

The Internet constitutes the universal foundation for company communications. With the Web, it gives you access to information, as well as a multitude of company software or services to the general public.

Seminars

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

OBJECTIVES

This seminar will provide you with a comprehensive overview of internet/intranet technologies. It will cover the following topics in a simple and practical way: the underlying techniques and infrastructures; the standards and tools available for developing efficient and secured applications; the impact of the introduction of new technologies such as mobility or e-commerce on applications and, more generally, on society.

- 1) [The information system](#)
- 2) [Basic technologies](#)
- 3) [Basic services](#)
- 4) [Security](#)

- 5) [Application architectures](#)
- 6) [Mobility](#)
- 7) [E-commerce](#)

Participants

This seminar is aimed at project leaders, IT decision makers, developers, IT managers, and webmasters.

Pre-requisites

None.

1) The information system

- The role of Intranet, Internet and Extranet applications in the information system. Their impact on the technological architecture and the functional aspects of the company.
- New communications infrastructure for applications. Evolution from the traditional 2-tier client/server to 3-tier and n-tier architectures. Comparison of 2- and 3-tier architectures. Client/server constraints, comparison with Web projects (development costs, development time and portability, length of life, length of life and management of versions, and data).

2) Basic technologies

How an Internet infrastructure operates

- Internet architecture and organisation. IP, ICMP, UDP and TCP protocols, addressing, application ports, naming, DNS, routing.
- Impact of networks on Web technologies.
- Domain names: obtaining them, legal regulations.

Network topology

- Autonomous systems.
- Service and access providers: types of Internet access (cable, xDSL, PPP and wireless local loop).
- Operators' offers.
- Access equipment - router, etc.
- Evolution to high-speed access: local loop and network core.

Virtual Private Network VPN IP

- Principles, benefits for a company, uses (interconnecting sites, access from mobile devices).
- Extended Intranet.
- Service quality: the MPLS approach.
- Security: IPSec tunnels.

Evolution of the information

- Taking advantage of infrastructures, deploying services as close as possible to users, checking and controlling the use of services, defining and controlling a use policy.

3) Basic services

Message services

- MIME, a representation and exchange format: coding, configuration, advantages.
- Message service protocols (POP3, IMAP4 and SMTP).
- Electronic mail, message volume, number and size of attachments, spam.
- Synchronous communication tools: ICQ, IRC, Instant Messaging, chat.
- Message service clients: Outlook, Notes Mail, Messenger, etc.
- Message service servers: Exchange, Lotus Domino, etc.
- SendMail and Eudora Internet message services. WebMail services.
- Proprietary and Open Source services.
- Security flaws. The secured message services. Evolution of services.

Directories

- The company directory concept.
- Access protocols, data syntax and model, directories and databases.
- History and overview: user management, DNS, Whois, application directories, X.500.
- The LDAP inquiry protocol and its models: information, naming, functions, security, duplication.
- LDIF: exchange format.
- LDAP URLs.
- Implementing a company directory service: creating a model, managing duplication.
- Server provisions: OpenLDAP, Sun/Netscape, IBM, Novell, Microsoft, Domino - selection criteria.

Search engines and portals

- The strategic role. The stakes, the players, the impact.
- The economic model of the information society.
- Techniques of indexing, referencing, ranking.
- Traffic, supervision tools, relevance.
- How the search engines operate: Google, Altavista, etc.
- Meta-engines (Copernic, etc).
- Specialist engines (images, sounds, photos, multi-media, etc).
- Workstation searches.
- Portals (Yahoo, MSN, AOL, Voilà, etc). Customising tools.
- What audience and what "passage" on the Internet?

Collaborative work

- Collaborative work from the point of view of the Internet and the Web. The characteristics.
- What tools for what needs?
- The company environment and the personal environment for collaborative working.
- Accessibility.
- Network services and hardware. Controlling resources.
- Security policy.
- Functions: groupware (screen sharing, paperboard, etc), workflow (the SWAP standard: Simple Workflow Application Protocol).
- Services: Web Access, instant messaging, Skype, etc.

Multi-media over IP

- IP infrastructure of multi-media services.
- Images, sounds, video: GIF, JPEG, MP3, MPEG formats etc.
- Streaming software: QuickTime, Windows Media Player, etc.
- Voice over IP technologies. Video over IP. Multi-cast broadcasting. WebTV, WebRadio. SIP protocol.
- RTP, H323 protocols.

The Web

- Basic principles: URI, HTTP, HTML. Localisation, transport, presentation.
- Managing the user session.
- XML for the Web.
- Presenting information (HTML, DHTML, XHTML, style sheets, etc).
- The universal client (browser). Principles. Functional and operational positioning.
- Web browsers, functions and differences: Internet Explorer, FireFox, Netscape, Opera and Nautilus.
- PDA, thick/thin PC solutions.
- RSS and podcast services.

4) Security

The problem

- How do the new technologies weaken architectures and applications?
- The types of attacks on TCP/IP: ip spoofing, tcp flooding, SMURF, Trojan horse, Netbus, NetOrifice, etc.

Security services

- Confidentiality, authentication, integrity, denial of service, non-repudiation. Signature and checksum. Certificated systems, secured systems.

Authentication

- Passwords, Active Card, Secure ID, biometrics... PPP authentication. Radius, Kerberos authentication systems etc. Smart card solutions.

Access security

- Firewall, proxy: differences, complementarity, address masking.
- Firewall architecture and localisation, DMZ (de-militarised zone), firewall selection. Impact of the firewall on technologies.
- Packet filtering, filtering routers, ACL.

