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Evaluating Users' Experiences (UX): a case study approach to improving I-Doc UX Design

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Key words: UX Design Evaluation, Interactive Documentary (i-doc), Informational architecture, User-centred design, Usability, Sense-making.

Introduction

Hundreds of interactive documentaries (i-doc) have been published on the Internet in the 2005-2015 decade. Despite the apparent success of i-docs (Gaudenzi 2013: 247, Gantier 2012), it appears that a great majority of them do not keep their users beyond a few minutes¹. How can one explain this? One response to the question is that i-docs are particularly challenging as an emerging media mixing the language of documentary films with that of computational and interactive 'computerised media' (Jeanneret 2007). In effect, an i-doc is of a hybrid nature. It merges a graphic interface with an audiovisual flow (Gantier 2016). In this context, the aim of our study was to establish an i-doc evaluation methodology of users' experiences.

To present the study, first, archetypal '*Model User*' drawn from the minds of professionals (filmmakers, producers, web developers, graphic artists, television broadcasters) involved in the designing of the i-doc '*B4, Fenêtres sur tour*'² (2012, '*B4, Windows of a block of flats*') is portrayed. Second, we describe a novel *tri-dimensional evaluation model*. Third, in an *empirical case study*, we examine how two user groups experienced different viewing modes, usability problems and the informational architecture of *B4*. Fourth, we examine how users' sought to

make sense of their i-doc experience. Finally, the gap between the Model User and Empiric User is advanced, along with recommendations to improve i-doc design

1 Archetypal Model User

The study began when one of the researchers of the chapter, Samuel Gantier, was employed as a film-editor on the six-month long design of the i-doc *B4*. It provided an opportunity to observe how the design team imagined the archetypal Model User³ (Gantier and Labour 2015). The identification of a Model User effectively crystallises a set of sociotechnical negotiations (Akrich 2006) and semio-pragmatics elements (Jeanneret and Souchier 2005) that conditions both the informational architecture and the interaction design of the i-doc and its ‘film-interface’⁴.

1.1 Informational architecture of *B4*

B4 is an adaptation of the experimental novel of Georges Perec, *La Vie, mode d'emploi* (1978), which explores the fictional possibilities of algorithmic logic (cf. Hartje, Magné and Neefs 1993). *B4* re-interprets Perec’s exploration on how 12 inhabitants of a virtual, 12-floor, inner-city block of flats feel about their neighbourhood. At the heart of the i-doc are 96 ‘documentary *haïkus*’ of two to three minutes, totalling 180 minutes.

If one views, for example, six videos (for about 15 minutes), and if one takes into account all the possible sequences of watching the *haïkus*, users have a choice of 667 billion⁵ different viewing paths. The *B4* architecture offers three navigation modes.

- A *vertical* viewing mode presents a series of 12 characters in a specific *haïkus* pattern. The mode is found by clicking on the columns of the virtual block of flats, or by clicking haphazardly on the décor.
- A *horizontal* viewing mode focusses on each character of *B4*. Users click on the rows of windows of the building.
- A *transversal* viewing mode offers the different themes of the videos. This is situated at the bottom of the screen.

