takes place in-house, with the exception of sound design.
Trade partnerships	Consults with physiotherapists and scientific researchers in Holland, such as the Royal Dutch Society for Physiotherapy. Also collaborates with some ten clinics, and one in particular, as well as two universities, including Eindhoven University of Technology.
Sales partnerships	*Biometrics, Gymna*, *Residentie Christoff*, *Healthlink holdings*, *Beka Rus*, *Apsun Inc*.

Game description

- **Background**: The Silverfit is a virtual rehabilitation system dedicated to improve the health of elderly people by providing them with rehabilitation exercises that are fun in the form of computer games.
- **"Instructional" component:** Improve the health of elderly people.
- **Gameplay:** Silverfit is a complete platform that includes a 3D motion-sensing camera and a set of games. It offers a range of exercises and physical training programmes for older people, including physiotherapy applications for recent stroke and accident victims.
- **Feedback:** The Silverfit system is currently installed in senior care units and retirement homes in Belgium, Hong Kong, USA and Netherlands, and has met with a positive response from most of those who have used it. Employees at the Groenhuysen care centre in the Netherlands have said that, in addition to providing resident seniors with a good amount of exercise, the system helps foster social interaction and a competitive spirit. The game has been a commercial success and sales are growing steadily. As of April 2010, 50 Silverfit systems had been sold and installed in care centres.

  More than 150 patients have evaluated the games which continue to be improved with the help of care-givers. The system has received awards from the Dutch gaming industry (Dutch Game Award (DGA) and EIGA Award) and the medical profession: the Izovator award for excellence in physiotherapy, which was given to one of Silverfit's main partners/clients.

Economics of the project

Development	
Total development cost	Sum not disclosed This is the currently company's only product. 50% of funds go to development and 40% to distributing the system.
Profession's contribution to development costs	Not disclosed
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	Business angels and subsidies from the WBSO (Dutch government's fiscal incentive system for companies involved in innovative R&D)

Business model	
Pricing strategy	11,000 EUR per unit (hardware and software)
Revenue and revenue sharing	-
Sales target	The Americas and Asia in the near future. Distributors of the system have promised sales of more than 100 units.
Target breakeven point	The breakeven point has already been surpassed.

Marketing, commercialisation	
Marketing strategy	Marketing strategies are based on health and science-related articles, invitations to industry conferences, mailings, online and print newsletters, trade shows, live demonstrations, sales calls, appearing on TV and radio programmes devoted to health issues and communication through a dedicated website (no budget for buying ad space in print media, on TV or any other medium).
Project's sales and marketing budget	Not disclosed
Sales force	Both direct and through distributors
Geographical coverage	50% of sales have been in the Netherlands, the remainder in Belgium, the United States, Hong Kong and South Korea. The American and Asian markets are more promising than European ones.

6.4.8. The Great Flu

http://www.thegreatflu.com/

- **Partner:** Erasmus MC: University Medical Centre in Rotterdam, Holland
- **Project objectives:** the Erasmus Medical Centre in Rotterdam wants to share its knowledge of viruses using a serious game.
- **Designer:** Ranj serious games – the Netherlands (Director, Michael Bas)
- **Release date**: March 2009

Partnerships	
Technological partnerships	Science view supplied videos
Trade partnerships	Department of Virology at Erasmus University in the Netherlands
Sales partnerships	

Game description

- **Background:** This serious game was developed as part of an exhibition called "H5N1 – The Evolution of an Influenza Virus" mounted by the History Museum of Rotterdam, and to celebrate the Darwin bicentennial. The scientific content was approved by Dutch virologist, Dr. Albert Osterhaus.
- **"Instructional" component:**
  - Increase knowledge of H5N1 viruses;
  - Show the difficulties involved in managing a global pandemic.
- **Gameplay:** The player must manage a new strain of virus and avoid a pandemic by acting the part of the head of the world flu pandemic organization. School closings, finding a vaccine, distributing face masks and public information campaigns are among the decisions the player will face. Armed with only a mouse, the player is given an initial budget of 2 billion virtual dollars to manage the pandemic and prevent it from killing the entire global population. The paths of action available to the player derive from the recommendations issued by the World Health Organization
- **Feedback:** According to the firm Ranj serious games, more than 400,000 people have played the game in a year, which well exceeds initial expectations.

Economics of the project

Development	
Total development cost	Around 70,000 EUR
Profession's contribution to development costs	Erasmus has contributed its presence, but has not quantified the amount of time spent.
Sponsors (if any) and degree of involvement	qsk, GlaxoSmithKline, Solvay Biologicals et Pharmaceuticals, Science view, Darwinjaar 2009
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Distributed for free. The application itself can be considered an edumarketing game, i.e. combining an educational message (understanding the virus) with a marketing message (sponsored by the pharmaceutical company that makes the vaccines)
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing, commercialisation	
Marketing strategy	Game distributed at an exhibition and through a dedicated website
Project's sales and marketing budget	Not disclosed
Sales force	-
Geographical coverage	Chiefly the Netherlands

6.4.9. The Magi & the Sleeping Star

http://themagigame.net/gameplaydemo.html

- **Partner:** Game Equals Life (USA)
  - Video game studio created in 2008, and based in Norman, Oklahoma
  - This game has not yet been released, and is currently in the prototype stage. The studio financed the demo itself and is now looking for a partner to bring the project to completion.
- **Project objectives:** Increase awareness of the dangers of Type 1 diabetes and the precautions that diabetics should take.
- **Designer:** Game Equals Life (USA) – Adam Grantham, the game's designer, has Type 1 diabetes and drew on his own experience when designing the "instructional" aspects of the game.
- **Release date**: Unknown

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** This title employs the tools of video games designed for entertainment purposes to increase players' awareness of diabetes.
  The plan is for the game to be distributed on CD-Rom.
- **"Instructional" component:** learning to live with diabetes
- **Gameplay:** the player moves his avatar through a three-dimensional fantasy universe. As the hero, he must battle a host of evil creatures and overcome a great many obstacles. This game distinguishes itself from ordinary action games as it incorporates the issue of diabetes into the gameplay. To increase his energy level, the hero can eat different types of food that he collects during his odyssey. But each food is defined by a real glycemic index, so eating it increases the amount of sugar in the hero's bloodstream. This means that the player needs to keep an eye on his blood-sugar level and take the right amount of insulin if necessary. Single player only.
- **Feedback:** This game is still at the prototype stage.

Economics of the project

Development	
Total development cost	Around €30,000 to create the prototype. Provisional budget to complete production on the game not disclosed.
Profession's contribution to development costs	Not disclosed
Sponsors (if any) and degree of involvement	The studio is currently looking for partners in the healthcare sector.
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	How the game will be marketed and its price have yet to be determined. The way it is financed differs from most serious games which are generally funded by a partner who is involved in the different stages of the game's design. The approach taken for *The Magi & the Sleeping Star* is different and more akin to that of a regular video game. The studio began by creating a demo of the game using its own money. It is now using this demo to look for a publisher who can help finance the game's development and production. So this serious game is not being developed under a classic "partner-service provider" model, but rather a designer-publisher one. The developer is therefore the only one ultimately contributing to its design and "instructional" aspects.
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing, commercialisation	
Marketing strategy	-
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	-

6.4.10. Triage Trainer

http://www.seriousgames.com/

- **Client:** British Ministry of Defence
- **Project objectives**: This serious game is a fee-based prototype whose goal is to train healthcare professionals: first responders, fire fighters, medical students, etc. to prioritize the medical needs of the victims of a bomb attack.
- **Designer:** TruSim, a division of Blitz Games Studios (the UK)
- **Release date**: 2008

Partnerships	
Technological partnerships	UKTechnology Strategy Board, Salero
Trade partnerships	The University of Coventry was involved in the project's development for six months, surrounded by researchers and experts University of Birmingham, University of Sheffield, Advanced Life Support Group
Sales partnerships	Selex Systems

Game description

- **Background:** after a major bomb explosion, the player has to locate the victims and perform a fast diagnosis to try to save them. This triage protocol was established by the Advanced Life Support Group: a medical education charity since 1993.
- **"Instructional" component:**

  The client defined a set of cognitive and personal skills to be acquired:
  - reactivity in an emergency situation
  - decision-making ability
  - ability to organize and prioritize tasks
  - ability to assess the skills acquired
- **Gameplay:** the game is played out in real time in a very realistic 3D setting. A bomb has just exploded in a shopping district during a time of heavy traffic. The player must assess the scope of the damage and hurry to save the casualties. She must take care of the most critically injured first and perform tests on them: see if their breathing passages are clear, take their pulse, etc. Then she must make a preliminary diagnosis to prescribe the necessary care. Cursors depict the status of the victim's vital signs on screen, allowing the player to measure the severity of their wounds and act in consequence. If the player is too slow to act, because of a lack of skill or objectivity, the victims will die.
- **Feedback:** according to Mary Matthews of Blitz Games Studios, "this game was not developed with a commercial goal in mind, but rather as a prototype to be able to assess whether a serious game is more effective than a traditional training method. To perform this assessment, a trial was carried out during an emergency medical training course given by the ALSG (Advanced Life Support Group). The trainees were divided into two groups: one worked with written exercises and the other with the Triage Trainer serious game. The results revealed that the second group acquired a better knowledge of how to prioritize the care given to the casualties and follow the proper protocols. This game also provides a good illustration of the potential of learning-based games for teaching decision-making in emergency situations".

  200 people have used the game officially. The current goal is to develop production of Triage Trainer and to find a publisher to be able to cover several types of scenario, accidents and protocols.

Economics of the project

Development	
Total development cost	£400,000
Profession's contribution to development costs	Around 50%
Sponsors (if any) and degree of involvement	Blitz Games Studios and Selex Systems self-financed 50% of the project
Reliance on a specific source of financing and amount received	50% of financing provided by the UK Technology Strategy Board

Business model	
Pricing strategy	Not yet set
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing, commercialisation	
Marketing strategy	-
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	The UK

6.4.11. Xperiment

http://www.xperiment.ca/

- **Partner:** Canadian Centre on Substance Abuse (CCSA)
- **Project objectives:** This is a serious game aimed at people between the ages of 10 and 24. It was created as part of the activities under *A Drug Prevention Strategy for Canada's Youth*—a national drug prevention initiative that aims to reduce illicit drug use by Canadian youth aged 10 to 24 developed by CCSA and a number of key partners. The objective of Xperiment.ca is to increase awareness about drug and their related harms among the target population. The CCSA has been tasked by the government to act as the national information centre on substance abuse, and to provide analyses and factual advice to be able to further collaborative efforts to reduce problems related to the detrimental effects of alcohol and other drugs.
- **Designer:** Canadian Centre on Substance Abuse
- **Release date**: April 2009

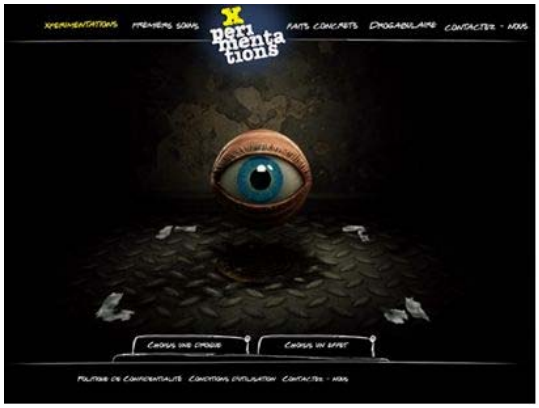
Partnerships	
Technological partnerships	DraftFCB (communications agency), Rune Entertainment and Jam3 Media
Trade partnerships	Funding from Health Canada's national anti-drug strategy, and in-kind support and guidance from the MYC (Media Youth Consortium), YSAP (National Advisory Group on Youth Substance Abuse Prevention) and DraftFCB (communications agency)
Sales partnerships	

Game description

- **Background:** This single player serious game focuses on the physical effects of of substance use and is aimed at people between the ages of 10 and 24. The site also offers additional information on several drugs and provides links and contact information to support organizations in each province and territory in Canada.
- **"Instructional" component:**
  - Implementation of tools for assessing the impact of the Xperiment project among 10 to 24-year olds;
  - Deployment of techniques for communicating on the topic of drugs.
- **Gameplay:** On the site, the user can experiment "virtually" with three drugs: marijuana, cocaine and ecstasy, using as its guinea pig a giant 3D eye called Earl. Once Earl has taken the drug, the player can watch the effect the drug has on him. As the player feeds Earl more and more of the three drugs, the direct and secondary effects become increasingly strong. A voice-over narrates and provides additional explanations on the damaging effects of drug use.
- **Feedback:** The game has received several awards: Site of the day by the Favorite Website Awards, Site of the week by Allmyfaves.com and the Applied Arts Magazine Interactive Award, one of Canada's largest magazines devoted to visual communications. Between March 2009 and April 2010, the site attracted over 160,000 visitors (French and English combined).

  Prior to the release of the site, a baseline survey was conducted with youth aged 10 to 24 to assess the current level of awareness of drugs and their related harms. A follow-up survey will be carried out in 2010 to measure the impact that the game has had on its

target audience, as part of ongoing efforts to prevent substance abuse amongst 10 to 24-year olds.



Economics of the project

Development	
Total development cost	Not disclosed. 10 millions USD répartis sur 5 ans de 2008 à 2012. Ce budget comprend la réalisation du jeu mais également le financement du consortium média/Youth, le développement de normes canadiennes dédiées à la prévention anti-drogue dans les contextes scolaires, familiaux et de communautés et la mise en place d'outils d'évaluation (questionnaires destinée aux 10-24 ans pour connaître leur degré de vigilance face aux drogues)
Profession's contribution to development costs	Not disclosed
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	Project entirely supported and funded by the Canadian government's national anti-drug strategy.

Business model	
Pricing strategy	Distributed for free
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing, commercialisation	
Marketing strategy	Distributed by the game's various partners, bookmarks distributed in schools and libraries across Canada, banner ads on youth specific sites including facebook and muchmusic, and targetted email campaign.
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Canada

6.5. Outlook

We can expect to see serious games dedicated to healthcare develop over the next five years. Several indicators would seem to confirm this, particularly if we look at current trends in the products being designed for the general public and for healthcare professionals.

6.5.1. General public

There is already a sizeable selection of games for health aimed at the general public, for managing chronic conditions or improving physical and mental fitness. Although brain training has become a very competitive segment, there are other untapped niches like mental relaxation (*Mindhabits*). Game developers in Asia, who are being particularly innovative in the area of healthcare, have created products that do not yet exist in the West, including ones devoted to healthful eating (*Kenkou Kentei*), facial exercises (*Otona no DS Kao Training*), acupuncture (*Raku Raku Shiatsu Navi*) and skincare (*Yumemihada: Dream Skincare*). Not all of these titles are compatible with the Western market, but the selection does give a good idea of the possibilities and is no doubt a sign that the range of consumer products will continue to expand in the coming years, at least in the West.

We are very likely to see a growing number of games in the area of prevention (*Xperiment*) as they are offer a very good way to reach younger users. One concrete application for this type of serious game could well be the growing phenomenon of the "apéros géants" or giant cocktail parties that are being organized in French cities, where thousands of young people gather to drink alcohol. For safety reasons, the French government wants to supervise these events. There have been several such parties to date, which are usually organized on Facebook, and it is very likely that we will see prevention campaigns being run on social networking sites as a result. These campaigns could well include serious games that explain the potential dangers of these events to young people.

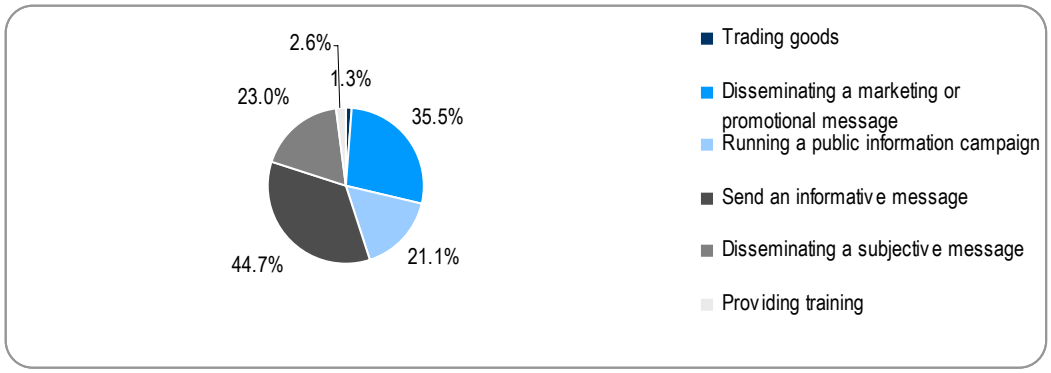
6.5.2. Healthcare professionals

As it stands, there appear to be far fewer serious games aimed at healthcare professionals, so the market has a lot of room to grow. The prevention segment, for instance, is largely untapped although it is easy to imagine campaigns designed to explain the measures to take to prevent nosocomial illnesses (i.e. those caught while in hospital). We are seeing developments in the areas of therapy and assistance with therapy, and there are several indicators that these developments will continue. These include initiatives like the *PlayMancer* project whose goal is to enable the creation of serious games by bringing down development costs, along with others like the Robert Wood Johnson Foundation's Health Games Research National Program (which produced the game *Lit*). A final point worth mentioning is that if a project like *MoJOS* manages to prove that a serous game can really serve as a treatment, we will no doubt see tremendous growth in this new market over the next five years. During that time, we will also discover the results of the clinical trials currently being conducted by the *MoJOS* project.

