



Fraunhofer FOKUS

Fraunhofer Institute for Open
Communication Systems

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Offered contributions to the FI PPP from Fraunhofer FOKUS Fraunhofer Research Center for Open Communication Systems

Prof. Dr. Thomas Magedanz | **FI PPP Open constituency building event** | March 12th 2010 | Nice



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Systems and Tools for Future Internet Experimental Facilities

Cross-Domain Testbed Federation, Monitoring & Management

■ Resource Federation Framework

- Different administrative domains provide resources becoming federation partners
- Administrative domains can be existing and upcoming testbeds or other organizations
- Testbeds are usually build for specific application areas and provide specialized resources
- Heterogeneous resource federation allows cross-domain experiments using resources from different existing testbeds (e.g. sensors, CPU, memory, services)
- FI PPP core platform enabler and testbeds will need to federate in order to achieve scale and diversity
- Building upon existing work will speed up the integration process and leverage previous investments

<http://www.fire-teagle.org/tutorials.jsp>

■ Cross-layer/-domain Monitoring & Management

- Multiple pluggable monitors
 - Active / Passive Monitors for Service Layer / Control Layer/ Cloud Layer/ Network Layer/ Host Level Monitoring
- Integrated measurement control
 - Scheduling, aggregation, correlation, alarm and Web-based display
- Powerful, policy-based control loops
 - Cross-Domain/-Layer control-loop: Monitor → Analyze → Plan → Execute → Monitor
 - Self-healing mechanisms
- Tight integration into Federation Framework
 - Automated testbed / resource federation, monitoring, fault management and test execution



Systems and Tools facilitating Open Communication Platforms

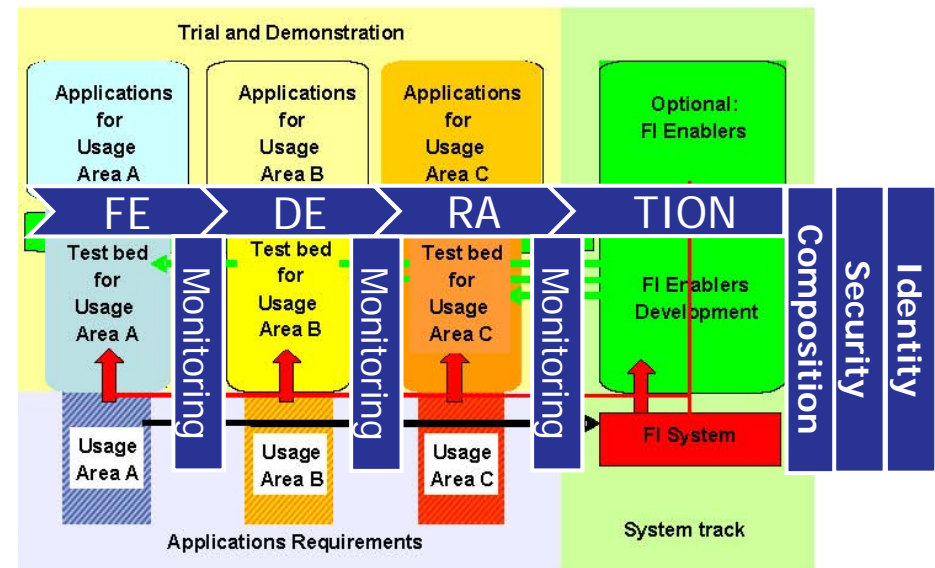
Cross-Layer Composition, Identity Management and Security

■ Identity Management and Security

- Multi-stakeholder environment
- Network access and security policy are different from one stakeholder to another
- Some appropriate identity management mechanisms providing simplified authentication and authorization procedures are needed
- Security mechanisms preventing fraud and misuse between the different stakeholders' domains are needed
- Enforce the respect of the SLAs with the stakeholders' customers as well as their privacy in the heterogeneous environment

■ Cross-Layer Service Composition Framework

- Enables the dynamic composition of service and network functionalities based on user/application requests
- Adaptive and differentiated network behavior based on service requirements



FI ENGINES

Extensible Next Generation INternet Enablers

- Novel Reference Architecture:
 - coexistence of the three interdependent collaborative planes/hierarchies/etc.
 - Media Delivery, not necessarily E2E
 - Management, necessarily heterogeneous
 - Self-control
- Benefits
 - Clean and clear support for the de facto business roles
 - But also openness for a new business models, hence accept that management is always heterogeneous in other domains
 - Network SOA made real
 - Infrastructure sharing between [virtua] network operators

- ENGINES answer the research challenges:
 - Dependable infrastructure ← self!
 - Run-time composition of functions and resources ← context!
 - Accountability ← SOA ready
 - Self-aware ← cognition ready!