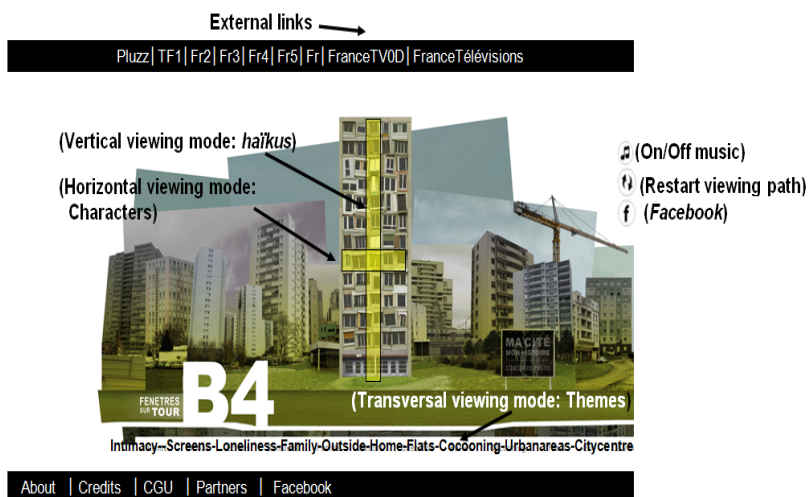


Figure 1. *B4* informational architecture
(translated from French)

Users can switch on or off the default background neighbourhood sounds of children playing and passing trains.

1.2 Interaction design and user choice

During the participant-observation of the *B4* design team (see in the Introduction, above), a central issue was deciding which actions should be system-driven, and which should be user-driven. This shows how when viewing an i-doc, users are placed in a dialectical tension between the *cognitive ease*, by letting the i-doc system decide what is watched, and the *cognitive effort* of letting users decide as ‘spec-actors’ (Barboza and Weissberg 2006) what to watch. User-driven decisions depend, however, on knowing from what options can be chosen.

Regarding the question of providing users with (choice giving) ‘clickable’ possibilities, Serge Bouchardon (2009) distinguishes between ‘*conventional engagements*’ (where the ergonomics of a system seek to increase the coherence of the narrative) and ‘*non-conventional engagements*’ (users do not find what they expect). According to Yves Jeanneret and Emmanuel Souchier (2005) when users find confusing on-screen features, they disengage.

In this context, the *B4* design team differed about how much leeway to give to users. Short of conducting tests to find out what users thought about the *B4* design, the in-team discussions focused around three key points.

1. The author-director and the graphic artist wanted to give users *minimal guidance*. Users were expected to discover in an open-ended, trial-and-error approach how the i-doc was organised *via* a series of non-conventional engagements (Bouchardon 2009)
2. The producer and development engineers pushed for a *semi-guided* user approach. They argued for visual decision-aiding graphics that would suggest how the videos were organised. They proposed that when a user clicks inside a window of the block of flats, the floors (horizontal line) and columns (vertical line) of the building simultaneously and momentarily light up to create an intersecting cross. This approach sought to reduce user cognitive effort as a way to limit disengagement.
3. The department director of *France Télévisions - Nouvelles Écritures* (co-producer of *B4*) argued to embed established web design conventions. This design decision can be considered as providing conventional engagement (Bouchardon 2009). It reinforced the decision to light up the horizontal and vertical lines of the block of flats.

1.3 Model User's viewing path

During the official launch of *B4*, its author-director created a 39-minute film focussed exclusively on the *vertical* mode of viewing *B4*. The film represents an effective portrayal of a Model User. In this light, it would seem useful to compare the vertical viewing mode *B4* Model User to a data-based Empiric User inferred from a study of users' declared experiences.

2 Evaluation of users' experiences

2.1 Research methodology

Focussing on user experience can highlight or diminish different aspects of an i-doc depending on the domain of reference (technological, ergonomical, emotional, cognitive, aesthetical, semio-pragmatic, etc.). In interaction design,

notably in the ‘new documentary writing’⁶ domain, user experience is often described as ‘an individual’s perceptions of his/her interaction with a product, service, or environment’ (Drouillat 2013). For researchers such a description lacks precision, hence limiting its effective use. It is thus necessary to explain what is meant by ‘user experience’ in the *B4* context, namely concerning the evaluation dimensions.