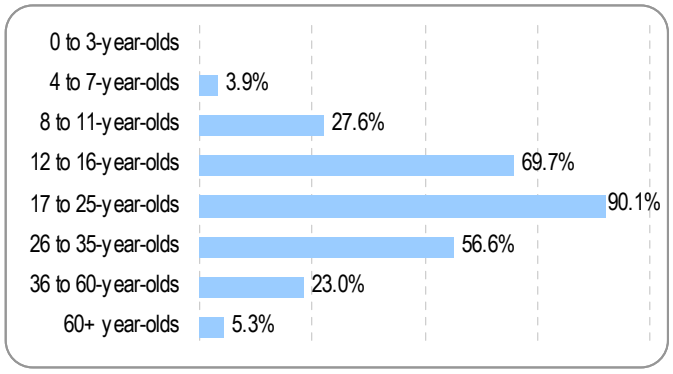
7. Serious games for public information and business communication

7.1. Statistical data

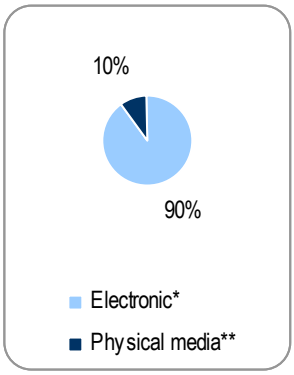
Plans for use



User segmentation by age group

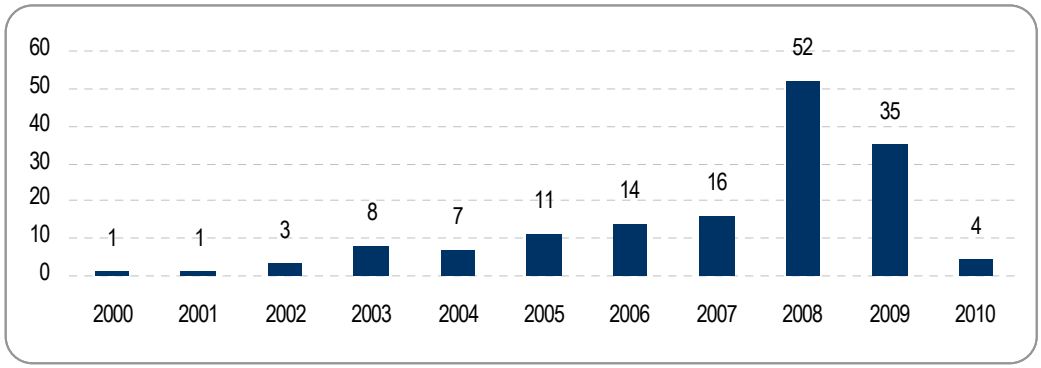


Distribution method/medium



*Browser, download…
** CD-Rom, console…

Growth of the number of titles published



Source: IDATE, based on Serious Game Classification http://serious.gameclassification.com/

www.idate-research.com © IDATE 2010

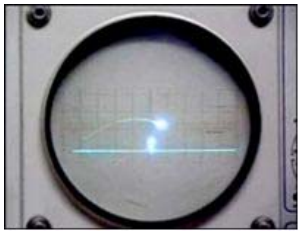
Serious games can be used to deliver different types of message, which leads to a variety of game profiles. Added to this, there are three different ways to deliver a message using a serious game: *associative*, *illustrative* and *demonstrative*. Although the design of a game whose purpose is to inform and communicate is very important from an industry standpoint, also important is the way in which the game is distributed. There are three approaches in particular: viral marketing, cross-media marketing and the edumarket game. From a market economics perspective, these information-centric games represent a 400 million USD market worldwide in 2010, and growing at a rate of around 12% a year.

Serious games can deliver different types of message: advertising, informative, political, ecological, etc. This translates into different types of serious game: advergames for those with a marketing purpose, news games for those based on a topic in the news, political games, green games devoted to ecological issues, etc. Not all of these categories represent an equal share of the market. While the news game sector is still more or less anecdotal in terms of revenue, advergames generated 312.2 million USD in 2009[13]. Here, a distinction needs to be made between in-game advertising and advergames, the first of which involves a company advertising its brand within an existing video game, while the second involves designing a dedicated game for a company to be used as an advertising tool. This is an important distinction as some estimates include these two segments in their calculations, taken either separately or together. Only advergames fall under the heading of serious games. A serious game that carries a company brand and is a video game first and foremost without being an advergame is called an edumarket game, in other words one that combines several purposes, only of which one is marketing-related, i.e. to promote a brand and a product.

7.2. Market development status

On 18 October 1958, American nuclear physicist, William A. Higinbotham, unveiled one of the first ever video games: *Tennis for Two*, which was meant to entertain visitors to the *Brookhaven National Laboratory*, a nuclear research lab. During the cold war, the lab held open houses for local residents to inform them about the nature of the research work being done on the premises. *Tennis for Two*, which was the predecessor to *Pong* (Atari, 1972), was therefore the pioneer in using a video game for PR. It did not really have a message, however, and it was more the context in which it was played that had that role. It was not until the early 1980s that games containing marketing messages, such as *Kool-Aid Man* (Mattel Electronics, 1983), begin to emerge.

***Tennis for Two* (Higinbotham, 1958)**



***Kool-Aid Man* (Mattel Electronics, 1983)**

[13] Source: Yankee Group

In 2001, Jane Chen and Matthew Ringel, two marketing strategy specialists from the American firm KPE, created three classifications for advergames:

- **Associative**: "Advergaming promotes brand awareness by associating the product with the lifestyle or activity featured in the game". An example of an advergame in this category is *Sportura the game* (*Nonoche*/*Medialand*, 2004).

Sportura the game

The gameplay of this title is based on a car race, with the advertising element found in panels displayed at regular intervals around the track carrying the Japanese watchmaker's brand. This game qualifies as associative since the brand in no way affects the mechanics of the game. The logos could be removed and replaced and the goal of the game would remain the same, i.e. making it around the track as quickly as possible.

- **Illustrative**: "Advergaming can prominently feature the product itself in game play. It is done in an incidental way. Products are integrated so as to spur consumer interaction. They are not the leading actors in the game." *Volkswagen Drive-In* (*Achtung!*, 2007) is an example of "illustrative advergaming."

Volkswagen Drive-In

In this game, the player listens to a series of musical extracts and has to say what decade they are from. The gameplay is therefore that of a quiz. The German car-maker's models are used to illustrate the different decades, which run from the 1950s to the 2000s. So the Beetle corresponds to the 1950s, the Volkswagen van to the 60s, etc. When the player wants to give her answer, she clicks on the vehicle that corresponds to the decade. Although the brand is central to the game, the purpose of the game is not to promote the different vehicles – they are used more as accessories, which is characteristic of an "Illustrative advergame".

- **Demonstrative**: "Advergaming can leverage the full arsenal of interactivity by allowing the consumer to experience the product within the gaming space."
  "Demonstrative" advergames are therefore built around the properties of the product being promoted. A car race is a good example here, and there are several games of this kind: *Volvo S60 Concept: Volvo the game* (*Simbin*, 2009), *BMW M3 Challenge* (*Blimey! Games*, 2007), *Toyota Auris Ice Experience* (*Ad Invaders*, 2007)…

None of these three categories, *associative*, *illustrative* or *demonstrative*, is exclusive to advergames and can be found in all serious games whose purpose is to inform and communicate. A game can therefore be used to deliver a political, ecological or activist message, to inform the public, etc. and this regardless of the type of gameplay used.

Volvo S60 Concept: Volvo the game

BMW M3 Challenge

Toyota Auris Ice Experience

We are seeing a growing number of edumarket (education + marketing) titles in the games with a message category. These are serious games that combine marketing and other more useful functions. This type of approach allows companies to associate their brands with some form of knowledge, expertise and values. One example is the serious game *Virtual Walking the Pens* (*ForgeFX*, 2008) which helps teach how to manage a pig farm while promoting Pfizer veterinary products.

Another major trend that we are seeing in the segment of games with a message is the incorporation of innovative technologies to attract customers. A good example is the game *Je tue un ami/I'm killing a friend* (*BETC EURO RSCG*, 2009) which incorporates photos of the player's friends in interactive videos. The serious play initiative[14] *HBO imagine* explores short interactive scenes that have been filmed from four different angles simultaneously. Both of these games are used to promote cable TV channels.

Je tue un ami

HBO Imagine

These innovative technologies tend to move away from regular ways of playing a game (keyboard, mouse) and offer a blend of reality and virtual reality, and so are often referred to as ARG (Alternative Reality Game). Another example of an alternative reality advergame is *Can you stop it?* (*SFR*, 2009) from French telecom operator SFR. It is a contest where

[14] Serious play, like the site *Second Life*, is built in video-based entertainment. There is no such thing as winning but, like a serious game, it can deliver a message, provide training or enable the exchange of information.

contestants need to solve riddles on the Web by walking through the actual city of Lille, France, where clues are hidden.

Can you stop it? (SFR, 2009)

7.3. Sector-specific aspects

Among those serious games with a message or whose purpose is to inform that are profiled in this report, the sector-specific aspects include use of the video game to:

- **increase awareness of flood protection and prevention policies** (*FloodSim, Stop disasters!*);
- **advertise** (*Je tue un ami.com*);
- **create eco-citizens** (*Hutnet Island, Energuy, SIMURénov*);
- **teach users how the federal budget works** (*Budget Hero*);
- **recruit personnel while promoting a company or an institution** (*Moonshield*, *WinGineer*);
- **learn about renewable energy sources** (*Enercities*, *Energy City*, *Clim'Way*);
- **denounce child labour** (*Global conflict sweatshops*);
- **learn how to run a pig farm while promoting veterinary pharmaceuticals** (*Virtual Walking the Pens*);
- **attract visitors to museums** (*Le code perdu: musée de la civilisation*);
- **promote real estate** (*Eco Reporter*).

As we can see from this selection alone, a plethora of messages can be communicated and information imparted through serious games. The serious game therefore needs to be viewed as an instrument of communication that comes to flesh out existing tools. As with teaching and training, one of the main sector-specific aspects concerns how to design these games so they will deliver the desired message. One challenge that is no doubt more specific to communication and information is how to make the target audience aware of the game. Three strategies in particular are used to do this:

- viral marketing,
- cross-media marketing,
- edumarket game.

7.3.1. Using viral marketing

Viral marketing is a strategy that relies on consumers to circulate ads or promote a product amongst themselves. This is the principle adopted by Hotmail, for instance, which tacks an ad on to all of the e-mails it delivers. A serious game in the form of a computer file and hosted on the Web can also be easily distributed by mail. The idea with a viral marketing approach is to rely on the attractive aspect of video entertainment to make users want to share the application with others. One of the first companies to use this approach was NVision Design which earned its reputation with *NStorm*. On April Fools Day in 1998, the company sent out the game *Good Willie Hunting*, which is played like a game of "whack-a-mole "[15] and whose gameplay starred the people involved in the Monica Lewinsky scandal. The purpose of *Good Willie Hunting* was to promote the young company, NVision Design, in a fun and original way. But why did it choose the Monica Lewinsky affair?

This type of serious game uses a story from the day's headlines to grab users' attention. These events are played out in a way that is meant to elicit a response from the players (laughter, indignation, etc.). The interest and emotions that the game's designers hope to stir up is what will trigger users to pass the game along to others, which allows the game to promulgate its message to an ever growing circle of users. For *Good Willie Hunting*, the message was NVision Design's URL.

In 2009, it was the H1N1 virus that was depicted in a variety of serious games. One example was *Le Père Noël a la grippe A*/Santa Claus has the swine flu (*Virtuadz*, 2009) whose purpose was to promote French marketing agency *Virtuadz*. The player has to help the ailing Santa Claus deliver his presents while dodging the evil virus, and getting regular doses of the vaccine. If Santa goes too long without a vaccination, he dies. The application was distributed at Christmastime.

Good Willie Hunting

Le Père Noël a la grippe A

It should also be pointed out that the game was connected to social networking sites like *Facebook* and *Twitter*. This type of link has become a very common strategy to help a title go viral, and social networking sites are in fact ideal platforms for ensuring a successful viral marketing campaign. Communities can be created around a game, to discuss it or just to compare scores. As long as a community continues to exist around an application, the application will live on. The current interconnection between advergames and social networking is crucial.

[15] A fun fair/arcade game where, as quickly as possible, the player has to whack moles with a mallet as they pop their heads up out of the ground.

7.3.2. Using cross-media marketing

Among other things, cross-media marketing is aimed at interconnecting different types of media and communicating objects. This approach can be used as part of a marketing strategy. A serious game is a product that an Internet user needs to seek out on her own, hence the need to use viral marketing to facilitate its distribution. A cross-media approach also helps with this distribution thanks to media like TV and radio which carry the message to viewers and listeners. This type of campaign involves creating a real synergy between the different media, and not just sending out an identical message on each.

An example here are the *Routes* set of mini alternate reality games from Channel 4 in the UK. The games immersed the players in an alternate reality that combines the Internet, the telephone, newspapers… with a team of supervisors in charge of ensuring the game went smoothly. The *Routes* campaign ran over eight weeks, from 26 January to 26 March 2009. It began with a video that was distributed on the Net about the disappearance of a famous geneticist under horrible circumstances. Internet users were then tasked with uncovering the mystery behind his death by solving different puzzles and riddles that would allow them to access "secret information". They needed to exchange information with other players, via the Web, to solve these problems. Each week, a new video was added to the site to announce the next stage of the game, right up to the final episode. To complete the experience, four serious games, *Ginger Dawn*, *Sneeze*, *DNA Heroes* and *Breeder* were posted to the website. All of them are meant to carry on this scientific marketing campaign once the *Routes* series had ended. Although based on different gameplay, all four games have the same purpose, namely to increase public awareness of genetic science and its applications.

Routes

Channel 4 is not the only TV broadcaster to use serious games, another example being the *History Channel* with *Turf Wars* (*This is Pop*, 2008). This American specialty network mixes history and combat games in a title aimed at promoting its documentary series, *Jurassic Fight*. Capitalizing on the public's interest in dinosaurs, each episode in the series, created with CGI, is a battle between two prehistoric beasts, to illustrate the harsh environment in which they lived. The serious game *Turf Wars* is based on this same principle of combat.

Turf Wars

7.3.3. The edumarket game

The term "edumarket game" (cf. Chapter 5.2.) refers to a serious game that combines different types of message, of which one is marketing related, which includes:

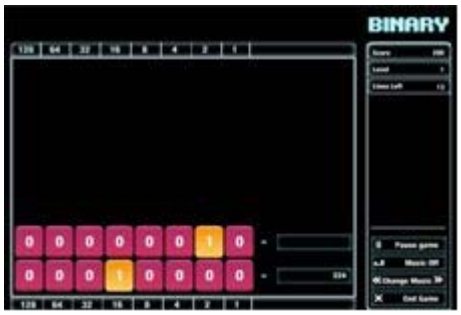
- edugame plus advergame,
- news game plus advergame,
- game with a message plus advergame.

Of course this is not an exhaustive list as other goals can be incorporated into an edumarket game. From a concrete standpoint, how are these combinations achieved and what purpose do they serve?

Edugame plus advergame

The purpose of *Cisco Binary Game* (*Cisco System*, 2006) is to initiate users to binary code. Players have to convert eight-digit binary numbers to decimals, and find the binary code of an eight-digit string. The different codes succeed one another like the lines of bricks in *Tetris* (*AcademySoft CCAS USSR Moscow*, 1984). If the stack reaches the top of the screen, the game is over. This fun introduction to binary coding allows *Cisco System* to promote the company's image of a pioneer in leading edge technologies, but which it can explain in layman's terms to make them accessible to everyone. In a similar vein are games like *Virtual Walking the Pens* which is profiled later on in this section.

Cisco Binary Game



News game plus advergame

Games based on the news can also be combined with some form of marketing, with cases in point that include *NewsBreaker* and *NewsBlaster* (*MSNBC*, 2008), launched by *MSNBC.com* (partnership between *Microsoft* and American TV network *NBC*). The goal of these two serious games is to provide information about the news. *NewsBreaker* is a classic brick breaker game. When a user destroys the bricks random headlines falls out, which the player must collect to move on to the next level. If she succeeds in breaking a brick, the headline is added to the list of items that the player can then browse. *NewsBlaster* is based on virtually the same idea, only the nature of the gameplay is different: the brick breaker is replaced by a game that uses the principle of *Puzzle Bobble* (*Taito*, 1994). So, when the player pops all of the bubbles, she automatically obtains headlines from the news, and does not have to collect them. Both of these games explore new ways of accessing information, the goal being not to search for a specific piece of news but rather exploring world events randomly. From a marketing standpoint, this helps distinguish MSNBC from other news channels.

NewsBreaker

NewsBlaster

Game with a message plus advergame

The companies involved in edumarket games that combine information and education with advergaming are generally positioned in their area of specialization. The approach for activist games is different, with a company associating itself with values that could have tenuous ties at best with their areas of expertise. From a marketing standpoint, this approach helps enhance the company's image with values that are not expressed through their daily business operations. With *Planet Green Game* (*Tree Media Corporation*, 2007) the *Starbucks Coffee* chain establishes ties with the *Global Green USA* association, to spread the word about ecology and increase users' awareness of how to be good eco-citizens and hem in global warming. Gameplay is based on a series of mini-games: quizzes, games of skill, memory and observation, puzzles, etc. Each one is intended to make users think about what actions will help save the planet.

Planet Green Game

7.4. Case studies

7.4.1. Budget Hero

http://marketplace.publicradio.org/features/budget_hero/

- **Partner:** American Public Media, which was founded in 2004 and is the second largest public radio producer in the United States, behind National Public Radio.
- **Project objectives:** the purpose of this serious game is to inform the public about how the American government manages the budget. It was put online during the presidential elections of 2008.
- **Designer:** educational games store, 360 Kids, developed the game and designed its interface. The Woodrow Wilson Center also contributed to its development.
- **Release date:** May 2008

Partnerships	
Technological partnerships	360 Kids
Trade partnerships	Woodrow Wilson Center
Sales partnerships	-

Game description

- **Background:** With Budget Hero, the player can made an objective assessment of the presidential candidates and their budget policies.
- **"Instructional" component:**
  - understand how the American federal budget works;
  - allow the public to assess each presidential candidate's budgetary policy.
- **Gameplay:** this is a 2D single player game that is available for free online. When the player starts the game, he has to choose three "badges" that represent his political values, such as health and wellness, efficiency of existing policies, energy independence, etc. The different spending programmes in the federal budget are then represented as buildings. The height of each building corresponds to that item's share of the budget. When a player clicks on a building, cards appear that list the components of that item and the consequences of budgetary spending for the population over time. The player then decides whether to increase or decrease spending on that item and gradually builds the national budget, trying not to bankrupt the country.
- **Feedback:** according to Joellen Easton, an analyst at American Public Media, at the end of April 2010 "the game has been played 554,019 times since it first launched. Of these, 401,062 players made it to the end of the game. Budget Hero has elicited 5,574 comments and 24,300 have shared demographic information about themselves. The game has exceeded its target it terms of audience. 94% of the players who left a comment said that Budget Hero changed their understanding of the American federal budget".

Economics of the project

Development	
Total development cost	
Profession's contribution to development costs	
Sponsors (if any) and degree of involvement	
Reliance on a specific source of financing and amount received	A subsidy from the Corporation for Public Broadcasting helped finance the game's creation and update.

Business model	
Pricing strategy	Game distributed for free online
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Viral marketing, i.e. through word of mouth
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	USA

7.4.2. Clim'Way

http://climcity.cap-sciences.net/

- **Partner:** Created in 1995, Cap Sciences is a centre for scientific, industrial and technical culture, located in Bordeaux and which operates as an association (http://www.cap-sciences.net/).
- **Project objectives:** to increase users' awareness of climate change problems linked to greenhouse gases, of excess energy consumption, etc. To help anticipate and adapt to the imperatives of climate change thanks to more responsible behaviour, for instance, encouraging the use of renewable energy sources, etc.
- **Designer:** Cap Sciences and Objectif Prod. Objectif Prod. is a single-person company created in 2002 by Benoît Santamaria. It is located in Buscat, near Bordeaux. Specialised in the production of educational, industrial and promotional films, the company was responsible for the project's technical aspects.
- **Release date:** November 2008 (Mau 2008 for the associated exhibit).

