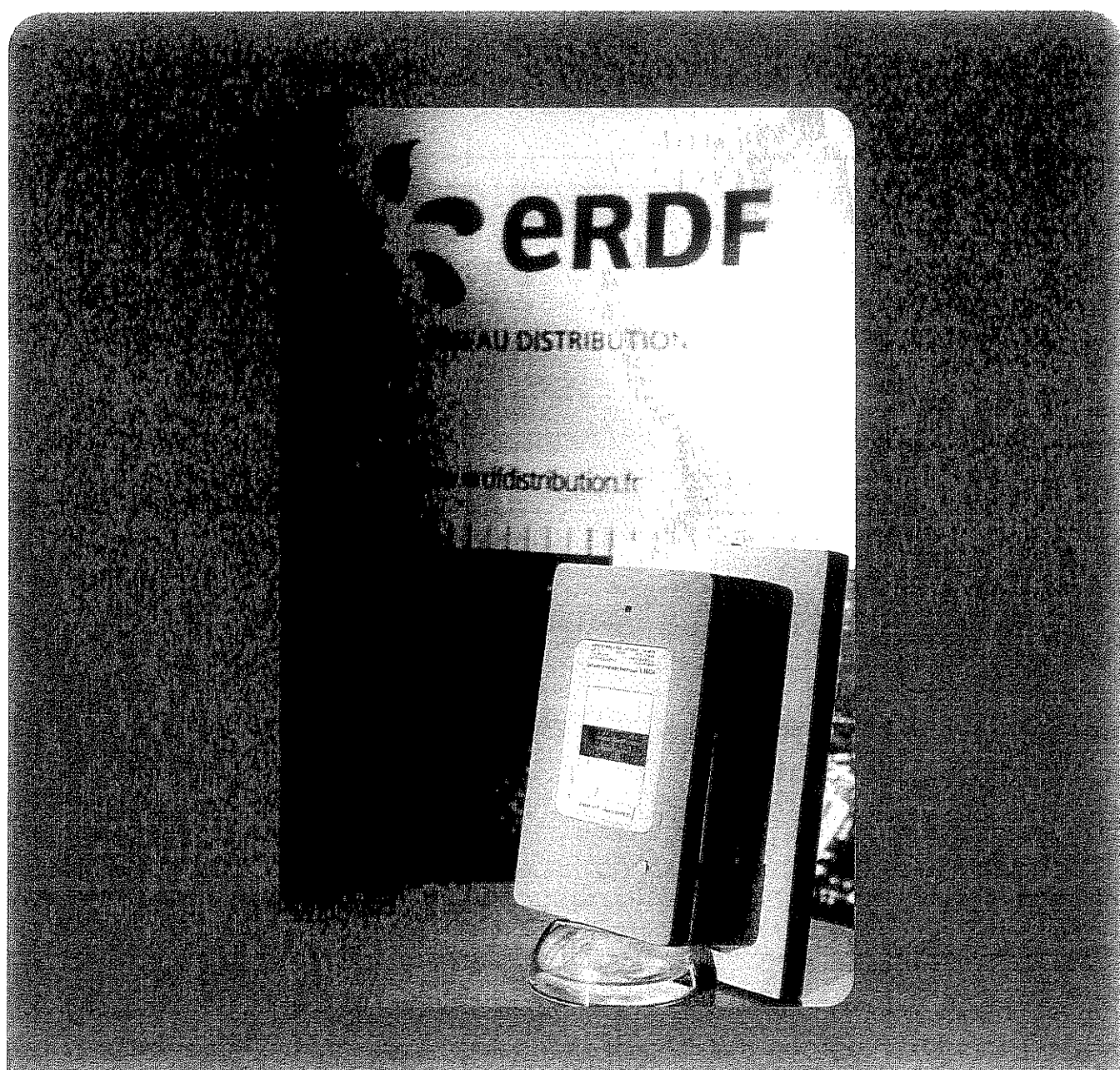
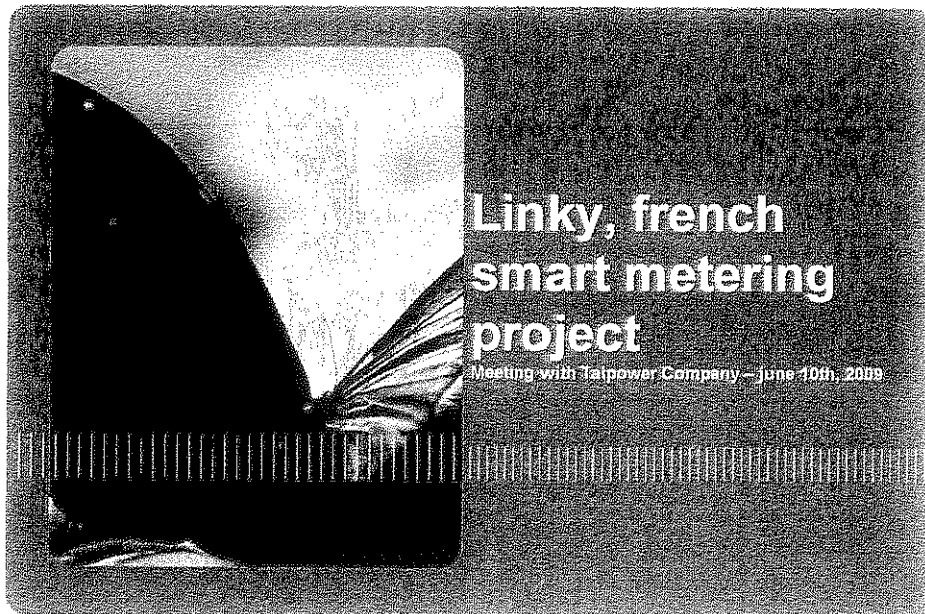