Following the work on the metrics of interface usability (e.g. Baccino, Bellino and Colombi 2005) and multimedia documents (e.g. Huart, Kolski and Bastien 2008), the empirical analysis of *B4* users’ experience were focused on the systemic⁷ interaction of three dimensions (see Figure 2, below):

- 1) *Viewing frame*. Given that i-docs are relatively ill-defined (Gaudenzi 2013: 26), viewers do not know what to expect or what to do. This can negatively impact on establishing the appropriate viewing ‘frame’⁸ to enable users’ adapt their interpretive ‘belief system’ to a document (Pignier and Drouillat 2005). In this light, one hypothesis of our hypothetico-deductive study is that an i-doc viewing frame involves a simultaneous ‘documentarising’ (Odin 2011,) and ‘ludic’ viewing mode (Genvo 2013, see below).
- 2) *Usability*. This is described as the ‘degree to which a product can be used by specifically identified users to attain a defined objective with efficacy, efficiency and satisfaction in a given context of use’ (Bonnier 2013: 147). For an i-doc, usability can be seen as the extent to which a film-interface becomes meaningful for users in a given reception context.
- 3) *Sense-making*. This draws on the work of researchers like Brenda Dervin and Patrica Dewdney (1986), and more recently that of Michel Labour (2011, see below). Sense-making research attempts to understand the construction of context-bound problem-solving constructs.

Figure 2, below, summarises the tri-dimensional *B4* evaluation model based on mutually reinforcing (*via* iterative loops) top-down and bottom-up dynamics.

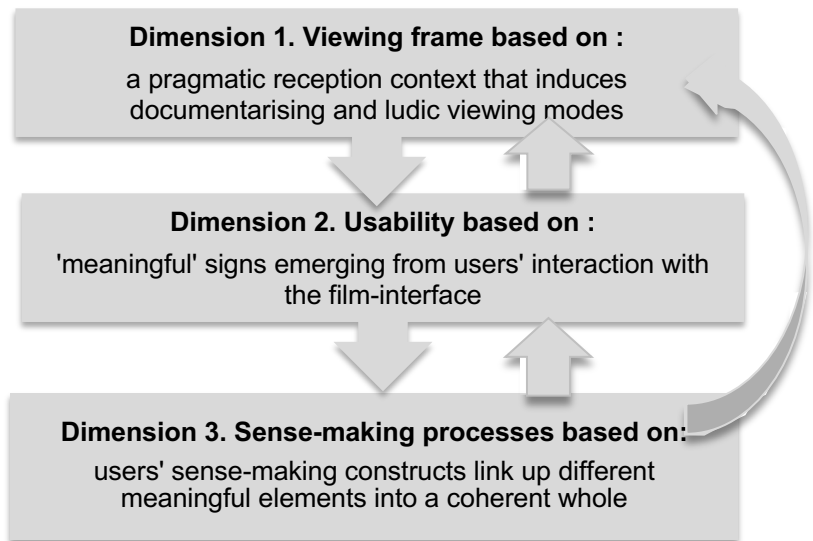


Figure 2. The systemic tri-dimensional i-doc UX evaluation model

The Model formally identifies three key dimensions in an apparent top-down linear logic. In practice, however, the dimensions function as an interdependent emerging functional whole. An evaluation of i-doc usage should thus take into account the realities of actual use which go beyond formally identified 'dimensions' conceived for research purposes.

2.2 Working hypotheses

An advantage of a quantitative approach, like web metrics, is that it indicates the frequency and the duration of visits to i-docs, but it is not enough. We contend that a qualitative and empirical experimental approach is also needed to understand how different users 'make sense' of i-docs.

In this context, our evaluation was trialled in a pre-study that crystallised four working 'falsifiable hypotheses' (Popper 2007 [1935]) of users' experiences, taking in consideration the three dimensions identified earlier (see Table 1, below).

User experience evaluated	Underlying concepts (see below)	Working hypotheses (H)
1. Viewing frame	Ludic and documentarising viewing mode.	H ₁ : A successful viewing frame 'balances' the ludic and documentarising viewing modes such that both emerge simultaneously.
2. Usability	Affordance and go-between signs. Architecture of the informational and paratext.	H ₂ : Not grasping signs embedded in a film-interface create problems of usability. H ₃ : The presence of decision-aiding paratexts increases the use of different viewing modes.
3. Sense-making processes	Sense-making constructs, Senselessness, Sense-making break.	H ₄ : The type of viewing mode impacts on sense-making processes.

