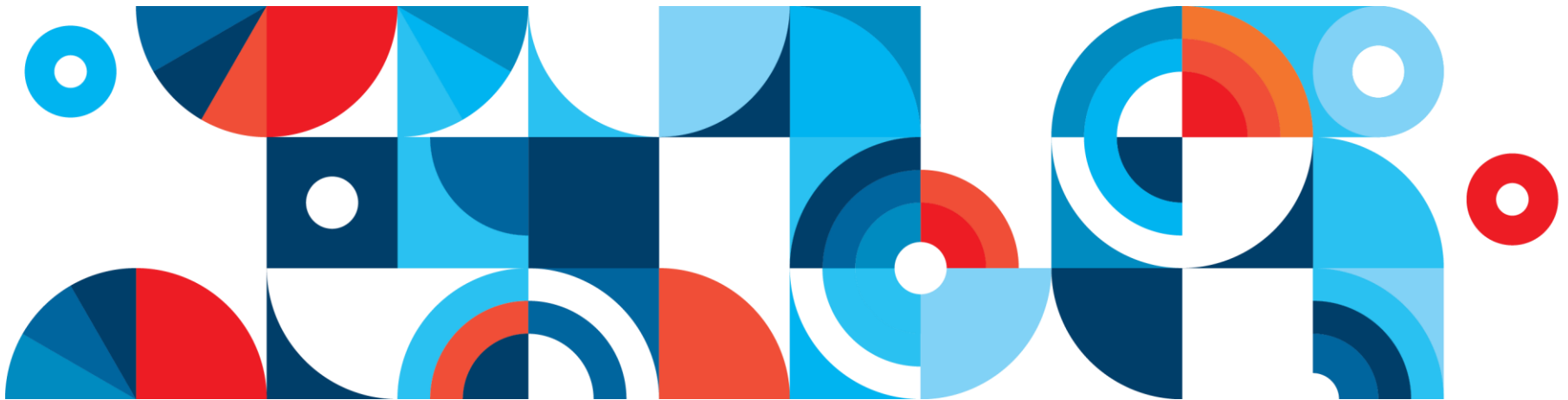Felix Sutter — IT Architect, IBM Switzerland Ltd

Dr. Tilo Steiger — Head of Storage Services, ETH Zürich Informatikdienste

World Leading Storage Cloud at ETH Zürich

Agenda

- **The challenges – From IT Silos to Cloud Workloads** **Felix Sutter, IBM**

- Overview IBM SmartCloud Orchestrator   Felix Sutter, IBM

- Practical Scenario   Felix Sutter, IBM

- Self-Service Storage Cloud at ETH Zürich   Dr. Tilo Steiger, ETH

The challenges – From IT Silos to Cloud Workloads
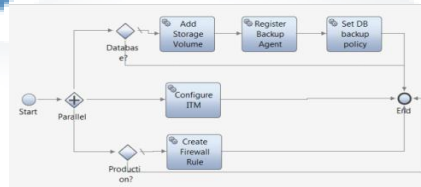
Infrastructure

We have lots of tools, to manage **isolated automation tasks**

But getting everything coordinated is challenging and **takes a lot of time**

Operations

Releasing a new application in production **is more then creating a virtual machine.**

