



HAL
open science

Telehealth: Towards a Global Decision Support Framework based on Value Creation for Healthcare Systems Design

Camille Jean, Julie Le Cardinal, Marija Jankovic, Jean-Claude Bocquet

► **To cite this version:**

Camille Jean, Julie Le Cardinal, Marija Jankovic, Jean-Claude Bocquet. Telehealth: Towards a Global Decision Support Framework based on Value Creation for Healthcare Systems Design. Center for Integrated Healthcare Delivery Systems (CIHDS) Workshop, Apr 2012, State college, Penn State University, United States. hal-01359087

HAL Id: hal-01359087

<https://hal.science/hal-01359087>

Submitted on 1 Sep 2016

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

TELEHEALTH

Towards a Global Decision Support Framework based on Value Creation for Healthcare Systems Design

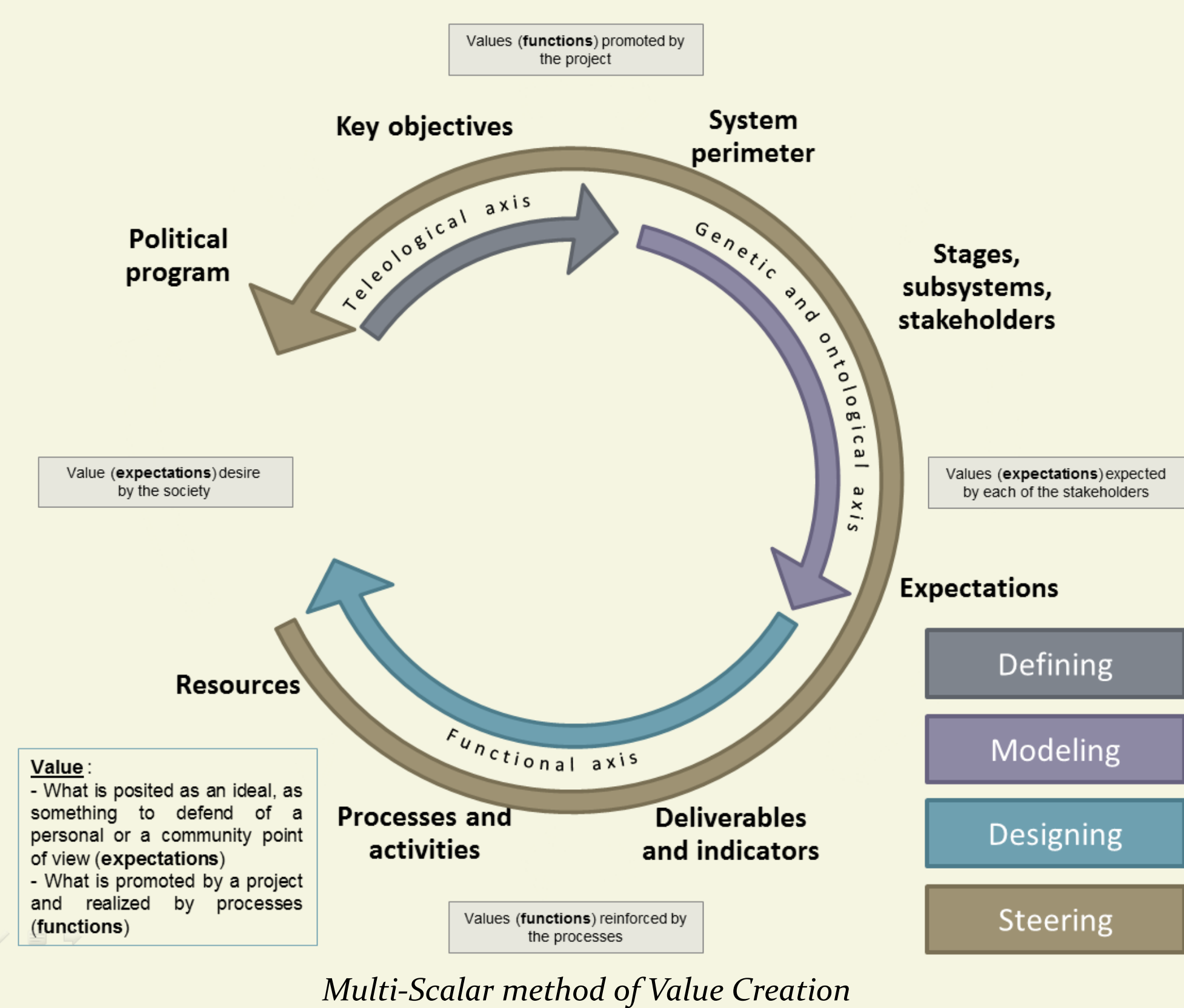
Camille Jean, Pr Julie Le Cardinal, Dr Marija Jankovic, Pr Jean-Claude Bocquet

