SOA on Embedded Systems

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Outline

1. Introduction to Service-oriented Architecture (SOA)
2. Commonly used SOA technologies and their applications
3. SOA on resource-constrained embedded systems
   1. Pros and cons
   2. Limitations
4. State of the art
   1. Binary XML – EXI
   2. CoAP vs DPWS
   3. Cloud-connection
5. EISLAB’s research fields
Introduction to Service-oriented Architecture

• SOA is architecture model for distributed functions with formal interfaces
• SOA is build around services
• A service is
  – "Building block"
  – Discoverable
  – Composable
  – Stateless
• A service contains
  – Contract (description, messages, etc)
  – Interface (operations)
  – Internal implementation
Service-oriented Architecture

- Services hides away internal logic
- Internal logic can be implemented using any (suitable) programming language on any (suitable) operating system
- Existing services can be composed into new services
  - Orchestration
  - Choreography
SOA technologies, and their applications

- OPC-UA, industrial monitoring and control
- DPWS, general purpose
- SOAP, general purpose
- UPnP, media, home automation
- CoAP, general purpose for embedded systems
SOA on embedded systems

• SOA on embedded systems...
State of the art

- EXI, DPWS, CoAP
EISLAB’s research fields

- EXI, DPWS, CoAP
References

1. Ref 1
2. Ref 2
3. ...

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