附件 2

ERDF - Linky 計畫簡報



Library

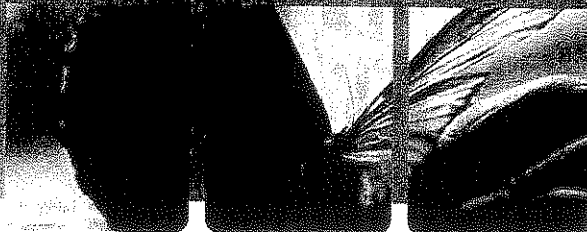


Linky, french smart metering project

Meeting with Taipower Company – June 10th, 2009

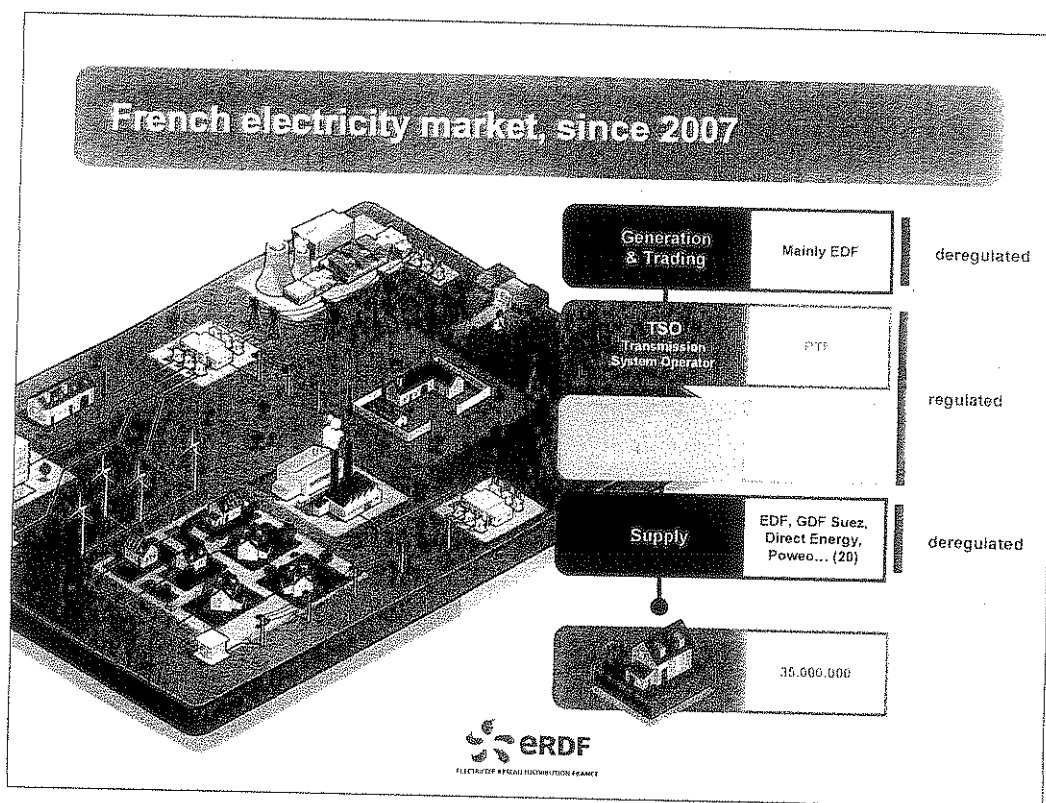


Summary



- ||| French electricity market since 2007
- ||| ERDF, 1st DSO
- ||| Metering, an activity about to become smart
- ||| Facing the smart challenge, ERDF has launched Linky
- ||| Linky project : 6 dimensions to be managed
- ||| Conclusion : 2016, aiming at a full smart ERDF





Since July 1st, 2007, every customer can choose his supplier.

Hence, in France, Generation, Trading and Supply are said « deregulated » (prices are market based) while Transport and Distribution are still « regulated » (prices don't exist, « rates » are set by French regulator).

EDF is present at each step of the process, under its name or by its different subsidiaries (RTE, ERDF).

