

# SW Transformation – New Generation

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*Presentation issued from Thales Services Technical Directorate (D. Attal, R. Wei)*

8 proposals to handle the wave – NESSI User Summit, May 27th



# IT evolutions illustrated by decades - Major ruptures

productivity  
↑

## ▶ Google Gen.



Google, Android, Apple, iPhone, Facebook, réseaux sociaux, Web2, Ajax, GWT, Développement incrémental, méthodes agiles, SOA Web Services/REST, NoSQL, Open Source, Linux, Mobilité, Clustering P2P, JVM, Virtualisation Cloud computing...

## ▶ JAVA Gen.



Java, Web, J2EE, EJB, Sun JavaSoft, IBM, Eclipse, Oracle/BEA, MS .NET C#, RMI, SOA Web Services/SOAP

## ▶ Distributed IT



Client-Serveur, Station, X11, Sun NFS, Apollo NCS, Microsoft Windows, RPC, Corba, TCP/IP, C++

## ▶ UNIX Gen.



Unix, tty, vt100, RS232, DEC, PC/MSDOS, C

1980

1990

2000

2010...

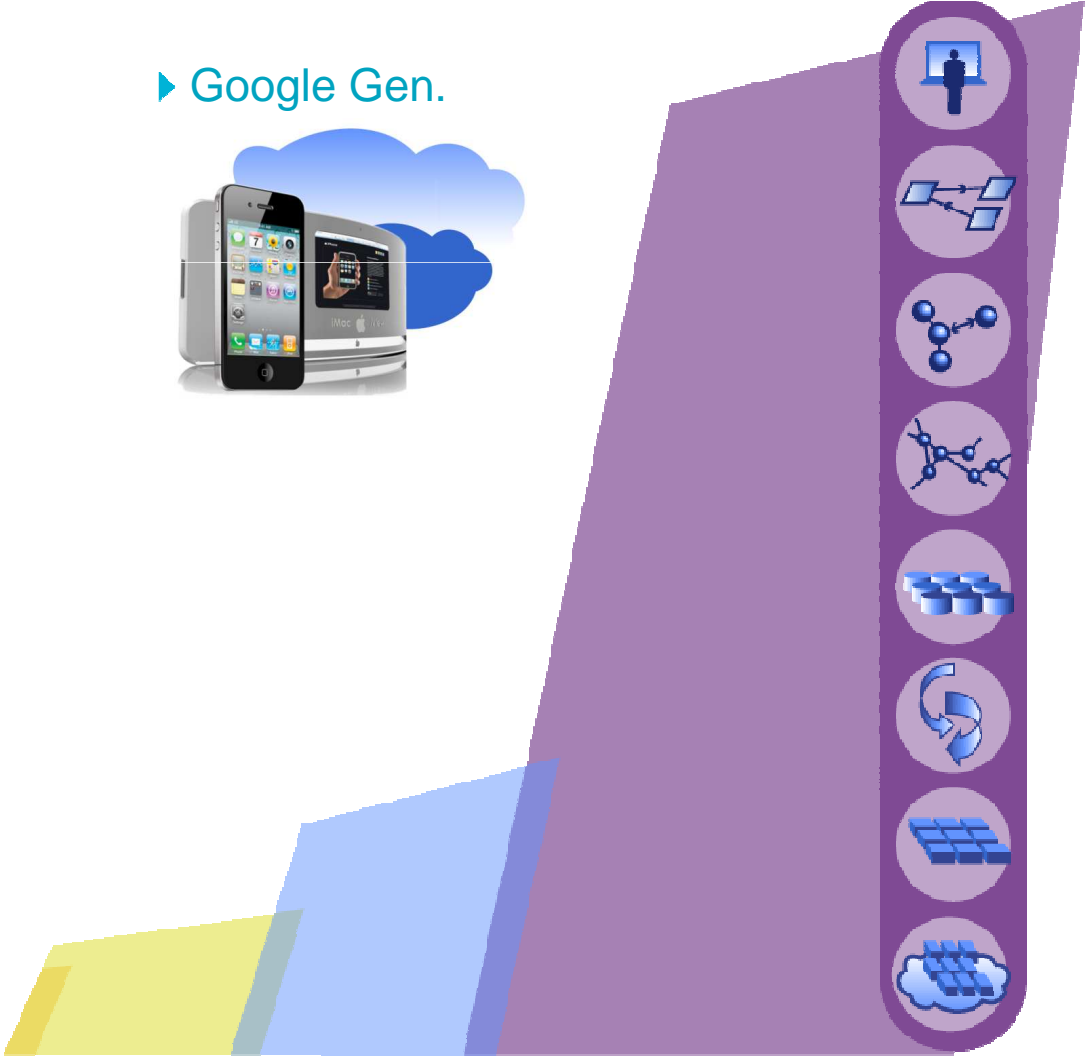
SW a autonomous activity

Network at the heart of IT

Web as WW network

# The *New Generation* thru 8 points

► Google Gen.