Partnerships	
Technological partnerships	Objectif Prod
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** the game allows the player to discover the different climate issues that we are currently facing. Teaching material and an exhibit (Clim'Way l'expo) are attached to the title for use in schools. The exhibit and teaching materials took 14 months to produce and include close to 320 related articles and videos.
- **"Educational" component:** Inform users about the problems of climate change and provide them with the technical information they need to deal with it.
- **Gameplay:** This single player 2D game is available for free online, and on DVD (4,000 copies produced for partners, and 6,000 copies of Clim'Way included with the "*Atlas des changements climatiques*" (Atlas of climate change) published by *Editions Autrement* in *2009*). The player must establish a climate plan to prevent the developments taking hold in Clim'Way. If she does nothing, energy consumption and greenhouse gas emissions will go up every year. This growing trend is based on a scenario of "nothing being done to turn the tide on climate change." The player has 50 turns (= 50 years) to implement courses of action that will make it possible to: reduce energy consumption, develop renewable energy sources, cut greenhouse gases by four and adapt Clim'Way to climate change. These courses of action will make up the player's climate plan. Players can use three types of "action centre" that represent the different players in Clim'Way: public authorities, enterprises and citizens. The game took seven months to develop.
- **Feedback:** At the end of 2009, Clim'Way was reporting 188,103 unique visitors and 303,771 hits. From January to April 2010, the site logged 32,370 unique visitors and 54,244 hits. Since its launch, 20,400 player accounts were created on the dedicated website.

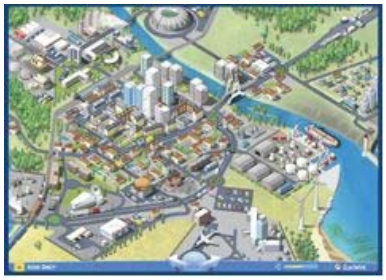
  There are 70,000 Google results for Clim'Way and some 100 websites, blogs, TV and radio programmes have talked about the game. There have been around 100 articles on Clim'Way in the regional, national and international press, along with TV coverage: video game news, and on channels Canal+, Arte…

Several versions of Clim'Way have been planned by:

- CREA, urban authority of the city of Rouen (in development since April)
- Aquitaine region and CUB (proposal)
- World Bank, to adapt it to the 11 countries around the Mediterranean (proposal submitted)

Lastly, version 2.0 of the game is also in the works, which adds an international dimension, better gameplay, improvements at the graphic level, ability for multiplayer action and an open source architecture to allow others to add extra modules.

- **Resources**:
  - Guide to the game: http://www.cap-sciences.net/upload/guide_clim_last.pdf
  - Educational booklet: http://climcity.cap-sciences.net/images/livretcomplet.pdf
  - Press kit: http://www.cap-sciences.net/pageseditos,234,left_74A2F5E7.html



Economics of the project

Development	
Total development cost	150,000 EUR budget for the entire project: game, exhibit and educational material. 100,000 EUR for the technical portion, the remainder being for design, fees, overhead, ad campaigns and salaries. The game took seven months to develop, and the exhibit and educational materials took around 14 months.
Profession's contribution to development costs	Roughly 10%
Sponsors (if any) and degree of involvement	Cap-Sciences self-financed between 10% and 20% of the project. The balance was funded by ADEME (government agency), the Aquitaine departmental council, GDF-SUEZ (national power company) and la Caisse d'épargne aquitaine Poitou-Charentes (bank).
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Game distributed for free. Also distributed on DVD and with the "*Atlas des changements climatiques*" (Atlas of Climate change) published by Editions Autrement, 2009 (which sells for 17 EUR).
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Distributed by a network of partners, promoted at trade shows, through viral marketing, work with schools and exhibits associated with the game's central theme.
Project's sales and marketing budget	Around 10%
Sales force	-
Geographical coverage	Global

7.4.3. The lost code

http://www.mcq.org/code/en/

- **Partner**: *Musée de la civilisation* in Quebec City, Canada. www.mcq.org/
- **Project objectives**: the aim of "The lost code" is to stimulate user's interest in the socio-economic history of French Canadians, from 1790 to the present day.
- **Designer**: iXmédia is a Quebec-based web agency that was founded in 1994.
- **Release date**: 2008

Partnerships	
Technological partnerships	-
Trade partnerships	Other museums
Sales partnerships	-

Game description

- **Background**: this free online games plunges the player into a tale of espionage. She must hunt for information to solve the riddles that will allow her to break the access codes for the three museums where the game is set.
- **"Educational" component**: learn while having fun.
- **Gameplay**: this is an interactive adventure game whose visuals are digital photographs. A historian has mysteriously disappeared after having set up the security systems for three museums in Quebec. The players must find these access codes. To do so, they use their computer to control a flying camera that moves through the different locations, collecting information that will allow them to solve the riddles and break the codes. The game takes players through the history of the province chronologically, allowing them to learn as they go. The game is also designed to serve as a teaching tool. It is a single player game that is available in both French and English.

Economics of the project

Development	
Total development cost	Total cost not disclosed, but budget broken down as follows: Research and writing: 20%, concept and development: 68%, educational concept and writing 5%, promotion 3%, evaluation 4%
Profession's contribution to development costs	-
Sponsors (if any) and degree of involvement	Department of Canadian Heritage (production of the site), partnership with Manoir Mauvide-Genest, Seigneurie des Aulnaies, Musée L'Aventure Leclerc (museums where the game is set), iXmédia and Télé-Québec
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Game distributed for free
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Launch party at a trendy nightclub, distribution of printed badges, press releases and advertisements
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Canada (Province of Quebec)

7.4.4. EcoReporter: A la découverte d'Andromède

(Mettre lien)

- **Partner:** SEM Constellation/office of the Mayor of Blagnac (France) – SEM Constellation is a semi-private enterprise responsible for administrating urban development projects in the Toulouse region. Its flagship project is the eco-neighbourhood of Andromède, located in the municipality of Blagnac.
- **Project objectives:** Promote the eco-neighbourhood of Andromède to people in the region, while increasing awareness of the ecological dimension involved in developing this type of project. The client defined all of the topics that it wanted to address through this serious game.
- **Designer:** IRIT – University of Toulouse III / OKTAL (France)

  Institut de Recherche en Informatique de Toulouse, IRIT (Computer sciences research institute of Toulouse) and the firm OKTAL, which specialises in simulation and eLearning, pooled their resources with the client to produce this serious game.

  The following people were involved in the project:
  - a project manager, attached to the city hall of Blagnac
  - two directors of communication from SEM Constellation
  - a research scientist from the IRIT lab
  - a freelance graphic designer
  - a freelance musician
  - and part-time contributions from experts in the various fields covered in the "serious" aspects of the game
- **Release date**: May 2010

Partnerships	
Technological partnerships	Produced in collaboration with a computer sciences research lab, this project is part of a research process on serious game design methodologies.
Trade partnerships	The client involved two of its directors of communication, who are specialists in this eco-neighbourhood, to provide the "serious" dimension of the game. Outside experts (landscape architects, architects, etc.) also supplied their expertise when needed.
Sales partnerships	-

Game description

- **Background:** The game has the player act the part of a journalist whose assignment is to write an article on eco-citizenship. To do so, the player goes to the eco-neighbourhood of Andromède to meet with its residents and take photos, which will give her the information she needs to write the article, in the hope of having it published.
- **"Instructional" component:** Through the two directors of communication of SEM Constellation, the client defined all of the messages and values it wanted to transmit through the game. For instance: eco-friendly building techniques, neighbourhood planning, water management issues, etc. The client also wanted the serious game to allow the public to discover the geography of this new neighbourhood which is currently under construction, and imagine how it will look before it is completed.
- **Gameplay:** The player moves freely through the neighbourhood which is rendered in a 2D vector field simulation, and can visit some 20 "key" locations. After having taken photos of each location, the user will talk with residents, in the hope of gathering interesting information. These photos and information, which are automatically jotted down, can then be used to write an article. The player can submit a draft of her article to

her editor several times along the way. If the editor feels the article is interesting enough, it will automatically be published in a fictitious newspaper. Note that, when the game was produced, most of the locations did not yet exist. The virtual rendering of the neighbourhood was produced by the firm OKTAL.

- **Feedback:** The game is too recent to have received any significant feedback.

Economics of the project

Development	
Total development cost	Around €40,000
Profession's contribution to development costs	15% (estimate)
Sponsors (if any) and degree of involvement	No
Reliance on a specific source of financing and amount received	This project is part of a doctoral thesis that received a CIFRE training through research industrial agreement grant (***C**onvention **I**ndustrielle de **F**ormation par la **RE**cherche*), which is given by the French National association for research and technology (*Association Nationale de la Recherche et de la Technologie*) to projects that bring together university lab research and local businesses or authorities. This subsidy funds only a portion of the fees allocated to the client's use of a research scientist, but the production of the serious game is only one of several goals set by this R&D partnership. Brought down to the scale of the serious game, we estimate that the grant covered around 35% of the total development cost.

Business model	
Pricing strategy	Communication tool distributed for free over the Internet
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Free distribution of the serious game on two levels: • at the national level, via the web; • at the regional level on CD, backed by presence at local events. This serious game was launched officially at the "Luluberlu" festival that was held in the town of Blagnac's culture centre.
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	France, with particular focus on the Toulouse region

7.4.5. Enercities

http://www.enercities.eu/

- **Partner:** The project's initiator is Dutch organization Qeam, represented by Erik Knol: http://www.qeam.com
- **Project objectives:** The goal of this online serious game – which can be played on Facebook – is to increase awareness among young people of environmental and energy-related issues through some 50 teaching establishments, in the hope of affecting changes in their ecological attitudes and behaviour.
- **Designer:** Paladin Studios (http://www.paladinstudios.com) in the Netherlands, which was founded in 2005. Its CEO is Derk de Geus.
- **Release date:** June 2009

Partnerships	
Technological partnerships	Paladin studios
Trade partnerships	• Agencia de la Energía de Granada (Spain): http://www.apegr.org/ supplied the different parameters used in the game (e.g. energy efficiency ratio of wind farms and coal-burning plants, the benefits of public transport and recycling, etc.); • Akademie Klausenhof (Germany): http://www.akademie-klausenhof.org/ product testing and quality control; • Unified Vocational Training Centre of Cyclades (Greece): http://www.ncyclades.gr/ provided assistance throughout the project; • Ljudska Univerza Velenje (Slovenia): http://www.lu-velenje.si/ is in charge of the project's planning and implementation.
Sales partnerships	Lancaster & Morecambe College (United Kingdom): http://www.lmc.ac.uk/ is involved primarily in marketing the project.

Game description

- **Background:** This online game is available in six European languages: English, Dutch, German, Greek, Spanish and Slovenian. It can be accessed directly from the dedicated website or from Facebook – with users on the social networking site able to compare their scores. The principle of the game is reminiscent of SimCity. The player must create virtual cities, and thereby increase their knowledge of renewable energy sources for helping reduce pollution and face energy shortages, etc. It is a single-player 3D game, which requires users to install the Unity plug-in before playing.
- **"Instructional" component:** The partner wants to use this game to create:
  - a competitive energy through the competitions;
  - a shared-approach to problem solving;
  - a teaching tool for schools to enhance their educational programmes on environmental issues.
- **Gameplay:** set in a 3D environment reminiscent of SimCity. At the start of the game, the player has a small town and a bit of land. She needs to perform easy drag and drops to build new structures and expand the town. At the same time, she needs to manage the balance of population by taking account of their demands: low pollution, maximum amount of renewable energy sources, etc.
- **Feedback:** At may 2010, the game was played more than 10,000 times by 3,000 Internet users. Since the game's official launch, it appears that it gives students a good excuse to go on Facebook.

Economics of the project

Development	
Total development cost	1,458 437 EUR: 25% allocated to the game's design, development and installation on Facebook. The remaining 75% went to designing the pedagogical platforms for the game in the six European countries involved in the project, and to promoting the game and the associated research and analyses.
Profession's contribution to development costs	-
Sponsors (if any) and degree of involvement	Paladin Studios financed the remaining 25% through business initiatives tied to the game: e.g. looking for energy companies to sponsor the game. Parallel creation of the game that includes fee-based content (e.g. bonus level and sale of virtual goods). Also seeking to position itself with established business models on social networking sites, in the same vein as FarmVille and Mafia Wars.
Reliance on a specific source of financing and amount received	75% of the financing supplied by the European Commission's IEE programme (Intelligent Energy Europe): 1 million EUR.

Business model	
Pricing strategy	Game distributed for free
Revenue and revenue sharing	Around 20% of the money go to the game, and the remaining 80% are shared between educational material, marketing and impact studies.
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	The game is being distributed thanks to Facebook. Teaching establishments in the six European countries involved in the project help promote this edutainment game to both students and teachers.
Project's sales and marketing budget	Not disclosed
Sales force	-
Geographical coverage	Europe (available in six languages)

7.4.6. Energuy

http://www.aee.gouv.qc.ca/Energuy/game/

- **Partner:** Agence de l'efficacité énergétique du Québec http://www.aee.gouv.qc.ca/
- **Project objectives:** the goal of this serious game from Canada is to increase players' awareness of ways to save energy at home, and so to avoid waste.
- **Designer:** The Agence de l'efficacité énergétique du Québec (energy efficiency agency of Quebec) which identified 20 relevant gestures, and approved the serious content.
- **Release date:** September 2008

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** The game *Energuy* uses humour rather than a didactic approach to appeal to younger people.
- **"Educational" component**: Increase users' awareness of ways to save energy at home.
- **Gameplay:** Using her mouse, the player takes the hand of Engerguy – a male character who has been filmed and integrated into a décor based on altered photos. The player steers him towards different areas where there are opportunities to save energy: put the lid on a saucepan, turn out the lights in an empty room, etc. The player has two minutes to find 20 eco-friendly gestures. To do so, she will move *Energuy* through the different rooms of the house and make him interact with key areas. Each time the player finds the right gesture, *Energuy* does a happy dance. At the end of the allotted time, the player is given her eco-consumer profile.
- **Feedback:** According to François Lemelin, from the Communications department of the Agence de l'efficacité énergétique: "By the start of May 2010, 130,000 people had played the game since it launched. If we had to do it over again, we would have done much more PR. Plus, we would have used social networking sites to create more exposure for our character, *Energuy*, and gone more viral, using the game, a Facebook page, a blog, etc. All of this was thought about during the planning stage, but we had to make certain choices to be able to launch the campaign on time".

Economics of the project

Development	
Total development cost	Budget not disclosed. 80% spent on production: filming, post-production, sound, etc. and 20% on programming.
Profession's contribution to development costs	Outside skills for developing and deploying the application.
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Game distributed for free on the Web
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Web and viral marketing campaign
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Province of Quebec (Canada)

7.4.7. Energy City

http://www.jason.org/digital_library/8239.aspx

- **Partner:** The Jason Project is a scientific research programme created in 1989 by Dr Robert Ballard, an oceanographer and explorer who discovered the shipwreck of the Titanic. The Jason Project designed and developed the game.
- **Project objectives:** increase the player's awareness of renewable energy sources.
- **Designer:** Filament Games is a development studio based in Madison, Wisconsin that specialises in video games.
- **Release date:** November 2009

Partnerships	
Technological partnerships	-
Trade partnerships	National Geographic
Sales partnerships	-

Game description

- **Background:** the goal of the game is to discover which are the best sources of energy to ensure the sustainable development of a city.
- **"Instructional" component:**
  - teach players about the different renewable energy sources;
  - pass on the message that different power solutions need to be adopted, depending on a city's configuration.
- **Gameplay:** this is a single player isometric 3D game. The player first chooses between six cities, each of which represents a different case scenario where specific solutions need to be put into place. The player must then decide which source of energy to use to power the city: coal, biofuel, etc. Once the city has received its energy quota, the player moves onto the next level. As she progresses in the game, the player discovers the requests and advice given by different members of the local population: use more renewable energy sources, produce more energy, avoid pollution, etc. At the end of the game, the player finds out her score which is posted online, so players can compare their results with others and see if they made the "energy visionary" leaderboard.
- **Feedback:** at the start of May 2010, the game had been played some 20,000 times. According to John Gersuk, Vice-president of The Jason Project: "We are pleased by the project's success so far. In addition to positive feedback from teachers and students, Energy City/Operation: Infinite Potential received two 2010 Distinguished Achievement Awards from the Association of Educational Publishers. A number of organizations and blogs link to the game, including the National Oceanic and Atmospheric Administration. Teachers find that the game offers a good balance between science lessons and fun".

Economics of the project

Development	
Total development cost	Total cost: between 50,000 and 100,000 USD. Scientific content and development: 15%; script: 15%; sound: 2.5%; game design: 15%; programming: 20%; testing and Web integration: 10%; computer graphics: 20%; distribution: 2.5%
Profession's contribution to development costs	15%
Sponsors (if any) and degree of involvement	M. Ewing Kauffman Foundation of Kansas City, Missouri and National Geographic
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Game distributed for free online
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Social networking sites: Facebook and Twitter – teaching workshops as part of professional training programmes
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	USA

www.idate-research.com © **IDATE 2010**

7.4.8. FloodSim

http://floodsim.com/

- **Client:** Aviva – formerly Norwich Union (the UK)
- **Project objectives**:
  - Increase the British public's awareness of the UK's risk of flooding, and the policy decisions needed to make sure the UK is protected against floods.
  - Achieve maximum media coverage.
- **Game designer:** PlayGen, established in 2001. This UK-based development studio specializes in serious games, social games and simulations. See http://playgen.com
- **Release date**: 2008

Partnerships	
Technological partnerships	
Trade partnerships	British insurance company Aviva has called on several of its clients and experts in the area of flooding. Fishburn Hedges www.fishburn-hedges.com: a PR firm that specializes in policy relations.
Sales partnerships	

Game description

- **Background:** as a result of the growing impact of climate change, there were a number of severe floods in the UK in 2007 which caused damages that led to an estimated £3 billion in claims for insurance companies. The goal of this serious game is to encourage better public awareness of the wide range of flood policy and interventions available. Leading to a better understanding of them and to ask local authorities to help finance infrastructure, better drainage systems, etc. Created in Flash, this game can be played online for free.
- **"Instructional" component:**
  - understanding flood-related risks and policies;
  - learning technical and social solutions for better handling future floods.
- **Gameplay:** a single-player game with competition against other player. The player assumes the role of the Flood Tsar of the country, essentially an imaginary highest ranking policy-maker who has to make decisions over a simulated period of three years relating to the risks of future flooding, to past floods and to demographic and economic issues. The player can choose from two main types of policy decision: regional or national. At the end of each period, a consultant assess the decisions that the player has made throughout the game, with graphics that allows the player to compare their results to those obtained by others who have played the game.
- **Feedback:** From 2008 to the start of 2010, more than 100,000 people played the game. At the start of 2010, 1,000 people a month were playing FloodSim. With respect to media coverage, 200 articles have been written about it, there have been several radio interviews and coverage by blogs. In terms of ROI, the media coverage the game has received has been ten times cheaper than a traditional advertising campaign that achieved the same results would have been.

  The media target was met and the hope for PlayGen is to repeat this marketing experience. From a gameplay standpoint, the idea now is to develop the multiplayer angle for future serious games. According to PlayGen, this approach should help increase the online buzz surrounding the games thanks to social networking sites. The

company is currently developing a new serious game called FloodManager for the American Associationof Floodplain Managers.

