Service Provider Architecture and Framework

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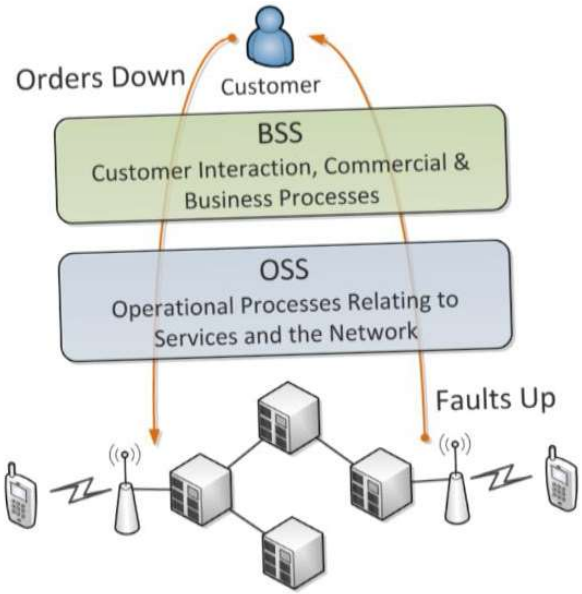
The Service Provider Architecture (SPA)

- The **Service Provider Architecture (SPA)** is a software architecture for an OSS/BSS solution bringing OAV (orchestration, automation and virtualisation) mechanisms to manage services.
- Provide a common way to introduce new services
  - Reuse available common blocks
  - Fast forward new service development
- User-centric
  - Unified view of service offerings, service monitoring and management
- TMForum standards

OSS/BSS

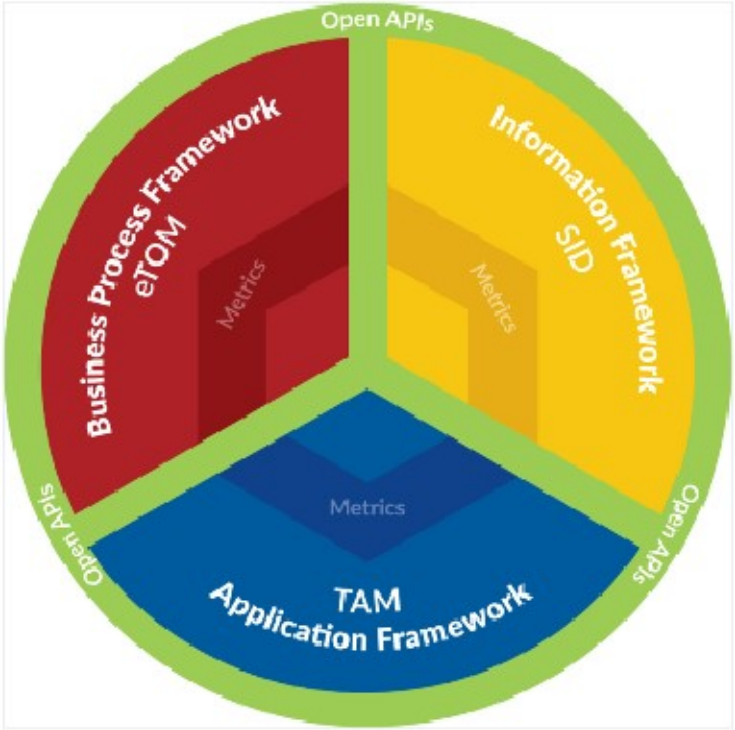
- **Business Support Systems (BSS)** – Processes and systems that support customer facing activities
  - Product Management
  - Customer Management
  - Revenue Management
  - Order Management

- **Operations Support Systems (OSS)** – Processes and systems that support back-office activities within a network
  - Service Delivery
  - Service Fulfillment
  - Service Assurance
  - Customer Care
  - Network Management Systems