# User experience is the new priority

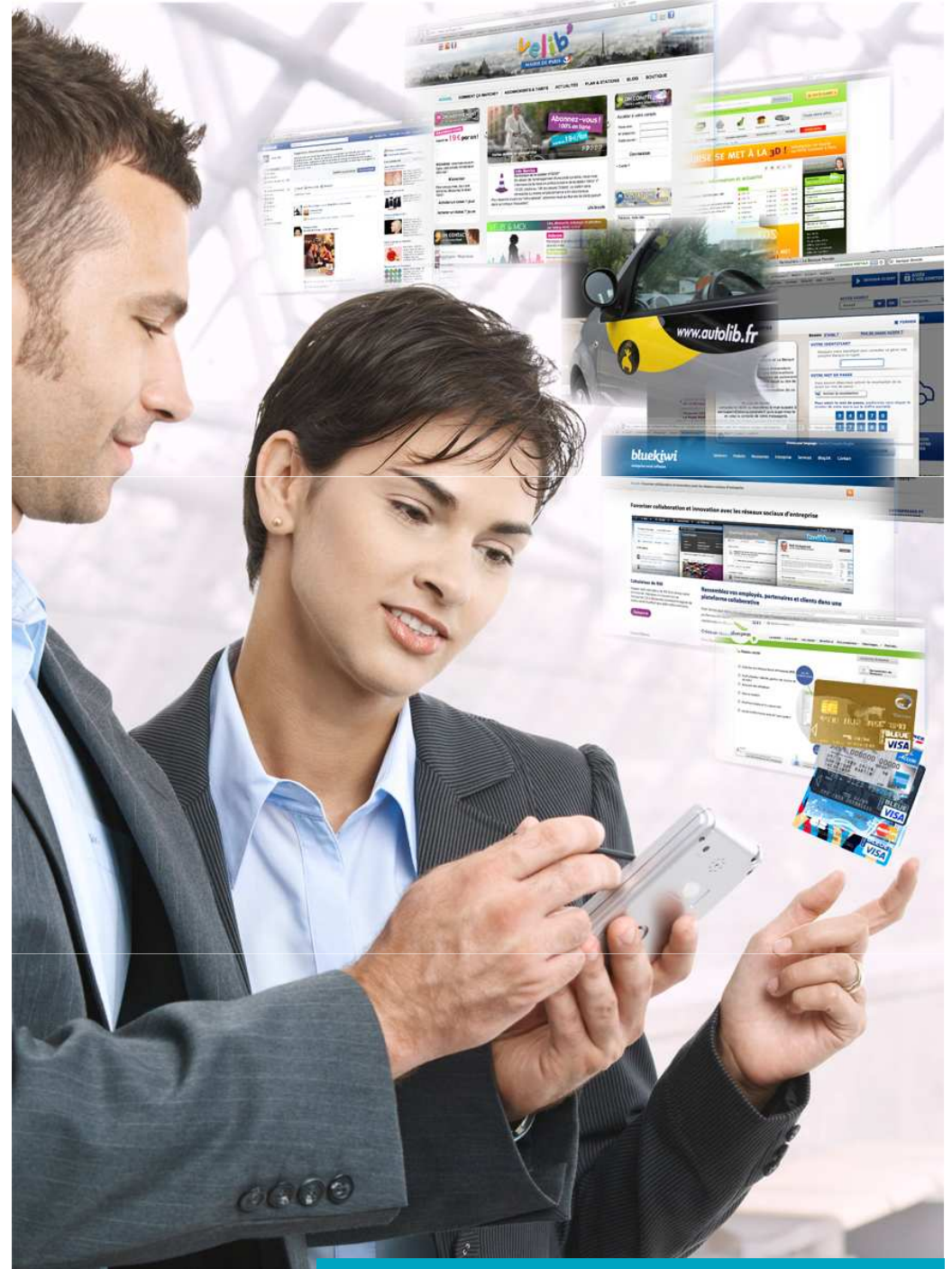


**Ergonomics exigencies** go from teenagers' (who know only the Internet...) to professional users.

Ergonomics are a key business challenge

Users are taking the central place

3 major device types are leading the market : iOS, Android, Web (HTML5)