- **Resources:** http://www.aviva.com/investor-relations/news/4274/

Economics of the project

Development	
Total development cost	Approximately £80,000 (including internal costs) Production of the game itself cost £40K, or 50% of the total budget – broken down as follows: 20% for game design, 50% for development, 20% for testing and 10% for marketing
Profession's contribution to development costs	50% (estimate)
Sponsors (if any) and degree of involvement	No
Reliance on a specific source of financing and amount received	Aviva provided all the financing for this project which earned the support of the Minister for the Environment, Mr. Phil Woolas.

Business model	
Pricing strategy	Distributed for free
Revenue and revenue sharing	-
Sales target	The prime target was broad media coverage
Target breakeven point	-

Marketing	
Marketing strategy	Viral marketing/seeding
Project's sales and marketing budget	£4,000
Sales force	-
Geographical coverage	

7.4.9. Global Conflicts: Sweatshops

http://www.globalconflicts.eu

- **Client:** Global Conflicts - Denmark
- **Project objectives:** denouncing child labour in the clothing industry in Bangladesh.

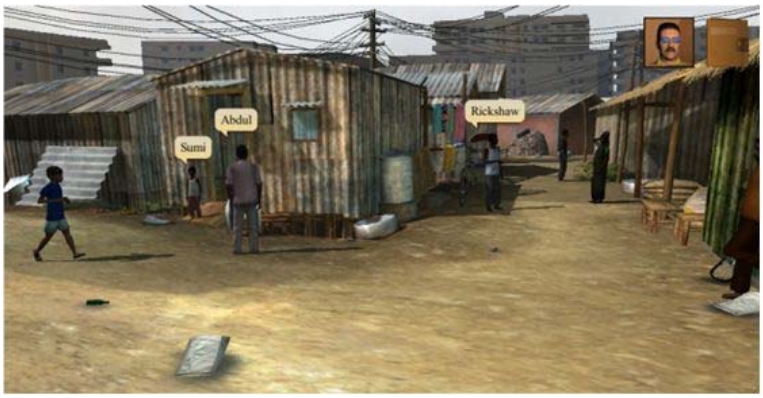
  4.9 million children between the ages of 5 and 14 work in Bangladesh. The country's state of deep poverty sustains ongoing child labour, despite it being illegal. This game also offers lessons in citizenship, for instance in the areas of human and citizens' rights.
- **Designer:** Serious Game Interactive - Denmark
- **Release date:** November 2009

Partnerships	
Technological partnerships	Freelancers for the voices and music
Trade partnerships	Experts on working conditions in Bangladesh
Sales partnerships	-

Game description

This serious game targets the dismal working conditions in Bangladesh. Through the game, the player discovers the country's culture and the reasons for sweatshops that use child labour.

- **"Instructional" component:**
  - Increase teenagers' awareness of child exploitation in sweatshops in Bangladesh.
  - Increase awareness of human rights
- **Gameplay:** Global Conflicts: sweatshops is a 3D single-player game. The gamer plays the role of a representative of a European leatherwear company who received a letter a few days earlier that claimed a little girl was working in the company's tannery in Bangladesh. The player must investigate the case and find proof of child labour, in addition to finding a solution that will not damage the tannery. Game time of around 35 minutes.
- **Feedback:** According to Mikkel Lucas Overby, the Sales Director for Serious Game Interactive: "We have achieved the goals set by Danida. We have a thousand annual subscriptions from schools. We estimate that 33% of these schools will extend their subscriptions to at least three years. We have 1.200 trial accounts for the whole Global Conflicts game series not just Sweatshops."
- **Resources:** Product info on the game: http://www.globalconflicts.eu/images/factsheet/1000009.pdf



Economics of the project

Development	
Total development cost	Between 50 K EUR and 100 K EUR
Profession's contribution to development costs	The experts worked on the project for free
Sponsors (if any) and degree of involvement	Danida (Danish International Development Agency, which is part of the Danish Ministry of Foreign Affairs) provided 50% of the financing
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	9.95 EUR for 1 licence, 49.95 EUR for 30 licences, 79.95 EUR for 1 school licence
Revenue and revenue sharing	Not disclosed
Sales target	The target is to reach at least 500 schools internationally. At May 2010, 10% of Danish schools (app. 200) have been reached. Palestine and Danida was satisfied with this.
Target breakeven point	Not disclosed

Marketing	
Marketing strategy	Publicity by taking part in conferences and advertising online via Google AdWords
Project's sales and marketing budget	Around 3,000 EUR
Sales force	-
Geographical coverage	Project partner Danida is targeting only the Danish market. Reaching the international market is viewed only as a bonus. The game is in English and Danish.

7.4.10. Hutnet Island

http://www.seriousgamesopinions.org/

- **Partner:** France Telecom Orange Labs, under the management of Valérie Maffiolo.
- **Project objectives:** increase players' awareness of the consequences of excessive paper consumption, by making them aware of the impact of deforestation on human life.
- **Designer**:
  - Design and development: Orange Labs (Valérie Maffiolo and Julian Alvarez)
  - Computer graphics: Toma Danton
- **Release date:** December 2008

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** Hutnet Island is a free online game where the player's mission is to become more ecologically aware: adopting new technologies to decrease paper consumption, and so to save the trees.
- **"Instructional" component:** Increase ecological awareness and inform users of eco-friendly habits.
- **Gameplay:** This is a single-player 2D game. The player starts by listening to a speech by the worried Mayor who asks all of the citizens of his island to help save it by adopting new technologies (the Web, e-mail, etc.). If they want to save the island from deforestation, the player needs to click on the roofs of the huts in the village when they turn red, a sign that the people inside are not yet good eco-citizens.

  This game has also been adapted for play on a multi-touch table. In that version, up to six players can sit around a table to collaborate and work together to click on the different houses.
- **Feedback:** The game has been played more than 40,000 times during the six months since its launch.

Economics of the project

Development	
Total development cost	Less than 50,000 EUR
Profession's contribution to development costs	25%
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Distributed for free on gaming portals
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Distributed on gaming portals (Serious Games Opinions, Whosegame, Kongregate…), exposure on blogs and on TV (LCI).
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Global

7.4.11. Je tue un ami.com

http://www.jetueunami.com/13emeRue/

- **Partner:** 13ème Rue is a French cable TV channel that was created back in 1997. It is owned by the NBC Universal Global Network. 13ème Rue is working to build a strong partnership policy around its central themes of crime, action and suspense by associating itself with the latest movie, DVD, video game, book and comic book releases in that genre, and with festivals, trade shows, exhibits, etc. 13ème Rue also exists in Germany, Benelux and Spain. http://www.13emerue.fr/la-chaine/lhistoire-de-la-chaine/2.htm
- **Project goal:** the goal is to pique Internet users and TV viewers' interest in the criminal investigations on offer each day on the channel.
- **Designer:** BETC EURO RSCG is a French marketing agency that was created in 1994.
- **Release date:** October 2009

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** This serious game, which can be played online for free, puts the player in the position of hiring a virtual assassin to kill a friend. A promo for the channel, 13ème Rue, then runs at the end of the game. Je tue un ami.com (kill a friend.com) is restricted to people over the age of 16.
- **"Instructional" component:**
  - Promote 13ème Rue
  - Update the channel's brand image
- **Gameplay:** the player starts by recruiting a hired gun. He then gives the assassin information on the person he wants to kill, virtually (their name, e-mail, etc.), and sends in photos of himself and of his future victim. The person who has hired the killer can then watch the video of the murder. The victim can be murdered in several different ways, depending on which assassin has been hired: shot with a rifle with a telescopic sight, hit with 2x4s, drowned in liquid cement, decapitated with a sword… In each scenario, the victim is played by an actor on whose face the digital photo of the victim is overlaid. Once satisfied with the result, the player approves his "order" and the victim is sent an e-mail informing them of their murder. After the victim has viewed the video of their murder, the name and mobile number of the friend who ordered it is displayed. He then watches as his friend is arrested for the crime. The game ends with a promo of 13ème Rue, and its crime series.
- **Feedback:** Fabien Saillant, Marketing Director of the NBC group explains that, "the goal was to promote the channel, 13ème Rue, and its focus on crime dramas. The result has been that, since it launched, the game attracted 20 million visits with an average connection time of close to half an hour."

Economics of the project

Development	
Total development cost	Estimated cost of between 100,000 and 500,000 euros. 50% for producing the scenes and 50% for developing the website.
Profession's contribution to development costs	n.a.
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Game distributed for free; funded entirely by NBC Universal
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Viral marketing: Internet users promote the game to their network of friends. It was the marketing agency, BETC, that came up with the concept for the game, after having explained the concept of viral marketing to the client.
Project's sales and marketing budget	"No ad time was bought or promotion done on the channel itself. PR was used to launch the game (press release with the murder of our press liaison…). Then came the virtual murder of a number of bloggers, who then helped promote the game. And that's how the buzz got started," explains Fabien Saillant.
Sales force	-
Geographical coverage	France and Benelux

7.4.12. Moonshield

http://www.moonshield.com

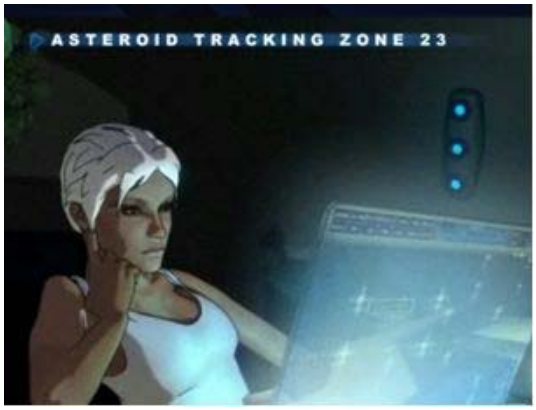
- **Client:** The Thalès Group, a French company created in 2000, specialises in the manufacture and marketing of equipment and electronic systems for the aeronautics, naval and defence sectors. The Thalès Group employs nearly 67,000 people and recorded a sales turnover of 12 billion EUR in 2007. http://www.thalesgroup.com/
- **Project objectives:** this online game is intended to increase the visibility of The Thalès Group and to aid in the recruitment of 7,000 engineers per year, starting in 2010.
- **Designer:** KTM Advance France is a company created in 1995 which specialises in e-Learning solutions, and which designs and conducts interactive training schemes, remote multimedia and serious games. The company used of a subcontractor for the 3D elements of the game and for PHP database development. The final phase of programming required the services of several independent programmers.
- **Release date:** October 2008

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

This is an online strategy game in which the player must build a lunar station to protect Planet Earth from meteorites. This approach aims to attract young engineers for recruitment.

- **"Instructional" component:**
  - Raise the profile of the Thalès Group.
  - Aid in the recruitment of engineers
  - Illustrate the various activities of the Thalès Group
- **Gameplay:** The game is set in the near future, in August 2029. An approaching asteroid threatens to ricochet off Mars and crash down to Earth. The player takes on the role of leader of the lunar base station and must marshal all the scientific resources of the Thalès Group to avoid a catastrophe, including setting up systems to detect and destroy meteorites and to protect the lunar base and its colony. The goal is to get the highest score possible.



Economics of the project

Development	
Total development cost	Entirely financed by the Thalès Group. 400,000 EUR: Project management: 10% - game design: 10% - programming: 30% - trailer: 15% - graphics: 20% - music: 7% - PHP: 8%
Profession's contribution to development costs	10%
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Game distributed for free on a dedicated website
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Viral marketing
Project's sales and marketing budget	Not disclosed
Sales force	-
Geographical coverage	Europe

7.4.13. SIMURENOV

http://www.simurenov.fr/

- **Client:** *Fédération française du bâtiment*/French Building Federation (FFB) – Rhône-Alpes region. FFB handled the game's promotion and distribution.
- **Project objectives:** SIMUrénov (renovation simulator) is a serious game whose purpose is to increase users' awareness of how to make a home more energy efficient, through 16 home renovation projects.
- **Designer:** NetDesign is an web design agency located in Annecy (Haute-Savoie) that offers a range of web-related services: web marketing consulting, web design, graphic design, Flash animation, online games, web development, e-business, CMS. For this project, Net Design provided:
  - Consulting and distribution strategy for the game:
    - During the first six months, distribution through interactive terminals and a USB key, the target audience being Building Federation members (FFB official stand at trade shows, reception desk at FFB regional offices, various regional events, etc.)
    - After that: distribution online to the public, via the SIMUrénov.com website
  - Interactive design: script, game design, storyboarding
  - Production of the game: 2D and 3D graphics, sound design and flash development
  - Monitoring, testing and managing the project
  - Website design and production
- **Release date:** February 2009

Partnerships	
Technological partnerships	NETDESIGN
Trade partnerships	FFB/French Building Federation
Sales partnerships	

Game description

- **Description**: In this free online game, the player is the owner of a house that she wants to renovate to make more comfortable and more energy efficient.
- **"Educational" component:**
  - teach users to choose the best energy solutions, to support sustainable development when performing home renovations;
  - show that a home's insulation needs to be improved before improving heating systems with renewable energy sources.
- **Gameplay:** at the start of the game, the player must choose which work will be done: insulation (from outside, inside, the roof, the floors, etc.), technical equipment (ventilation, furnace, etc.), renewable energy sources (solar panels, geothermal energy, earth tubes, collecting rain water, etc.) and so on. The player has 10 minutes to made the best choices for creating an energy-efficient home.
- **Feedback:** According to Nicolas Cortesi, spokesperson for the FFB Rhône-Alpes unit for sustainable development and trade representation, "the launch of SIMUrenov at the BlueBat trade show in February 2009 was a great success, both in terms of media coverage and the interest it elicited from visitors to the show. As a result, it was decided to make the game available for free on the Web (www.simurenov.fr). In terms of numbers, 1,500 USB keys containing the game were distributed, and close to 13,000 people have visited the site and tried the game since it launched. The game has also been

showcased at several trade shows in the Rhône Alpes region and across France, to several hundred people each time".

According to David Boyadjian, of the firm NetDesign, "The game has been attracting interest since February 2009, and there has been a steady stream of visitors to the site (between 1,000 and 2,000 a month)."

Economics of the project

Development	
Total development cost	€50,000 Broken down as follows: consulting and strategy: 3% interactive design and project management: 28% graphics: 25% development: 34% sound design: 10%. Development time: 5 months
Profession's contribution to development costs	3%, or 80 man days
Sponsors (if any) and degree of involvement	ADEME (30%), Rhône-Alpes region (30%), programme co-financed by the European Union (European regional development fund)
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Completely free
Revenue and revenue sharing	n.a.
Sales target	n.a.
Target breakeven point	n.a.

Marketing	
Marketing strategy	Three different target audiences (interested public, companies involved in renovations and young apprentices in the construction sector)
Project's sales and marketing budget	€10,000 (USB key + 4 interactive terminals)
Sales force	n.a.
Geographical coverage	Rhône-Alpes region to start, then the whole of France

7.4.14. Stop disasters!

http://www.stopdisastersgame.org

- **Partner:** The United Nations
- **Project objectives:** reduce the number of victims of natural hazards through prevention and increasing public awareness.
- **Designer:** Playerthree is a London-based studio that was created in 2001 and run by David Streek and Pete Everett. http://www.playerthree.net/
- **Release date:** March 2007

Partnerships	
Technological partnerships	-
Trade partnerships	The ISDR (International Strategy for Disaster Reduction) brings together a number of organisations, universities and institutions for a common purpose: to reduce the number of dead and injured by disasters triggered by natural hazards.
Sales partnerships	-

Game description

- **Background:** The purpose of this Serious Game is to help the player increase their awareness of the fact that using common sense in regional planning and development can help save lives and limit the impact of natural hazards.
- **"Instructional component**:
  - Increase public awareness of regional planning strategies that help limit the damage caused by natural hazards;
  - Teach the public ways to avoid having natural hazards become disasters.
- **Gameplay:** Initially a single-player, online 2D Flash game. The player begins by choosing between five scenarios: a wildfire, flood, hurricane, earthquake or a tsunami on the five continents, and a level of difficulty (easy, medium, hard). Their role is then to plan and build the safest possible environment for the population, by organizing and outfitting the area they are responsible for in such a way as to minimize the potential impact of a natural hazard. They must therefore control construction to prevent homes from being built in the most vulnerable areas, for instance – such as bungalows on the beach before a tsunami. They must then reduce the impact of the hazard by informing the public of potential dangers, for which the *Stop Disasters Game* supplies the player with a number of tips and educational messages.
- **Feedback:** As of April 2010, the game had been played 80 million times since it first launched. These very good results can be attributed to the positive feedback from schools and good press coverage – e.g. on the BBC.
- **Resources:** http://www.ac-dijon.fr/

Economics of the project

Development	
Total development cost	Around 200,000 USD: 30% design, 50% code, 10% research, 10% website. The initial game budget was 100k USD and after various additional works it worked out around $200k USD of which *Playerthree* contributed about 60kUSD in his own time..
Profession's contribution to development costs	10%
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	Financed entirely by the UN

Business model	
Pricing strategy	Game distributed for free over the Web
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	The ISDR ran its own advertising campaign
Project's sales and marketing budget	Not disclosed
Sales force	-
Geographical coverage	Southeast Asia, Latin America, Europe, USA and Russia

7.4.15. Virtual walking the pens

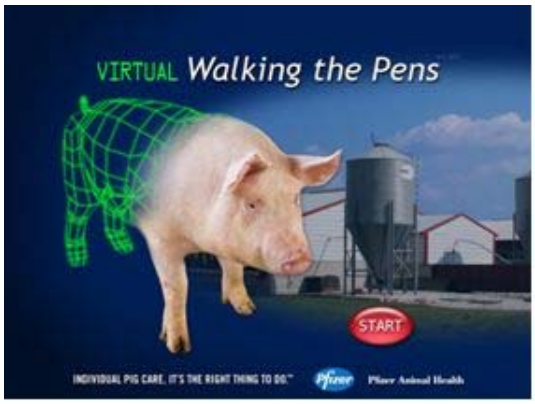
http://www.virtualwalkingpens.com/

- **Partner:** ForgeFX is an American development studio directed by Greg Meyers and Adam Kane who have surrounded themselves with programmers, artists and experts. (For more information: www.forgefx.com/about/company_who_we_are.htm)
- **Project objectives:** this serious game is a simulation that helps swine producers to better manage the health of their livestock to achieve more profitable production.
- **Designer:** Pfizer Animal Health is one of the largest makers of human and veterinary pharmaceuticals.
- **Release date:** June 2009

Partnerships	
Technological partnerships	-
Trade partnerships	Carthage Veterinary Services
Sales partnerships	-

Game description

- **Background:** this 3D serious game is a simulation of a pig pen. It allows users to work on a virtual farm and diagnose and treat the pigs from when they show the first symptoms of a disease, the goal being to achieve a more profitable business.
- **"Instructional" component:**
  - Increase awareness of the ties between the pig farm's profitability and the decisions made by the user, and help improve them;
  - Increase awareness of the diseases that can affect the swine and take the right measures to care for them.
- **Gameplay:** the ability to identify and treat diseases quickly is crucial to a pig farm's profitability. This 3D simulation teaches swine producers how to deal with illnesses among their livestock by offering a risk-free way to experiment with several solutions without affecting their actual animals or staff. Because the virtual pig pen is entirely functional, it provides a valuable tool for teaching and training.
- **Resources**:
  - www.forgefx.com/
  - http://www.farms.com/