Table 1. Hypotheses regarding Users' Experiences

These hypotheses were tested by using a set research method.

2.3 Research method

In 2014, 12 users, aged from 20 to 30 years, were recruited on the basis that they had never met the researchers, before the study, and were media and web literate. Users were randomly divided into two equal groups: A and B. The main difference between the groups was that only Group B received a decision-aiding 'paratext' (explicative text about a text) that explained the informational architecture of *B4* in the following way:

'The i-doc gives you the possibility of meeting 12 inhabitants of an inner-city block of flats. As you can see from the picture (see Figure 1, above) you can view 96 videos in three viewing

modes: Main characters mode, Type of films mode, Themes of B4 mode'. (translated from French)

Before viewing *B4*, groups A (without paratext) and B (with paratext) were given the same verbal instructions: *'I would like you to discover the site B4, Windows of a Block of Flats. Have you already seen the web site? (If the answer is 'Yes', the user is asked to leave the room). Feel free to view the site in any way you wish. Afterwards, I would like to speak to you about how you viewed the site'*. (translated from French) Viewers spent about 30 minutes viewing the i-doc (see Table 4, below). In order to monitor users' viewing paths, a tracking software of users' clicks was installed on computers used in the experiment. After the viewing session, users agreed to fill in a self-evaluating *Visual Analog Scale* (VAS) questionnaire (preferences are indicated on a sliding scale of 0-100) and participated in a semi-guided interview about their *B4* experience.

3 Empiric User

3.1 Viewing frame (Hypothesis 1)

Documentarising viewing

Roger Odin (2011) defines 'documentarising viewing' as a user interpretative ('reception') skill that gives a text its 'documented value'. This rests on context-bound semio-pragmatic elements allowing users' to infer the documentary value of a text from its viewing situation. One function of the documentarising mode is that it allows users to establish who is responsible for the discursive and mood aspects of a text. In this way, users can symbolically question issues of 'identity of action and of truth' (Odin 2011: 56). The viewer is thus in a position to criticize the 'enunciator' (the one who appears to be responsible for the discursive and mood aspects of a text). In short, the credibility of a documentary is never guaranteed as it involves a user's interpretative process.

'At the end the day, the i-doc says there is not one sole way of speaking about inner-cities. So I said to myself, why is there no inhabitant in a difficult economic situation in the films? Is this a deliberate choice of the film director? I wonder if the

situation is not a bit distorted because the i-doc only shows more or less well-off inhabitants. In my opinion, the director should have shown what 'really' exists, that is to say the socio-economic reality of the inner-city block of flats' (interview extract of User 12B⁹).

Our study showed that overall, groups A and B accepted, without question, that the characters really lived in a Parisian inner-city. From this, one can infer that users successfully adopted a documentarising viewing mode in perceiving the inhabitants of *B4* as credible enunciators. In this sense, the *B4* characters and the users shared a common communication space based on an underlying '*agreement of trust*' (Soulez 2004). This agreement is the outcome of a dialectic relationship between what the author states about the world and what the viewer thinks of the world. Guillaume Soulez (2004) describes this situation as the inevitable 'communicational challenge' of a documentary film director wanting viewer endorsement.

Ludic viewing

For Sébastien Genvo (2013) the idea of a ludic mode involves *playability*, a *ludic ethos*, and a *Model Player* that reinforces user involvement. By ludic ethos is meant 'a structure that seeks to persuade its user that 'this is play' (Genvo 2013: 134) in echo to Gregory Bateson (2000 [1954]: 178).