ERDF, 1st DSO

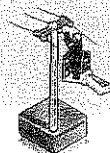
- Subsidiary of EDF
- Created January 1st, 08
- Managing the public electricity distribution service
- Shares a common service with GrDF
- 1,250,000 km distribution network (230 - 20,000 v)
- 32,890,000 customers
- 95% of the french territory (33,830 municipalities)
- 35,000 employees

■ Total income : 11,300,000,000 €

■ Annual investment : 2,000,000,000 €* (2008)



* Without Linky



Though a young subsidiary, ERDF, relies upon a long experiment in Distribution, going back up to 1946 (Nationalization of most of the electricity companies).

Metering, an activity about to become smart



The DSO is responsible for carrying out the metering business for customers (Law of December 2006), in particular :

- Supply
- Installation
- Metrological checks
- Maintenance and replacement of metering devices
- Provide data management and all tasks related to these activities



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Incitation on Energy efficiency

欧洲规范

- European Directive - April 5th, 2006
- Grenelle Environment Forum and law
- 3rd European Energy Package - April 22nd, 2009

Proposal of a state executive order

法国规范

- Systematic deployment of AMM meters from 2012
- Replacement of whole assets by advanced meters by the end of 2016



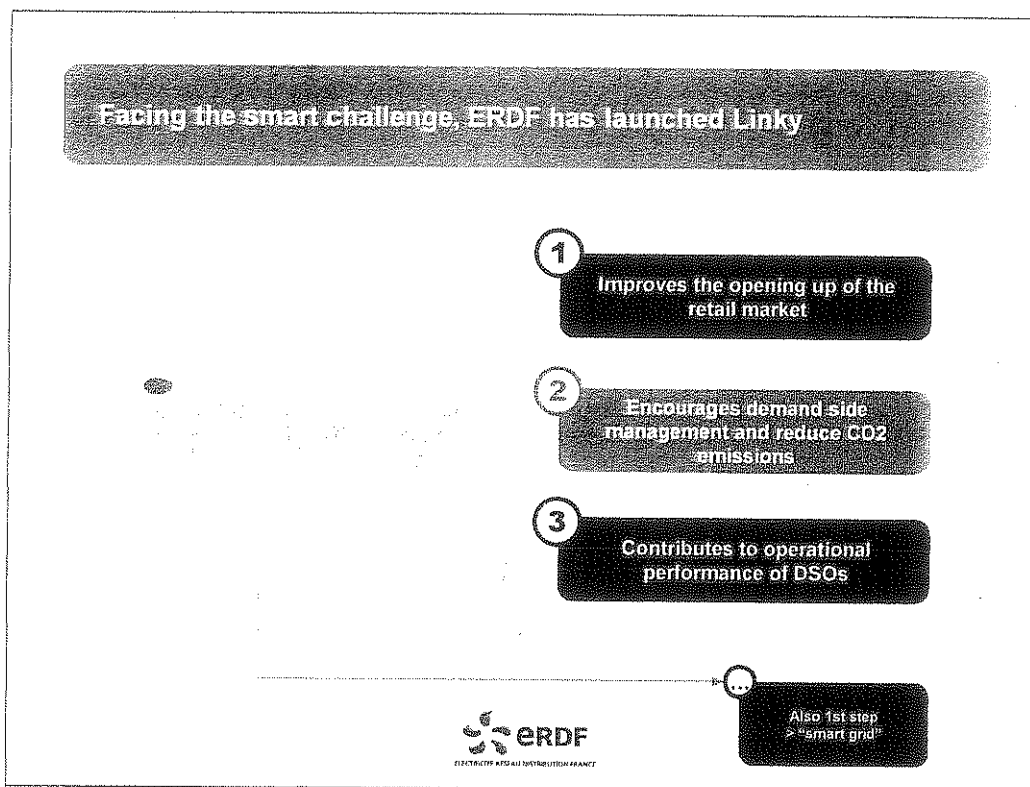
In France, the opening of the market was the opportunity to clarify and establish the responsibility of the distributor in metering.

Providing data became an activity in itself, committed to ERDF by the law.

Because they enable more complex and real-time management of energy consumption, smart meters are about to play a major part in the open market (new pricing models, changes of behavior).

The 3rd European Energy Package calls for the right of the consumers to be "properly informed every month of actual electricity consumption and costs". It aims to fully equip the UE with smart meters by 2022 (80% in 2020).

French public authorities themselves prepare the necessary rules to require smart metering by 2016.