Virtual Private Network

- IPSEC operation, L2F and PPTP secured protocols. The security tunnel, security rules. Virtual Private Network on the operator backbone, on the Internet.
- Cisco, Checkpoint, administered VPN services.

Cryptography

- French legislation. What legislation for an international project?
- Symmetric and asymmetric keys. Data encryption.
- The electronic signature: MD5, SHA.
- Certificates: the x509 standard, operating principle, installation, purchase. Certificate servers, trusted third parties.
- Specifics and installation of a public key infrastructure (PKI/EGC).

5) Application architectures

Introduction

- The different servers of an information system's architecture: files, databases, transactions, applications, objects, Web.
- Possible interactions between these servers.

- Their position with regard to Internet architectures.

XML

- Overview of XML. A meta-language. Describing data and documents. XML Schemas. The parsers (Xerces, MsXml, Xt, etc).
- XSLT processing, style sheets, XSLT transformation engines (Xalan, etc).
- Web services, interconnection between applications. Examples of requests. Communication methods.
- XML languages (ebxml, XHTML, BPML, etc).
- Implementation over the WAN.
- Adopting XML for metadata reference (DSML, XMI, VoxML, etc).
- SyncML protocol for data synchronisation between mobile units and application servers.

Client-side technologies

- Browsers, their differences and impact on client technologies.
- Plug-ins.
- Implementation problems.
- Client-side presentation, HTML language and its limitations.
- Client-side interaction: Javascripts, style sheets (CSS), Document Object Model (DOM), integration with HTML (DHTML), XHTML, Flash.
- Interfacing forms (server transfer), cookies.
- Rich interfaces: ActiveX components, Java applets, Macromedia services.
- Evolutions: SVG, XForms, Ajax, etc.
- Graphic formats: GIF, PNG, JPEG, Flash.
- Managing streams (MPEG, MP3, DivX)
- Thick client. Thin client. Rich client.

Server-side technologies

- N-tier architectures.
- The client-server dialogue. Managing sessions.
- Server components. Programs, servers, architectures.
- Server programs. Review, overview of CGIs (development, security, portability), PHP, JSP, PERL, ASP, ASP.NET scripts.
- Component-oriented approaches (Sun Enterprise JavaBeans, Microsoft .Net). Proprietary APIs (NSAPI, MSAPI, Apache API, etc).
- J2EE and .NET architectures. Usable Frameworks (Struts, Spring, Hibernate, etc). Overview of other PHP solutions, LAMP architecture, Zope/Plone, etc.
- Accessing data. The transaction.
- Integrating with inherited systems.

Web servers and application servers

- Network and system infrastructures. Linux, 2000, Unix and other operating systems.
- High availability load balancing. The cluster approach.
- Web servers (Apache, IIS, etc). Tools (migration, load balancing, etc).
- Evolution. Application servers.
- Role of the application server in Web architecture.
- Presentation service, distributed object services, distributed transaction services, flow control services, resource access services, administration and deployment services.
- The commercial offer: IBM WebSphere, SUN iPlanet, Weblogic by BEA, Oracle 9IAS, etc.
- Open Source : TomCat, jBoss, Jonas, Geronimo, etc.
- Application bus, definition, use.
- Technologies for running a Windows application on the Web: the Citrix client.

Distributed architectures and Web services

- Web services, standards (SOAP, WSDL, UDDI, BPML, BPEL), definition, implementation under .Net and Java. Implementation over the WAN.
- Ways to connect Web services to existing applications.
- SOA architectures.
- Specifics and advantages of distributed architectures.
- Overview of other technologies (Corba/IOP model, DCOM, RMI model, etc).
- Comparison of architectures (interoperability, portability, communication protocols, interoperability of languages, code portability, component life cycle, security, performance) between MOM-Java, COM/DCOM/ActiveX, SOAP, Corba and Java/RMI/EJB technologies.
- Available services, .NET/WebSphere, .NET/J2EEE, ASP-SQL Server-COM+/JSP-RDBMS-servlet, WebMethods, etc.

6) Mobility

- PANs and WI-FI, Wimax and Bluetooth standards. LAN, Wireless WAN and Wireless Loop networks.
- Technologies in the mobile environment. GPRS, EDGE and UMTS high-speed networks.
- Private wireless networks: architecture with a base station, hybrid architectures (wired and wireless).
- Wireless Internet routing.
- Advantages and drawbacks of mobile IP. What is the future for the communicating PDA?
- Mobile terminals (PDAs, WebTV, terminals, etc). Development tools for PDAs.
- Intranet/Mobile gateways (AvantGo server). Impact on distributed services. Multi-channel XML impact.
- Security solutions for Mobile services.
- Mobility in Ipv6.

7) E-commerce

Review

- The concepts of B2B, B2C, P2C, mbusiness, business and their use of technologies.

Payment over the Net

- Payment systems: SET, SSL and HTTPS, trusted third party, micro-payment,
- Secured payment architectures, bank card number processing.
- Back-office technologies and obligations.

Coordination technologies

- CRM: analysing consumers and their behaviour. The essential technologies.
- Audience measuring tools: Clicksteam, Webmeasure, Adsuite.
- Traffic analysis tools: webtrend, net.Analysis, etc.
- Coordination technologies and services: syndication tools, solutions for building customer loyalty: e-couponing.
- Content management: intranet, thumbnail image, open text, etc for audiences, Web documentum content managers, etc.

Summary and outlook

- Evolution of the infrastructures towards extended VPN, multi-media and high-speed mobile networks.
 - The open information system. The role of the Internet and standards. The evolution of economic models.
 - Migration to IPV6.
 - Glossary
 - Bibliography.
-

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	27			6								