



## Management of IS, Technologies, State of Art

---

The Orsys seminars present state of the art information and communication technologies. They offer you the most relevant approaches to adopt and develop your information systems.

### Seminars

[IT Technologies, overview.....](#) ( p2 )

[E-Information Systems, Architectures.....](#) ( p5 )

## OBJECTIVES

A clear and precise overview covering the very latest IT and telecommunications advances, their foreseeable short and medium-term evolutions, their impact on companies and users. The main objectives of this seminar include: Analysing and comparing the main network solutions. Constructing multi-service networks. Making them secure. Mastering Internet technologies. Measuring the impact of digital media and e-commerce. Integrating the object approach in development methods. Putting in place rich-client and Web applications. Selecting a development process suited to the digital technologies.

- [1\) Telecommunications: the market, the major solutions](#)
- [2\) Network architectures](#)
- [3\) Network technologies](#)
- [4\) Security](#)
- [5\) The IS infrastructure in 2006](#)
- [6\) Web technology and its applications](#)
- [7\) XML in the IS](#)
- [8\) Web services](#)

- [9\) Open Source software](#)
- [10\) Portal and content management](#)
- [11\) EAI and Urbanisation](#)
- [12\) Application servers](#)
- [13\) Java technology](#)
- [14\) Microsoft's .Net platform](#)
- [15\) Data servers](#)

## Participants

This seminar is aimed in particular at IT managers and their immediate staff who wish to obtain the information needed to define IT strategies.

## Pre-requisites

None.

---

## 1) Telecommunications: the market, the major solutions

- The telecommunications market: voice, data, the traffic and the related income.
- The industry players and standardisation: the traditional players and the newcomers.
- Switching, routing and related solutions (ATM, IP, MPLS).
- Virtual private networks (VPNs).
- The changing influence of players in terms of standardisation and business.
- The impact of deregulation. The legal principles.
- The change over to broadband and mobility.

## 2) Network architectures

### Access networks

- The change over to broadband.
- xDSL solutions and their evolutions (SDSL, HDSL, VDSL). Voice and image flow rates, distances, and transport. DSLAMs and the transport network.
- Cable-based techniques.
- The optical local loop.
- The emergence of radio networks: WiFi, WiMax. Mesh networks.

### Company networks

- Local network architecture. Wiring, solutions and implementation. The extended family of Fast Ethernet, switched Ethernet and Gigabit Ethernet. Which technology for which use? Changing over to virtual networks (VLANs). Switching and routers in the company network. The migration of existing systems to different solutions. Interconnecting with operators' networks.

### Operators' networks

- ATM for constructing the core of Frame Relay networks and multi-service networks. Changing over to IP architecture. IP signalling and controls. The introduction of MPLS and label switching. Traffic engineering in operators' networks. The service guarantee. The demand for virtual private networks (VPNs) and the solutions for building them (level 2, 2.5, 3). Content distribution networks (CDNs) and "overlays". Convergence. The economic aspect of networks.

### Mobile telephone networks

- Mobility and nomadism: the displacement of the workstation with its software and data.
- Using cellular telephone networks: EDGE, UMTS, HSDPA. L4G.
- The mass arrival of local mobile telephone networks Wifi (802.11 a/b/e/g/n) and Bluetooth (802.15), ZigBee and UWB..
- Handover, roaming, mobility management.
- WIMAX 802.16 networks, complementarity and the alternative with regard to competition.

## 3) Network technologies

### ATM and frame relays

- Frame switching. The protocols used (forwarding, flow and congestion control).
- ATM and service quality.
- Implementation principles. The position of the different operators' networks.

### IP technology

- Packet switching. Internet routing (intra-domain and BGP).
- IP, UDP and TCP protocols.

- SMTP, FTP applications, the introduction of Peer-to-Peer. The example of Skype.
- Internet service quality: the DiffServ model.
- Telephony over IP and video transport.