Research objectives

- Elaborate a new multi-scalar method based on the concept of **value creation**
- Develop a **decision support framework** permitting to better envision potential impacts of different scenarios in the healthcare system
- Design new telehealth processes with a **Systems Engineering** point of view for **Health Organization Transformation**

A - Multi-scalar Method of Value Creation

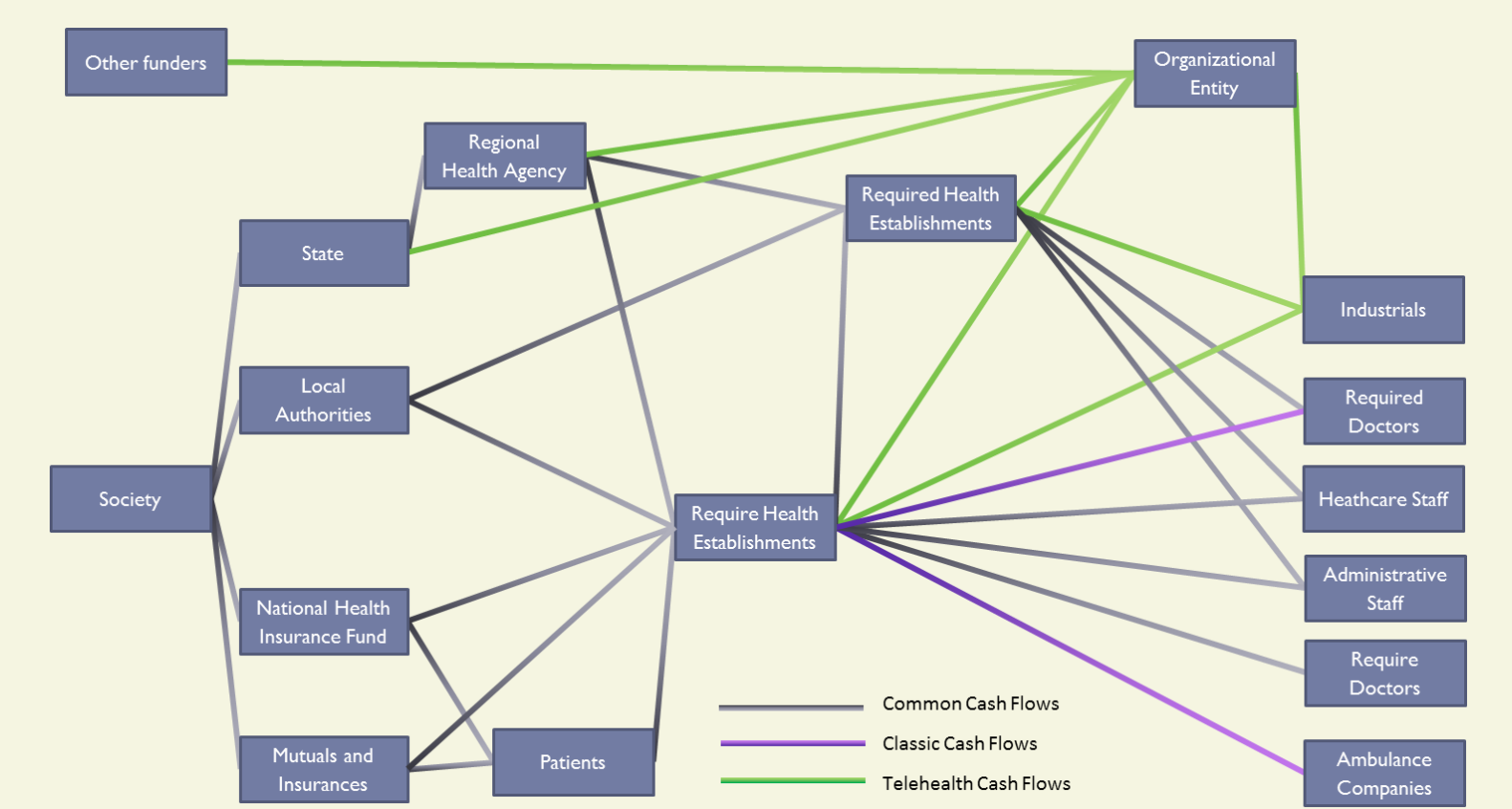
- Industrial Engineering tools can be used to help **design** new organizational processes in the healthcare context (Reid et al. 2005)
- A new **multi-scalar method of value creation** based on the **systemic approach** is developed. This method takes into account **multi-stakeholder** and **multi-criteria** aspects (Jean et al. 2012)
- The ultimate goal is to build a **robust and generalizable model** to simulate and optimize value creation in the healthcare context