Economics of the project

Development	
Total development cost	Between 150,000 and 250,000 USD. The budget was broken down as follows: computer graphics: 30%, programming 40%, game design: 30%
Profession's contribution to development costs	Produced in-house by Pfizer Animal Health
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	It is an edumarketing (education + marketing) game, and so distributed for free.
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Game distributed through a dedicated site. Press releases handled by Pfizer.
Project's sales and marketing budget	Not disclosed
Sales force	-
Geographical coverage	USA

7.4.16. WinGineer

http://www.wingineer.fr/

- **Client**: ESIEA a private State-approved school that was founded in 1958 by engineer, Maurice Lafargue. It trains engineers in new technologies: computer sciences, electronics and automation. ESIEA has three campuses: Paris, Ivry-sur-Seine and Laval.
- **Project objectives:**
  - To promote the school in general, and especially to future students (increase the number of applicants);
  - Showcase the school's educational *savoir-faire* (presenting courses in an appealing way).
- **Designer:** the firm Inveniétis handled the development and operation of the website that hosts the game. Students from the school helped to assess the game's difficulty and to find any potential weak spots (cheats)… the rest was done in-house: the game's design and development, development and operation of the online game engine, community management (support forum for contestants).
- **Release date:** January 2009

Partnerships	
Technological partnerships	Inveniétis (development and operation of the website that hosts the annual contest)
Trade partnerships	-
Sales partnerships	-

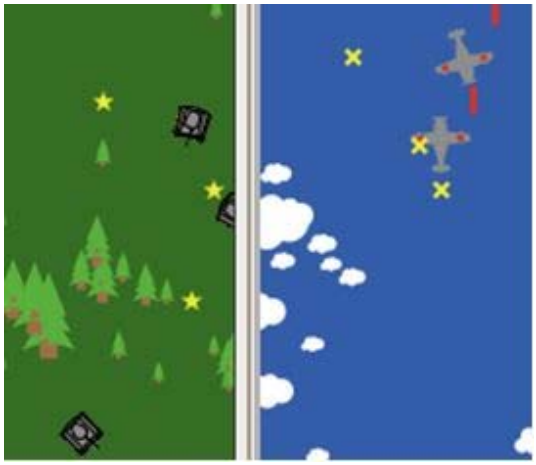
Game description

- **Presentation:** WinGinner is an annual contest that has been held since 2009. It challenges contestants to programme the most efficient form of artificial intelligence (AI) they can. The contest has a different theme each year, the goal for the contestants being to win a five-year scholarship to the school. The challenge for ESIEA is to promote the establishment in an original way to potential engineering students interested in a career in computer sciences, electronics or automation.
- **"Instructional" component:**
  - promote the school in an original way to potential undergraduate students;
  - create a contest built around AI programming;
  - showcase the ESIEA engineering school.
- **Gameplay:** each contestant must programme the artificial intelligence of robot software that operates within a 2D video game. The programming language used is Netlogo. In 2009, the challenge was to programme the flight of a butterfly so that it could gather nectar from as many flowers as possible, without being intercepted by bees. In 2010, contestants must programme the movement of a military tank, its artillery and its attack and defence systems. The goal is to collect the maximum number of stars that appear in an arena.
- **Feedback:** According to Franck PISSOCHET, Director of communication for the ESIEA group: "With very limited resources, by the second year, this contest achieved its goal (improving the school's profile with young high school students who are passionate about computer programming).

  For next year's contest, we are looking at the possibility of forming a partnership, either with an institution (bank, etc.) or an IT industry player (software or game publisher, service bureau, etc.). We are also considering committing more in-house resources (students, other IT professors) since, the more applicants

the contest attracts, the hard it becomes to manage and becomes very time-consuming for its inventor (Hubert Wassner) and his team."

- Resources:
  - Press release (in French) http://www.wingineer.fr/....pdf
  - Poster from the 2010 contest: http://www.wingineer.fr/....pdf



Economics of the project

Development	
Total development cost	5 to 10,000 EUR. This includes PR + hosting and developing the website. To this must be added: • contest prizes: five-year scholarships for the three finalists, including a full scholarship for the winner, 50% for the 2nd place winner and 25% for the 3rd place winner. School fees are 7,450 EUR a year, so the prizes equal a total of more than 65,000 EUR for each contest. • salaries of the teachers and marketing teams involved in the operation.
Profession's contribution to development costs	No estimate as yet
Sponsors (if any) and degree of involvement	Planned for year three of the contest (2011).
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Distributed for free
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Running an annual contest to generate viral marketing
Project's sales and marketing budget	Less than 10,000 EUR. Communication via the press and the web (blogs like Presse Citron)
Sales force	-
Geographical coverage	France

7.5. Outlook

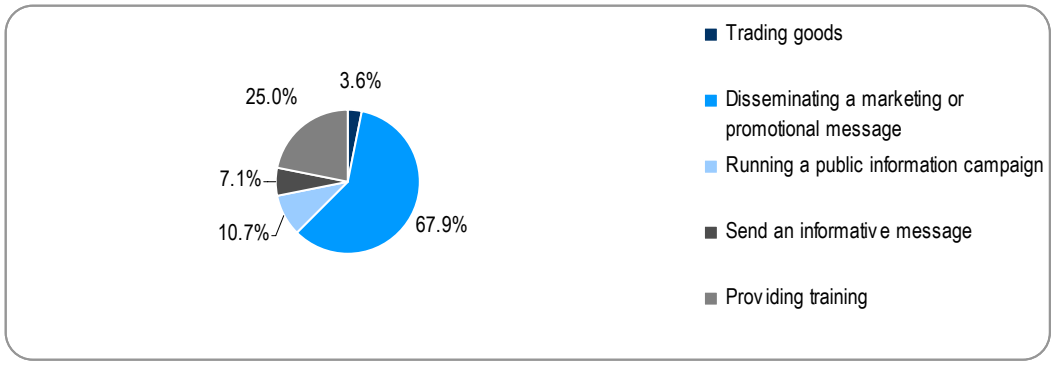
It is interesting to know that gamers are not necessarily averse to having ads in video games. A survey performed in 2006 by TNS Sofres revealed, for instance, that 83% of gamers accepted ads is they were incorporated into the game in a coherent or unobtrusive way (e.g. on a race course, billboards in cities, etc.). Meanwhile, 76% of players were accepting of product placement provided it enhanced the game in some way, and did not alter the course of the action. These findings would seem to open the way to significant development for in-game advertising, a market that the Kelsey group forecasts will be worth 1 billion USD by 2012. This figure covers both in-game advertising and advergames, although only the latter is part of the serious gaming market. The market segment linked to advergames is growing only slowly, going from 339 million to 350 million USD between 2010 and 2012, or by only 3% in two years. In-game advertising, on the other hand, enjoyed over 10% growth during that same period, with a market that increased from 589 million USD to 650 million USD[16]. In-game advertising is not confined to entertainment games, however, but includes serious games as well, namely edumarket games. We are seeing more and more edumarket games every year. In the first half of the noughties, there were very few of them and many, such as *Petites Histoires de Dents*, were used to promote a brand, combined with an educational and informative message. In the second half of the decade, their numbers began to grow: *Food Force*, *Technocity*, *Stop Disasters!*, *Planet Green Game*, *Cisco Binary game*… and are expected to continue to do so in the twenty-teens. Two elements in particular would seem to indicate this: first the fact that the number of serious games in general is increasing every year. And, second, the edumarket game is a marketing strategy that allows companies to do more than just promote their brand. Providing users with useful content is a way of increasing the chances of success for a viral marketing campaign. This is something that marketing agencies will not fail to recognize, and many have already adopted similar strategies for building audiences on websites. It should nevertheless be said that, although edumarket games are on an upwards trajectory, they are still an only tiny market, accounting for only 1% of in-game advertising in 2010.

[16] http://advergames.wordpress.com/2008/03/21/ingame-vs-advergame-definitions-et-marches/

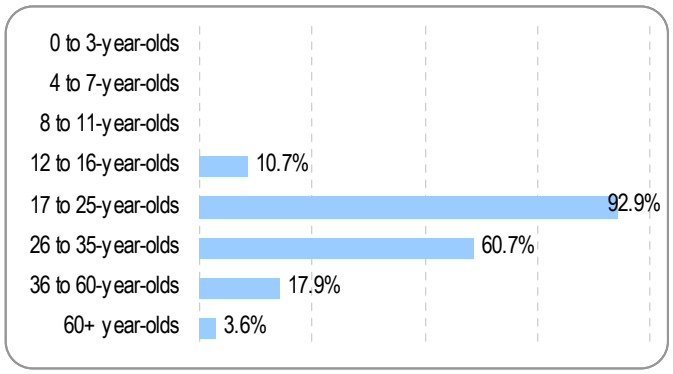
8. Serious games for public safety and defence

8.1. Statistical data

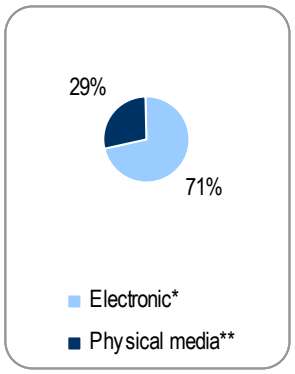
Plans for use



User segmentation by age group

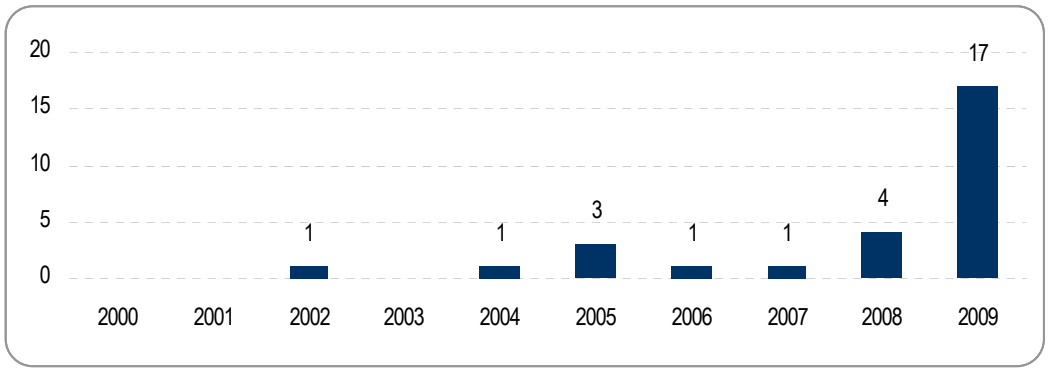


Distribution method/medium



*Browser, download…
** CD-Rom, console…

Growth of the number of titles published



Source: IDATE, based on Serious Game Classification http://serious.gameclassification.com

Serious games devoted to defence encompass three main features: showcasing the armed forces, serving as a recruitment tool and providing training to military personnel. The flagship game in this category is *America's Army*, which incorporates all three of these features. Released in 2002, this military game is distributed for free on the Web, and had been played by 9 million users as of mid-2010. Other countries, notably European ones, have also commissioned military games which incorporate the same functions, although communication strategies may vary. As concerns the training aspect, the main sector-specific requirement for these serious games is to provide configurations that can be customised, while making them more immersive. This requirement also applies to public safety-related games, most of which are used for training members of the profession.

The US military has been actively supporting the serious gaming industry since 2002 by commissioning military games through the *Defence Advanced Research Projects Agency* (*DARPA*), with examples that include *America's Army*, and by holding annual tournaments to showcase the serious games. As a result, there are strong ties in the United States between the army and serious games, but it should be pointed out that, despite its support and the games it commissions, which can run in the several million USD, the defence sector is only one segment of the serious games market. Military games generally have at least one of the following three features: showcasing the army, serving as a recruitment tool, providing military personnel with training. Public safety games are devoted almost exclusively to training different types of personnel.

8.2. Market development status

When the first *Serious Game Summit* opened its doors in Washington in 2004, 70% of those in attendance were from the military. Small and medium enterprises (SME) were also on hand at the conferences which were focused largely on obtaining funding, particularly from *DARPA*[17]. This organization, which is the development arm of the US Department of Defense (DoD), is in charge of issuing the tenders for defence contracts and identifying innovations coming out of SMEs and promoting them. The American government is therefore the biggest client for this market. This approach is rooted in the directives contained in the Small Business Act. Each government department in the US, be it defence, NASA, agriculture, justice… must earmark 10% of the contract funds in its budget to SMEs. The size of the contracts given to SMEs range from 2,500 to 100,000 USD, and even more in some cases – the goal being to stimulate the development of small businesses.

At the same time, to move away from a business model based chiefly on purchase orders, the American army organizes events like the *Serious Games Showcase*, which is an annual competition that serves to promote the best military games, as well as the best games devoted to teaching, healthcare and industry in particular.

8.2.1. The market's flagship game: *America's Army*

America's Army was released on July 4th 2002, which is Independence Day in the United States. At first glance, it appears to be a classic first-person shooter game. Initially available only online, each game opposes two groups of soldiers with a specific mission (rescuing a hostage, killing an enemy…), putting them into the category of tactical shooter games. This means that, in addition to shooting and moving, a relative "realism" tempers the pace of the action: shooting while running makes it hard to be accurate, and two or three bullets are enough to kill an opponent. Technologically advanced and updated regularly, *America's Army* rivals the biggest commercial military games with a AAA label. But it is distributed for free.

[17] http://www.darpa.mil

America's Army

Why the choice to distribute it like this? Beyond its appearance of a game designed to entertain, *America's Army* is in fact a 7 million USD promotional and recruiting tool for the US military. The game is also used by the army for training purposes. The mechanisms of the game are a perfect reflection of the training that recruits are given, and the use of the game constitutes an exercise that is perfectly adapted to basic training in the US Army. Rumour has it that the civilians who play the game regularly online are formidable opponents for soldiers in training. Although *America's Army* is not the first game to combine a fun and a serious dimension, it is the first to have such a big budget and to have met with so much success: more than 9 million players as of May 2010, according to the official site. It is therefore often considered the starting point of the current serious game movement.

Clearly pleased by the effectiveness of the game, the US created versions of it for other platforms as well. A version for the *XBox* entitled *America's Army: Rise of a Soldier* (2005) was published by Ubisoft, followed by *America's Army: True Soldier* (2007) for the Xbox 360. That same year, GameLoft (an Ubisoft subsidiary) designed a version for mobile phone, while an arcade version was produced by the firm GlobalVR. These retail market products have been enhanced with a single-player mode that simulates the experiences of an actual soldier who fought in the war in Afghanistan in 2001.

8.2.2. Other serious military games

America's Army is not the only serious military game, with others that include *Virtual BattleSpace 2* (Bohemia Interactive, 2007) produced by the creators of *Operation Flashpoint* (Bohemia Interactive, 2001), a war game that enjoyed tremendous success. Bohemia Interactive's strategy consists of developing both consumer market and "professional military" versions of its combat simulation games. There are also games devoted to tactical and strategic training, such as mōsbē (BreakAway, 2007), which creates simulations for military generals and those responsible for planning first response strategies. Based on topographic maps, any geographical area can be quickly recreated to be able to manage units deployed there – be they fire-fighters or soldiers.

Following in the footsteps of the US army, several other national military corps – in the UK, the Netherlands, Sweden and France, among others – have adopted the serious game approach for both training and communication purposes.

8.3. Sector-specific aspects

Among the serious games devoted to defence and public safety that are profiled in this report, the sector-specific aspects include use of the video game to:

- **promote the army and its values** (*804, Special Officer Academy, Team*)
- **attract new recruits** (*804*, *Special Officer Academy*, *Team*)
- **provide training** (*UK Navy serious game*, *RescueSim*, *Virtualbattlespace 2*)

8.3.1. Showcasing and image promotion

The challenges are the same as those attached to the game *America's Army*, although the approaches do differ slightly depending on the country. Instead of showing a war, for instance, the Swedish army has taken a different approach for its recruitment campaign. The *Swedish Armed Forces Recruitment Campaign* (*ACNE Digital/DDB Stockholm*, 2008) game includes four tests for assessing the user's ability to perform several tasks simultaneously, their spatial perception, memory and concentration. The game therefore attracts players by focusing on intellectual challenges, with abstract representations, the idea being to then promote the various careers in the armed forces by presenting each user with a job that matches their score in the game. This title was probably a trial run for the Swedish army since it has followed it up with a new game each year: *Special Officer Academy* in 2008, *Swedish Armed Forces Recruitment* in 2009 and *Team* in 2010. Also worth noting is that these serious games out of Sweden are part of multimedia recruitment campaigns (print, TV, etc.), so the game does not necessarily reach all of the people targeted by the campaign. Classic mass media also need to be included to point users to the games on the Internet. For the Swedish army, this is probably a more efficient approach than relying solely on viral marketing (cf. Chapter 5.3.1.).

Swedish Armed Forces Recruitment Campaign

Swedish Armed Forces Recruitment 2009

While the communication aspect for building image and recruiting constitutes a large portion of the sector-specific components, the training aspect also needs to be mentioned.

Central requirements in this area in particular include:

- providing training configurations that can be customized;
- designing more immersive man-machine interaction.

8.3.2. Providing training configurations that can be customized

The *Virtual BattleSpace 2* (*VBS2*) virtual military training platform offers a simulation of military missions in a three-dimensional environment. *VBS2* can be customized, which means that any army can give the avatars the appropriate uniforms and equipment, configure the terrain and lay out the troops according to the needs of a specific type of training… The firm Bohemia Interactive, which publishes *VBS2*, also offers courses to train their client armed forces to configure the games themselves. The sector-specific challenge here is to provide the greatest possible degree of autonomy and the broadest selection of options. Based on this principle, *VBS2* can be fleshed out with additional modules that increase the customization options, such as *VBS2 Fusion* which makes it possible to associate C++ programmes with the training platform. This opens up a host of technological possibilities, like the *Virtual Role Player* system developed by Raytheon BBN, which is profiled further on.

A similar offering in the area of public safety is the game *RescueSim,* which helps train first response personnel (fires, drowning, etc.). This training platform also makes it possible to

configure the accident scenes, so trainers can deploy the avatars, vehicles and buildings how they want, and define the type of disaster or accident. This title also helps underscore the fact that virtually all public safety games are used for training purposes.

One final thing worth noting is that other solutions exist alongside these mechanisms. The French army, for instance, uses video games designed for entertainment to train its troops. The ground forces have been using the game *Operation Flashpoint* for several years now, combined with the *Operation Frenchpoint* (*Equipe OFrP*, 2002-2009) mod, or modification, which adds weapons and vehicles that are specific to the French army. This game holds an appeal for the army for several reasons: the craftsmanship of the game is very good, the mod is complete as it contains all of the equipment used by the French military and, finally, the overall price is very attractive. Although "professional" simulators offer equivalent solutions, all are in a much higher price range. In 2006, the cost of the *Operation Flashpoint* game was around 140 EUR per computer, broken down as follows: "game licence: 20 EUR, graphics card: 60 EUR, RAM: 50 EUR, wheel mouse: 10 EUR"[18]. The *Operation Frenchpoint* mod is free[19]. Professional simulators, by comparison, cost in the tens and in some cases hundreds of thousands of euros.