## The MPLS solution

- Label switching. Utilizing explicit paths (LSPs).
- LDP, RSVP-TE, CR-LDP protocols.
- Service quality in MPLS. VPN support.
- Comparison with native IP and ATM solutions.
- Position, choice and evolutions of operators' networks.

## Overview

- The interaction between networks and applications. Traffic models and their evolutions.
- Application model changes and their impact on the traffic within the Internet and its management.
- Internet metrology, diagnostics.
- What technologies for tomorrow. One solution for different needs or an integration of solutions.
- The social and economic aspect of networks.
- The market and the prospects for change.
- The emergence of new services and multi-media.
- Ambient Internet.

## 4) Security

- Security issues: physical architecture, protocols, encoding, organisation.
- From the firewall to the IDS: techniques and limitations.
- Secured VPNs: IPSEC or SSH/SSL.
- Biometrics.
- Mechanisms for digital signatures.
- The infrastructures for managing and distributing keys.
- The links between security and service quality.

## 5) The IS infrastructure in 2006

- The state of the art in IS infrastructure.
- From the thin client workstation to the centralised server.
- The new operating systems, the new types of workstations, mobile phones and PDAs.
- Expected prospects and changes.

## 6) Web technology and its applications

- Internet developments. The changes to be looked for with protocols. The structure of applications on the Web.
- Internet protocols: message services, forums, web, directories (SMTP, POP, IMAP, HTTP, LDAP).
- The new protocols, SOAP: operation and issues.

## Intranet, universal client-server

- The three-tier architecture, the role of the relay Web server. How to distribute the application components.
- The structuring of documents. PDF, X HTML and Web 2.0.
- RIA Technologies (Flex, Flash, Silverlight, Java), RDA (Air, JavaFX), HTML5, xHTML. The trends.

## 7) XML in the IS

- Presentation of XML, the XSLT transformation engines and the XML parsers (Xalan, Sabloton, etc). Web services, what means for connecting with the existing applications. Protocols (SOAP, ebxml, Rosettanet, XHTML, BPML, WSDL). XML impact on call centre and Web applications. XML SGBDs.

## 8) Web services

- The principle of Web service defined by W3C.
- SOAP, UDDI and WSDL. Access protocol, mode of operation.
- The offers from the major players and the start-ups in the field of Web services and orchestration.

## 9) Open Source software

- Genesis of the main Open Source Software in the market. All the sectors covered.
- The guarantees of security and long life. The impact on workstations. Similarities and differences to non-free software.
- Linux server or client? Apache: a major presence today? Development environments (PHP, Eclipse, Trac, GIT etc). Databases (MySQL, PostgreSQL). CMS.
- Integrating the company's back-office.
- Is the service age taking over from the software age?

## 10) Portal and content management

- What are the features of a company portal? Secured access, open connectors, profile management and parameter setting. The market offers. Positioning, functionalities, specialities: Tridion, Fatwire, eZ publish, Drupal, Liferay, eXo Platform...

## 11) EAI and Urbanisation

- Enterprise Application Integration: pipe-dream or major axis of the information systems of the future? The market offers. The components of an EAI solution: rules engine, broker, workflow, connectors, development. Hub and Spoke or Network Oriented architecture?
- Positioning, functionalities, specialities.

## 12) Application servers

- Application Intranets and application servers. Features.

- Complete application server offers : WebSphere (IBM), Weblogic (BEA), Iplanet (Sun), Oracle Application Server...
- Cloud Computing Architectures: Private et Public.

### 13) Java technology

- Java, a complete object language. The hardware platform portability concept. Sun's strategy.
- The Java objects communicate with each other (JavaBeans and RMI). Access to databases (JDBC). Security.
- Java APIs and their openness to the IS: JCA, JMS, JNDI, etc.
- The clients and servers use Java. Applets and Servlets.
- Enterprise Java Beans, integrating CORBA.
- The application bus concept. The J2EE platform. Adopting SOAP.
- Design Patterns. Struts logical architecture.

