Publication date : 06/05/2024

Course : WOA, Web-oriented architecture, overview

Synthesis course - 2d - 14h00 - Ref. BOA
Price : 2020 CHF E.T.

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WOA synthesizes multiple concepts and techniques: SOA, cloud, microservices, API and Web. With the help of numerous demonstrations, this course presents all aspects of this family of architectures, from security and monitoring to integration and deployment automation.

Teaching objectives

At the end of the training, the participant will be able to:

- Understanding Web services architecture
- Securing data access
- Implementing an API strategy
- Control performance and traffic management
- Mastering IS Web standards

Intended audience

Information system architects, developers and decision-makers.

Prerequisites

No special knowledge required.

Practical details

Teaching methods

The concepts will be illustrated by technical and visual demonstrations.

Course schedule

PARTICIPANTS

Information system architects, developers and decision-makers.

PREREQUISITES

No special knowledge required.

TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

TEACHING AIDS AND TECHNICAL RESOURCES

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

1 Web Oriented Architecture

- n-tier architectures, distributed applications and components.
- Enterprise, SOA, WOA, ROA. Introduction to Web IS.
- Information system alignment: DevOps, Cloud, IaaS, PaaS, BaaS...
- Extreme industrialization of IT practices. Brewer's theorem (CAP).
- Openness, structuring and orchestration. Application microservices.
- Web services technologies (REST, SOAP, LDP, SOLID, etc.).
- Resource-oriented architectures.
- Filtering and transformation of exchange formats (XML, JSON).
- Transactional relationship management. (ACID).

Demonstration

Analysis of a WOA IS (Google, Facebook), identification of business and technical components. Case study of specific responses.

2 Choosing a technology base

- The main architecture styles. REST, SOAP.
- Special features of the HTTP protocol.
- Protocol translation and content filtering.
- Position the resource (URI) at the heart of the system.
- Representation of best practices. Message-based and asynchronous communication.
- Granularity and weak coupling.
- Standards: BPMN, BPEL, SCA...
- HATEOAS, Hypermedia As The Engine Of Application State.
- Tools for design standardization: Swagger, BluePrint, RAML...

Demonstration

Design and generation of Web Services in multiple technologies with Swagger, integration and interoperability. Drafting of appropriate documentation.

3 Managing targets and consumption patterns

- IoT and mobile applications.
- Scalability characteristics (vertical/horizontal).
- Cache management strategies.
- Performance and traffic management.
- Create, manage and expose APIs for developer communities.
- Support Cloud, mobile and REST API projects in existing systems.
- Support customers in the consumer park.

Demonstration

Based on a case study (e.g. Google), a review of how open IT is used on the Web. Different modes of production and consumption depending on the profile of the players involved, from the end user on down.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.

4 Human-Machine Interface

- HMI volatility. HMI "on-demand".
- What type of interface should be used?
- Contributions and evolution of the HTML5 standard.
- Progressive Web Application: boosting user engagement.
- Anticipate the development of offline applications.
- Isolating security and business processes with JavaScript.
- Advantages and limitations of hybrid development.
- Evolution of development solutions. The contribution of JavaScript.

Demonstration
Use of a multi-target, multi-media development strategy

5 Data distribution

- Evolution of storage architectures.
- Limitations of the relational model.
- The "NoSQL" alternatives, defining solutions and uses.
- Use of metadata: FOAF, GraphQL.
- Cutting out distribution layers.
- Choice of datastores (SaaS, BaaS...)
- Duplication and synchronization.

6 Security and confidentiality

- Definition of usage rules (encryption, authorization, SLA).
- Authentication standards (implementation and delegation: OpenID and oAuth).
- Solutions: filters, encryption and signature.
- Encryption mechanism.
- Cryptographic standards.
- Storage key management.
- Access and identity lifecycle.

Case study
Anticipating technical weaknesses in an architecture.

7 Support and monitoring

- Implementation of procedures, indicators and methodology.
- Platform accessibility.
- Consolidation of business "metrics".
- Develop a new BI (Business Intelligence).
- Opening of a partner offer.
- API packaging, product and plan creation.
- Error handling.

Demonstration
Collective analysis of operating OVIs (Objectively Verifiable Indices) to support business analysis.

8 Automated API deployment and management

- Architecture and automation strategies, (Cloud Management, OpenStack, "Docking").
- Solution evaluation criteria. Market offers.
- Strategies : Proxies, Agents or Hybrid.
- Choose an API management solution.
- Characteristic features.
- Key points for drawing up specifications.

Group discussion
Presentation of major solutions: MAS Azure, Apigee, Oracle SOA, WSO2...

Dates and locations

REMOTE CLASS
2026 : 31 Mar., 23 June, 6 Oct., 15 Dec.