Operation Frenchpoint

8.3.3. Designing more immersive man-machine interaction

America's Army offers the ability to train for combat, infiltration and rescue missions, etc. But the player can only interact in the game using a mouse, a keyboard, a joystick and possibly an optical gun. These are forms of man-machine interaction that do not take the players' body and especially voice into account, whereas doing so would create a much more realistic sense of conditions in the field. An illustration of this comes from the firm Raytheon BBN[20] which markets the *Virtual Role Player* system. Released in early 2010, this system combines several technologies to increase the player's immersion: the *VSB2* simulation platform projected on a wall, the Wiimote, a headset with a microphone combined with a voice recognition system developed by Raytheon BBN and the *Softkinetic iisu* gesture recognition system (cf. *Softkinetic iisu* profile). Thanks to this equipment, a person using *Virtual Role Player* can dialogue with avatars over the headset, make his avatar move forwards or backwards with gesture recognition that detects whether the player is taking a step forward or back, control his point of view and fire his weapon using the Wiimote. One example of the training provided by Raytheon BBN is an American soldier in Iraq who is in

[18] Source: http://www.abc.terre.defence.gouv.fr/spip.php?article93

[19] The use of work that is offered for free by passionate amateurs for professional purposes, by the army or other entities tied to defence, has triggered debates amongst "modders". While some are pleased by the recognition, others see it as an unfair exploitation of their labour without proper financial compensation.

[20] http://bbn.com/technology/immersive_learning_technologies/virtual_role_player

charge of controlling the occupants of a car at a checkpoint on the road. The user must ask the avatars in the vehicle to get out, show their papers, open the boot of the car, answer questions on the purpose of their trip. The user can also walk around the vehicle to inspect it, check out the surrounding area, move forward to look in the boot and shoot if necessary.

This technological solution is currently deployed in a classroom but ubiquitous systems can also be used that combine field training with GPS-equipped smartphones. This would make it possible to organise orienteering races with means of monitoring the different participants' movements more closely. A combination of this type of ubiquitous game and the technologies employed by Raytheon BBN opens up a host of possibilities for a richer immersive training experience for users.

8.4. Case studies

8.4.1. 804

http://www.804.nl

- **Partner:** Royal Netherlands Navy
- **Project objectives:** This PC game is a simulation of the daily life and military drills of sailors in the Royal Dutch Navy, the goal being to inform and interest young adults in a naval career.
- **Designer:** Incredible Sims is a development studio located in Shaftesbury in the UK.
- **Release date:** 2009

Partnerships	
Technological partnerships	The game 804 was developed using the proprietary middleware, 3D toolkit, which allows Incredible Sims to reduce development costs.
Trade partnerships	The Navy provided technical details about the frigate, along with diagrams and text describing the different duties of each marine onboard the ship.
Sales partnerships	-

Game description

- **Background:** The game takes place in a very realistic 3D environment where the player moves through the ship and discovers the duties of a Dutch marine. 804 is continually enhanced with monthly add-ons.
- **"Instructional" component:**
  - Making strategic choices
  - Ranking and setting priorities
  - Knowing how to make decisions
- **Gameplay**: this single player, real time 3D game plunges the user into the life onboard a ship belonging to the Dutch Navy, based on the De Ruyter frigate. The user can explore 80 rooms on six decks and converse with some 40 marines onboard who have various specialties. The player is asked to perform several feats, including shooting at a target with 20 mm canons, landing a helicopter on the deck of the ship, get ridding of the smoke after a fire in the engine room…

Economics of the project

Development	
Total development cost	Between 250K and 1 million EUR, broken down as follows: 15% for design 40% for programming 40% for graphics and 5% for audiovisual.
Profession's contribution to development costs	0% - the partner provided the expertise
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Free
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	The Royal Netherlands Navy planned and ran all of the marketing campaigns. It employed the following media: TV, magazines, newspapers, editorials, posters, display ads and the Internet. The game was distributed on CD and online. The CD was distributed for free, chiefly as a bonus item with magazines.
Project's sales and marketing budget	Not disclosed
Sales force	-
Geographical coverage	The Netherlands

8.4.2. RescueSim

http://www.rescuesim.com/

- **Partner:** VSTEP is a Dutch company that was created in 2002. It develops 3D simulators and software applications for training emergency rescue teams, train drivers, security agents, seamen, etc.
- **Project objectives**:
  - allow emergency crews to learn to neutralize a fire through simulations;
  - learn to assess the situation to find the best response strategy to limit the damage;
  - observe the consequences of their decisions.
- **Designer:** VSTEP – The Netherlands
- **Release date**: 2008

Partnerships	
Technological partnerships	-
Trade partnerships	Artesis (fire management consultants), I-Fast (fire and safety training), ISEC (Industrial Safety & Emergency Consultant), JURIS (business law consultants), Risk Management Control, GB (fire department for the port of Rotterdam and surrounding area), Ecoloss (independent group of companies specialized in incident control).
Sales partnerships	-

Game description

- **Background:** this is training software that prepares public safety and security professionals for real-life incidents in a virtual environment. RescueSim is broken down into several dedicated modules: emergency response training, industrial and port incident management.
- **"Instructional" component:**
  - Train emergency rescue teams (fire fighters)
  - Improve operational preparedness of the emergency response organization
- **Gameplay:** the application first provides the trainer an editing tool that allows him to create a 3D incident environment that includes buildings, incidents, emergency response units, etc. The trainee takes stock of the environment by moving the avatars that represent the response team, the goal being to determine and implement the best response to the situation.
- **Feedback:** according to Hans Ten Bergen of VSTEP: "clients are pleased with this training platform because of the advantages it has over the competition: the number and variety of virtual environments available, the product's strong ability to be customized to create new scenarios, the ability to import one's own virtual objects, ability to manage the sound dimension, the multiplayer and the multi-agency dimensions".

  RescueSim clients include: *Shell*, *Port of Rotterdam*, *Monsanto*, *Ministry of the Interior of the Netherlands* (for a more complete list: http://www.rescuesim.com/references)

Economics of the project

Development	
Total development cost	4 million EUR, of which 25% for research, 60% for production, 10% for tests and 5% for management
Profession's contribution to development costs	25%
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	The EU government provided 25% of the financing for the project

Business model	
Pricing strategy	Marketed to potential customers Price not disclosed
Revenue and revenue sharing	Not disclosed
Sales target	Not disclosed
Target breakeven point	Not disclosed

Marketing	
Marketing strategy	Communication through a dedicated website, at trade shows, through the company's network and its partners' networks
Project's sales and marketing budget	Not disclosed
Sales force	Not disclosed
Geographical coverage	Not disclosed

8.4.3. Special Officer Academy

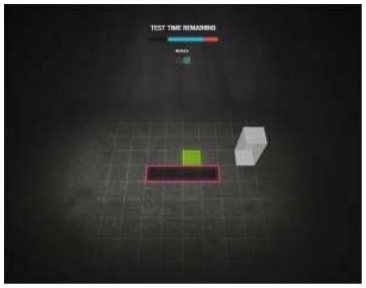
http://www.aspirant.nu/english/

- **Partner:** Swedish Armed Forces.
- **Project objectives:** the goal of this serious game is to recruit future army officers who may not have any prior military experience.
- **Designer:** Acne Digital / DDB Stockholm (Sweden). The DDB marketing agency handled the multi-platform campaign and delegated the design of the game to the firm Acne Digital, which employed a team of 10 people (project manager, graphic designers, programmers, sound engineer and video specialists) to produce the game.
- **Release date**: August 2008

Partnerships	
Technological partnerships	-
Trade partnerships	Acne Digital. The Swedish Armed Forces acted solely as the client, and supplied no experts as consultants for the game.
Sales partnerships	-

Game description

- **Background:** The game is a fictitious entry exam for the Special officers' academy. It is made up of a series of logic problems (puzzles, labyrinth, etc.). The total lack of any reference to war or violence is reflective of the game's target audience, namely civilians with no prior military experience.
- **"Instructional" component:**
  - test the user's cognitive abilities;
  - promote opportunities in the Swedish armed forces.
- **Gameplay:** the player must work through a series of tests, such as steering a ball through a maze or racing against the clock to move a cube so that it ends up in a key position. The game has a cold and stressful atmosphere, the purpose being to put the player under pressure. At the end of the tests, the player is pointed towards the position in the army that best reflects how he performed in the game.
- **Feedback:** The impact in terms of "brand" image and PR have been very positive for the Swedish Armed Forces which has run a similar campaign four times in a row (in 2007, 2008, 2009 and 2010). The second game in the series, *Special Officer Academy* has been played 90,000 times to date. The four serious games created by the Swedish Armed Forces for recruitment purposes have attracted a combined total of more than a million Internet users, which is considerable given that Sweden has a population of 10 million(source: Markus Forsberg of ACNE).



Economics of the project

Development	
Total development cost	Not disclosed
Profession's contribution to development costs	10% (estimate)
Sponsors (if any) and degree of involvement	No
Reliance on a specific source of financing and amount received	No

Business model	
Pricing strategy	Marketing tool distributed for free online
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Multi-platform campaign (print, TV and Internet)
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Sweden

8.4.4. Team

http://team.forsvarsmakten.se/english/

- **Partner:** Swedish Armed Forces (Sweden).
- **Project objectives**: The goal of this serious game is to provide information to people who may be interested in a career in the armed forces, and especially those who may not have any military experience. It also aims to spread the following message: "a chain is no stronger than its weakest link". The purpose of this multiplayer game is therefore to encourage teamwork, which is a crucial ability for anyone wanting to engage in this type of career.
- **Designer**: Acne Digital / DDB Stockholm (Sweden). The DDB marketing agency handled the multi-platform campaign and delegated the design of the game to the firm Acne Digital, which employed a team of 10 people (project manager, graphic designers, programmers, sound engineer and video specialists) to produce the game.
- **Release date:** December 2009

Partnerships	
Technological partnerships	-
Trade partnerships	Acne Digital. The Swedish Armed Forces acted solely as the client, and supplied no experts as consultants for the game.
Sales partnerships	-

Game description

- **Background**: This four-player game involves a series of logic problems. When a player fails at one of the tasks, he damages his team's chance of success. The total lack of any reference to war or violence is reflective of the game's target audience, namely civilians with no prior military experience.
- **"Instructional" component:**
  - assess teamwork abilities;
  - promote opportunities in the Swedish armed forces.
- **Gameplay:** the player has to solve a series of cognitive problems, such as memorizing shapes and colours, counting, solving puzzles of geometrical shapes, etc. The user is not the only one performing the task, but is working with three other players who have been selected randomly from among those connected to the website. Each time a player fails a challenge, he loses life points, and each time a player solves a problem, he increases each of his teammates' life points. When one of the team members loses all of his points, the game is over for the entire team. The game thereby aims to demonstrate that, within a team, working together must prevail over individual efforts.
- **Feedback:** The impact in terms of "brand" image and PR have been very positive for the Swedish Armed Forces which has run a similar campaign four times in a row (in 2007, 2008, 2009 and 2010). The fourth game in the series, *Team* has been played 330,000 times to date. The four serious games created by the Swedish Armed Forces for recruitment purposes have attracted a combined total of more than a million Internet users. The game was purposely designed so that the teams are created randomly, and does not allow the players to communicate with each other, although everyone can see his teammates' cursors since they are all playing on the same screen. Some players have nevertheless managed to create "elite forces" by agreeing to all go onto the site at the same time to maximize their chances of playing together. To communicate, they have developed a language based on they move their cursor with their mouse. The Army was

pleasantly surprised by this behaviour which shows that the players had assimilated the message of teamwork that the game is trying to impart (source: Markus Forsberg of ACNE).

Economics of the project

Development	
Total development cost	Not disclosed
Profession's contribution to development costs	10% (estimate)
Sponsors (if any) and degree of involvement	No
Reliance on a specific source of financing and amount received	No

Business model	
Pricing strategy	Marketing tool distributed for free online
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Multi-platform campaign (print, TV and Internet)
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Sweden

8.4.5. Maritime Warfare School: Weapons Engineering Round Immersive Learning Simulation

http://vimeo.com/7416640

- **Partner:** Royal Navy (Britain)
- **Project objectives**: Develop an immersive learning simulation that exposes new recruits to Britain's Royal Navy to some of the core daily tasks that they will perform, to reduce the "shock" that learners experience during their first days on their assigned ship.
- **Designer:** Caspian Leaning (Britain)

  Staff:
  - Caspian Learning: two artists, two designers, one project manager, two script writers;
  - Royal Navy: two experts and one project manager.
- **Release date**: 2009

Partnerships	
Technological partnerships	Based on "Thinking Worlds" technology developed by Caspian Learning, which makes it possible to author real time 3D adventure games very quickly. The games can then be put on CD or played directly using a Web browser, which means they can be distributed online.
Trade partnerships	The Royal Navy defined the material to be taught in the game through the supply of guidelines.
Sales partnerships	-

Game description

- **Background:** this serious game simulates life aboard a type 23 military frigate. It is a 3D adventure game where the player is a new recruit who has to familiarize himself with the procedures of life onboard the naval vessel. To do so, he must explore the ship and accomplish several tasks.
- **"Instructional" component:** The client provided the partner with professional guidelines on the military information to be incorporated into the game. The game seeks to provide a faithful reproduction of a type 23 frigate, and a simulation of some of the daily tasks to be performed.

  More specifically, the Maritime Warfare School's primary objectives for the simulation were to:
  - reduce the "shock" that learners experience during their first days on their assigned ship;
  - improve speed-to-acceptable-performance in conducting a Weapons Engineering Health and Safety round onboard a type 23 frigate.
  - In addition to these objectives, the MSW, for whom this game was its first experience with the process, wanted to assess:
  - the possibility of producing immersive learning simulators more quickly and more cheaply than "traditional" simulations;
  - the possibility of using simulations on standard PCs that still provide as good an immersive experience as more sophisticated simulators (virtual reality, real simulators, etc.).

- **Gameplay:** The recruit moves his avatar trough a 3D environment that is a faithful simulation of a Royal Navy frigate. He can interact with other characters and must perform several tasks, including handling weaponry systems. Single player game only.
- **Feedback:** The Navy used this serious game to assess its value as a training tool. It found that, compared to traditional simulations, the game allowed them to cut future additional training on the points addressed by the game by half, while the recruits themselves found the game motivating.

  Since its creation, this game has been used to train at least 200 new recruits. It was named the Best Learning Game at the 2009 eLearning Age awards.

Economics of the project

Development	
Total development cost	Around 100 000 EUR
Profession's contribution to development costs	Roughly 20%
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Internal training tool for the British navy
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Game used only internally, not intended for use by the general public
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Britain

8.4.6. Virtual BattleSpace 2 (VBS2)

http://virtualbattlespace.vbs2.com/

- **Partner:** Bohemia Interactive is an Australian design studio that was originally based in the Czech Republic, and which produces serious and entertainment games. Located in Nelson Bay in Australia and founded in 2001, it has two distinct studios: one devoted to serious games and the other to the entertainment sector.
- **Goal of the product:** to provide a combat simulation platform that can be customised, the purpose being to train military personnel in the tactics and missions waiting for them on the ground. The first version was released in 2004.
- **Designer:** Bohemia Interactive (Australia)
- **Release date**: 2009

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** this middleware application simulates military missions in a 3D environment. It is used by the US Army, USMC, ADF and UK MoD for "mission rehearsal, tactical training and simulated combined arms exercises".
- **"Instructional" component:** Combat training.
- **Feedback:** according to Stacy Elliott: "The Virtual BattleSpace game has exceeded its ROI. We are improving the product on an ongoing basis and calling on new contributors to expand our development team".

Economics of the project

Development	
Total development cost	Production cost covered in-house. The studio devoted to entertainment products financed the development of the game's engine and the studio devoted to serious games financed the rest.
Profession's contribution to development costs	-
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Price not disclosed. There are two add-on modules for VSB2: "VSB2 Fusion" and "VSB2 Fire". Bohemia Interactive also offers training for customers who purchase VSB2, and will tailor the product to the customer's needs.
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	-
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Global. The two main clients to date are the US and the British armies.

8.5. Outlook

The defence industry in the United States supports the serious game industry, particularly through DARP and annual events like the Serious Games Showcase. It is entirely likely that this policy will continue since the army has an ongoing need for new recruits, to promote its image and train its troops. The military game has also made its way to other countries, particularly in Europe. The United Kingdom, the Netherlands, Sweden and France all use serious games to recruit, to communicate and to train their soldiers. Like the United States with *America's Army*, Sweden has been renewing its marketing campaign every year since 2008. It appears to be satisfied with the return on its investments in terms of recruitment and communication. It seems entirely probable that other countries that have only a volunteer military will begin using serious games for recruiting purposes in the very near future. This military game market for communication and recruitment purposes is therefore expected to develop and sustain itself over time.

From a training standpoint, case studies have revealed the constant need to increase the level of realism in the combat simulations. This is also true of public safety games which are used almost exclusively for training. While the sums spent to commission a game range from several hundred thousand euros up to 5 million EUR, any supplier targeting this market segment needs to know that the financial downturn in 2009 cut into budgets. The defence sector may also seek to cut back on the cost of the games it commissions. The example of the simulation based on the game *Operation Flashpoint* could serve as a good lesson here. Another case that supports the idea that soldiers can be trained at little cost: in 2009, one of the best military drone pilots in the United States was an 18-year-old boy who had originally been a hardcore devotee of military games on the *Xbox*[21]. Naturally, the young recruit had to be trained, but this ended up being relatively easy thanks to the practice he got with video games. If the cost-saving approach were to be put into place, this would open up a new market, however: helping the military to develop training methods based on game consoles and the entertainment-based titles associated with them.

[21] http://www.gamepolitics.com/2009/02/07/young-soldier-uses-xbox-skillz-become-ace-drone-pilot-iraq

9. New trends

Serious games are not confined to a simple vertical approach. Technological developments and evolving applications are bringing us closer, paradoxically, to the view that Clark Abt had of serious games in the early 1970s, namely one that encompasses all types of game, including board games and outdoor games. To get an idea of the future shape of serious games, we will take a look at five areas in particular: man-machine interaction, image processing, network games, mobility and robotics.

The goal is not to have serious games restricted only to screen, keyboard, mouse and joystick-based interfaces. In the early '70s, American researcher Clark Abt published a book called *Serious games*[22]. Abt saw games as a medium that could help enhance school curriculums while breaking down the barriers between classroom learning and informal learning. He based his thesis on a number of examples of game-based teaching practices, on topics ranging from physics to social sciences, by way of politics. It is important to remember that this work was done before video games had developed as an industry. In the 1970s, a serious game could therefore be a computer game, a board game, a role-playing game and even an outdoor game. Now, in the early 21st century, we need to remember this much broader notion of what a serious game can encompass, and not confine ourselves to a simple vertical approach.