### 14) Microsoft's .Net platform

- Microsoft's .Net architecture. Mode of operation and implementation techniques (Framework, Enterprise Server, ASP .Net, Common Language Runtime, etc). Why Microsoft's middleware object approach is so successful.

### 15) Data servers

#### SGBDs

- The market and the offers, the orientations of the major players (IBM, Oracle, Microsoft). The pressure from Open Source providers.

#### User-oriented systems

- Types of multi-dimensional storage (MOLAP, ROLAP, HOLAP). The client tool families: relational query tools, EIS, Data mining.
- How do you handle large volumes? Dedicated architectures.
- Special modelling techniques. Star or snowflake schema.

#### DataWeb

- The thin client offers from the suppliers. Openness to new user populations. The Push model. The under-lying technologies and their impact on deployment and security.

#### Next sessions

Center/Month	Sep. 10	Oct 10	Nov. 10	Dec. 10	Jan. 11	Feb. 11	Mar. 11	Apr. 11	May 11	Jun. 11	Jul. 11	Aug. 11
Brussels			15									

## OBJECTIVES

*This seminar explains the concepts and standards of the new technical / functional architectures, how they have evolved and how they have matured. It presents an overview of the 3rd revolution in information systems, based on the idea of "services". Case studies based on large and significant projects, will show you how these technologies and platforms have been implemented.*

[1\) Technical principles of Web applications](#)

[2\) The principles of IS urbanism](#)

[3\) Integration-oriented architectures: a concrete response to Urbanism](#)

[4\) Web services](#)

[5\) e-Business infrastructures](#)

[6\) Service-oriented architectures \(SOA\)](#)

[7\) Web Content Management \(WCM\), document management \(GED,](#)

[WDM\), personalisation and syndication](#)

[8\) The enterprise portal \(EIP\)](#)

[9\) Data Warehouse](#)

[10\) Security infrastructure](#)

[11\) Summary](#)

## Participants

IT management. Operational department managers. User project leader. Technical project leader/manager. Technical architect.

## Pre-requisites

Knowledge of the Internet and notions of technical architectures.

---

## 1) Technical principles of Web applications

### Web technologies

- TCP/IP, HTTP/HTTPS, HTML, Internet browser, JavaScript, applets, ActiveX.

### The basics

- The different types of architecture: 1-tier, 2-tier, 3-tier, n-tier.
- The client, application servers, connected mode and disconnected mode, the main notions: context, transaction, middleware, components and objects.
- Dividing architectures into five layers.

### Overview of JEE architecture

- Overview of the components of JEE architecture: JSP, Servlets, EJB, JMS, Grails ...
- Additional specifications (portlets and content management). The main JEE architecture types. Summary and prospects.

### Overview of .NET architecture

- Overview of the components of .NET architecture: WebForms, WinForms, Enterprise Services and MSMQ. Comparison with JEE. Microsoft's vision of company architectures.

### The Open Source alternative

- The PHP platform. The Open Source JEE offer with TomCat, JBoss...
- Benefits and risks.

### Web 2.0 and the new MMIs

- Ajax technology and its consequences for Web applications.
- Web 2.0: definition, impact on applications and user requests. The arrival of crowdsourcing.
- Changes to graphical interfaces, the new possibilities offered by the rich client.

## 2) The principles of IS urbanism

- What is urbanism? Mapping the existing elements. Defining the target IS.
- How do you define the convergence trajectory? Who are the players in an urbanism project? What is the time scale?
- What are the deliverables? What is the control structure? Which approach should you adopt? Analyses: maturity, integrations, costs and risks. Case studies on ROI and the organisation linked to the new architectures.
- Impact analyses: the cultural transition for the company and the ISD, the learning curve for the teams, organisation in relation to internal and external skills, project management.