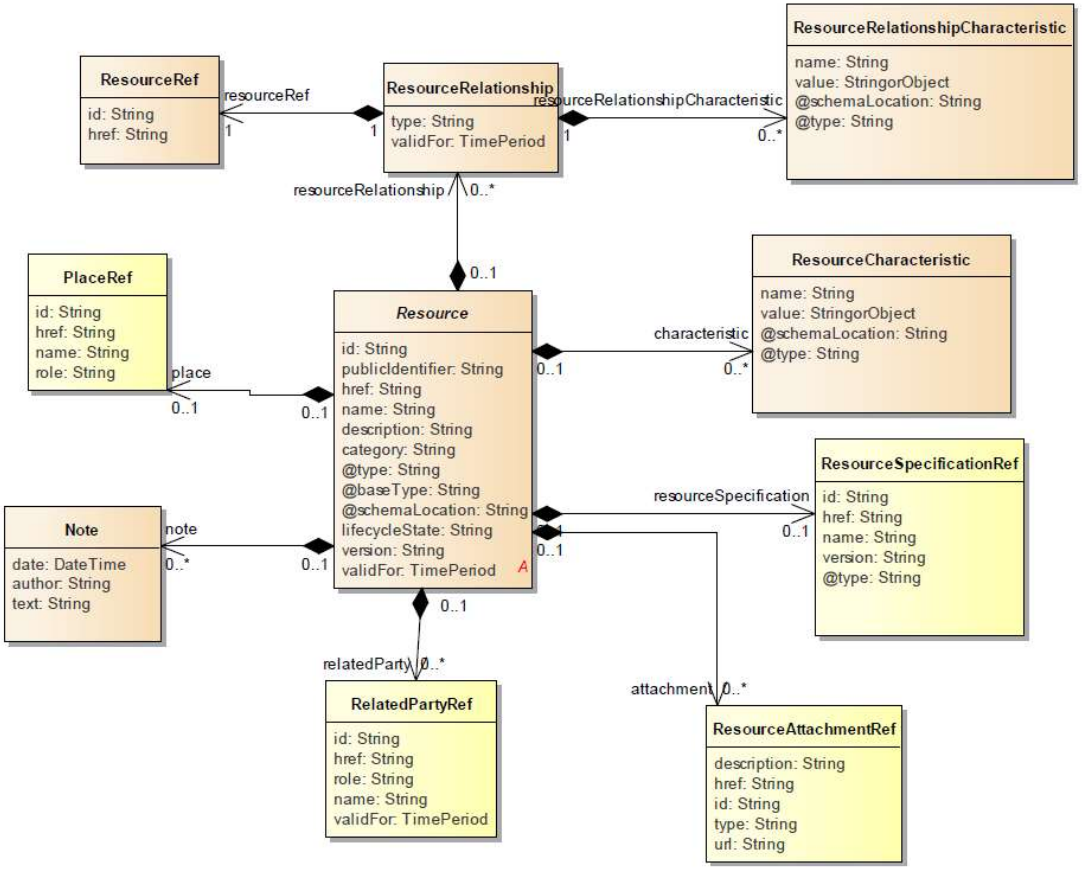


TMForum Frameworx

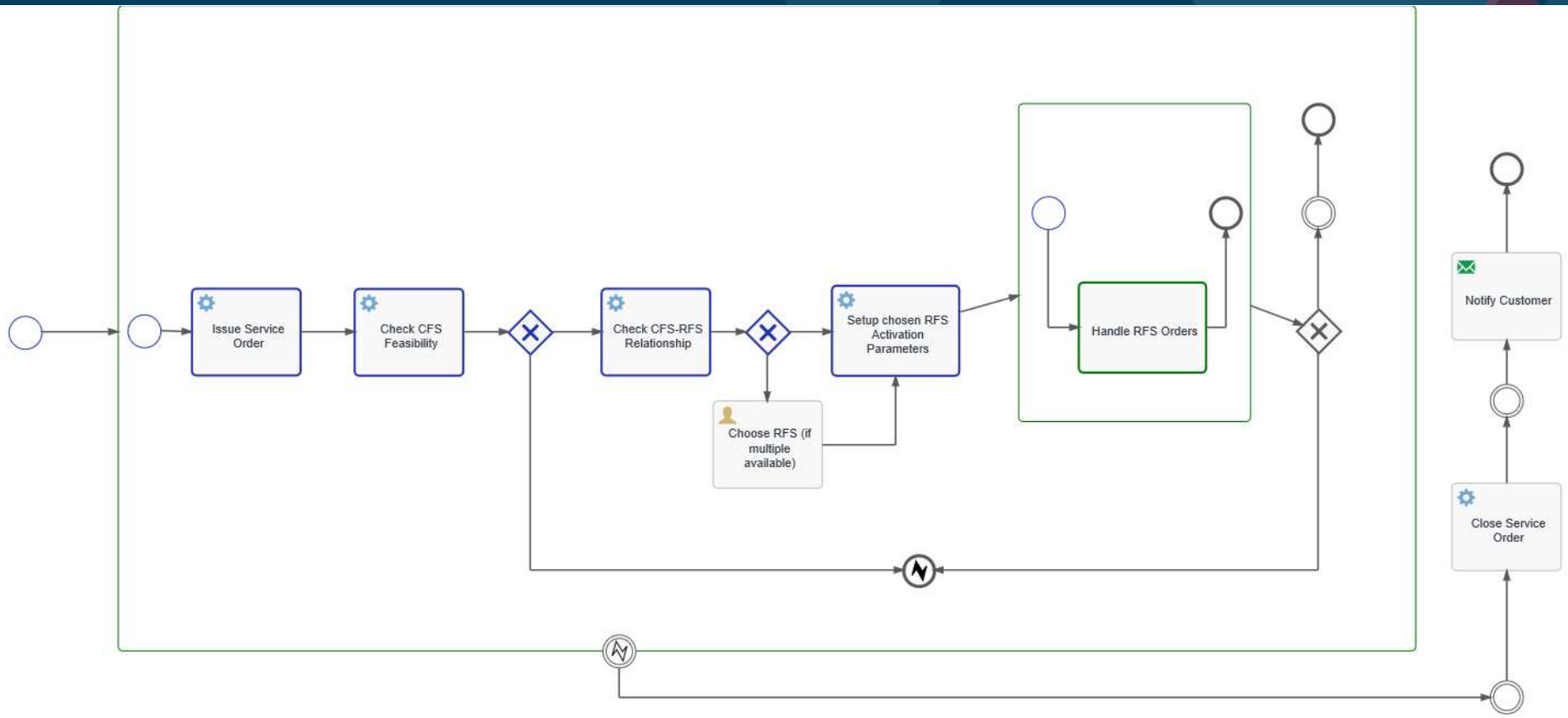
- Components
- Processes
- Information Model
- Open APIs