In this last part of the report, we will explore five technological areas that can open up prospects for the development of serious games, namely man-machine interaction, image processing, network games, mobility and robotics. Innovations, technological developments and evolving applications born of these five fields already give us some perspective on the vast array of serious games that can be imagined. And this diversity only expands when we combine the developments to emerge from these different fields.

9.1. Market development status

Technological developments are leading us little by little to the more wide-ranging approaches that Clark Abt saw for serious games. In the area of "board games," for instance, we now have tangible objects, such as those equipped with an RFID chip and multi-touch tables, for instance. For outdoor games, we can incorporate the use of smartphones, the iPad, etc. … all opening up a variety of ways of combining the real world and the computer world. This is what is referred to as ubiquitous computing, which leads us to the notion of "ubiquitous games" – the idea being to use the real world as the gaming environment, while incorporating computer-based elements. *The Haunted* is an example of this approach. Developed in 2007 by the Quebec-based lab *MML* (*Mobil Media Lab*), this ubiquitous game takes place in Mount Royal Park in downtown Montreal. The game itself is aimed at young university students, of around 20. Working in pairs, the players are equipped with a mobile phone connected to a GPS system. The device makes it possible to locate the players' position in the park and to offer certain key locations for downloading the podcasts that contain clues, etc.. The gameplay involves having the players communicate with the dead to find the head and body of a girl whose spirit is haunting the park. To set the tone, the organizers begin the game at sunset.

[22] Clark Abt, "Serious games", The Viking Press, 1970

There are other games based on the same technologies used by the travel/tourism sector – namely city games[23]. Games of this genre include titles like *The Target*, *Codecrakers*, *CityTracks*, *CityTeam Conquest*, *The Treasure of the Monk* (*La Moca*, 2006-2010). *La Mosca* is a Belgian publisher of city games that organizes events in cities such as Paris, Anvers, Brussels, Amsterdam… The different games can involve 20 to 200 people, and are generally played in teams (only *The Target* is played with fewer people, usually 3 to 36 players). The gameplay is usually a treasure or a manhunt, with the players required to answer questions as they go to advance in the game. The serious game dimension is therefore quite simple to incorporate since the nature of the quizzes can be entirely utilitarian.

The Target

Codecrakers

CityTracks

The Treasure of the Monk

Ubiquitous computing can also be enhanced by "intelligent" objects such as robots. The robot *R.O.B.* (Robotic Operating Buddy), associated with the Nintendo *N.E.S.* (*Famicom*) was introduced back in 1985. It analysed what was taking place on-screen and reacted in consequence. Two games were associated with *R.O.B.*:

- *Gyromite* and *Robot Gyro*[24]: the robot helped the player by opening and closing doors that were preventing the player's avatar from moving forward;
- *Stack-up* and *Robot Block*[25]: the player had to steer *R.O.B.*, making him stack coloured disks according to a set sequence.

In a more serious game-centric approach we find the turtle named *LOGO*[26], which came out in 1982. It is a mobile robot in the shape of a bell jar equipped with a pencil that allowed it to draw on the floor. Able to be programmed using LOGO language, the robot was originally a pedagogical experiment for teaching computer programming to children between the ages of 8 and 14. After the first experiments at the University of Liege in 1982, this robot was then used in schools in Belgium and France starting in the mid-1980s, thanks to initiatives from the two countries' ministries of national education.

R.O.B.

LOGO turtle

[23] http://www.lamosca.be/citygames_quoi.htm
[24] http://www.gameclassification.com/9079
[25] http://www.gameclassification.com/9078
[26] http://php.educanet2.ch/corinne/wakka.php?wiki=LangageLogo

More recently we have the *Lego Mindstorms* range (first generation in 1998 and second generation in 2006), offering dedicated versions of *Lego Mindstorms for Schools*[27] which are designed to be used to teach programming and robotics to 7 to 15-year-olds. Children can build their own robot then programme it.

9.2. Technological aspects

There is no doubt that the technological aspects being explored here can help spur the development of the sector-specific needs of serious games. We can classify these aspects into five main areas:

- **MMI**: development of innovative man-machine interfaces (Bee-OH, SoftKinetic, SkinPut, sight-controlled computer game);
- **image processing**: embedding the user's picture in the action (*Moo-O*);
- **network gaming**: allowing several users to play a game simultaneously and remotely (*Flee the Skip*);
- **mobility:** giving the game a roaming dimension, making use of portable handsets like smartphones, along with other devices like the iPad (*Lit*);
- **robotics**: creating robot teachers (*Robot SAYA*).

Of course developing the sector-specific aspects of serious games will not be confined to these five areas. In addition to other areas of technological development, there is also the research being done in social sciences which are an area of focus for a number of other games. We must not forget that a serious game ultimately remains a video game, strictly speaking. There is no difference for a programmer between a serious game and an ordinary video game in terms of structure. The difference lies only in the cultural and practical systems that govern the two types of game, in other words in the elements that convey a real meaning, or when social sciences can use them to conduct research. Moreover, despite how powerful the technologies are, their ultimate success will depend on the way in which society uses them. With that it mind, let's take a look at the five main areas of technological exploration.

9.2.1. MMI

70 million Wii consoles were sold around the globe between the machine's launch in late 2006 and May 2010. This success can no doubt be attributed to its Wiimote and Nunchuck controllers which enable a more interactive experience, allowing users to use their body more. The success, which made Nintendo the topping selling console-maker, ahead of rivals Microsoft and Sony for four straight years, has made the market aware of the importance of MMI, or the man-machine interface. In the context of serious games, introducing new forms of interaction naturally opens up new ways to address sector-specific needs. The *Virtual Role Player* designed by Raytheon BBN[28], for instance, makes use of the Wiimote, while Project Natal, which is Microsoft's response to the Wii and due to release by Christmas 2010, is based on a system that interacts solely with the body, with no handheld controller at all.

The system is based on an RGB camera and depth sensor, combined with software which provide 3D motion capture by analysing 48 points of the human body in real time. While the main purpose for Microsoft is entertainment, the Belgian firm *Softkinetic* has been marketing a similar system called *Softkinetic iisu* since 2008, targeting segments far removed from entertainment, including healthcare (*Silverfit*) and defence (*Virtual Role Player*).

[27] http://www.lego.com/eng/education/mindstorms/default.asp
[28] http://bbn.com/technology/immersive_learning_technologies/virtual_role_player

Wiimote and Nunchuk

Projec Natal

9.2.2. Image processing

The advergame *Je tue un ami* (I'm killing a friend), referred to earlier (cf. product profile for *Je tue un ami*), allows players to embed a picture of one of their friends in the game, which helps create a greater impact on the person who receives the file that links to the game, i.e. the friend, since their ego is in play. This makes it a good technology to use in a viral marketing campaign. The case of Moo-O offers an interesting example of this in the area of teaching, as technology makes it possible to film children's faces using a webcam, and to then incorporate those faces into the stories in the video. While users have been familiar with the technical process involved since 2003, thanks to Sony's Eye Toy, the concept had not yet been used to help teach children to read. So it is the use being made of the technology that is helping spur the development of serious games directly. In the coming years, we will no doubt see this type of process expanded to other serious game segments. Project Natal, which will enable this type of image processing, could help move things forward, and we will no doubt find a variety of serious games among the entertainment games that use this technology.

Eye Toy

Example of a game

9.2.3. Network gaming

Network gaming in and of itself is nothing new. Already back in the 1980s we had examples like *Lucasfilm's Habitat* (*Quantum Link/Fujistu*, 1985) which is considered one of the first ever predecessors of *Second Life* (*Linden Lab*, 2003) in the history of gaming.

Lucasfilm's Habitat

Second Life

While network gaming is well known and widely used by the video entertainment industry, when we look at serious games, the number of multiplayer titles drops dramatically.

There are very few multiplayer serious games like *America's Army* and *PowerUp*, both of which are profiled earlier in this report. There are also very few games developed with Adobe Flash technology, which allow players to interact simultaneously and not one after the other. There are currently two that we know of: *Flee the Skip* (*Orange*, 2009) and *Team* (cf. profile of *Team*).

Massively multiplayer online (MMO) serious games are equally tiny in number. If we exclude *Second Life,* which is more serious play than a serious game strictly speaking, it appears that the only other title in this category is NASA's *Moon Base Alpha*[29], which is due out in 2010.

So we will no doubt see a real increase in the number of multiplayer serious games in the coming years, particularly as social interaction has become a major area of focus in the fields of teaching and training (cf. Chapter 3.3.1).

9.2.4. Mobility

Lit, which is profiled in the section devoted to healthcare games (cf. Chapter 4.3.2.), is a serious game that is designed to be played on the iPhone. This is not the only serious game to make use of mobility and the features that are proper to this type of device: multi-touch interaction, gyroscope, accelerometer, webcam, digital compass, microphone… There is no shortage of prospects, and the *Lit* project is just one example.

We should also remember that a mobile phone can communicate with RFID chips and Bluetooth stations which makes it possible, among other things, to send text messages in push mode depending on the user's location, and so to provide them with clues or information when playing a city game, for instance, or during ubiquitous games like *The Haunted*, which is described earlier on this report. The multiplayer dimension can be added to this to further expand technological and design innovation possibilities. Smartphones are nevertheless somewhat burdened by the small size of the screen, which is being resolved

[29] http://ipp.gsfc.nasa.gov/mmo/

with devices like the iPad which offers roaming use and a 9.7-inch screen, as opposed to the 3.5-inch screen that equips the iPhone and iPhone Touch.

iPhone

iPad

9.2.5. Robotics

As mentioned earlier (cf. Chapter 7.1.), we need to see games as more than just software to be viewed on a computer screen or game console. Serious games need to be understood as a much broader concept, where gaming is given a utilitarian dimension – which makes the use of robots entirely compatible with the notion of serious games.

KASPAR, for instance, is a humanoid robot that was developed at the University of Hertfordshire, as part of the three-year European project called *Interactive Robotic Social Mediators as Companions* (*IROMEC*), which began in 2006 with a budget of 3.22 million EUR[30]. *KASPAR* is designed to help autistic children integrate the school system by working on their social skills.

NAO robot

[30] http://www.engadget.com/2007/06/01/european-robots-assist-children-in-forming-relationships/

Also used in a classroom setting is the robot Saya. Developed in Japan, this "female" robot was designed to perform a number of tasks in the classroom, such as taking roll call. In Korea we have the example of the robot Tiro which was developed in 2007 by the *KAIST* (Korean Advanced Institute for Scence and Technology) and *Hanool Robotics Corp. Tiro* can help an English teacher for 30 minutes[31], for instance by asking students to open their books and say how many "giraffes are on the board". Also worth noting in passing is that Korea is starting construction on a robot theme park in 2010 called *Robot Land*, an industrial town devoted to robotics whose infrastructure will cost 562.3 million USD[32]. The park is due to open its doors in 2013, and we will no doubt find serious gaming concepts in use among the attractions.

In the meantime, these examples of existing robots make it easy to imagine a range of edutainment possibilities associated with robots coming to fruition in the near future. This is one of the areas being explored by the French firms *Idebaran* and *Paraschool* and the Paris-based *CHART* lab, attached to the Université de Paris VIII, as part of the *RASPO* project. Selected as one of the winning applications in the RFP for serious games that was issued in 2009 by France's Secretary of State for Digital Development, Nathalie Kosciusko-Morizet, the goal of this project is to make learning to read fun thanks to the use of the robot called NAO. It is due to be released in the market in 2011.

[31] http://www.chinapost.com.tw/business/2007/10/08/125739/Tiro-the.htm
[32] http://www.koreaherald.com/business/Detail.jsp?newsMLId=20090213 000083

9.3. Case studies

9.3.1. Bee-Oh

http://www.3d-test.com/interviews/ESIEA_1.htm

- **Partner:** Philippe Lecompte (beekeeper and President of the *Réseau Biodiversité pour les Abeilles/* Biodiversity network for bees http://www.jacheres-apicoles.fr/) and Naëm Baron, Yoann Fausther, Aurélien Milliat (students at ESIEA, *Ecole d'Ingénieur en Informatique, Electronique, Automatique*/School of Computer, Electronic and Automatic Engineering of Laval).
- **Project objectives:** to increase awareness amongst the public and local authorities of the problems that bees are having in feeding themselves.
- **Designer:** project run by three 4th year students at the ESIEA engineering school in Laval, France: Naëm Baron, Yoann Fausther, Aurélien Milliat, under the guidance of Franck Crison, a research engineer at the *Laboratoire de Réalité Virtuelle et Systèmes Embarqués*/Virtual reality and embedded systems lab.
- **Release date:** 2009

Partnerships	
Technological partnerships	
Trade partnerships	The students worked in collaboration with experts in beekeeping and agriculture from the biodiversity network for bees, which has 300 partners: beekeepers, farmers, agricultural and beekeeping organisations (for a full list of the network's partners, go to: www.jacheres-apicoles.fr)
Sales partnerships	

Game description

- **Background:** Bee-Oh is a virtual tool whose purpose is to provide a virtual perception of the world by immersing the player in the viewpoint of a bee and its environment: see what it sees and feel what it feels.
- **"Instructional" component:**
  - learning about the life of a bee and the problems it encounters;
  - increasing users' environmental awareness.
- **Gameplay:** this interactive, fun and educational simulator puts the player in the skin of a bee in search of food, and plunges them into a virtual reality where rural landscapes have been modelled in 3D: hives, apiarian fallows, flowers… At the start of the game, the player is looking out onto a field. She will then move about in an intuitive manner, using her wings, as they go in search of food. To move their wings, the player flaps two racquets that simulate the wings of a bee. As they move through the game, users become aware of the problems that bees encounter on a daily basis: not enough energy to make it home to the hive, and significantly weakened. To change the parameters of the environment,, the way the beekeeping business is managed can be altered in several ways: production varieties, installation of apiarian fallows… the goal being to forage the plants with the greatest amount of pollen to achieve balanced sustenance.
- **Feedback:** This tool provides an immediate view of the impact of environmental policies in support of biodiversity. "With Bee-Oh, elected officials, decision-makers and farmers will be able to see the impact of biodiversity initiatives," says Franck Crison, a research engineer at the ESIEA

Virtual reality and embedded systems lab. Simple and fun, Bee-Oh embodies the spirit of the Grenelle Environment Forum and the International Year of Biodiversity.

As to the feedback obtained on this serious game, Franck Crison says that, "we got our first feedback from the public when the game was first unveiled at the Laval Virtual 2009 trade show last April. The very positive feedback revealed that users were very receptive to additional explanations after having played the game. The combination of fun and education, along with the multi-sensory simulation attracted a lot of people".

- Resources: http://www.esiea.fr/Bee-OH

Economics of the project

Development	
Total development cost	The game was developed as part of a student project. The wings were entirely designed and built on the electronics lab budget earmarked for student projects: around 100 EUR.
Profession's contribution to development costs	-
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	-
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	-
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	France

9.3.2. Flee the Skip

http://www.seriousgamesopinions.org/jeuxSWF/Flee_the_skip/

- **Partner:** France Telecom Orange Labs, under the management of Valérie Maffiolo.
- **Project objectives:** testing players' solidarity through a multi-player challenge.
- **Designer**:
  - Design: Orange Labs (Valérie Maffiolo, Julian Alvarez)
  - Development: Morphée Interactive, development studio based in Nimes, France.
- **Release date**: 2009

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** There are very few message-based serious games that offer multiplayer gameplay which enable collaborative social interaction. *Flee the Skip* is one such game. It is a networked game for four players. To promote the message of mutual aid and solidarity, the game begins by assigning "disabilities" randomly to each player. This means that players need to work together to try to turn each "disability" into an asset for the group, and to complete all of the challenges that the game throws at them.
- **"Instructional" component:**
  - encouraging more solidarity between people
  - increasing public awareness of disabilities
- **Gameplay:** This is a multiplayer serious game. At the start of each game, each player plays the role of one of the four mobile phones that are the characters in the game. Depicted in a cartoon style, these four phones move through the 3D setting, like in a platform game. The setting is a high-tech skip where devices are destroyed, the goal being to get out in less than 20 minutes. To win, however, all of the players need to get out of the skip together. If one is left behind, they all lose.

  Each player uses the arrows on their keyboard to move and jump, if possible. The space bar allows them to perform the one action that is unique to their character: e.g. recharge the other mobiles, open doors, find secret codes, etc.

Economics of the project

Development	
Total development cost	Less than 50,000 EUR
Profession's contribution to development costs	25%
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Distributed for free on the gaming site www.seriousgamesopinions.org and on the France Telecom website, as part of a solidarity and disability awareness campaign for employees
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Background on the game can be found online at: www.seriousgamesopinions.org
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Global

9.3.3. Moo-O

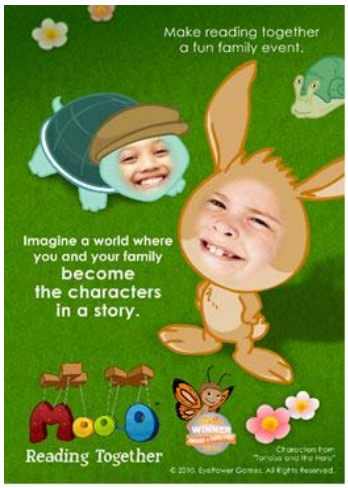
http://www.moo-o.com

- **Client:** Singapore-based firm EyePower Games Pte Ltd, which was founded in 2004 and specializes in developing language learning tools.
- **Project objectives:** the goal of this serious game is to give children the taste for reading and develop their storytelling skills.
- **Designer:** EyePower Games Pte Ltd (Singapore)
- **Release date**: March 2009

Partnerships	
Technological partnerships	National Institute of Education, Singapore (technological innovations in teaching)
Trade partnerships	National Institute of Education, Singapore (teaching expertise) Scottsdale Unified School District (teaching expertise) Authors supplying stories that are compatible for Moo-O
Sales partnerships	-

Game description

- **Background:** Moo-O (pronounced moo-oh) is a system that helps children improve their reading skills and ability to tell a story, while having fun. It is designed to be used either at home or in the classroom.
- **"Instructional" component:**
  - Develop imagination
  - Develop learning skills: reading, storytelling
  - Help a shy child to speak in front of others thanks to a virtual character
- **Gameplay:** Based on the use of a webcam, this serious game transports the child into a virtual environment where he embodies the character he has chosen for himself (his face and voice incorporated into the scenes of the story). The child is asked to read the text that is displayed on-screen while being filmed. A video is then generated which the child can show to others. Moo-O can be used by one or several people.
- **Feedback:** Moo-O was the recipient of an "Award of Excellence 2009" from the American magazine, *Technology & Learning*.