## 3) Integration-oriented architectures: a concrete response to Urbanism

- Enterprise Application Integration: EAI. What is it exactly? A technology, a concept? Why are integration problems more concerned with organisational and functional issues than technical ones? An EAI architecture (ETL, workflow, BPM, messaging, connectors, etc.). How do EAI tools respond to the architecture and the contexts? "Traditional" integration application interfaces: CORBA/IIOP, EJB/RMI, DCOM, XML-RPC and JCA.

## 4) Web services

- The Web services concept and the related standards (SOAP, WSDL, WS-\*).
- Developing and deploying Web Services.
- The position of the main players in the market.

## 5) e-Business infrastructures

- Background.

- Attempts at standardisation (BPSS, cXML, xCBL, BTP, etc.), market offers (Commerce One, Ariba, Rightworks, Biztalk).
- ebXML v RosettaNet.
- Architecture, standards, adoptions, feedback. Financial and accounting standards (OFX-SWIFTML, XBRL, etc.).
- Orchestrating services (BPML, BPEL, BPEL4WS): a reality...

## 6) Service-oriented architectures (SOA)

- What is a "service"? How can a file server be service-oriented? Examples of services.
- Differences between managers and brokers. Orchestrating several services. Example of a multi-player transaction.
- Service quality and security. Supervision and maintenance.
- Transactional aspects: analysing technical and functional phases, integrations with strong or weak coupling.
- Concrete examples of applications for distributing contracts and insurance services.
- ESB (Enterprise Service Bus) architectures: an SOA - EAI convergence?

## 7) Web Content Management (WCM), document management (GED, WDM), personalisation and syndication

- Content management issues.
- Why collaborative working? Implementing a publication system, scaling down communication channels, decentralising, etc.
- Static sites v dynamic sites, using XML, managing roles. Description of content management and document management tools. Collaborative orientations, personalisation (profiling). Overview of some offers: Tridion, Fatwire, Drupal, eZ Publish, IBM WWCM, Microsoft MOSS ...
- The advantages of personalisation.
- Knowledge Management, personalisation for each user, etc. The "faces" of personalisation: implicit, explicit, collaborative, filtering, segmentation, etc.

## 8) The enterprise portal (EIP)

- The term EIP covers a lot more functions than the company really needs.
- Bringing all the data sources together and distributing them via one single application, the browser, is a very ambitious goal. What technical problems have to be solved in order to implement an EIP: personalisation, access control, searching, data syndication, process syndication? What are the principles of technical architecture for this?
- Brief description of the major tools: IBM WebSphere Portal, Oracle Portal, Liferay, Gateln ...

## 9) Data Warehouse

- Organisations want to have a decision-making information system that is really adjusted to their business, and that allows them to make real improvements in monitoring, forecasting and optimising their economic and company activities. To a larger extent than traditional infocentres, the Data Warehouse, as an analysis repository, capitalises on the existing IT system by making use of operational data and offers an architecture based on strategic functional issues rather than a technological challenge.
- Description of the complete chain: from collecting data in the operational systems through to its presentation in decision-making applications, including the processes supplying and storing data in the analysis repository. Information granularities: detail, aggregate, indicator. Some concrete examples illustrating the various approaches and tools.

## 10) Security infrastructure

- Making information exchanges secure: authentication, authorisation, integrity, confidentiality, non-repudiation and legal aspects. Why has application security become as important as infrastructure security? In an e-Business project, security has become a real project-within-a-project. PKI: encryption, certificates, SSL, electronic signature, etc. The security infrastructure for service-oriented architectures.

## 11) Summary

- Summary of the notions, concepts and precepts covered.
- The major trends in the evolution of technical architectures.

### Next sessions

Center/Month	Sep. 10	Oct 10	Nov. 10	Dec. 10	Jan. 11	Feb. 11	Mar. 11	Apr. 11	May 11	Jun. 11	Jul. 11	Aug. 11
Brussels		18		13								