# User applications, treatment & M2M communication

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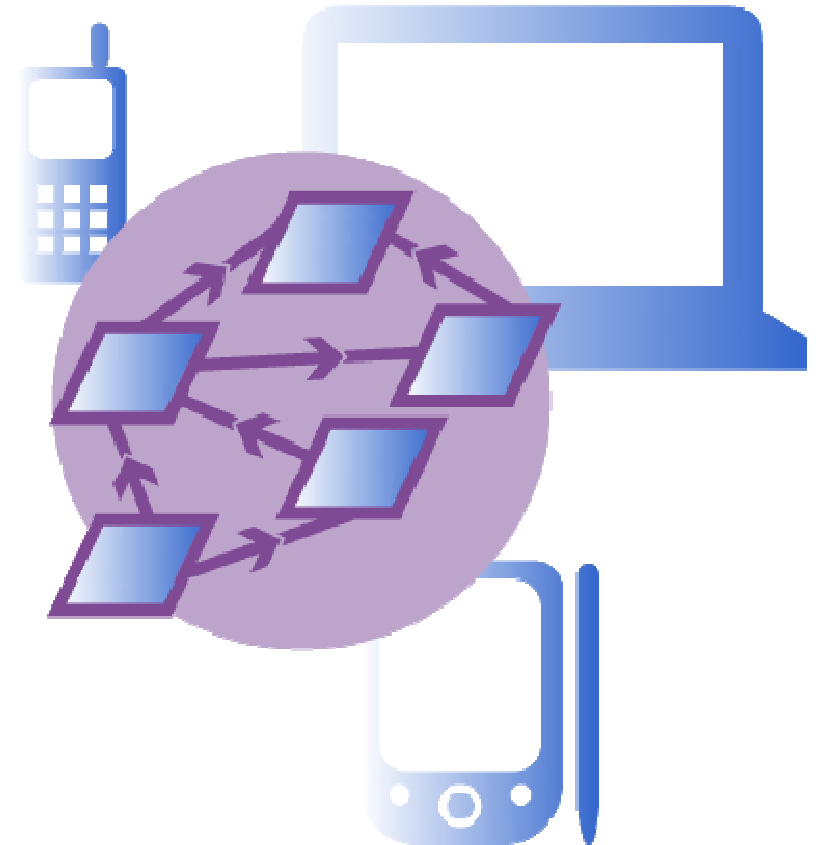


For the first time, we have 3 terminal types

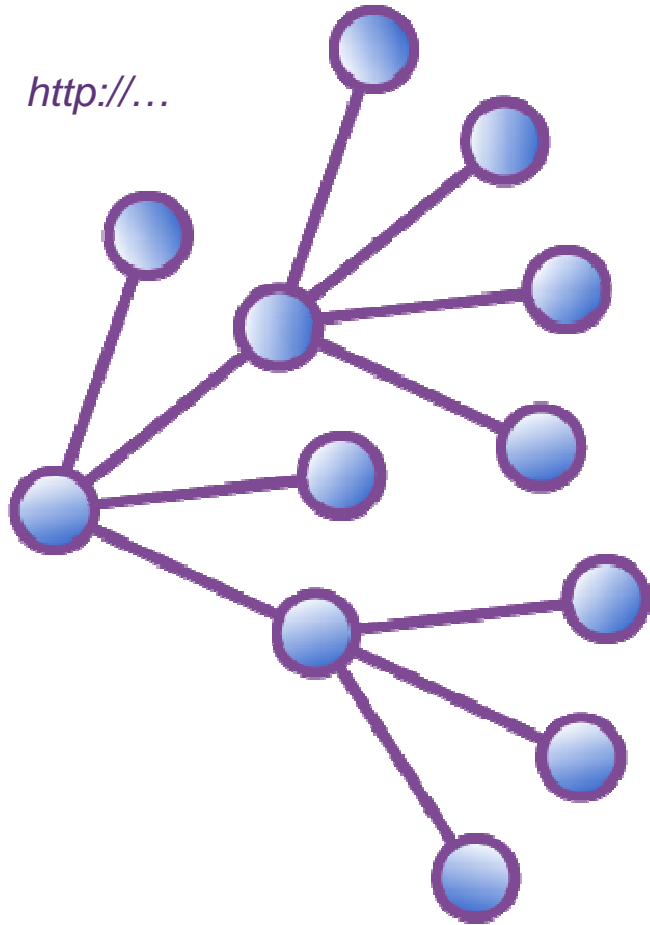
1. iOS,
2. Android,
3. Web (HTML5)