C - Design of New Healthcare Organization Processes and Medico-economic Models

- Correlated to this value creation identification, our objective is to go towards the proposition of a new business model to identify multiple potential payers.
- A Cash Flows Matrix and Graph are elaborated in order to calculate the **balance of annual margin of each stakeholder** comparing the “before” to the “after” telehealth implementation

Cash Flows Matrix

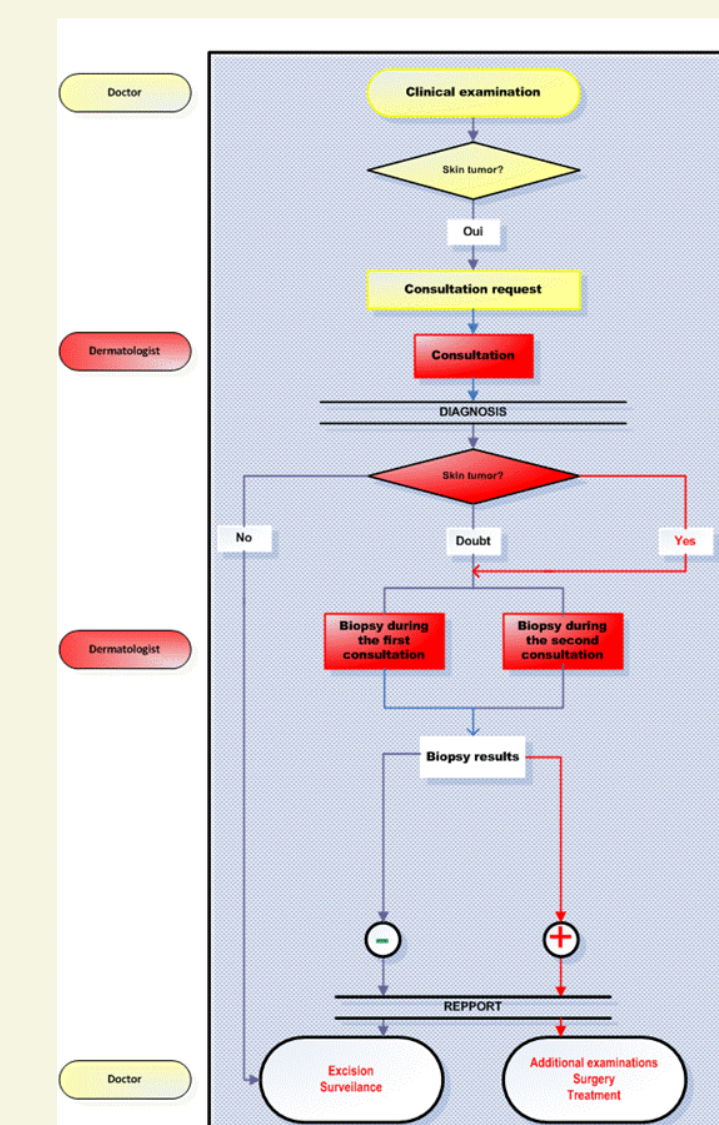


Cash Flows Graph

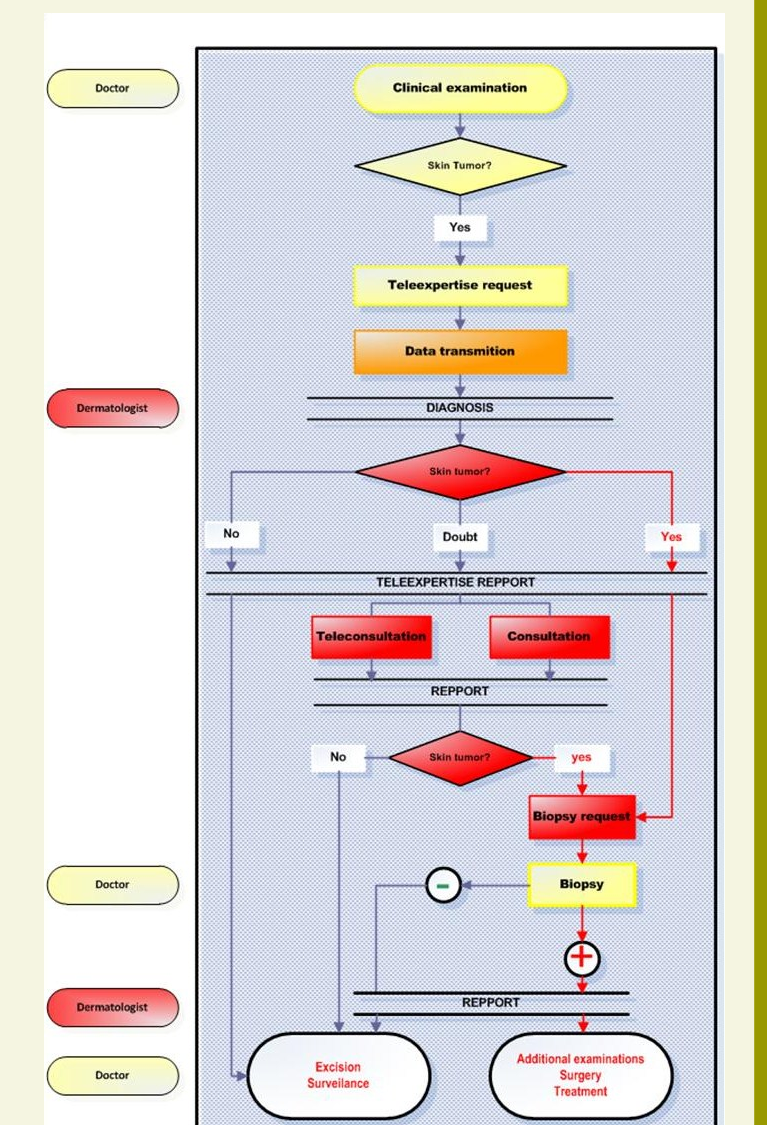
- Finally, processes and activities are operationally defined. The next processes represent the new telehealth process of dermatology consultations

- For example, this new process provides :

- Better accuracy to find the appropriate healthcare professional
- Direct cooperation and transfer of knowledge between the specialist and the referring doctor
- More time for the relationship during the teleconsultation
- Less stress for the patient due to the lack of transport
- Economic benefits with the absence of transport and the optimization of the patient pathway