When users were asked to self-evaluate (using a VAS questionnaire, see above) their ludic attitude when viewing *B4*, they indicated an overall average level of 73 per cent (Table 2, see below). The 44 per cent difference between the highest (92 per cent) and the lowest score (48 per cent) indicates that users' experiences of *B4* was in general playfully ludic. In this vein, it appears that the trial-and-error exploration of the film-interface provided some pleasure, notably concerning the parallax effect of the buildings and the random graphic animation of the i-doc *décor*.

Even if the trial-and-error mode is often encouraged in interactive media, it does not appear to trigger off lasting user involvement (i.e. being 'engrossed, caught up,

enthralled', cf. Goffman 1986 [1974]: 345) with i-docs. This was illustrated in the analysis of User 11A's viewing paths. This User declared having adopted a ludic attitude level of 78 per cent, yet had not viewed a single video in its entirety. Given the limited time constraints of the viewing situation, the plethora of viewing choices, and the absence of comment from the viewers about wanting to go back and relook at videos during the post-viewing interviews, it can be inferred that the determining factor appears not to be the 'ludic attitude', but the cognitive effort needed to understand the playability rules of an i-doc.

The effort required to grasp the three viewing modes of B4 appeared to be high for users (see User 9B's comments, below). It was only once the informational architecture of B4 had been assimilated that a ludic attitude became useful.

'I find the concept of a block of flats interesting but I did not answer 'completely ludic' because it took me some time to understand how things work. I did not always understand the different categories. When I am on the Internet, I don't want to search how to do things. I prefer to have all that info quickly. I want to learn stuff, and searching how to understand how the site is built is too tedious' (interview extract of User 9B).

Table 2, below, summarises the degree to which users perceived the lucidity level of the film-interface. The overall result shows that the perception of playful ludicity was seen as relatively high (73.7%), with only a three point difference between Group A (75.5%) and B (72%).

		Users	%
A	Group (without paratext)	U2	70
		U5	73
		U6	89
		U8	79
		U10	64
		U11	78
		average	75,5
B	Group (with paratext)	U1	80
		U3	80
		U4	92
		U7	56
		U9	60
		U12	64
		average	72
		overall average	73,7

Table 2. Perceptions of the ludicity level of *B4*

3.2 Usability (Hypothesis 2)

In evaluating *B4*, the analysis of on-screen actions indicated how users perceived, understood and used the ‘affordances’ and ‘go-between’ signs (Table 3, see below) of the film-interface and attendant problems of usability.

Highlighted affordances

Donald Norman (2013 [1988]: 10) defines an affordances as ‘the relationship between the properties of an object and the agent’s capacity to determine how the object could possibly be used’. The effectiveness of an affordance rests on informing users what possible actions can be taken without needing further guidance.

In the case of *B4*, after users click inside a window, the horizontal and vertical lines light-up as a momentary, yellow intersecting cross (see Figure 1, above) as an intended affordance. The data show that 92 per cent of users did not see that the highlighted cross as a visual aid indicating the organisation of videos (see Table 3, below). In addition, 77 per cent of users did not grasp that the flashing

cross indicated an entrance hall of the building that was clickable on what to watch, or not.

'I saw the lighted sign, but it did not strike me that it could have been useful. I did not see it as something significant. For me, it was decorative' (interview extract of User 6A).

At least two reasons can explain why most users did not click on the intersecting cross. First, when a user clicks on a video, a video player springs up in the middle of the screen, effectively blocking out the flashing light of the cross. Second, the lack of a label to explain the cross, differs from the logic of other parts of the film-interface that links the name of each character to a video (see User 5A's comments, below).

'I did not see the light in the hallway because the video player was in front of it [...]. I didn't click on it probably because there wasn't a text to it. In the other windows, I know they were links because they had titles. When the lines flashed, I thought it was an animation – like permanent hazard warning lights at (French) railway crossings – that was not clickable. When I see a text that changes, I say to myself that something is clickable, but here it just flashed when my mouse was not over it, so I thought it was decorative' (interview extract of User 5A).

