FELIX in a Nutshell

- FELIX is the result of collaboration between European and Japanese Partners, working in unison towards
  - a common system and software architecture
  - large scale testbed federation across two continents

- The project started in April 2013 and will run till March 2016
  - Estimated effort: 302 PMs
Over the last years we have learned a lot about SDN testbed federation as a community

- **OFELIA** ([www.fp7-ofelia.eu](http://www.fp7-ofelia.eu)) established the first large-scale OpenFlow-enabled testbeds in Europe
  - users can experiment with new network architectures
- In Japan, **RISE** (Research Infrastructure for large-Scale network Experiments) has established an OpenFlow testbed over JGN-X (the largest testbed network in Japan)
  - wide-area coverage from US West coast to Southeast Asia
  - users can experiment and validate their own SDN, cloud, and OF controller solution in the RISE sandbox.

**FELIX** bridges these two testbed worlds and aims to establish a unique federation on a global scale, using the following key ingredients:

- **OCF**, the OFELIA Control Framework, the access and management tool for virtualization and SDN resources. OCF is widely used in Europe and worldwide
- **AMSoil**, a solid foundation for building aggregate managers
- **A Clearinghouse**, which will implement the FELIX Authentication and Authorization
- **NSI**, the Network Services Interface, used for establishing multi-domain on-demand network connection services
The FELIX Architecture for Testbed Federation (1/2)

- **Resource Orchestration**
  - Orchestration of various virtualized resources (compute, network and storage) provided by multiple domains

- **Domain Resource Management**
  - Coordination of various resources provided by heterogeneous resource management systems within a domain

- **Resource Allocation Planning**
  - Consider both computing and network resources, user and resource administrator aspects, such as, for instance, cost, energy consumption and load balancing

- **Provisioning**
  - A virtual flat environment, just like a dedicated cluster, using dynamic resource information, such as IP addresses

- **Authentication and Authorization**
  - All actions are performed (only) by authenticated actors
  - Ensure all actors are who they claim to be; keep track of all authenticated action

- **Monitoring**
  - Information from multiple domains is aggregated and provided to the user.

- **User Access/GUI**
  - Allow for easy interaction between the experimenter and the FELIX testbed federation
The FELIX Resource Orchestrator is responsible for orchestrating the end-to-end network service and resource reservations for the entire FELIX architecture:
- intra-testbed
- inter-testbed

**AAI:** Authentication & Authorization Infrastructure

**TN:** Transit Network

**CR:** Computing Resource

**RM:** Resource Manager

**PR:** Physical Resource

More details available in Deliverable D2.2

[www.ict-felix.eu](http://www.ict-felix.eu)