The “before” process without the telehealth implementation



The “after” process with the telehealth implementation

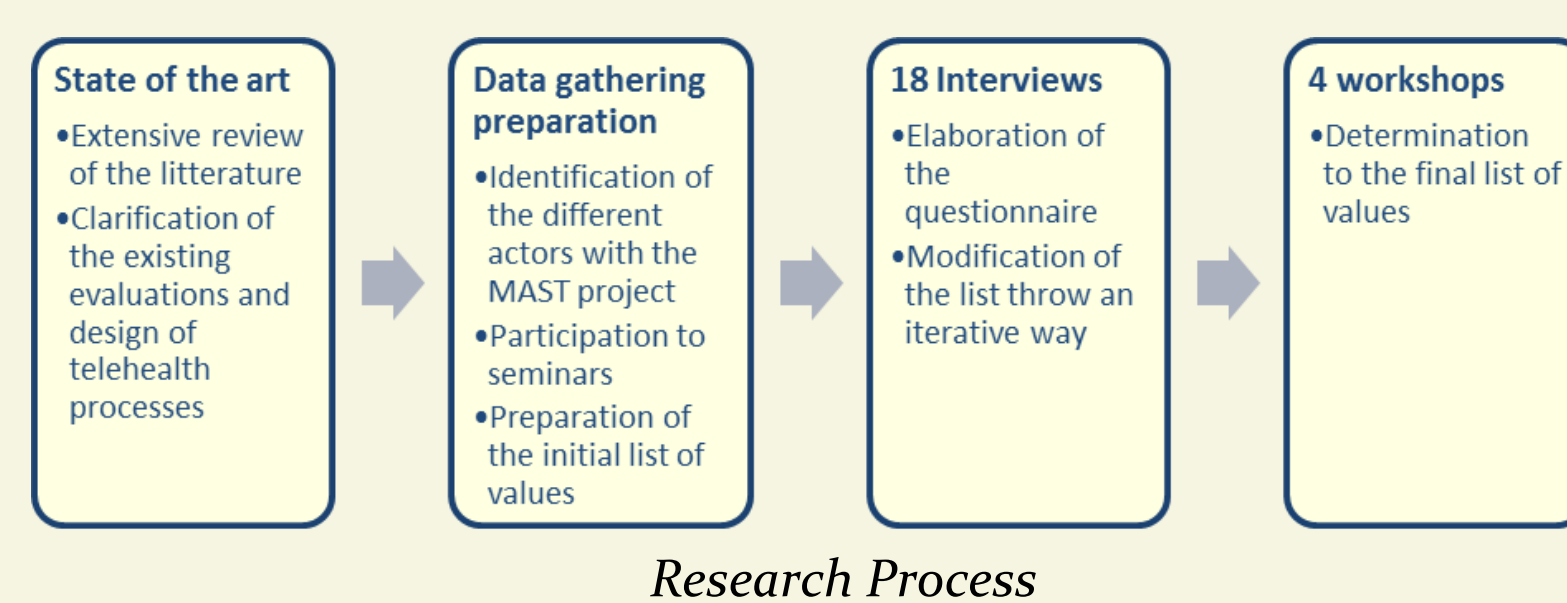
B - Value Creation of the Telehealth System

- The main idea of telehealth is to provide a **remote access** of healthcare services thus **closing the distance with appropriate healthcare professionals**
- However, the **introduction of telehealth** involves a **major organizational change**

- For identification and definition of health system **values** we have collected very different data

- We **investigate** a first experiment of telehealth named Tégéria at the European George-Pompidou Hospital, **realize** workshops and **assist** to dedicated conferences in order to extract a first set of value creation for each of the stakeholders

- The representation identifies a synthetic part of the **relation between values and stakeholders** of our telehealth system. (The intersection is represented by a green box for a value creation, and a red box for a destruction of value)



Research Process

Values	State	Local Authorities (Town, Department, region)	Regional Health Agency	Regional Health Insurance Fund / Mutual Health Insurance	Regional Health Establishment	Accepted Health Establishment	Regional Doctors	Regional Doctors and Staff	Patients	Inhabitants	Society
Medical											
Access to healthcare services											
Access to specialty care and expertise											
Cooperation between healthcare professionals from institutions and / or city											
Ethical and good medical practices, informed consent of the patient											
Prevention											
Quality of care											
Risk due to transportation											
Shared medical decision											
Social											
Better quality of life / Well being											
Geographical equalization of access to quality care for all											
Knowledge and skills transfer between health professionals											
Opening to the outside world											
Patient therapeutic formation through telehealth											
Quality of the relation between patient and healthcare professionals											
Economical											
Attractiveness of the health territory: improvement of medical demography											
Attractiveness of the healthcare establishment: reputation of the institution											
Coordination between medical and medico-social											
Control of health care costs											
Coordination of health facilities											
Creation of new jobs											
Fluency of the patients' journey											
Efficiency of the health system											
Limitation of the access to health emergency											
Medical activity development											
New markets											
Optimization of medical time											
Optimization of the patient journey time											
Pooling of resources for care, prevention and training											
General satisfaction											
Comfort of proximity care											
Comfort of daily work											
Fame											
Develop new services											
Intellectual practice enhancer											
Satisfaction of participating in the effort of healthcare											