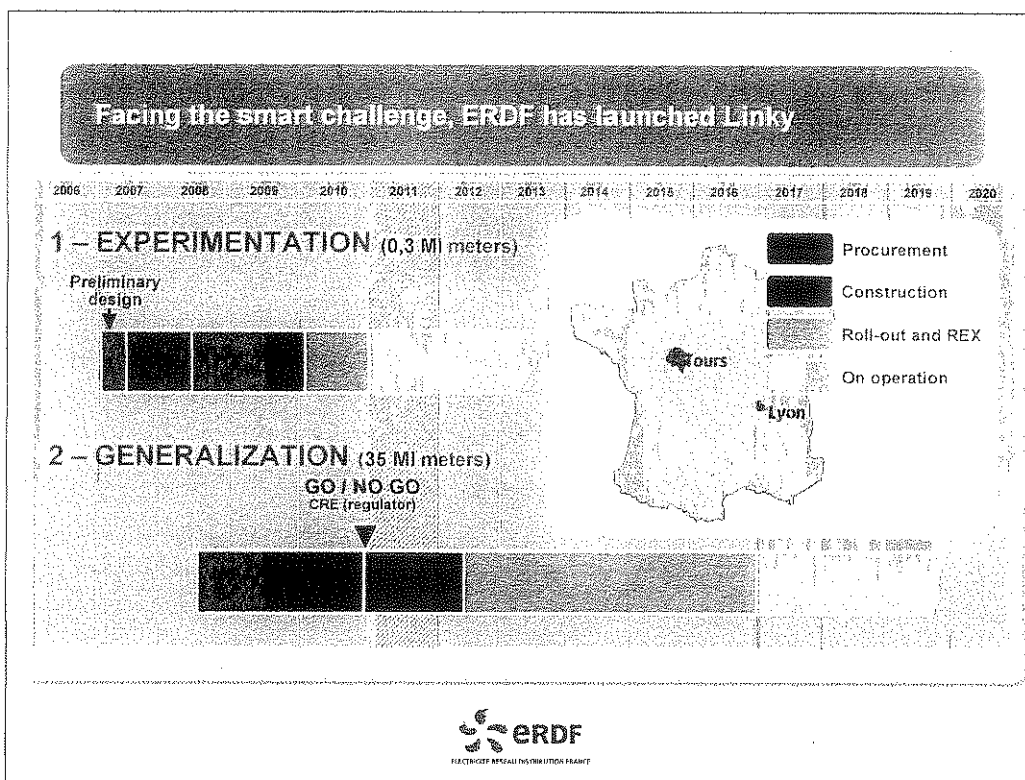


Linky is the name of ERDF smart metering project.

Many reasons lead to ERDF decision :

1. Political, in order to speed up the opening of the market (EDF remains the supplier of 98,1% of the customers on the retail market),
2. Political again, but for environmental issues this time, as smart metering can be a strong incentive for behavioural changes (smart meter > smart home > smart customer)
3. Economical, as labour costs will significantly be reduced, compared to manual meter reading.

A fourth good reason to step into smart metering is that it will lead to smart grid which will offer the opportunity to improve the management of ERDF network (cf. slide 5).

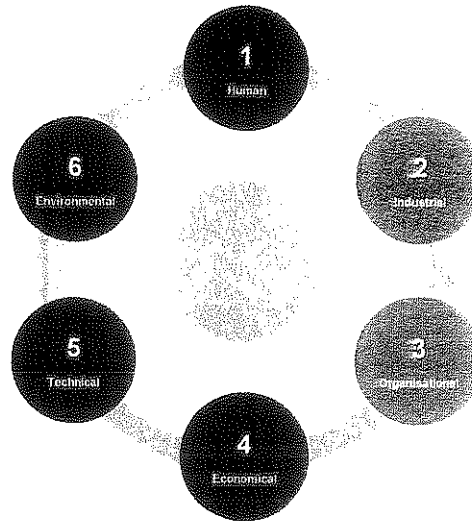


The project dates back to 2006 when it was decided to begin with a large-scale experiment concerning 1% of the metering stock (300,000 meters).