Economics of the project

Development	
Total development cost	Less than 50,000 USD: 50% for development, 30% for design, 20% for marketing
Profession's contribution to development costs	Authors supply the content (i.e. stories to be read) and are paid in the form of royalties (a higher percentage than in the world of publishing, according to EyePower Games).
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	The Moo-O application can be downloaded for free, and the stories cost 9.99 USD a piece
Revenue and revenue sharing	Authors: royalties
Sales target	Breakeven point is after 5,000 stories
Target breakeven point	Not disclosed

Marketing	
Marketing strategy	Rely on a network of schools that are already customers thanks to the company's previous product, NewsMaker (http://www.AboutNewsMaker.com). This base currently includes 100 schools in Australia and New Zealand, 100 schools in Singapore and more than 17 states in the US. There is a dedicated website and the company takes part in conferences to promote Moo-O.
Project's sales and marketing budget	10,000 USD
Sales force	-
Geographical coverage	Australia, New Zealand, Singapore and the USA

9.3.4. Saya the robot

http://kobalab.com/

- **Partner:** Department of Mechanical Engineering, Tokyo University of Science, Japan
- **Project objectives:** The team wants to create a humanoid robot in response to the problem of an aging population and a declining birth rate in Japan.
- **Designer:** Koba Lab is represented, among others, by researchers from the Tokyo University of Science: Hiroshi Kobayashi, Akihiro Yorita, Takuya Hashimoto, and Naoyuki Kubota.
- **Release date:** TBA

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** It took the team of researchers 15 years to create Saya, a robot that resembles a young Japanese woman. The robot was designed to be able to mimic facial expressions thanks to her latex skin and 18 motors that allow the face to display emotions such as fear, joy, surprise, disgust, anger and sadness. After noticing the how much children enjoy communicating with the robot, Hiroshi Kobayashi got the idea of making Saya a school teacher.
- **"Instructional" component:**
  - Having a class managed by a robot
  - Displaying emotions with a robot
  - Teaching lessons using a robot
- **Gameplay**: Saya the robot speaks several languages and has a vocabulary of 700 words. It can perform roll call and have students do exercises from their textbooks. Its skills are still relatively limited. Saya has overseen classes full-time after having passed a test in a primary school in Tokyo. Up until then, Saya had worked as a receptionist in a university in Tokyo.
- **Feedback**: One of the robot's developers, professor Hiroshi Kobayashi reports that, "the children were not at all disoriented by the robot. They viewed it as a human and not as a robot. They were very happy and surprised when she called them each by name. She was treated like a real teacher". http://www.tendancemag.com/article-high-tech.php?article=1173
- **Resources:** http://www.vincentabry.com/saya-le-robot-prof-est-arrive-4235 // mettre lien à un article en anglais??

Economics of the project

Development	
Total development cost	25,000 USD, financed entirely by the Tokyo University of Science
Profession's contribution to development costs	-
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Price of a robot: over 50,000 USD with no guarantee
Revenue and revenue sharing	Not disclosed
Sales target	Not disclosed
Target breakeven point	Not disclosed

Marketing	
Marketing strategy	Communication via conferences and articles in science journals, plus videos online
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Japan

9.3.5. Sight-controlled computer game

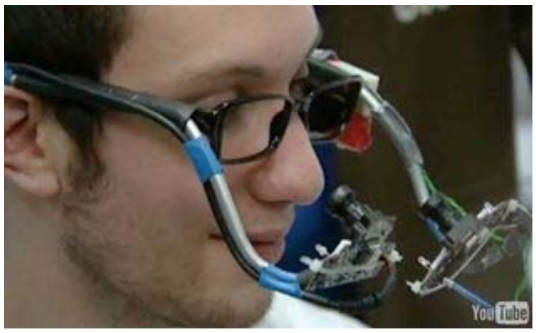
http://www.doc.ic.ac.uk/~afaisal/Site/Projects.html

- **Partner**: Imperial College of London, under the direction of Dr. Aldo Faisa.
- **Project objectives:** to give physically disabled users the ability to play video games using eye movement.
- **Designer:** Imperial College of London
- **Release date:** March 2010 (Prototype)

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** a group of undergraduate students at the Imperial College of London, under the direction of Dr. Aldo Faisal, created a solution that made it possible to play a simple version of Pong using eye movements.
- **"Instructional" component:** Studying interfaces based on tracking eye movement.
- **Gameplay:** The students fitted an infrared sensor and a webcam onto a pair of glasses that records the movement of one eye. The webcam is linked to a laptop on which a computer application syncs the player's eye movement to the game. The game itself involves a racket located at the bottom of the screen that the player moves from left to right with their eye movement, the goal being to keep hitting back the ball that bounces off the edges of the screen for as long as possible.



Economics of the project

Development	
Total development cost	40 EUR for the purchase of the camera. The students worked for free.
Profession's contribution to development costs	-
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	This is a research project. The goal is to study the feasibility of interfaces based on tracking eye movement.
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Articles scientifiques et web (vidéo YouTube et page dédiée sur le site de l'Imperial College de Londres).
Project's sales and marketing budget	-
Sales force	-
Geographical coverage	Global

9.3.6. Skinput

http://www.chrisharrison.net/

- **Partner:** Researchers at Microsoft and Carnegie Mellon University in Pittsburgh, Pennsylvania.
- **Project objectives:** Skinput is an experimental device that makes it possible to transform a portion of the body into a touchscreen.
- **Designer:** Chris Harrison (USA) is one of the researchers at Carnegie Mellon University School of Computer Science to have worked on the project.
- **Release date:** not yet marketed – still at the experimental stage

Partnerships	
Technological partnerships	Microsoft, Equipoise Technologies, American International Enterprises, Measurement Specialties, LOUD Technologies
Trade partnerships	Carnegie Mellon University
Sales partnerships	-

Game description

- **Background:** This experimental project comes in the form of an armband that contains biometric sensors that recognize skin taps on the user's arm or the palm of his hand. Each of these regions has its own acoustic signature, which can be associated with a function, such as dialling a phone number or acting as a video game controller. According to the researchers involved in the project, Skinput already has an over 95% accuracy level in recognizing taps. Skinput also works when the body is moving.
- **"Instructional" component:** Using the hand and forearm as an input interface
- **Gameplay:** currently in the prototype stage, Skinput lets the user play Tetris on the palm of their hand by tapping their fingertips to manipulate the falling blocks.
- **Resources:** Article on Skinput: http://www.chrisharrison.net/projects/skinput/SkinputHarrison.pdf

Economics of the project

Development	
Total development cost	Project financed entirely by Microsoft. Sum not disclosed.
Profession's contribution to development costs	100% (scientific research project)
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	-

Business model	
Pricing strategy	Not yet defined
Revenue and revenue sharing	-
Sales target	-
Target breakeven point	-

Marketing	
Marketing strategy	Science journals/articles
Project's sales and marketing budget	Estimated at less than 3,000 EUR (targeting the science community)
Sales force	-
Geographical coverage	Global

9.3.7. Softkinetic iisu

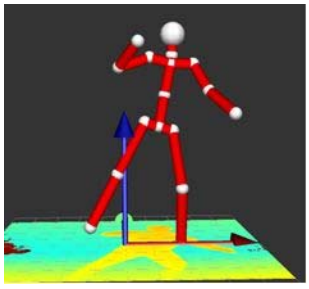
http://www.softkinetic.net

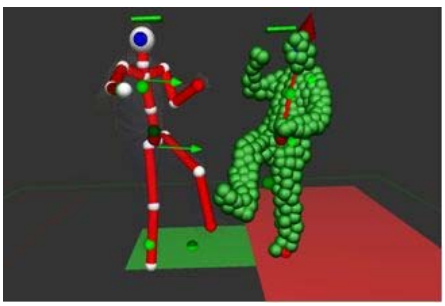
- **Partner:** Softkinetic is a Belgian start-up that was created in 2007 and which specializes in 3D gesture-recognition. Its director is Michel Tombroff.
- **Project objectives:** Softkinetic iisu is a 3D real-time gesture-recognition platform whose goal is to help create new man-machine interfaces for a variety of purposes.
- **Designer:** Softkinetic (Belgium)
- **Release date:** the project began back in 2003; the technology was patented in 2007 and the first product was released on the market in February 2008.

Partnerships	
Technological partnerships	-
Trade partnerships	-
Sales partnerships	-

Game description

- **Background:** this prototype is based on image-sensing technology using a 3D depth sensing camera that tracks the body's movements carefully and, most significantly, in space. It can detect the user's arm, leg and body movements in three dimensions, thereby creating possibilities for much deeper levels of interaction.
- **"Instructional" component:** 3D gesture-recognition with a 3D camera
- **Gameplay:** Softkinetic iisu can be used to develop several types of serious game, such as SilverFit which is profiled in this report (See page xx). Traduire en anglais : En plus du Serious Game, ce dispositif s'adresse également aux marchés du divertissement, du marketing interactif et du commerce électronique. Softkinetic iisu software works with any type of 3D camera, including time-of-flight, structured light, and stereoscopic cameras based on standard webcams.
- **Feedback:** according to Michel Tombroff: "It is still too early to measure our overall ROI since the 3D gesture-recognition market is still in its infancy. But our business plan indicates good results and we are entirely in line with our targets".
- **Resources:**
  - Blog post on SoftKinetic, incl. demo: http://g4tv.com/
  - Example of a customer that uses SoftKinetic iisu: http://bbn.com/
  - More informations on 3D depth sensing camera : http://en.wikipedia.org/wiki/Time-of-flight_camera and www.optrima.com





Economics of the project

Development	
Total development cost	Over 5 million EUR
Profession's contribution to development costs	-
Sponsors (if any) and degree of involvement	-
Reliance on a specific source of financing and amount received	Government subsidies and private investors

Business model	
Pricing strategy	Not disclosed. The price of a run-time iisu licence starts at less than 1 EUR for large volumes.
Revenue and revenue sharing	Not disclosed
Sales target	Not disclosed
Target breakeven point	Not disclosed

Marketing	
Marketing strategy	Promotion in tandem with the company's first customers (e.g. SilverFit). Communication through trade shows, conferences, marketing campaigns, etc.
Project's sales and marketing budget	Not disclosed
Sales force	-
Geographical coverage	Global

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Networks & Telecom

- Networks & Equipment
- Telecom Strategies
- Mobile
- Broadband / FTTH
- Satellite

TV & Internet

- Internet Services
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Watch Service

Ref	Continuous Services	Collection	Publication	Hard Copy	eCopy 1 to 5 Users
M10302	**World FTTx Market**	Watch Service	Continuous	Online Access only	**12 000**
M10502	**World LTE Market**	Watch Service	Continuous	Online Access only	**10 000**
M10202	**World NextGen TV Market**	Watch Service	Continuous	Online Access only	**10 000**

Note Service

Ref		Collection	Publication	Hard Copy	eCopy 1 to 5 Users
EN10	**Executive Notes**	IDATE Research	Monthly	-	**5 000**

Market Reports

Networks & Telecom Series

Ref	Market Reports	Collection	Publication	Hard Copy	eCopy 1 to 5 Users
	Networks & Equipment				
M10300	**World Telecom Equipment Markets** - Data & Forecasts	Market & Data Report	June/Nov 10	2 900	**3 500**
M80308	**Next Generation Carriers Models**	Innovation Report	Jan.09	2 900	**3 500**
M80108	**Network Intelligence**	Innovation Report	Jan.09	2 900	**3 500**
M92909	**Mobile Network Outsourcing & Sharing**	Innovation Report	June 09	2 900	**3 500**
M90509	**Why migrate to LTE?**	Innovation Report	July 09	2 900	**3 500**
M10306	**LTE Business Models**	Innovation Report	June 10	2 900	**3 500**
M10314	**Radio Spectrum**	Innovation Report	sept-10	2 900	**3 500**
M10313	**Femtocells**	Market & Data Report	June 09/ sept 10	2 900	**3 500**
M10307	**LTE Telcos Strategies**	Innovation Report	Oct.10	2 900	**3 500**
	Telecom Strategies				
M10301	**World Telecom Services Markets** - Data & Forecasts	Market & Data Report	Jan/July. 10	2 900	**3 500**
M92609	**New Vertical Markets - eHealth**	Focus Note	Aug. 09	900	**1 500**
M90409	**Telecom Tariffs:** Fixed, Mobile, Broadband (Europe/US)	Market & Data Report	March 10	2 900	**3 500**
M10316	**Mobile Networks Saturation**	Innovation Report	June 10	2 900	**3 500**
M10311	**Future Telecom** (Scenarios 2020)*	Market & Data Report	July 10	3 900	**4 500**
M10315	**NGA Regulation**	Innovation Report	July 10	2 900	**3 500**
M10318	**Green Telecom**	Market & Data Report	Q4 10	2 900	**3 500**
	Mobile				
M10117	**Mobile Internet***	Market & Data Report	jan 10/Nov 10	2 900	**3 500**
M91109	**Mobile Innovation in Japan**	Innovation Report	March 10	1 900	**2 500**
M90309	**Mobile Customer Acquisition & Retention**	Innovation Report	April 09	2 900	**3 500**
M90609	**The Future of Mobile Communication**	Market & Data Report	April 09	2 900	**3 500**
M93009	**Mobile VoIP**	Innovation Report	Oct. 09	1 900	**2 500**
M10111	**Mobile payments***	Innovation Report	sept-10	2 900	**3 500**
M10112	**Mobile stores/platforms***	Innovation Report	sept-10	2 900	**3 500**
	Business ICT Markets				
M91809	**RFID**	Innovation Report	June 09	2 900	**3 500**
M90909	**Fixed-Mobile Convergence in the Business World***	Innovation Report	Sept. 09	2 900	**3 500**
M10115	**M2M**	Market & Data Report	Aug 09/Sept.10	2 900	**3 500**
M10110	**Smart Grid & Smart metering**	Innovation Report	June 10	2 900	**3 500**
M10411	**Data Mobile Entreprise***	Innovation Report	oct-10	2 900	**3 500**
	Broadband / FTTH				
M81508	**FTTx Business Models***	Market & Data Report	Jan. 09	2 900	**3 500**
M81608	**Local Authorities & Ultra Broadband***	Innovation Report	Jan. 09	2 900	**3 500**
M84708	**The Sustainable City & ICT***	Innovation Report	Jan. 09	2 900	**3 500**
M10317	**FTTx Markets***	Innovation Report	March 10	2 900	**3 500**
M10303	**Public fundings & FTTx***	Innovation Report	July10	2 900	**3 500**
M10304	**Services over FTTx***	Innovation Report	oct-10	2 900	**3 500**
	Satellite				
M91009	**Hybrid Networks (Mobile/Satellite)***	Innovation Report	Oct. 09	2 900	**3 500**
M10310	**Satellite Ultra Broadband***	Market & Data Report	April 10	2 900	**3 500**
M10312	**Satellite : New growth engines***	Innovation Report	Q3 10	2 900	**3 500**

* Report also available in French

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Market Reports

TV, Internet & Digital Content Series

Ref	Market Reports	Collection	Publication	Hard Copy	eCopy 1 to 5 Users
	Internet Services				
MF90109	**e-Commerce & Media Group***	Focus Note	March 09	800	**800**
MF90609	**The Online Content Distribution Market**	Focus Note	Jan. 10	1 900	**2 500**
M91409	**Web 3D***	Innovation Report	Jan. 10	2 900	**3 500**
M93409	**The future of the Web**	Innovation Report	June 10	2 900	**3 500**
M10114	**Online Advertising***	Market & Data Report	May 09/Sept 10	2 900	**3 500**
M10211	**Social Video***	Innovation Report	May 10	2 900	**3 500**
M10113	**Internet Giants***	Innovation Report	Q4 10	2 900	**3 500**
	TV & Video				
M10200	**World Television Markets** - Data & Forecasts*	Market & Data Report	Jan./July 10	2 900	**3 500**
M83008	**Internet Video - Business Models***	Market & Data Report	Jan. 09	2 900	**3 500**
M91909	**Which Network to deliver HDTV?***	Innovation Report	May 09	2 900	**3 500**
M92809	**Pay TV***	Market & Data Report	Sept. 09	2 900	**3 500**
M93709	**Video 3D -** TV & Cinema	Innovation Report	Oct. 09	2 900	**3 500**
M92009	**IPTV services over FTTx**	Innovation Report	Feb. 10	2 900	**3 500**
M92109	**Next Gen TV***	Innovation Report	Jan. 10	2 900	**3 500**
M10214	**TV Groups Diversification Strategies***	Innovation Report	June 10	2 900	**3 500**
M10212	**Future Television** (Scenarios 2020)*	Market & Data Report	July 10	3 900	**4 500**
M10216	**Benchmark bundle IPTV***	Innovation Report	Q3 10	2 900	**3 500**
M10118	**Online Video** (CDN & Business models)*	Innovation Report	Q4 10	2 900	**3 500**
	Digital Content, Digital Home & Entertainment				
M10201	**World Video Game Market** - Data & Forecasts*	Market & Data Report	June / Oct 10	2 900	**3 500**
M83408	**Radio : Internet Strategies***	Innovation Report	Jan. 09	2 900	**3 500**
M84008	**ePaper***	Innovation Report	Jan. 09	2 900	**3 500**
M90109	**Connected Devices :** Notebooks, Mobile Internet Devices, eReaders	Innovation Report	Oct.09	2 900	**3 500**
M92509	**Use IT Trend Book***	Innovation Report	Nov. 09	2 900	**3 500**
M92309	**InGame Advertising***	Market & Data Report	Nov. 09	2 900	**3 500**
M92409	**Digital Home** - Connected TV*	Market & Data Report	Jan.10 / Q3 10	2 900	**3 500**
M10210	**Online Video Game** (appstores)*	Market & Data Report	June 10	2 900	**3 500**
M10213	**Serious Games***	Market & Data Report	June 10	2 900	**3 500**
M10116	**eBooks***	Market & Data Report	Q4 10	2 900	**3 500**

Market Reports (Usage & Behaviours)

Ref	Market Reports - French Series	Collection	Publication	Hard Copy	eCopy 1 to 5 Users
	Enquêtes - France				
M84408	**Comportement d'Achat des PME***	Market & Data Report	Aug. 08	4 900	**5 500**
M84308	**VoIP dans les PME***	Market & Data Report	May 08	2 900	**3 500**
M90809	**Enquête PME 2009***	Market & Data Report	Oct. 09	7 900	**8 500**
M10410	**Enquête Villes & TIC***	Market & Data Report	June 10	7 900	**8 500**

Ref	Market Reports - US Series by Centris	Collection	Publication	Hard Copy	eCopy 1 to 5 Users
MC2B09	**Digital TV Transition Report**	US Consumer Surveys	March 09	-	**1 925**
MC1A09	**Consumer Preferences:** for Wireless Broadband & Next-Generation Services	US Consumer Surveys	March 09	-	**4 620**
MC2B09	**Customer Satisfaction & Loyalty in Wireless Communications**	US Consumer Surveys	Sept. 09	-	**4 620**
MC1C09	**The Wireless Trifecta**: Access Device, Service Plan, and Usage	US Consumer Surveys	Dec. 09	-	**4 620**

Other Publications - DigiWorld Programme

Ref	Other Publications		Publication	Hard Copy	eCopy 1 to 5 Users
CS10	**Communications & Strategies**	DigiWorld Economic Journal	Quarterly	200	**320**
DW10	**DigiWorld Yearbook 2010***	DigiWorld Yearbook	May 10	29	**25**

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