Emergence of Composite Services in Smart Environments

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Opportunistic Composition Engine “OCE”

- Environment-directed service composition
- Emergence of new composite services adapted to the context and the user
- Dynamic and continuous adaptation
- Learning by reinforcement
- Decentralized and automatic decision
- Integration of new appearing services

Interactive Control Environment “ICE”

- Generate feedback from the user’s actions
- Let the user modify and edit the emerging service or create one from the available components

Current status

- Operational prototypes of OCE and ICE
- Demonstration of simple use cases with real connected objects
  - Arduino, Android, Node.js, WComp

Future Work

- Consolidation of the learning mechanism in OCE
- Interface adaptation to the user
- Feedback generation by ICE
- Feedback exploitation by OCE
- Full integration of OCE and ICE
- Scalability assessment

Methods and Tools

- Domain Specific Languages (DSL)
- Model-Driven Engineering (MDE)
- Model transformations
- Eclipse Modeling Framework, GEMOC

Presentation of emerging software services and how they are created and adapted to the environment and user needs.