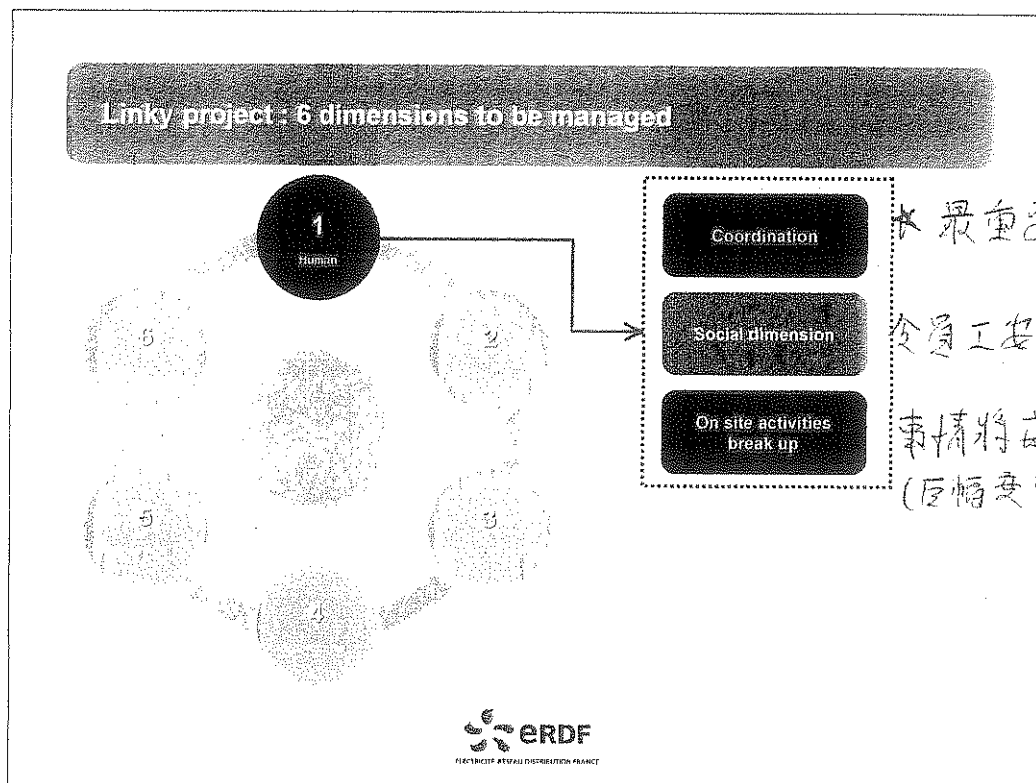
The project includes a 3-years preparation (an experiment in itself) leading to the installation of the 1st Linky (smart meter) on the 1st of march 2010. By the end of that year the experiment will end up on a complete feedback presented to the regulator in order for this authority to decide whether it will launch the generalization or not.

The experimentation is to take place in France 3rd town, Lyon, where 200,000 meters will be replaced, and in a more rural area, around Tours, in the Loire Valley, concerning 100,000 meters. Those 2 sites have been selected because they offer a vast number of different situations (type of construction, clients, network, etc.).

Linky project : 6 dimensions to be managed



The project can be summed up into 6 key-points, describing the main features to be secured in order to meet success.



- Human factor :

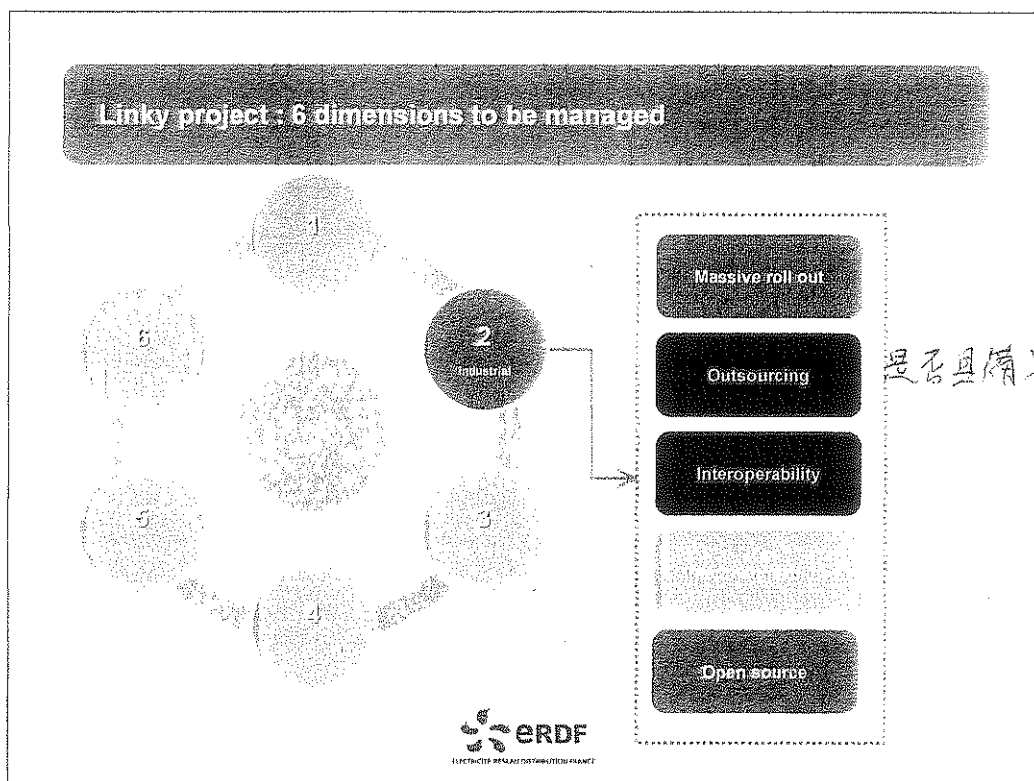
During the experimentation and even more in case of generalization, the project will have to coordinate a large number of internal and external actors.

- Social dimension :

Smart metering activities will transform the way we work. Some activities associated with the history of the company (e.g. : door-to-door interventions such as manual reading) will disappear. ERDF will have to explain these transformations and make sure its employees accept the new world and are willing to play an active part in it.