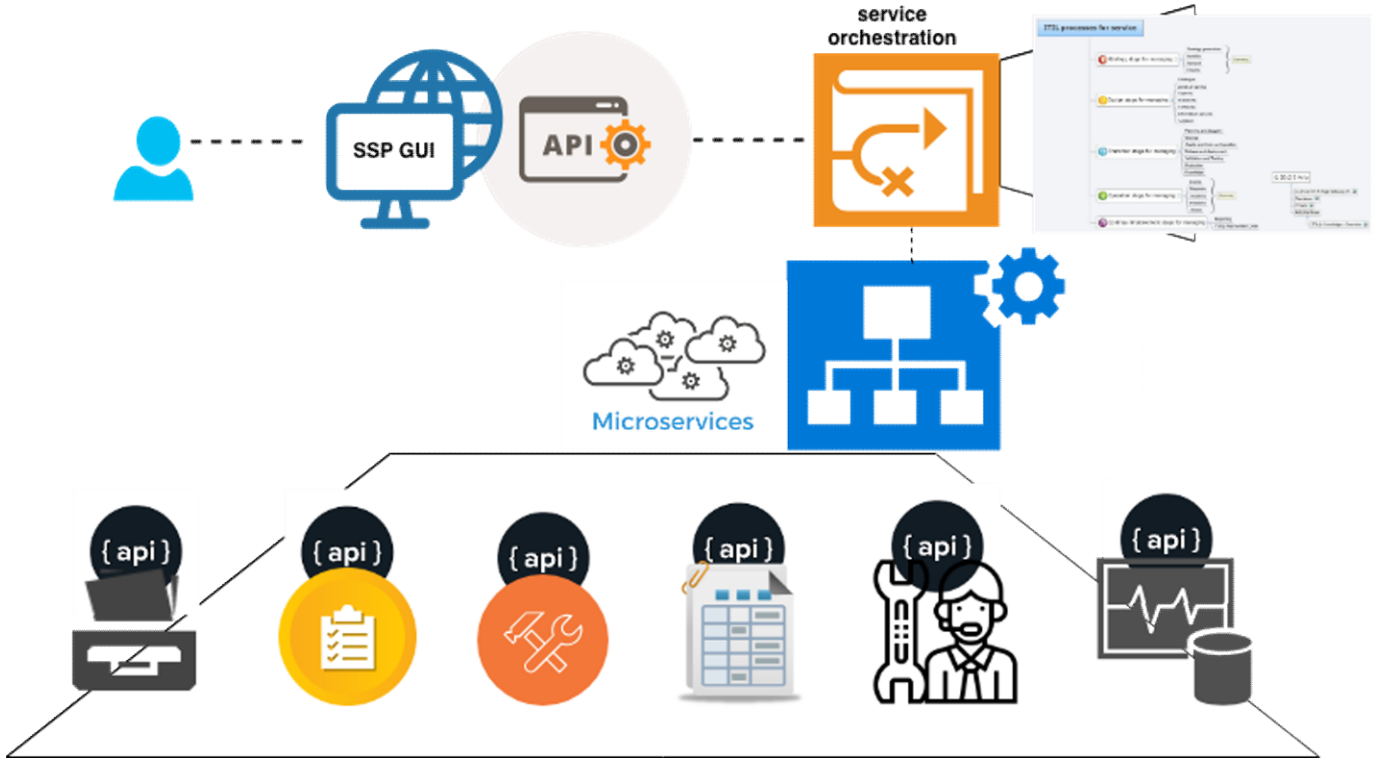
TMF Resource Inventory Management REST API



