

Road2CPS Roadmapping Workshop

Atos Vision

Roadmap Presentation

Atos



Nuria de Lama

24/06/2015

Paris

Our roadmap: Journey 2018

Your business technologists. Powering progress the 3rd digital revolution

agility and fragility: the lifecycle of data

- Main terms of Atos Vision vs. roadmap concepts

Business Drivers

= Motivation, rational

Technology Enablers

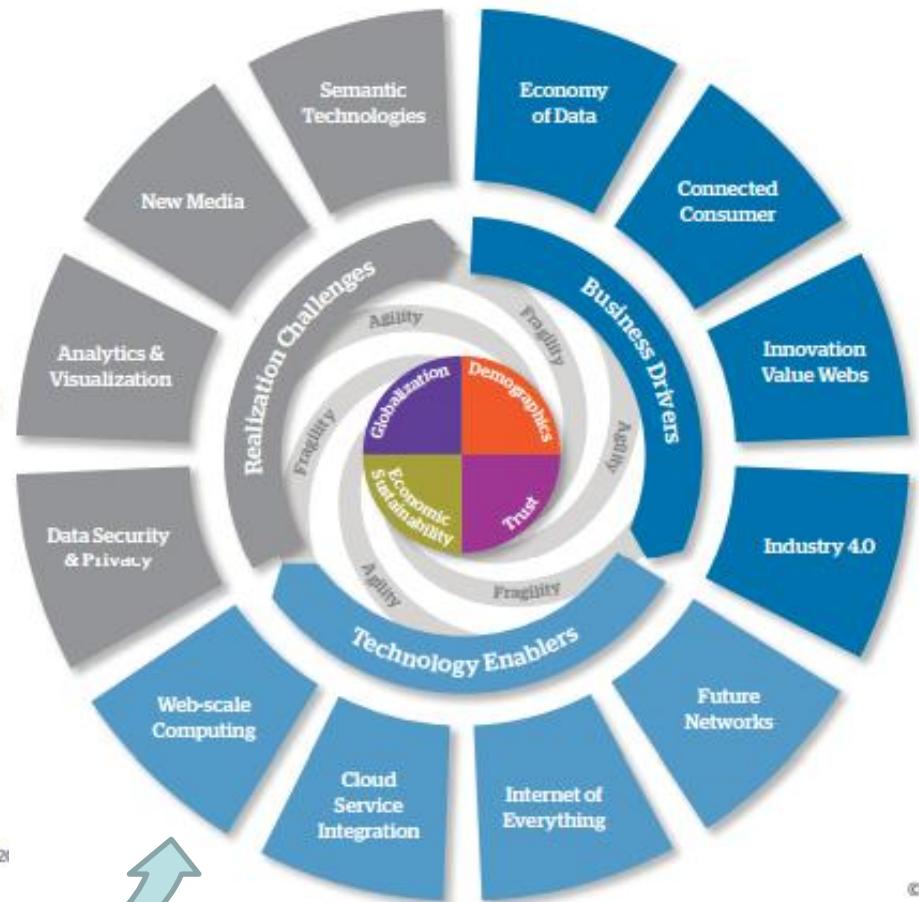
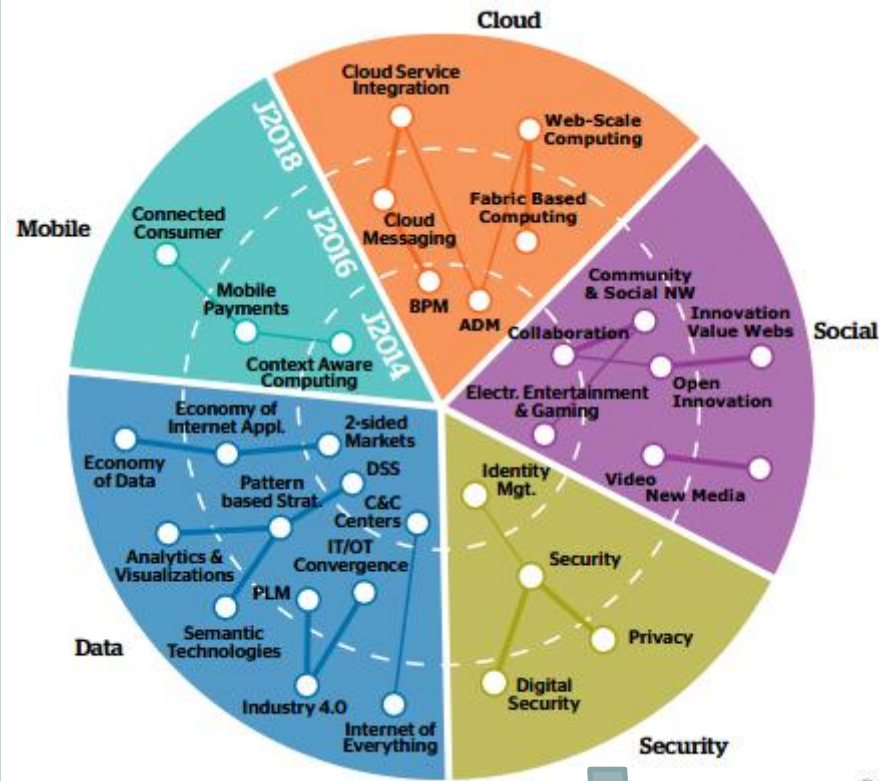
= Enabling Technologies

