SOA in Practise:
R&D Activities in Norway

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SOA in Practise – Partners

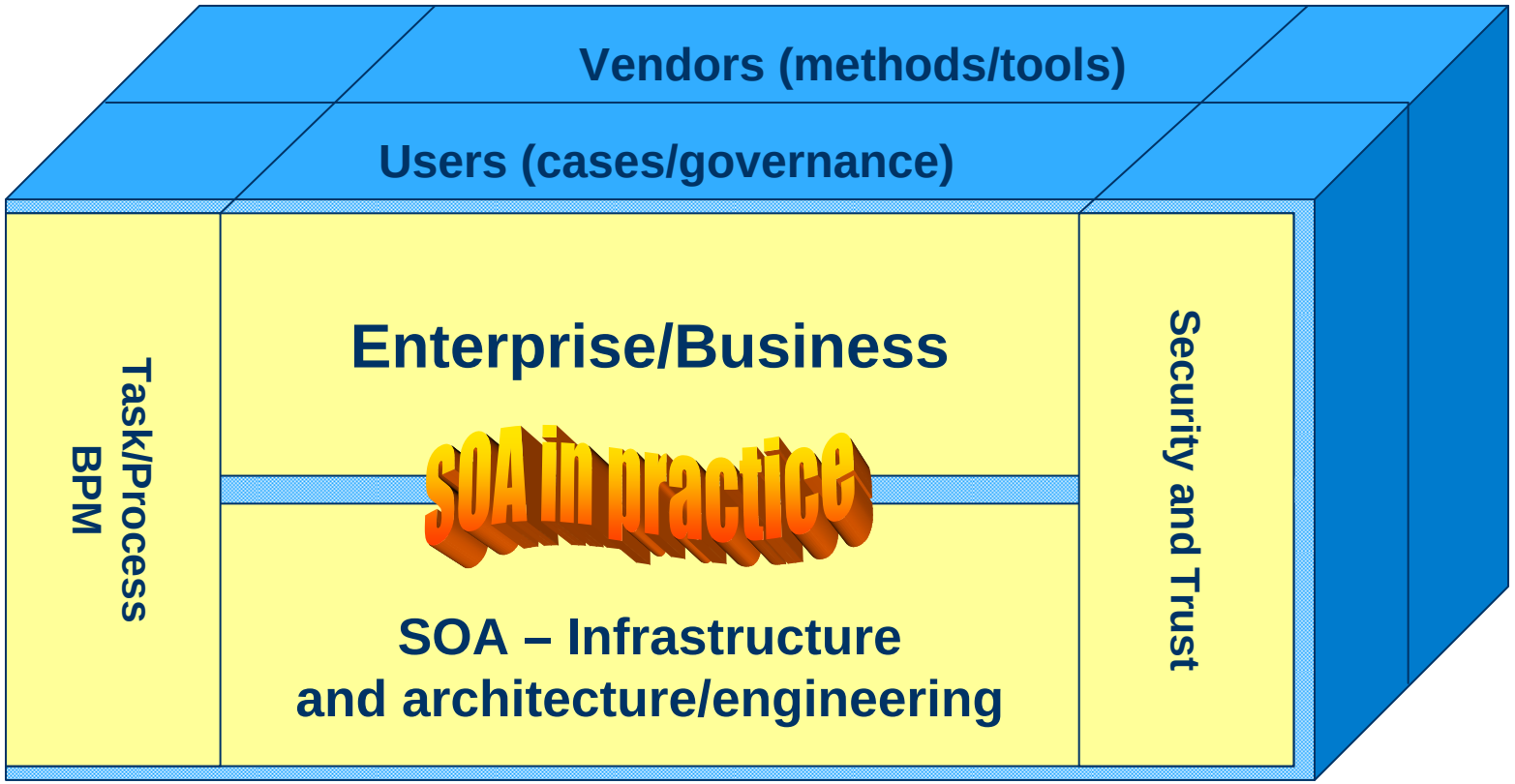
- **The network consists of more 35 Partners**
  - The network is runned as a project
  - Duration of the project is 3 years, terminating 2010
  - Partly funded by the Norwegian Research Council
  - Project lead is SINTEF, with Arne-Jørgen Berre as the pro.mng.
  - Often between 100-150 people attend our workshops, seminars, etc.