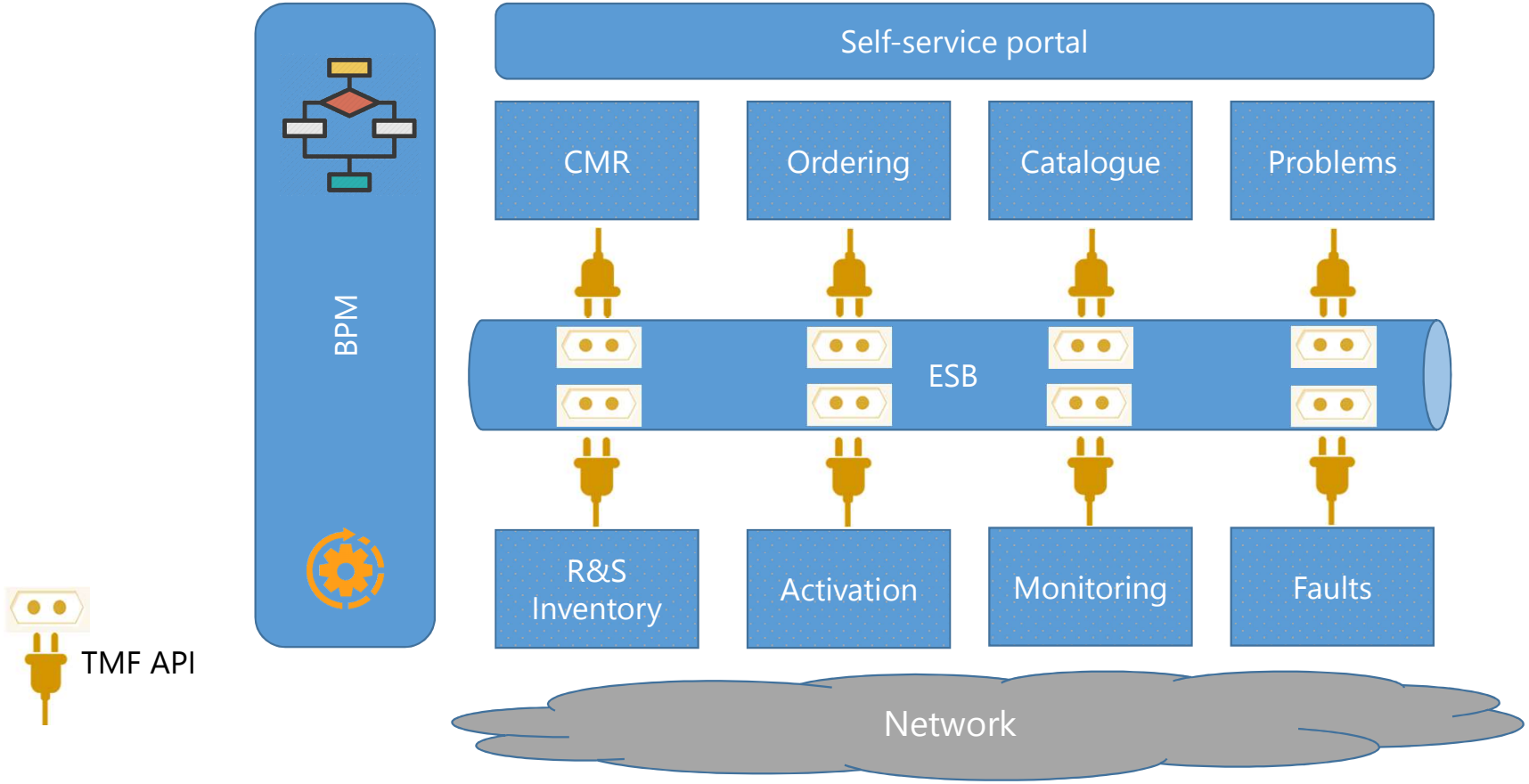
Automated process



Workflow automation and orchestration

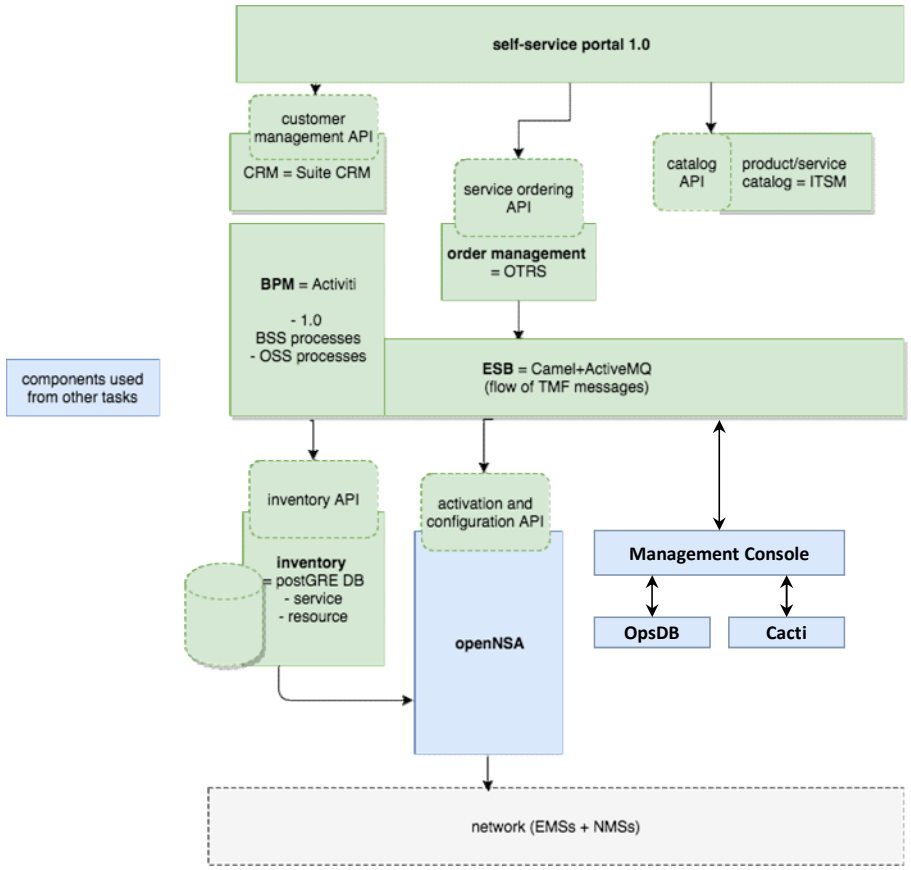


SPA Components



SPA Implementation with the E-LINE service

- Main components and APIs
  - Self-service Portal (Admin View and User View), R&S Inventory, Activiti, Camel
  - Open source tools: SuiteCRM, OTRS
- E-LINE as the first service in SPA
  - E2E circuits
  - NSI protocol
  - Activation by OpenNSA