- On site activities break up :

As a consequence of the previous point, the employees will have to adapt themselves to their new environment, meaning working differently, learning new skills and living a new relationship with our customers.



是否具备足够技术

- Massive roll out :

In case of generalization, the rythm will be 35,000 meters per day + 550 data concentrators (DC).

- Outsourcing :

95% of the roll out will be outsourced ; 5,000 electricians will be at work every day during 5 years, throughout the whole country.

- Interoperability :

Since the beginning, the system we are about to build is designed on this principle in order to be more supple. Every item, every device will have the capacity to communicate whatever its origin.

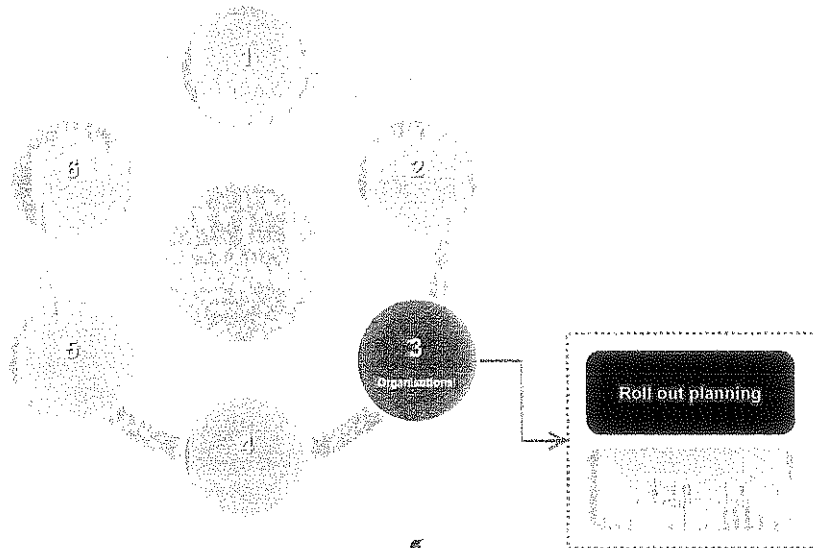
- Interchangeability :

Ditto, whatever the constructor, every item will be interchangeable.

- Open source :

The entire system can be used by other distributors or metering companies.

Linky project : 6 dimensions to be managed

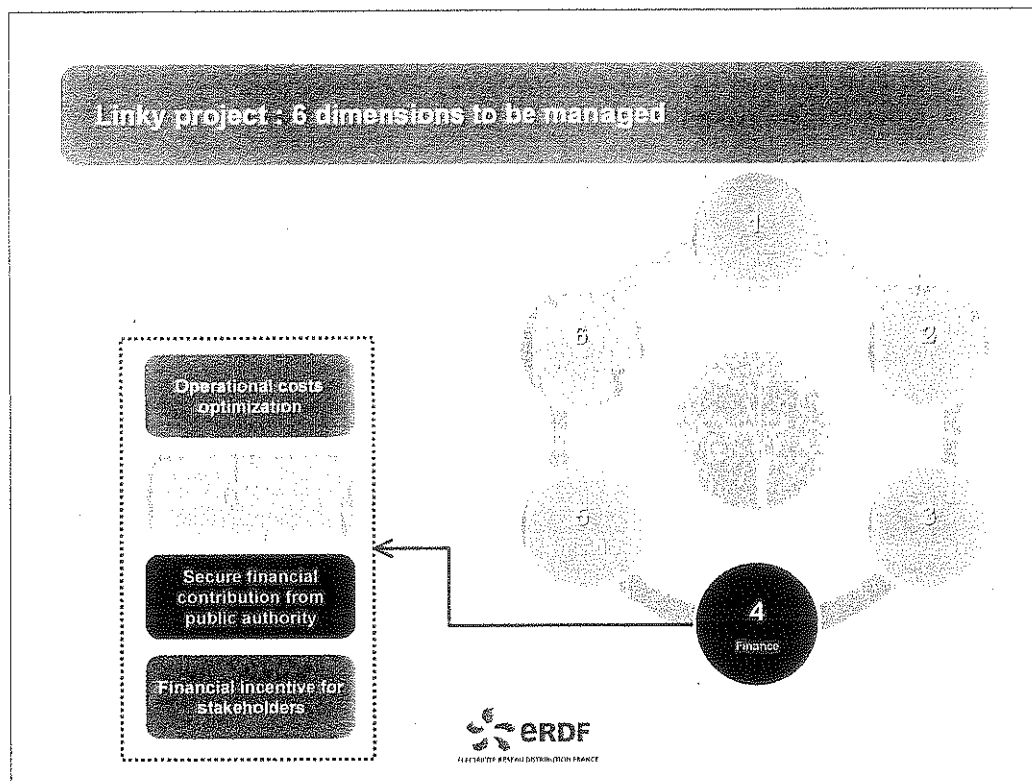


- Time schedule :

The experimentation on 300,000 meters and 5,000 DC is the first large-scale roll-out we are testing. It will be used as a feedback to secure the general roll-out of 2012.

