

Internet of Things + Internet of Services

TELEFÓNICA I+D

Date: November 2008

Alberto Leon

alm@tid.es



TELEFÓNICA I+D

Index

- 01 **Motivation**
- 02 **Drivers**
- 03 **Empowered users**

03 Motivation

IoT + IoS Flow



03 Drivers

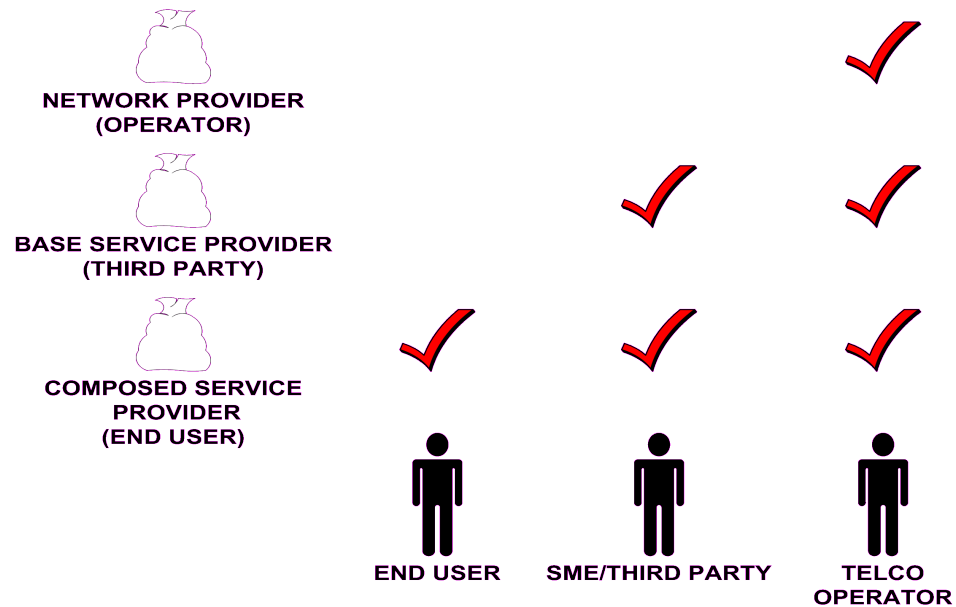
New Business Models and Value Map



- **New revenue models**, based on the use of the service by the consumers, sharing the revenues with the service creators and promoting services incubators



Revenue Source



03 Empowered Users

What IoT + IoS is for users?

■ Internet of Things & Services:

- **Fully Open cyberspace:** non deterministic, autonomous and intelligent entities or virtual objects that will act in full interoperability
- **Auto-organize** on context, circumstances or environments
- **Ambient intelligence:** host built upon Ubiquitous computing.
- **Share:** to make their own « objectives » converging.
- **Event driven:** bottom-up, each actor will be self-referenced.
- **Event:** based on the context of the event, Semantic Web.
- **Complex systems:** easily integrate new actors, huge amount of different and various links, interactions, between various & different actors & capacity.
- **Current top down approaches:** predicting everything & global is just not possible with the.
- **Billions of parallel and simultaneous events:** Internet of Things, will depend on each « entity » (object, process, information system, etc.). This Internet of Things will be accordingly based on massive parallel IT systems (Parallel computing).

Telefonica

04 Empowered Users

What IoT is for users?

■ Internet of Things

Wireless and self-configuring, wireless network between objects, such as household appliances. [Auto-ID Center](#), 1999, MIT based.

The idea is as simple as its application is difficult. If all cans, books, shoes or parts of cars are equipped with minuscule identifying devices, daily life on our planet will undergo a transformation. Things like running out of stock or wasted products will no longer exist as we will know exactly what is being consumed on the other side of the globe. Theft will be a thing of the past as we will know where a product is at all times. The same applies to parcels lost in the post.

If all objects of daily life, from yogurt to an airplane, are equipped with radio tags, they can be identified and managed by computers in the same way humans can. The next generation of Internet applications ([IPv6](#) protocol) would be able to identify more objects than [IPv4](#) which is currently in use. This system would therefore be able to instantaneously identify any kind of object.[\[2\]](#)

The Internet of Things should encode 50 to 100,000 billion objects and follow the movement of those objects. Every human being is surrounded by 1,000 to 5,000 objects.[\[3\]](#)

02 Motivation

IoT + IoS

■ Customers satisfaction:

- **IoT + IoS Users** are real Telco/Internet end-users, 3rd parties, SMEs...
- Global and digital society revolution
- User's roles changes: *prosumers*
- User Experience

■ Telco 3.0:

- Consolidate Telco + Internet (Web 2.0) Convergence
- Decrease digital divide (i.e. SMEs)
- New incomes
- Costs and churn reduction
- Ad-hoc cooperation of end-users, business units & 3rd parties

■ Competence:

- Strong competence
- Customers Loyalty
- **Users satisfaction** & experience significant improvement
- **Empower users** to create their own customized Services on real time



05 **IoS + IoT**

Q&A

■ **Telco positioning:**

- Telco 2.0 revision is not enough
- Further research on integration from different perspectives
- Architecture, Interfaces, User experience and Business Models
- Now the empowered users are the killer application
- Necessary need any « **common** standard » that would not be able to address billions of exceptions and errors being generated in such a *complex environment*?

■ **Telco 3.0:**

- IT/telecom/content networks and services
- Customer experience and satisfaction: no one but users knows best what they really need, so let them do it
- Personalization and Context Awareness
- Open APIs (plus OpenSocial, Parlay-X)

05 **IoS + IoT**

Q&A

■ **Technologies:**

- Easy services creation by users, i.e. textual description
- Semantic interoperability or access to service repositories.
- Identity, authentication and new billing models, OpenID or Oauth.
- New formats like RSS, micro-formats & data portability.
- Semantics web (Ontologies, Folksonomies) to handle data and mash it up.
- Peer technologies.

05 **IoS + IoT**

Where is the money?

■ **Users**

- Share revenues based on service usage
- “Advanced users” as service providers => 3rd party model
- ...



■ **Enterprises**

- New Business Models
- Premium Services
- Revenue sharings
- Hardware
- Software
- Licenses
- Maintenance



■ **3rd parties**

- Pay-per-use (of concrete provided services)
- Share revenues from premium users (i.e. fee percentage)
- Micropayments