  - compliant with MEF's LSO Reference Architecture and Framework

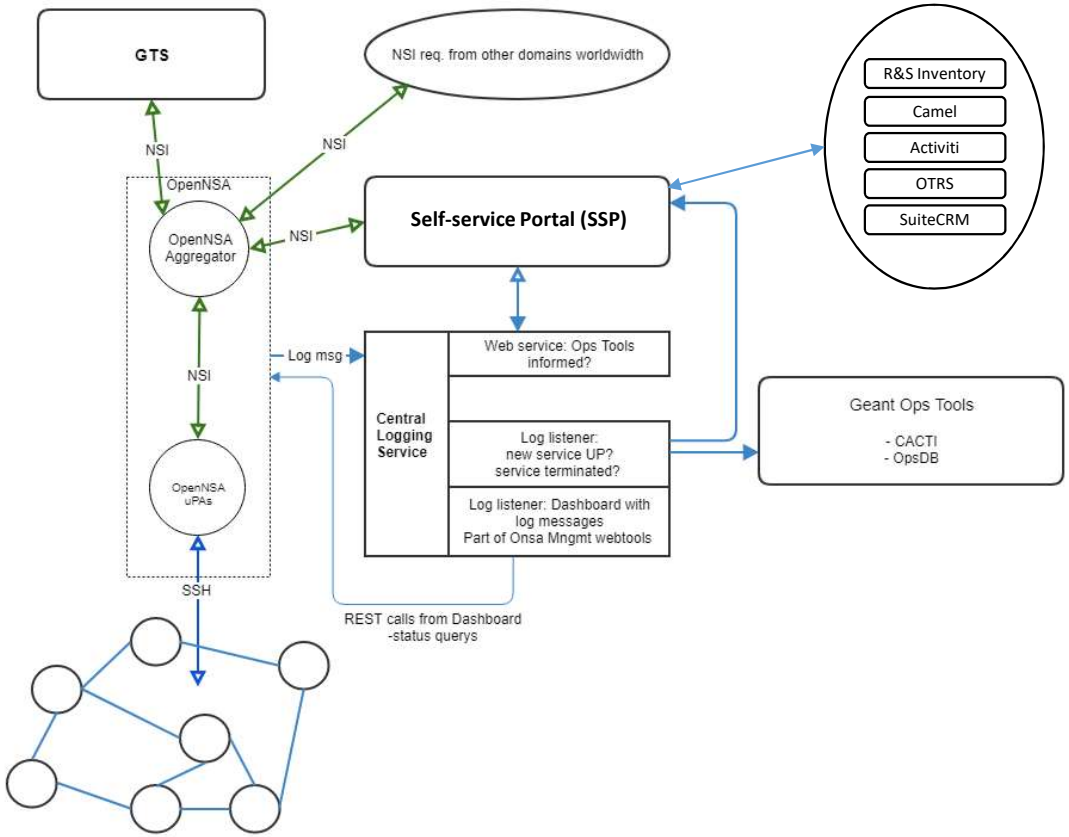


SPA Development

- Java, Javascript and Python
- Open source libraries (Activiti, Django, Camel)
- GEANT development tools
  - Bamboo
  - Jira
  - SonarQube
- Test environment
  - 2 GTS testbeds
  - SPA components monitoring with Nagios
  - SLAC (event notification)
- Code Audit is ongoing
  - Collaboration with WP9