- Organisational re-engineering :

The break up described in slide 10 will also lead to deep transformation of the entire organization of ERDF (structure, field organisation, process).



- Operational costs optimization :

The drastic reduction of door-to-door activities will decrease the cost of labor and associated costs (gasoline, sites maintenance, etc.)

- Secure business case :

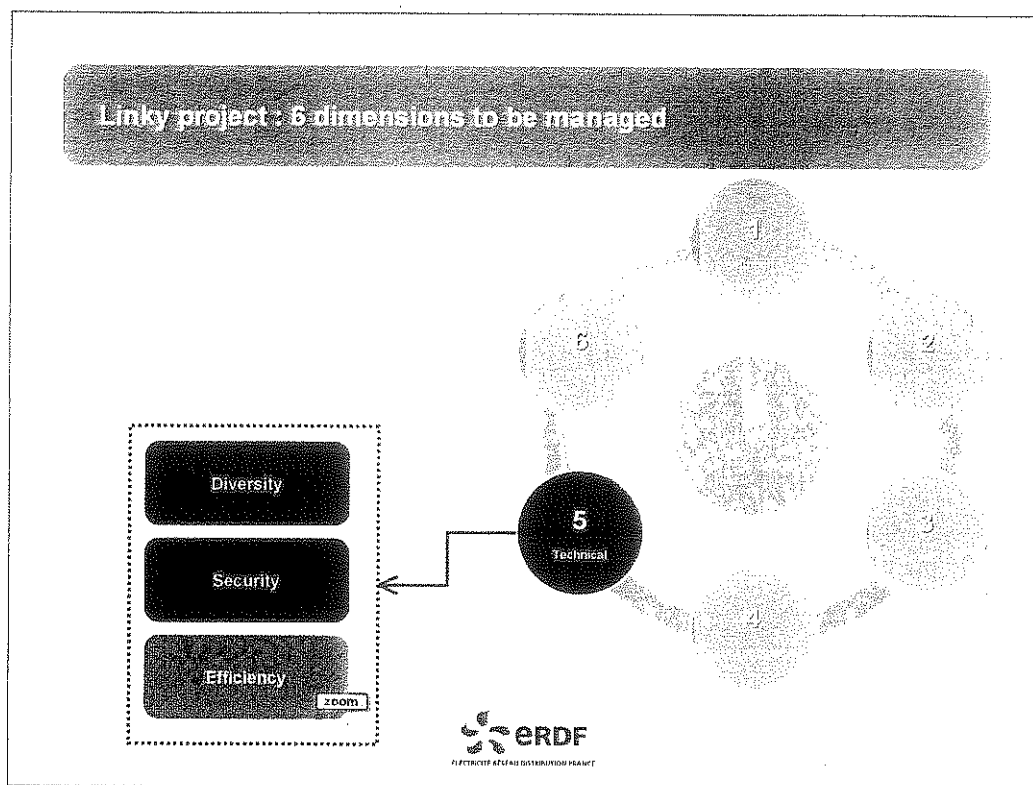
The business case is based upon hypothesis, such as the duration of replacement of a meter (35 mn) or the labor cost of the operation, which have to be reached.

- Secure financial contribution from public authority :

Working in a regulated world, ERDF needs the support of the public authority (regulator and government mainly) who defines the rates that will finance the company. The total cost of the project is € 4 billion.

- Financial incentive for stakeholders :

The interest of smart metering is underlined throughout the world, in particular in countries that have already adopted this technology (Italy, Sweden, Finland, Australia, State of California). The french project will have to prove its real interest not only for ERDF but for the french market taken as a whole : it is one of the purposes of the experimentation to confirm that what we hope (opening up of the market, demand side management, facilitation of intervention, reduction of non-technical losses, etc.) will come true.



- Diversity :