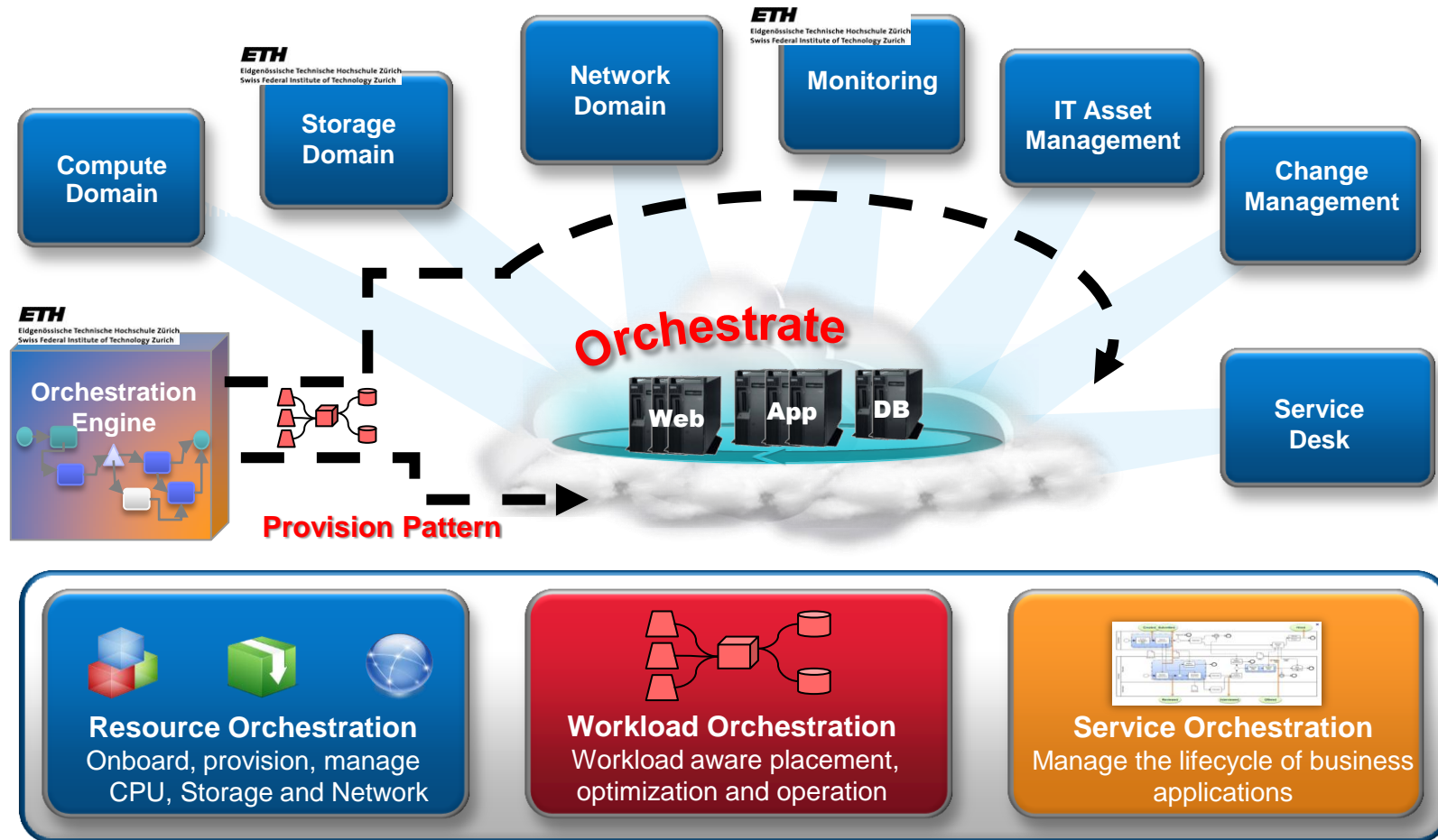And after deployment, I need to mange its **entire lifecycle**.

Development

I need to **accelerate delivery** and improve feedback between development and production.

Business

I need to **react quickly to market demand**. IT is not fast enough to support my strategy and is slowing down innovation

Managing workloads across the lifecycle requires orchestration

- Deployment of application patterns instead of single VMs
- Automation of operation across multi domains

Agenda

- The challenges – From IT Silos to Cloud Workloads   Felix Sutter, IBM
- **Overview IBM SmartCloud Orchestrator**   **Felix Sutter, IBM**
- Practical Scenario   Felix Sutter, IBM
- Self-Service Storage Cloud at ETH Zürich   Dr. Tilo Steiger, ETH

What is IBM SmartCloud Orchestrator?