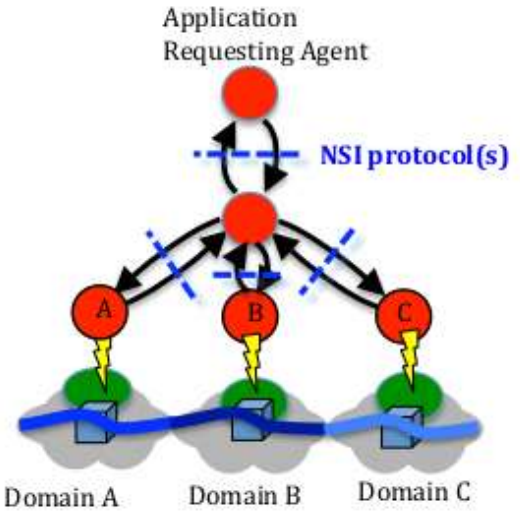
SPA and Generic Connection Service (GCS)

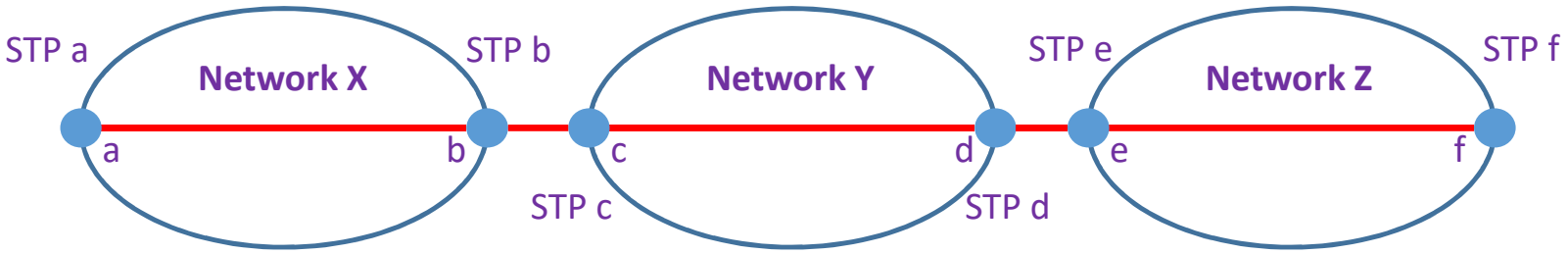
- Generic Connection Service (GCS) provides fully transparent Ethernet circuits over the GÉANT network using specific software tools for automated provisioning
- SSP Portal to manage circuits in the GCS service
- Test deployment in GÉANT VMs



