

# **E-Technologies for french hospitals**

## **Stories, mirages and realities**

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# French Health System – Key Figures

## Health system organisation

- French Ministry of Health and Social Affairs / agencies
- Regional approach: Regional Health Agency (13 regions)
- Ageing: local authorities (local counties)
- Public & private Hospitals
- 547 public hospitals (incl. 30 university hosp.) a 65% of beds
- Public & Private specialists and nurses /Private GPs
- 208 727 physicians / 52% GPs – 48% specialists

## Epidemiologic/demographic main data

- Chronic disease Patients = about 15 millions patients
- Ageing population: +60 years old a 23,8% in 2013 ; > 30% in 2030

# French Health system – Key figures (II)

## Funding

- Mainly by a national public insurance – 100% for chronic diseases
- Private insurances (complementary)
- Ageing : mix of local and national taxes allocated by local authorities

**Health expenditure** – 260 billions euros / 12% GDP

-35% hospitalisation care 21% ambulatory care 20% drugs

**Challenge 1** : The rise of chronic diseases accounts for more than 80% of the growth of health expenditure since 2002. Can e-medicine help?

# French eHealth market and ageing

- 2.4 billions euros
- Growth expected to exceed 10% per year
- Telemedicine market : between 80 and 140 millions euros in 2013
- The main fund for ageing and independant living (APA) led by local authorities : 5,5 billions euros.
- **Challenge 2** : Can e-technology help ?

# Innovation in e-health



# The key role of ASIP (I)

- The founding of ASIP Santé in 2009 reflects the will of the French authorities to develop a **standardized and stable** technical, legal and organizational environment. It has been entrusted with seven mandates :  
**Taking ownership of the health information system projects** assigned to it by its members
- **Implementing and rolling out the electronic health record (DMP)**, and in particular taking ownership of hosting of it
- **Defining, promoting and ratifying standards** which contribute to the interoperability, security and usage of health information systems and telehealth, and monitoring them to ensure that they are used properly

## The key role of ASIP (II)

- **Managing frames of reference** that group together the identities of and related information on healthcare professionals, along with services and institutions in the healthcare and medico-social sectors
- **Certifying, producing, managing and rolling out the healthcare professional card (CPS)** and, more generally, devices which perform identification, authentication and signature functions for recognizing healthcare professionals' identities and professional qualifications
- **Supporting and supervising public and private initiatives**

# Story 1 : **My medical pass** or how to improve Outpatients management

- ***My Medical Pass*** was born from an observation made by the creators of the service, former directors of health facilities and health professionals: making appointments is a source of tension and anxiety for patients. The project is also based on the belief that the development of outpatient surgery is a source of comfort and security.
- The objective of the online service is to facilitate access to outpatient surgery for patients prior to hospitalization.
- This constitutes the link between outpatient consultation and hospitalisation: it is a "one-stop shop" of a national network, facilitating access to outpatient surgery by facilitating the proceedings leading to this type of surgery.
- This service helps public hospitals to develop their ambulatory care, where they are mostly challenged by private for profit healthcare players



# Incubation ?

Incubation is the first biological phase which leads to embryonic development.

The incubator is a support organisation for the creation of a company, allowing it to pass from the initial idea to the implementation and consolidation of a project.

The incubator provides hosting assistance and tailored services to companies or projects involved in new technologies.

Gathered in one place, these young talents can exchange, share their opinions and grow together.

# French hospitals, incubators and e health

In France, there is no shortage of e-health innovation projects run by hospitals. For instance, in response to the reform of hospital procurement, Cluster Health and the University Hospital of Lille presented a prototype of a future hospital room that responds to hospital e-requirements

<http://www.conceptroom.fr/>

Paris Innovation Boucicaut develops innovative projects in telemedicine, diagnosis, and disease monitoring.

[http://www.rivp.fr/wpcontent/uploads/2013/09/2013\\_plaquette\\_Boucicaut.pdf](http://www.rivp.fr/wpcontent/uploads/2013/09/2013_plaquette_Boucicaut.pdf)

# An exemple of a French hospital incubators :

## Paris Biotech

- Paris BioTech was founded in 2000 by the University of Paris Descartes, ESSEC Business School, Ecole Centrale and The National Institute of Health and Medical Research (INSERM)
- Located in Cochin, APHP 3500 square meters in the heart of Paris
- It aims to develop innovative companies in the sectors medicine, medical devices and patient welfare services :  
<http://www.parisbiotech.org/>
- 11 Start-up in medical devices : Alantaya, Bioaxial, Biokawtar technologies, Millidrop instruments, Endonov, LL tech, Aterovax, Corwave, Eyevensis, Inderm

## Paris Biotech (II)

- 6 Start-up in medicaments : Platod, Peptinov, Ose pharma, Vac4all, Invectys, GMP-Orphan (orphan diseases)
- 4 Start-up in services : Observia, U parc, Deuxième avis, Happytal
- Close link with clinical research

# Story 2 : Ageing France and E-Lio



# E Lio

- **E lio is a monitoring device for the elderly used within the hospital or at home.**
- Developed by the **Technosens company**, thanks to the incubator of INRIA, National Institute for Research in Automatisation, with the support of hospitals and chronic care specialists
- Since 1998, **INRIA** created **more than 20 Startups**, some of which are dedicated to **home assistance**. INRIA is thus an innovator in the field of e-health and medico-social services.  
<http://www.inria.fr/centre/grenoble/innovation/toutes-les-start-ups>
- Easy to connect at home with a personal computer or a television
- A platform of services that aims to create a daily link with professionals (Food, TV, Entertainment, Domotics.... And telemedicine)
- This helps various professionals to coordinate their action