An open and scalable cloud platform

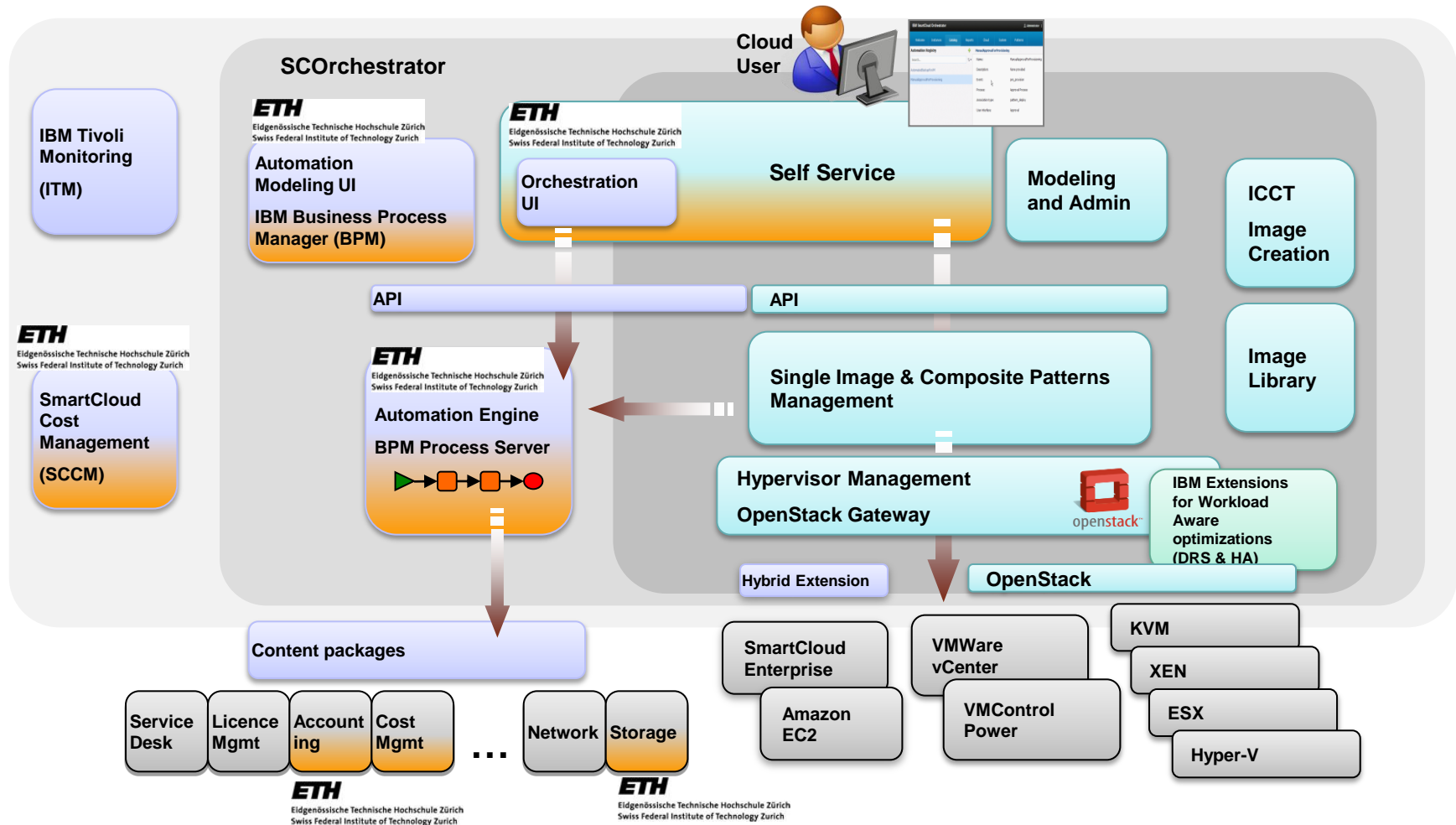**An easy to use orchestration engine for cloud service automation**

A marketplace for sharing automation packages (Toolkits)