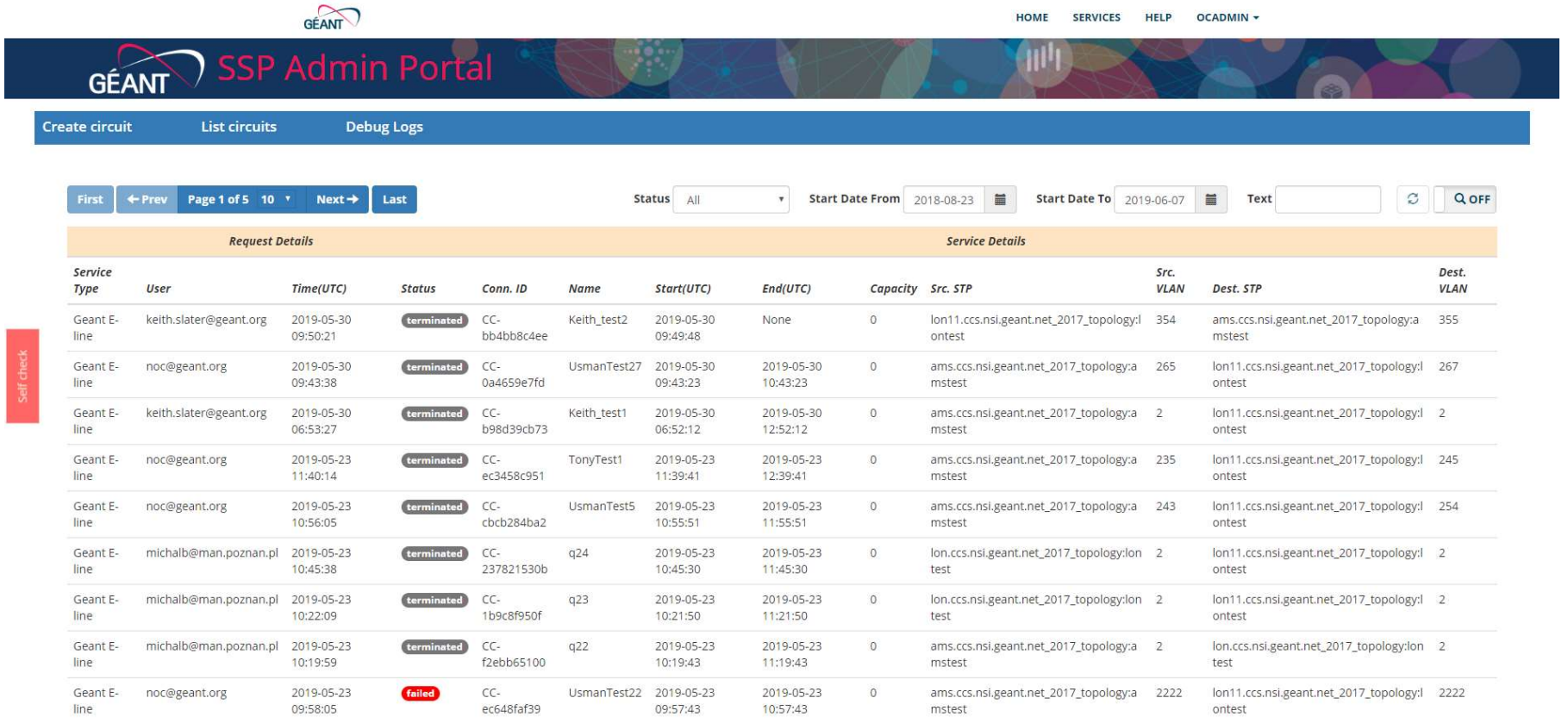
OpenNSA

- Key resource facing component for the E-LINE service (and the GCS service)
- Implementation of NSI
- NSI network abstraction layer for Self-service Portal (SSP)
  - STPs as circuit end points
  - Lower level network OAV using STPs and OpenNSA API and Agents
- Test instances of OpenNSA in the T2 GTS testbeds





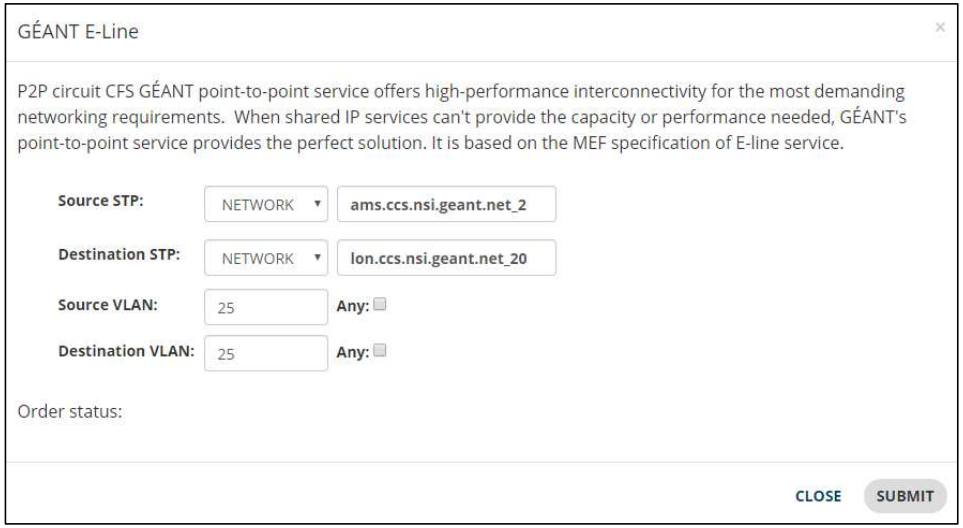
The Self-service Portal for the GCS service (1/2)



