

Collaboration of Autonomous Business Services

Theme	Prerequisite	Approaches learning objectives	Reaches learning objectives	Advanced themes
Service ecosystem architecture overview and concepts	<p>Can identify problems inherent in distributed, global systems (coordination protocols, no shared state, discrepancy in tools, languages, protocols, practices used)</p> <p>Suitable background available from Distributed systems, Software architectures</p>	<p>Can identify key business processes involved (contracting, outsourcing, breaches, sanctions, compensation, knowledge flows)</p> <p>Can identify key infrastructure services (interoperability support, service selection, monitoring of contractual state, trust, privacy, negotiation, knowledge bases involved)</p> <p>Can identify and describe challenges for the collaboration support infrastructure and architecture</p> <ul style="list-style-type: none"> • business alignment styles • autonomy • problems of use (technical, societal) • role of the software engineering 	<p>Is able to describe at least one case study where identified business processes exists and identify the level of automation supported</p>	<p>Is able to identify goals where the automatic behaviour of the agents involved are not technically validated or where societal requirements hinder the adoption of the solutions</p>
Basic concepts for business thinking		<p>Can identify and describe business strategies terminology including enterprise architecture, business model, business process model, IT alignment, value net, supply chain,</p> <p>Can describe a few networked systems and scenario</p>	<p>Can describe how business concepts act as requirements for the infrastructure functions</p>	<p>Is able to identify goals where the automatic behaviour of the agents involved are not technically validated or where societal requirements hinder the adoption of the solutions</p>
Key infrastructure services	<p>Programming, modeling, operating systems</p>	<p>Can describe key infrastructure services (service discovery and selection, eContracting, monitoring, business transactions, reputation services)</p> <p>Can describe the purpose and at least one implementation schenario of each key service</p>	<p>Can describe the purpose and some implementation schenarios for key services</p>	

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Technologies for implementing key services	Data structures Object-oriented programming Larger software projects	Can describe the principles of reflective systems and multiagent systems	Can describe how reflective systems, multiagent systems and ontology principles can be utilised in the implementations	Is able to compare interoperability support infrastructures in terms of dependability and extendability Is able to evaluate the systemic trustworthiness/dependability of an architecture, identify security threats of the architecture and informally estimate the performance of the architecture
Analysis and maturity evaluation; Business and infrastructure services meet?	Knowledge and application of CMM (Software engineering course) Software engineering project level experience on developing and evolving large software systems	Is able to classify systems with the help of categories defined by a maturity model	Can analyse strengths, weaknesses, opportunities and threats (SWOT analysis) for at least one technical case study in a given business scenario	Is able to select and justify the selection of integrated, unified or federated architecture for the business case at hand Is able to design architectures according to different design principles for the same collaboration situation and compare these designs with the help of a maturity models