Go-between signs

In the theory of 'screen writings' (*écrits d'écran*) of Yves Jeanneret and Emmanuël Souchier (2005) 'go-between signs' (*signes passeurs*) are described as sign-tools (icons, words, buttons, etc.) indicating what the viewer can decide to use. The go-between signs thus add a performative aspect to an i-doc. The design of such signs creates a dialectical tension between the graphic image of the sign and the norms of on-screen usage. In this way, clicking on an on-screen sign depends on a user's capacity to make sense of the document as much, if not more so, as the ergonomics aspects of the text.

B4 users understood the go-between signs indicating the *on/off* sound track and the sharing with *Facebook* (Figure 1 middle right of the screen, see above). However, 92 per cent of users did not grasp the *Restarting viewing*

path sign. In effect, users did not consider the option of changing viewing paths because they did not see how the film-interface was ‘playable’ in different ways.

User	Highlighted affordances			Instrumental go-between signs		
	Win-dows	Inter-section Viewing mode	Entr-ance hall	Music on/off	Restart viewing path	Facebook sharing
1	Yes	No	Yes	No	No	Yes
2	Yes	No	Yes	No	No	Yes
3	Yes	No	Yes	No	No	Yes
4	Yes	Yes	No	Yes	Yes	Yes
5	Yes	No	No	Yes	No	Yes
6	Yes	No	No	No	No	Yes
7	Yes	No	Yes	No	No	Yes
8	Yes	No	No	No	No	Yes
9	Yes	No	No	No	No	Yes
10	Yes	No	No	No	No	Yes
11	Yes	No	No	Yes	No	Yes
12	Yes	No	No	No	No	Yes
Total Yes	12	1	4	3	1	12
% Yes	100 %	8 %	33 %	25 %	8 %	100 %

Table 3. Understanding affordances and go-between signs

The hyperlinks sending users outside of the i-doc (top of the *B4* screen, Figure 1, see above) were considered as confusingly graphically similar to other hyperlinks offering paratextual information inside the i-doc (Figure 1, bottom of the screen, see above). This seemed to have disoriented some users.

‘I thought that the thumbnails on top of the screen were the menus of Pluzz (catch-up TV). I was wondering why it had been placed there. I did not dare click on it because I didn’t want to leave B4. I wasn’t certain whether the menu at the bottom of the screen made you stay in B4, or not’ (interview extract of User 10A).

3.3 Informational architecture (Hypothesis 3)

For Group A, who had viewed *B4* without a decision-aiding paratext, 66 per cent used the *horizontal* viewing mode, compared to 100 per cent of Group B (with paratext, see Table 4, below).

For Group A the *vertical* viewing mode was 100 per cent invisible, whereas for Group B, 66 per cent of users used it in their alternative viewing paths. It appears that Group B first needed to compare different the viewing paths before opting for a vertical viewing mode.

The *transversal* viewing mode acted as a reference point for users, in what can be called a reassuring ‘conventional engagement’ (Bouchardon 2009). A problem with the transversal mode is that it repeated videos found in other modes (see User 8A’s comments, below).

‘I would have liked to avoid the repetition of videos between those presented in the windows of the block of flats and those in the menu of themes because it was a right mess when you viewed the same video twice (...). I wanted to stop viewing because I had the impression of having seen all the videos, or that it was not worth the effort of looking for videos not seen (interview extract of User 8A).