- **Users:** ***Storebrand, SSB, Vital, StatoilHydro, Statkraft, VPS, NorgesGruppen, NAV, …***

- **Technologyproviders:** ***IBM, Oracle, Sun, Microsoft, Software AG, CommITment, Accenture, Computas, BEKK, ESITO, STERIA, ABEO…***

- **Research:** ***SINTEF, UiO, NTNU, BI, NHH***

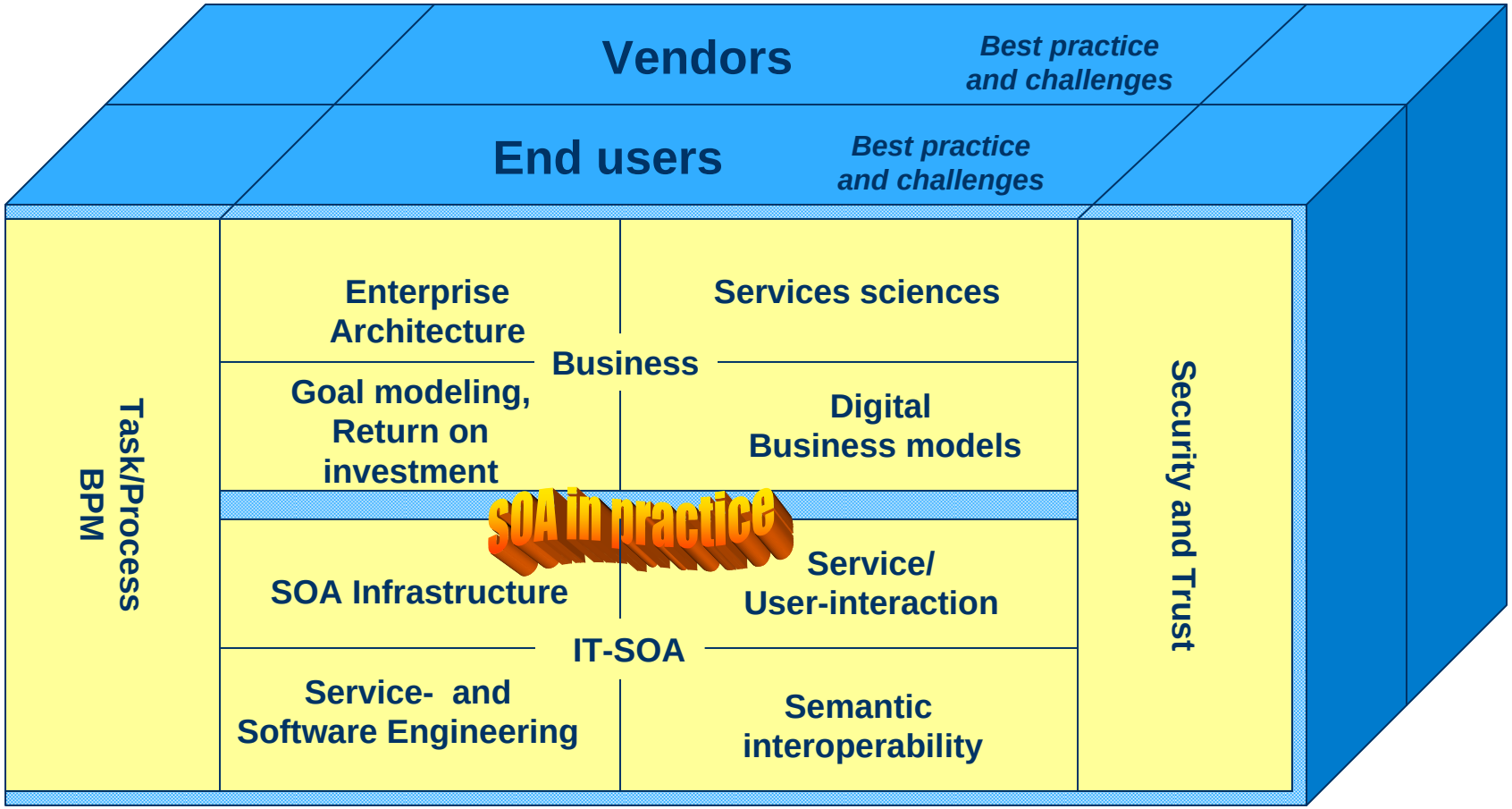
Scope of the SOA in Practise network



A Norwegian resource network, with Experience, Research and Technology forums

http://set.sintef.no/soaipraksis

SOA in Practise - R&D Areas



SOA Trends and Challenges

- Based on the Scope defined and the R&D Areas identified the partners also explored the most interesting trends and challenges
- The process has been to have workshops and meeting to discuss the issues and different topics
- Some core partner has then got the responsibility to formulate a common text on the matters.