Realization Challenges

= (to some extent) Main barriers

Atos vision in a nutshell

Understanding the path from 2014 to 2018 through 2016



© 21

© 2015 Atos

Enabling technologies

Enabling Technologies:

1. Future Networks/Communications
2. Internet of Everything
3. Cloud Service Integration
4. Web-Scale Computing

Enabling technologies (cont.)

▪ **Future Networks**

- End user connectivity to online services and Cloud platforms, requiring configurability, Quality of Service and resiliency of connections to remote platforms with secure plug-and-play functionality by design.
- M2M connectivity requires remote monitoring, Quality of Service and low energy consumption.
- Increased flexibility to adapt to changing traffic patterns, automatically configure and provide resilience to attacks

▪ **Internet of Everything**

- 25 billion objects connected to the Internet by 2018 will generate vast quantities of data. New architectures are necessary to collect, aggregate and process data at IoE hubs, before sending only relevant data to the main computing centers

▪ **Web-scale computing**

- Very loosely-coupled and flexible components, with simplified REST-based APIs and fully decoupled front-ends based on responsive HTML5 apps.
- Event-based, asynchronous, non-blocking communication models between subsystems.
- BASE (Basically Available, Soft state, Eventual consistency) data models versus traditional ACID (Atomicity, Consistency, Isolation, Durability).
- High elasticity. Fully-dynamic subsystem lifecycles to adapt to extreme load change.
- Enhanced Location Transparency, with application topology decisions deferred to runtime and controlled by deployment management tools.
- A new approach to fault tolerance that provides resiliency by expecting failure.
- Integration of NoSQL & Big Data solutions as first-order participants in the stack, especially in the real-time domain

Main barriers/challenges identified

Main barriers:

1. **Digital Security** (increased demand for data integrity and authenticity throughout the decision and control processes whereas cyber-attacks increase)
2. **Privacy and Personal Data** (protecting personal data to find the right balance between preserving an accepted level of privacy and enabling customized high value business)
3. **Analytics and Visualization**
4. **New media** (context aware computing; wearables; gaming technologies...)



Recommendations for research priorities

Research/ technological/ engineering priorities identified by Atos Vision

1. Systems of systems (management of complexity in critical systems)
2. Security and privacy
3. Network speed/capacity
4. Standards/interoperability
5. Management of Big Data (including real time responses)
6. Energy efficiency

Recommendations for CPS implementation

Advancements needed for successful CPS implementation/challenges for value creation:

1. Foster EU-based competitive offering at platform level (enabling infrastructures currently US-based, also from Asia)
2. Focus on standards and interoperable solutions
3. Develop Skills and create flexible work force
4. Address legislative and regulatory gaps
5. Reduce fragmentation of effort in Europe: contribute to Digital Single market creating economies of scale (ex. through harmonization of data models, point 2, pan-European experimentation frameworks...)

Strategic recommendations

Recommendations for future funding strategies

1. Open and standard-based platforms, fostering interoperability and preventing silo effect
2. Large-scale pilots/demonstrators (Pan-European)
3. Rapid prototyping “kill and scale fast”
4. Driven by business (not by technology)
5. Coordinate/establish “real” synergies with other initiatives (PPPs, EIPs, etc): “do not reinvent the wheel”

Unique findings in your roadmap and under-represented gaps

- **Unique:** technology should serve a purpose (the starting point of our roadmap is the business driver not the enabling technologies); obvious (?)
- **Underrepresented:**
 - User involvement in co-creation (user-driven innovation) and derived topics like user acceptance, usability, etc (apple has shown how important design can be vs. technology excellence)
 - Business transformation
- **Favourite 😊:** the challenge of a data-driven economy (opportunities and threats)

Contact

Atos

Nuria de Lama

e-mail: nuria.delama@atos.net



Albarracín 25
28037 Madrid
Spain

www.atosresearch.eu
es.atos.net