			Viewing modes		
	User	Duration	Horizontal	Vertical	Trans- versal
Group A (without paratext)	2	28'	Yes (24')	No	No
	5	27'	Yes (8')	No	Yes (13')
	6	33'	Yes (16')	No	Yes (20')
	8	31'	No	No	Yes (8')
	10	34'	Yes (15')	No	Yes (1')
	11	24'	No	No	Yes (1')
	sub- total	29,5'	4 (66 %)	0 (0 %)	5 (83 %)
Group B (with paratext)	1	33'	Yes (2')	Yes (32')	No
	3	30'	Yes (2')	No	Yes (7')
	4	33'	Yes (2')	Yes (7')	No
	7	23'	Yes (6')	No	Yes (14')
	9	29'	Yes (14')	Yes (2')	Yes (1')
	12	29'	Yes (2')	Yes (7')	No
	sub- total	29,5'	6 (100 %)	4 (66 %)	3 (50 %)
	Total	29'5	10 (83 %)	4 (33 %)	8 (66 %)

Table 4. Viewing modes of groups¹⁰A and B

4. Sense-making processes (Hypothesis 4)

Given that there are numerous viewing paths, *B4* users had to take a series of problem-solving decisions in choosing a given viewing path. The problem-solving process rests on a series of *coherence-seeking connections* of perceived meaningful elements (Figure 2, see above) guided by users' preoccupations.

In the case of *B4*, users' central preoccupation was to explore inner-city 'togetherness' (*vivre-ensemble*). It led users to create information-seeking quests expressed in identifiable 'search modes'. These search modes allowed users to connect, what they considered as meaningful elements into 'sense-making constructs' (Labour 2011: 96-99).

User	Examples of user sense-making search modes
U8A	Getting an overall view of the neighbourhood before zooming onto the block of flats.
U5A	Focusing on individual portraits.
U9B	Items of interest to young adults and children.
U12 B	Discovering the intimacy of everyday life.
U6A	Items that may interest a given ('female') public about the North African urban spaces.
U11	Curious about technical details.

Table 5. Sense-making search modes

There are times, however, when the top-down and bottom-up dynamics of the sense-making process do not mutually reinforce each other (see Figure 2). Users then find themselves in a 'sense-making break', or 'senselessness' situation.

Sense-making break

A break in the sense-making process (Labour 2011: 101-102) occurs when users can identify apparently meaningful elements but *cannot connect them up coherently*

in terms of the perceived situation-problem (cf. Goffman 1986 [1974]: 345-377). This can incite users to look for new epistemological connections in order to resolve the problem-situation. The sense-making break leads users to re-frame what they perceive. This can accord with an author's wish to challenge how users see their world. However, attempts to question users' value system are challenging because users can disengage at any time, namely if they feel they are wasting their time, or if the task is seen as too arduous.

In this case the B4 author's intention was to change how people perceive inner-cities, as User 9B explains below.

'There is an even bigger gap than I thought between the human warmth of inhabitants and the external environment of the flats. I've never lived in subsidised housing; I have always lived in a house in the countryside (...). I realised that beyond the cliché, people in inner cities had a story to tell. B4 opened my eyes about something I had never thought of before. I said to myself that people are there because they escaped a war in their country, or they want a better quality of life over here [...]. There was an example, of a person who worked for a Member of Parliament. This surprised me, but it makes sense that not everyone is white in Parliament. I said to myself that when one takes the time to get involved in the inhabitants' lives, they are very different to what you see on TV (interview extract of User 9B).

Senselessness

Senselessness happens when users *cannot identify meaningful elements* (words, sounds, and pictures, etc.) in a problem-situation (Labour 2011: 99-101). This can lead to a discouraging feeling of being in a dead-end, and disengagement can follow.

In the context of an i-doc, senselessness can be induced by disorienting (usability) problems that produce cognitive noise. Our data show that Group A (without paratext) declared a higher feeling of senselessness than Group B (with a decision-aiding paratext).

5. Empiric User and Model User gap

The findings of the study, focussed on four working hypotheses about a data-based constructed Empiric User, show that:

- Users did indeed use a combination of ludic and documentarisation viewing modes when using the film-interface (Hypothesis 1 confirmed).
- Unclear or patently absent go-between signs and affordances effectively caused usability problems for many users (Hypothesis 2 confirmed).
- Users' ability to make sense of their viewing paths increased with the help of explicit decision-aiding guidance (Hypothesis 3 confirmed).
- Sense-making constructs were effectively personalised through a series of information-seeking quests linked to different viewing modes. The data showed that users' modified their initial viewpoints about inner-cities after having interacted with *B4* (Hypothesis 4 confirmed).