## Story 3 : T Lor, A neurological program

- The neurology department of Nancy university hospital (CHU) launched a test phase in 2009, providing free services for local hospitals.
- 10,000 teleconsultations in 3 years.
- Mainly for radiology work and for at-home patients (Stage 1) and teleexpertise and in [multidisciplinary coordination meetings](#), in the treatment of cancer patients in connection with our web-conferencing service (Stage 2).
- T-Lor ensures pooling assessments across the whole of the Lorraine region. An X-ray can be assessed from anywhere.
- The second advantage for patients is that it takes less time for the radiologist's report to reach the doctor who requested it. The average waiting time in A&E, for example, has been reduced, especially at night, as the radiologist on duty no longer needs to spend time travelling.

## T Lor (II) Ongoing evolutions

- Médiale, the regional storage of medical images for exchanging and sharing them, was developed in 2013. The project involves all the healthcare institutions in Lorraine, including private radiology surgeries.
- Stage 3 (2014) allowed the implementation of a service platform dedicated to the medico-social system. It improves the availability of information between healthcare institutions and medico-social institutions to ensure better patient monitoring.
- Stage 3 helps with patient referrals, which are rolled out across residential care homes for elderly dependents (EHPADs), home hospital treatments (HADs) and at-home nursing care services (SSIADs).



# Story 3 : Cardiauvergne

- Cardiauvergne is an organization proposing a telemonitoring service for heart failure patients, founded in 2010 by CHU Clermont-Ferrand
- Cardiauvergne is a healthcare cooperation grouping (GCS of 35 partners) which proposes remote monitoring service and care coordination for patients with heart failure. The first objective of Cardiauvergne is to better the vital prognosis of heart failure patients by improving their medical care.
- The goal is also to reduce hospitalizations and to keep patients at their homes the longest time possible. In fact, heart failure is the leading cause of hospitalization of citizens aged 60 or older in France, with more than 220 000 stays per year. It is therefore a major public health issue.

# Cardiauvergne (II)

The patient is given a personal connected scale, which measures and report daily weight to the hospital. A rapid weight gain informs on the patient water and salt retention, and the possible formation of edema. Beyond a certain threshold (2kg), the hospital receives an alert.

- Often, a simple telephone call is enough, but if the case is more severe, the hospital contacts the nurse or the GP so they can assist the patient at home.
- These nurses, received a smartphone and downloaded the application from which they can transmit, from a distance, informations on the clinical status of the patient.
- Thanks to the connection via secure messaging with regional pharmacies, this information feeds to the electronic file, which compiles biological analysis results and treatments.

# Cardiauvergne (II) : First results of a « qualified self » hospital application

- Quantitatively, it has halved heart failure mortality and reduced by nearly two-thirds the rate of rehospitalization on the first 558 patients enrolled and monitored for an average of one year.
- Patients are pleased because they feel very safe. Moreover, they are worried and would like the continuation of this pilot program, which survives today thanks to grants from the State, and the European Union. Unfortunately, there still lacks a financial structure to sustain the project which still has no stable “business model”.
- This program is undeniably a plus for patient monitoring, on the condition that they are monitored by a doctor and share their information with him.
- In the stage 2 of the program, developed with Alméry, the society which accompanies the hospital on the technical aspects, patients will be wearing a connected shirt, capable of transmitting their information such as body temperature, cardiac frequency, respiratory frequency, and physical activity level.

# Cardiaaouvergne



# Story 4 : DMP, a mirage ?

- DMP is the electronic health record (DMP)
- Launched in 2004, should save billions of euros according to the Ministry of health
- Ten years after, cost of 500 millions of euros for 400000 DMP after 5 postpone strategies
- Polemics on privacy and consent issues with patients' organizations
- Supported by all health institutions.... But reluctance of clinicians (Useless for their practice, time consuming....)
- Reformed in 2015 to attract physicians
- Supposed to be extended in 2017

# Conclusions : What works in France?

- Start small and build incrementally / French attraction for laws and big bangs
- Regional tailoring rather than « one size fits all »
- Clinician involvement is more crucial than technocratic vision of a patient-centric prevention and disease management and ubiquitous provider use of IT. Success based on a lot of communication work get doctors on board.
- Define appropriate standards
- Change management ! E health programs are major transformations that require a good governance, engagement and support
- Trust the players and find incentives : First build a critical mass of real cases for use of the system, this will ensure adoption and sustainability
- Hospitals can support this change through various levels of engagement

## Some links to go further

- **Ministry of Health and social affairs (fr)**  
<http://www.sante.gouv>
- **ASIP Santé** (Information systems standards)<http://esante.gouv.fr/en>
- **HAS on Medical devices process** [http://www.has-sante.fr/portail/upload/docs/application/pdf/2010-03/guide\\_dm\\_gb\\_050310.pdf](http://www.has-sante.fr/portail/upload/docs/application/pdf/2010-03/guide_dm_gb_050310.pdf)
- **Silver Economy** in France (fr) <http://www.social-sante.gouv.fr/espaces,770/personnes-agees-autonomie,776/dossiers,758/silver-economie,2432/>
- At the european level **OneMoreLife Community**  
<http://www.onemorelife-community.com>