Service Level Agreements in Virtualized Service Platorms

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Requirements on SLAs

- Easy usage
- Automated SLA negotiation
  - Automated mechanism with minimal user interaction
  - User decides the degree of automation
  - Multiple offer/counter-offer steps
- Dynamic SLAs
    - Agility of the whole SLA Management
      - Quick and focused reaction on changes in the environment
    - Renegotiation of SLAs

SLAs in Virtualized Platforms with Real-time requirements

- SLAs and the services they are about will have different life cycles.
- Real-time constraints need to be considered in the whole SLA Management process, including negotiation.
- SLAs on different levels have different requirements.

SLAs in IRMOS

- SLAs at two levels in IRMOS:
  - Application SLAs (high level, „Classical“ SLA)
    - Between Application Provider and Customers
  - Technical SLAs (low level, “Classical” SLA + VSN description (VSNd))
    - Between ISONI Provider and IRMOS Provider
- The underlying resources (network links, execution environments,…) are virtualized, so the platform must
  - advertise and offer a mechanism to discover the general supported capabilities;
  - provide SLA templates to the upper layer;
  - provide a means to reserve and book concrete requests;
  - complete the SLA negotiation by
    - mapping request to internal parameters (QoS classes,…) and
    - instantiating the virtualized resources.

SLAs in BREIN

- Integration of Multiagent and Semantic Web concepts in the Grid to allow for
  - Service discovery on basis of SLA capabilities
  - clear understanding of different SLA "languages" (term definitions)
  - mapping between contractual terms and system terms
  - Dynamically negotiate QoS terms
  - Automatically understand the infrastructure capabilities for negotiation purposes
  - Optimize negotiation wrt business goals & policies
  - Compare current SLAs to prioritize (intentionally violation)
  - Optimize resource usage whilst still meeting the SLA

BREIN
Business objective driven REliable and Intelligent grids for real busiNess

Future trends and challenges

- More examples of meaningful SLA use are needed to promote further uptake from non-experts
- Legal issues are completely ignored
  - Maybe a topic for the next calls
- Signing SLAs – apart from legal issues – is an open issue
- No elaborate standard negotiation protocol (WS-Ag is too simple)

Thank you!

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Further Information

http://www.irmosproject.eu

http://www.gridsforbusiness.eu

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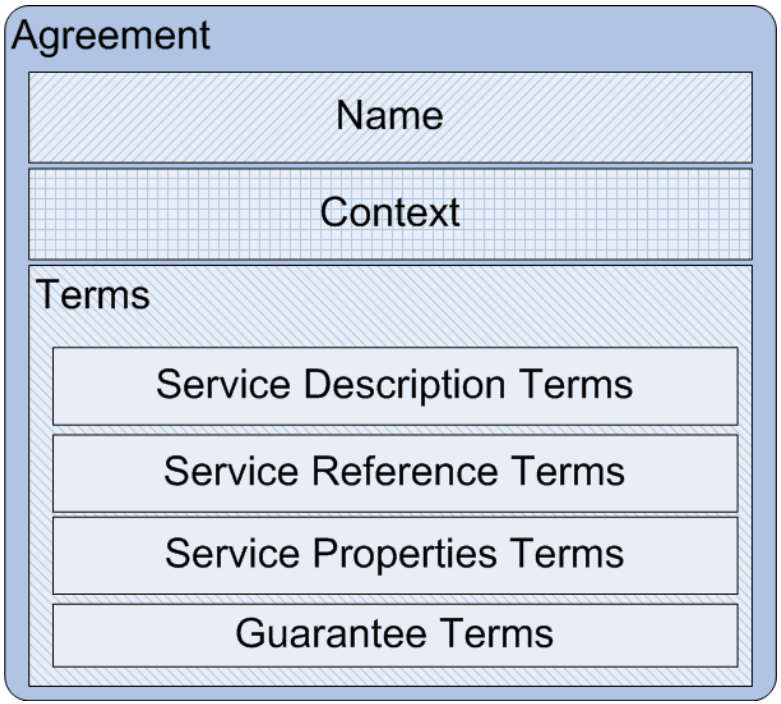
Application SLAs

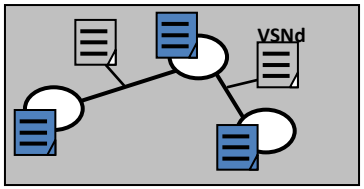
- „Classical“ SLAs with
  - application-specific parameters and
  - QoS criteria.



Technical SLA (I)

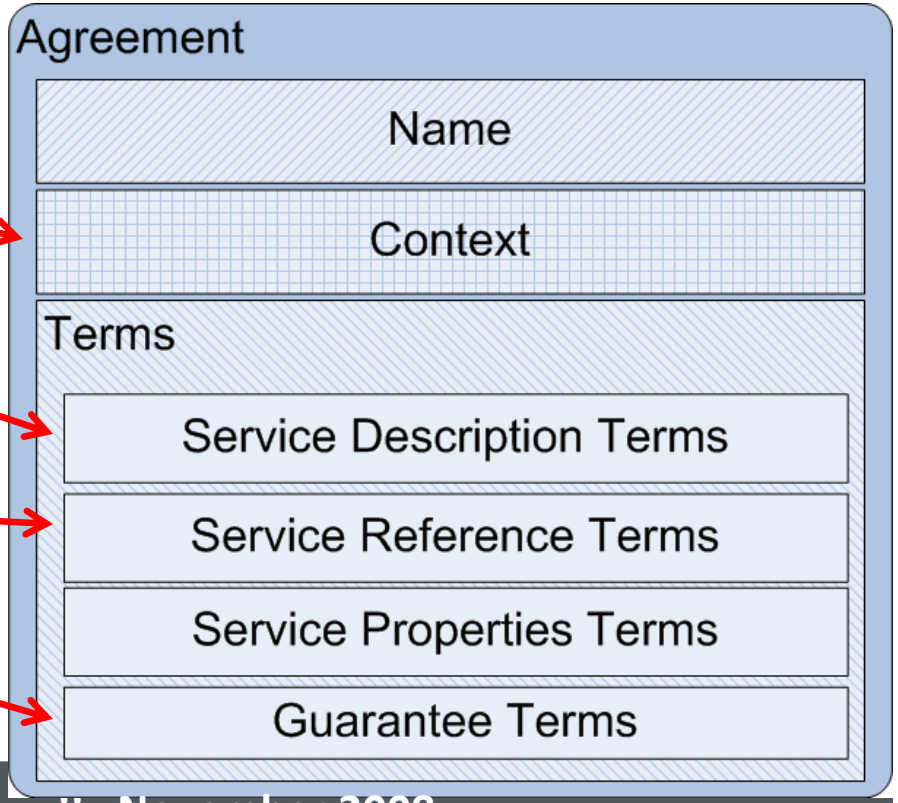
- Technical SLA = “Classical” SLA + VSN description (VSNd),
  - incl. Service Components description, links to binaries, topology, links and characteristics

Participating Parties‘ Information



References to existing services

General guarantees not related to VSN components



Technical SLA (II)

- The underlying resources (network links, execution environments,…) are virtualized, so the platform must
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  - complete the SLA negotiation by
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