The comparison between the Model User and the Empiric User leads us to advance three key points about lessons learnt for i-doc design.

First, if *B4* users deploy simultaneously a documentarisation and ludic viewing mode, it did not encourage 'playability' as would have wished the author-director's Model User.

Second, the archetypal Model User was aimed at encouraging an intuitive viewing of *B4*. This was not confirmed in the study. It turned out that most users needed to be provided with clear 'conventional engagements' (Bouchardon 2009). For example, in the film of the trial-and-error Model User, the vertical viewing mode was promoted. Yet, in our study, no user took the vertical mode unless they had been explicitly informed of its existence. In a nutshell, the design of i-docs could be significantly improved if users were given explicit guidelines about its informational structure.

Finally, our study revealed that senselessness increased when the viewing was conducted without an explicit decision-aiding paratext. The lack of such guidelines creates

cognitive noise that hampers users' information-seeking quests.

Conclusion

A linear television (pre-production, production, post-production) model was used in the design of the *B4* i-doc examined in this study. This resulted in the i-doc being designed around a Model User based on the perceptions of the different author/designer/TV commissioner involved in the i-doc design. However, the qualitative UX research approach of our study shows the gap between what the projected Model User should have experienced, and what the observed Empirical User experienced actually experienced. Given this, we advance an iterative user-centered design approach to ensure that empiric users grasps (sense-making) of the intentionality of authors is both fully experienced (usability) and taken seriously (viewing frame). Such an iterative design approach involves creating a user-validated prototype phase about the initial design (paper prototyping) before moving on to the implementation phases (dynamic prototyping).

One limit of the study was that it was conducted in a near-laboratory condition and not in a more natural viewing context. Future research could also compare very different i-docs as a way to improve i-doc design from a user perspective. More broadly speaking, the challenge of emerging i-docs formats lies in evaluating iterative user-centred design. An example, of this approach can be found in the *Manifesto for Agile Software Development* (Deuff and Cosquer 2013), with its capacity to integrate authoring issues through self-organization, team work and flexible responses to change when improving i-doc design.

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¹ There appears to be little reliable studies on this subject. The observation is based on professional grassroots practice.

² The *I-Doc*, which will henceforth be referred to as *B4*, was directed by Jean-Christophe Ribot and co-produced by *Mosaïque Films* and *France*

Télévisions (French state television). Available at: <http://www.francetv.fr/nouvelles-ecritures/banlieue-b4/> (accessed 30 October 2015).

³ The idea of Model User is inspired from Umberto Eco's (2010 [1985]) concept of *Model Reader* in his theory of textual cooperation.

⁴ Marida Di Crosta (2009) defines a film-interface as a series of hybrid objects found in the intersection between cinematographic fiction and video games.

⁵ i.e. $96 \times 95 \times 94 \times 93 \times 92 \times 91 = 667, 474, 778, 880$.

⁶ See the interviews conducted by Sandra Gaudenzi. available at: <http://i-docs.org/?s=UX+series&x=0&y=0> (accessed 30 October 2015).

⁷ A systemic approach involves circular causal relationships – *via* a series of feedback loops operating in different temporal frames – linking up different dimensions into a functional whole.

⁸ For Erving Goffman (1986 [1974]: 345) a 'frame' organises 'meaning' and 'involvement', linked to normative expectations, such that 'participants will not only obtain a sense of what is going on but will also (in some degree) become spontaneously engrossed, caught up, enthralled'.

⁹ All of the interview extracts are translated from French.

¹⁰ Time given in minutes on an indicative basis.