Vision

- Today → procedural languages
  ✓ BPEL, WS-CDL, …
- Need for declarative languages for the specification, verification and execution of business processes / services (see DecSerFlow)
  ✓ Higher level view
  ✓ Flexibility/adaptivity
  ✓ Openness
  ✓ Autonomous nature of services
  ✓ Seamless integration between a (partial) flow specification and business rules / policies
  ✓ Rules + Ontologies
- Need for high-level graphical specification languages with a mapping to the underlying formalism(s)
  ✓ Usability
Current and Future Research Directions

- Smart engines (discovery, **contracting** and composition of web services)
- Computational logic-based **semantics** for standards like WS-BPEL, BPMN, and RuleML
- Automatic **reasoning** on specifications
- Run-time **verification** of compliant behaviour
- A-priori verification of interoperability (**choreographies**)  
- Formal proof of **properties**

Ongoing research:  
Contracting in Service Discovery Engines

Automatic reasoning on specifications (policies)  
  - Specifically on contracting  
  - Reasoning about services and composition  
  - Monitoring  
  - Learning (ILP)
Ongoing research: Web Services/Choreographies Specification, Semantics, and Verification

Development of computational logic-based conceptual models, platforms and tools

Applications: health care

- Service-oriented applications in health care
- Knowledge-based systems (logic-/rule-based)
- Aims/Services:
  - Managing patient care
  - Assisting the doctors (monitoring, diagnosis)
  - Supporting health care
    - Quality assessment and assurance
    - Clinical decision
    - Workflow (computerized medical guidelines)
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