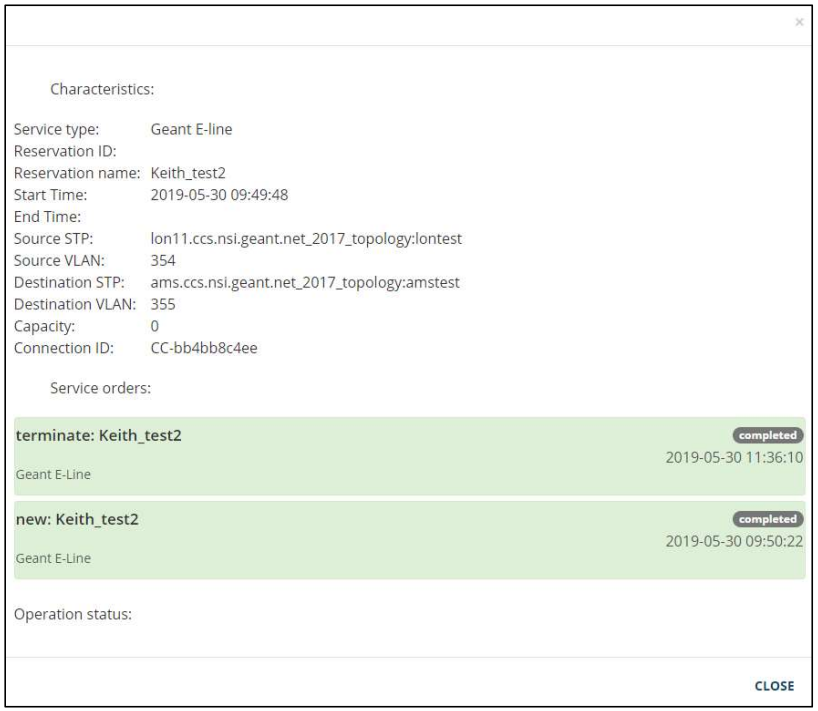
Request Details						Service Details					
Service Type	User	Time(UTC)	Status	Conn. ID	Name	Start(UTC)	End(UTC)	Capacity	Src. STP	Src. VLAN	Dest. STP	Dest. VLAN
Geant E-line	keith.slater@geant.org	2019-05-30 09:50:21	terminated	CC-bb4bb8c4ee	Keith_test2	2019-05-30 09:49:48	None	0	lon11.ccs.nsi.geant.net_2017_topology:lontest	354	ams.ccs.nsi.geant.net_2017_topology:amstest	355
Geant E-line	noc@geant.org	2019-05-30 09:43:38	terminated	CC-0a4659e7fd	UsmanTest27	2019-05-30 09:43:23	2019-05-30 10:43:23	0	ams.ccs.nsi.geant.net_2017_topology:amstest	265	lon11.ccs.nsi.geant.net_2017_topology:lontest	267
Geant E-line	keith.slater@geant.org	2019-05-30 06:53:27	terminated	CC-b98d39cb73	Keith_test1	2019-05-30 06:52:12	2019-05-30 12:52:12	0	ams.ccs.nsi.geant.net_2017_topology:amstest	2	lon11.ccs.nsi.geant.net_2017_topology:lontest	2
Geant E-line	noc@geant.org	2019-05-23 11:40:14	terminated	CC-ec3458c951	TonyTest1	2019-05-23 11:39:41	2019-05-23 12:39:41	0	ams.ccs.nsi.geant.net_2017_topology:amstest	235	lon11.ccs.nsi.geant.net_2017_topology:lontest	245
Geant E-line	noc@geant.org	2019-05-23 10:56:05	terminated	CC-cbcb284ba2	UsmanTest5	2019-05-23 10:55:51	2019-05-23 11:55:51	0	ams.ccs.nsi.geant.net_2017_topology:amstest	243	lon11.ccs.nsi.geant.net_2017_topology:lontest	254
Geant E-line	michalb@man.poznan.pl	2019-05-23 10:45:38	terminated	CC-237821530b	q24	2019-05-23 10:45:30	2019-05-23 11:45:30	0	lon.ccs.nsi.geant.net_2017_topology:lontest	2	lon11.ccs.nsi.geant.net_2017_topology:lontest	2
Geant E-line	michalb@man.poznan.pl	2019-05-23 10:22:09	terminated	CC-1b9c8f950f	q23	2019-05-23 10:21:50	2019-05-23 11:21:50	0	lon.ccs.nsi.geant.net_2017_topology:lontest	2	lon11.ccs.nsi.geant.net_2017_topology:lontest	2
Geant E-line	michalb@man.poznan.pl	2019-05-23 10:19:59	terminated	CC-f2ebb65100	q22	2019-05-23 10:19:43	2019-05-23 11:19:43	0	ams.ccs.nsi.geant.net_2017_topology:amstest	2	lon.ccs.nsi.geant.net_2017_topology:lontest	2
Geant E-line	noc@geant.org	2019-05-23 09:58:05	failed	CC-ec648faf39	UsmanTest22	2019-05-23 09:57:43	2019-05-23 10:57:43	0	ams.ccs.nsi.geant.net_2017_topology:amstest	2222	lon11.ccs.nsi.geant.net_2017_topology:lontest	2222

The Self-service Portal for the GCS service (2/2)

Circuit order



Circuit details



Ongoing activities and plans

- Policy management in SPA
  - The use of SSP Portal to set up MS ExpressRoute connectivity
- Integration of SSP with eduGAIN (federated authentication)
- Tests of SPA with GCS in the GÉANT network
- Testing, testing, testing …

Conclusions

- SPA – user-centric, standards-based OSS/BSS platform to manage network services
- Focus on standards and quality
- Deployment in the GÉANT network – the GCS service
- Collaboration with the GEANT service team (WP7) and the software development suport team WP9
- We have plans to enhance and improve SPA
  - Next releases, next deployments, next services managed by SPA and use cases

Thank you

Any questions?

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