As such, IT solutions explode into :

- ▶ User Applications (x3 for iOS, Android, Web)
- ▶ Business applications processes (REST API)



*http://...*



## ▸ WHAT IS “REST” ?

- Architecture Style
- Web Services type
- Modern approach for SOA

Applications publish their services thru “Tree Shapes”

« Verbs » are only those of HTTP:  
*Get, Put, Post, Delete*

Robust communications without  
« state »

Interface is navigable

« Cache » increase application performances

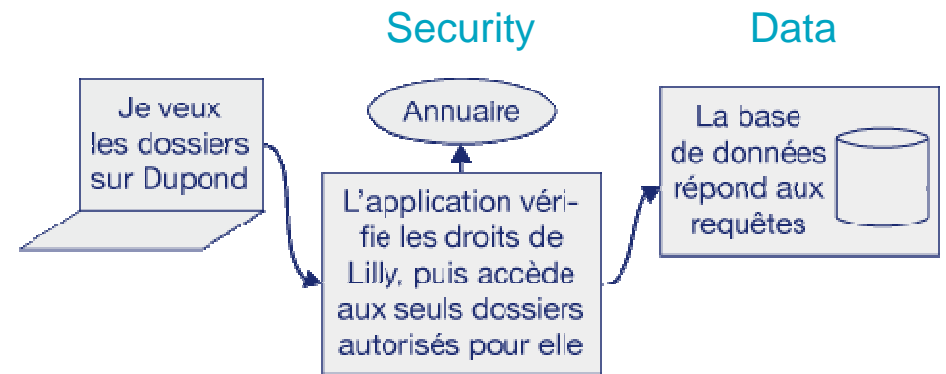
Maximal flexibility for design & further evolution

# Communication & exchange between applications are done thru services

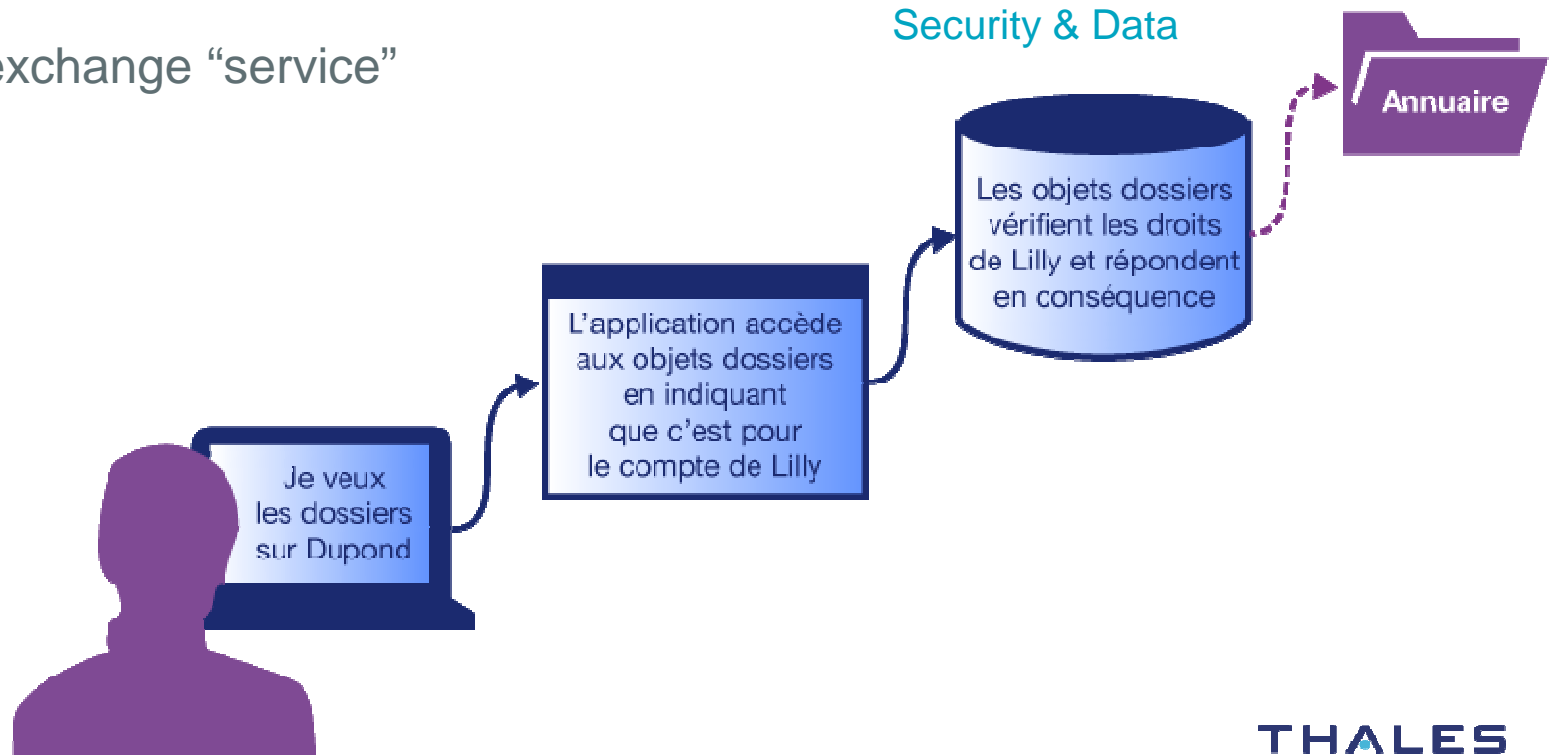
**Size & complexity** of applications force developers to cut them into modules