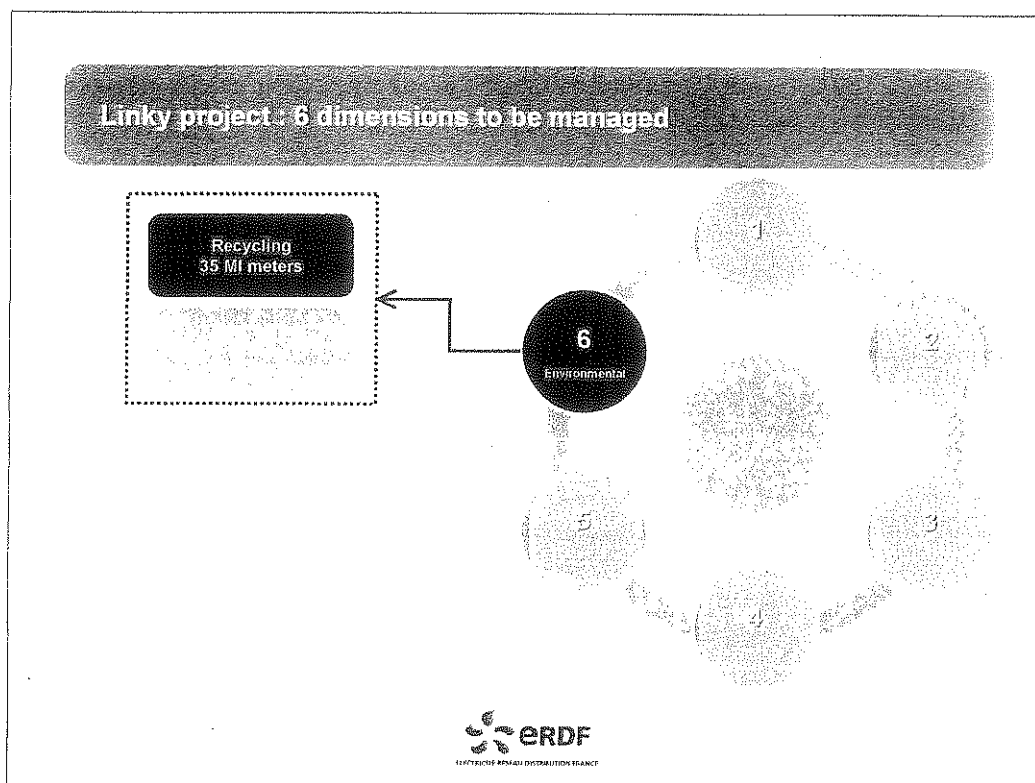
Due to our technical history, we will face 114 different technical situations when replacing a meter.

- Security :

This diversity and the massive roll-out constitutes a security risk in itself that has to be carefully managed

- Efficiency :

Meters, DC, the entire system, once set has to... work



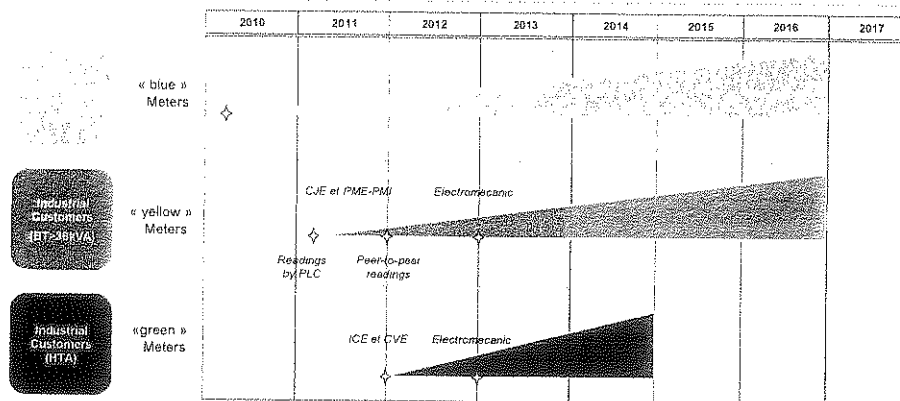
- Recycling 35 millions meters

From the beginning of the project, ERDF has planned the entire recycling of the former stock.

- Communication on sharp decrease in CO2 emissions

The « green benefits » will constitute a strong argument for the generalization. They will be effective if the customers take care of the matter. Therefore, one of the goals of the project is to enhance this dimension.

2016, aiming at a full smart ERDF



The AMM system will cover all ERDF meters (generation and consumption), and it will be the sole metering data management system in ERDF

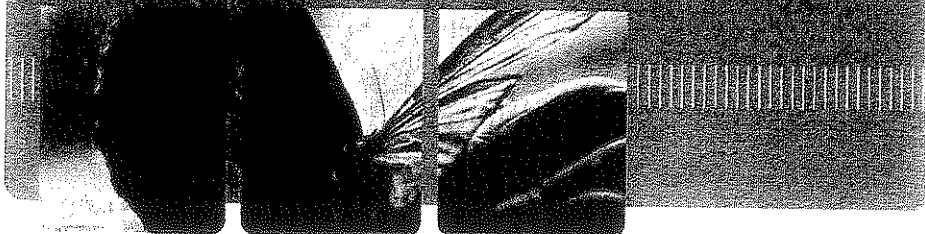


100% Linky

Although the retail market is by far the main field where smart meters will be developed, the industrial market (former « yellow » and « green » meters) will also be concerned by the technology. By 2016, the entire french metering activity will be Linky-able.

Meanwhile, the Linky system itself will have evolved (PLC G3 new generation, « isolated » meters, modular meter, etc.) thanks to its design where futures changes (5 years) have been prepared.

Annexes



Efficiency - Linky's 3 levels architecture

[back](#)