Trends
as reported by the Technology Providers

- Consolidation ➪ comprehensive platforms
- Merging of Human Workflow and System Orchestration/Process services
- Integration of Business Rules Engines
- Support for Event Notification services (publish and subscribe)
- Integration of Model-generated workplaces and role/task-oriented user interfaces, user interaction services, portals, and multi-device interfaces
- Explicit use of models (Enterprise and System)
- Enterprise architecture + SOA
- Inclusion of semantics – towards SESA, Semantically-Enabled Service Architectures

Challenges

as prioritised by the ”SOA in practice” network/users

1. Business Driven IT – From Enterprise architecture to IT architecture

2. Executable models for Networked organisations

3. SOA Governance Framework – A framework of ”Best practices”

- *These main challenges are defined orthogonal to the following sets of technological challenges, not yet solved:*
  - *SOA Challenges*
  - *Service Architecture challenges*
  - *Service Engineering challenges*

The 9 SOA challenges

1. **Service identification**. What is a service? What is the business functionality to be provided by a given service? What is the optimal granularity of the service?
2. **Service location**. Where should a service be located within the enterprise?
3. **Service domain definition**. How should services be grouped together into logical domains?
4. **Service packaging**. How is existing functionality within legacy mainframe systems to be re-engineered or wrapped into reusable services?
5. **Service orchestration**. How are composite services to be orchestrated?
6. **Service routing**. How are requests from service consumers to be routed to the appropriate service and/or service domain?
7. **Service governance**. How will the enterprise exercise governance processes to administer and maintain services?
8. **Service messaging standards adoption**. How will the enterprise adopt a given standard consistently?
9. **Service publication and discovery**: How can we find the services we need ?

The 8 Selected Service Architecture challenges

1. Service-based unification for heterogeneous architectures, including Web services, Grid, P2P, Agents, Sensors and Mobile devices
2. Context-based Adaptive & self-adaptive systems
3. Dynamic Service Discovery - in heterogeneous architectures
4. Dynamic composition, service choreography and collaborative services – in heterogeneous architectures
5. Semantic service-oriented architectures and semantic services (Ref. semantic web services)
6. Service mediation – dealing with mismatches
7. Scalability in service environments
8. Cultural, Language, Social and Legal Obstacles in Services-Centric Business Models, "*software as a service*" (ref. UDDI failure !)

The 7 Selected Service Engineering challenges

1. Model Driven Engineering and Domain Specific languages for services and business modeling
2. Unified Process modeling, Service composition, choreography, collaboration and workflow modeling_Active and Executable Models – for Simulation and Enactment
3. Model-based “active” Service level agreements (SLAs)
4. Quality of Service (QoS) and Cost of Service (CoS) and NFA (Security, Performance, Reliability, …)
5. Analysis and Quality assessment support for Service models
6. Support for Security, Privacy and Trust for service computing
7. Unification with the Requirements Engineering and Information System Engineering communities

Some ongoing Norwegian Projects

1. From Enterprise Architecture to SoA (Accenture - *Consultancy*)
   - Portfolio Management of architectures, so that business and IT is better related, and could serve as the basis for building SoA.
2. SoA og SoA Governance (VITAL - *Finance and Insurance*)
   - Management of different types of Services, w.r.t. the SoA defined by VITAL and operated for several years.
3. National Pension system SoA Governance (NAV – *Public sector*)
   - The development engages 300 developers in the project, and the main asset is to built robust enterprise critical SoA solutions on top of IBM product platform.
4. From Process to Realization with BPMN and BPEL (Bærum – *Local Municipal*)
   - All public services used by citizens and business are transformed to Internet Services. The project has gained much experiences of Service Identification through a process model.
5. Information Architectures as the basis for SoA (Rikshospitalet - *Hospital*)
   - The project, based on many previous attempts, has based information integration based on SoA on common ontologies for data/information exchanged across systems and domains. The information models are the core of the integration strategy.
6. Service Modelling with UML SoA-Profil (SINTEF in FP7 ICT SHAPE)
   - UMPS is an upcomming new standard for modelling of SoA based systems. We have modelled Procurement solutions with order and invoice services.