**Modules are « sharing nothing »**

They only exchange “service” requests



**Security & Data**



# Web architecture is nowadays THE reference

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www

Google docs

Microsoft Office

Salesforce.com

amazon.com



SAP Business ByDesign

**Web Architecture is simple & proven** by the previous generation

It has been adopted “deeply” within Information Systems



Intelligence is in every server (never in « middleware », « SOA framework », or « ESB »)

Security goes beyond « fortress paradigm » with a new concept of “paranoiac programming” (enabling in depth control)



# Databases diversification with NoSQL

## Functional requirements & volume are increasing a lot

Data management solutions diversification thru :

- + SQL databases
- + key/value databases
- + Column databases
- + Document databases
- + Graph databases
- + Geographic databases

Examples : Cassandra, designed by Facebook, is a great success for big capacity



# Open Source : the standard for SW development



Business models evolution has reinforced Open Source

**Open Source development model has proven its viability**

- ▶ Open Source software have a better quality
- ▶ Proprietary software often get benefits of Open Source

# Beyond to Java, the power of JVM is rediscovered

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Encouraging the re-use of **SW components** is requesting new mechanisms

Beyond to Java, the JVM brings a powerful environment

- Portability,
- Parallelism support (including exceptions)
- Dynamic loading of « Classes »
- Independency between « Interfaces » & « Data Structure »
- Instrumentation, ...



# Clouds become the new server paradigm

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Cloud computing **de-couple**  
Software activity from  
Infrastructure ones

From a **Usage** point of view :

- ▶ On demand Computer & Network

From an **Operation** point of view :

- ▶ Homogenous Infrastructure
- ▶ Easier Management (ex. SW displacement is possible)
- ▶ Automation



SaaS  
(Software as a Service)



PaaS  
(Platform as a Service)



IaaS  
(Infrastructure as a Service)



Cloud Watt  
par l'état français (CDC),  
Orange, Thales



**Cloud computing defines precisely IT activities, which brings positive competencies transformation**

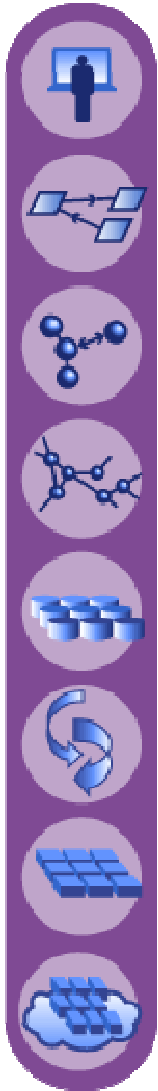
Virtual Computer = File

Real computer = Electronic



# The New Generation in 8 points

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**User Experience** is the new priority

User applications, processes and **M2M communication**

Exchange between applications are done thru **Web Services**

**Web architecture** is the reference

Databases are diversifying with the usage of **NoSQL**

**Open source** is the Software development reference

Beyond to Java, **JVM** power is rediscovered

**Clouds** are the new server paradigm



Thank you  
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**THALES**