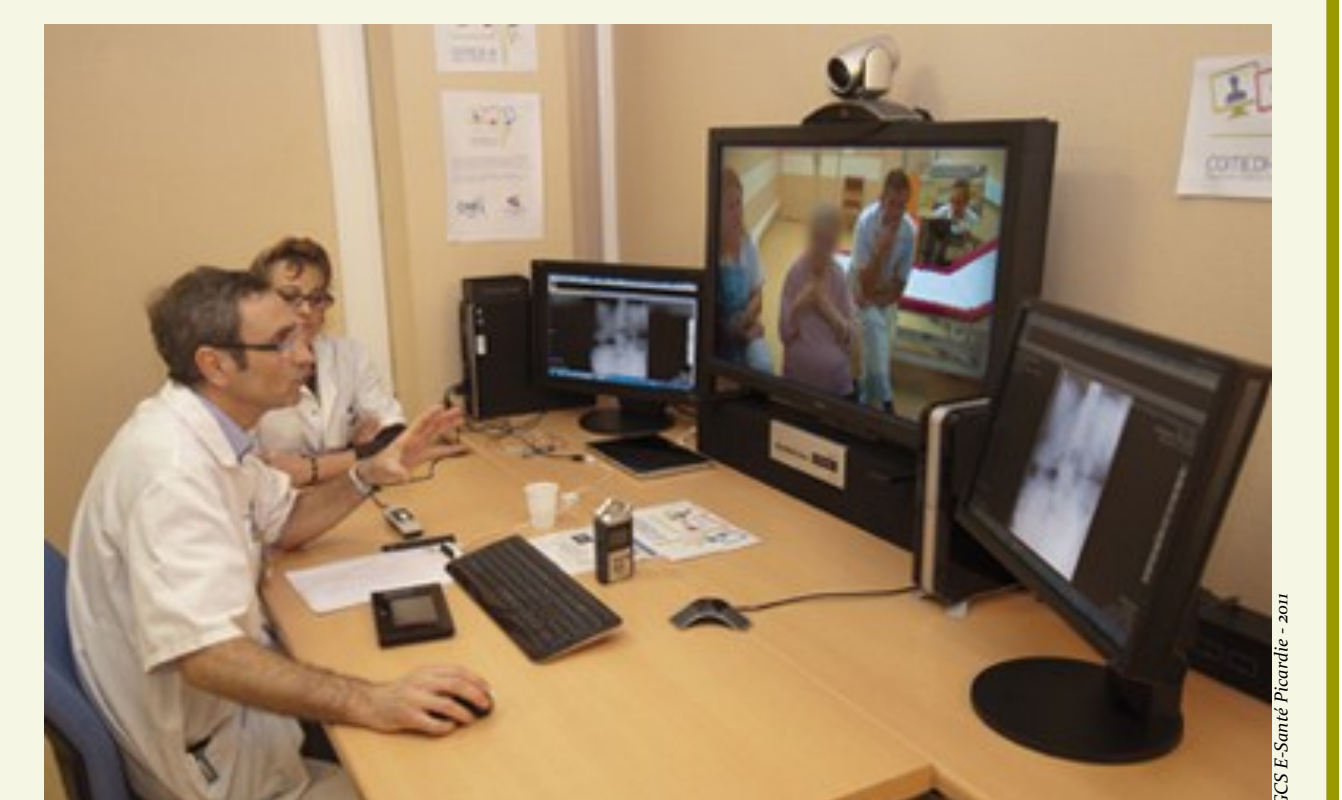
Values Stakeholders Matrix

D - Future Works

- Scenarios-based decision-making technique will be used to determine the new processes that guarantee the value creation

- Future numerical simulations will validate our hypothesis on a long term to provide a medico-economic model viable and sustainable

- These works will allow to determine the advantages of the telemedicine and to organize its large-scale setting-up at the regional and national level



A telehealth platform in the Picardie Region

References

Homer, J et al. 2006. *System Dynamics Modeling for Public Health : Background and Opportunities* American Journal of Public Health

Jean, C et al. 2012. *Telehealth : Towards a global industrial engineering framework based on value creation for healthcare systems design*. DESIGN Conference

Jun, T et al. 2009. *Health care process modeling: which method when?* International Journal for Quality in Health Care Advance Access

Reid, P et al. 2005 *Building a better delivery system: a new engineering/health care partnership* National Academy of Engineering, Institute of Medicine, National Academies Press