A rich set of ready to use automation packages

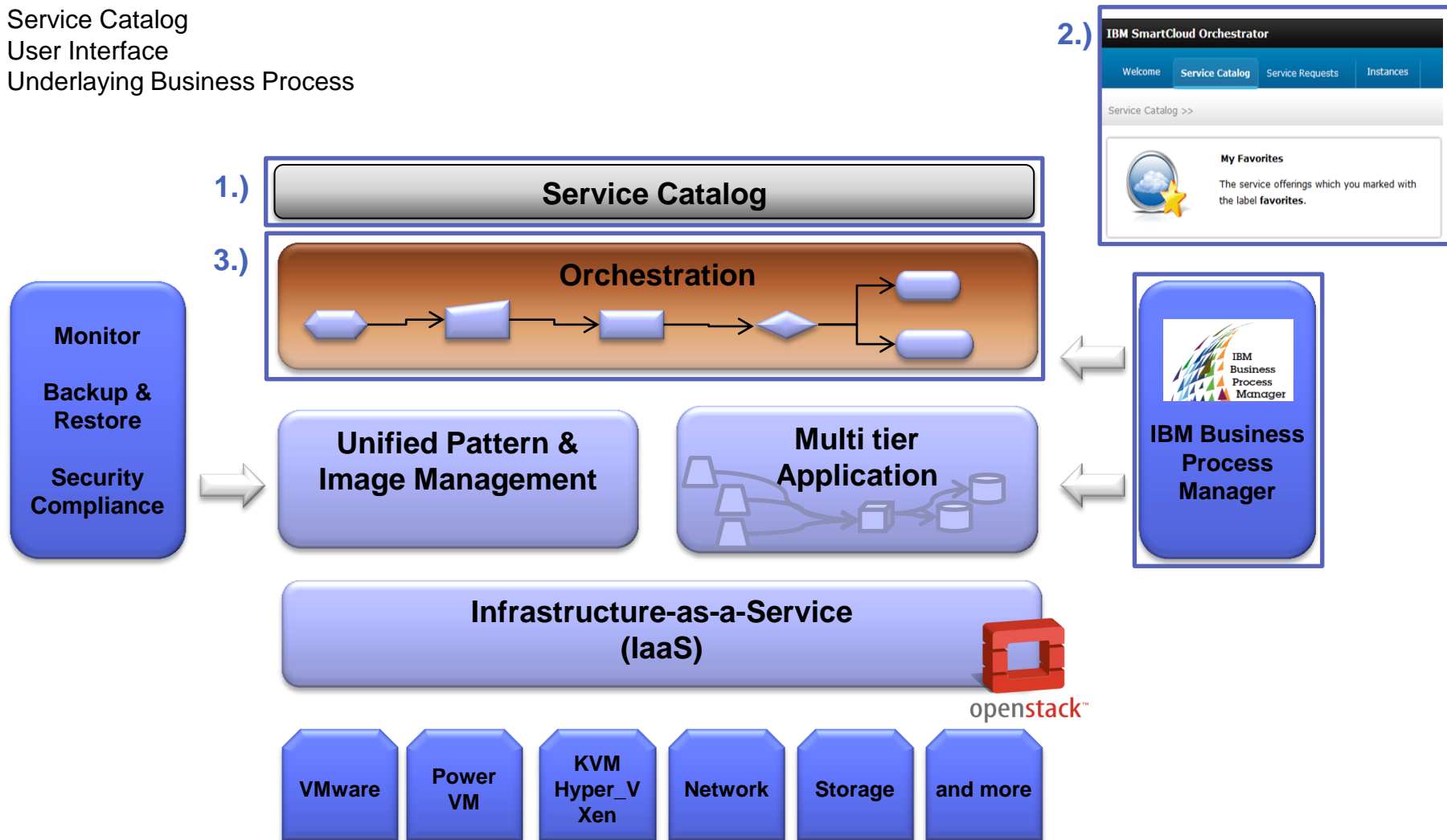# High Level Architecture – IBM SmartCloud Orchestrator

Agenda

- The challenges – From IT Silos to Cloud Workloads   Felix Sutter, IBM

- Overview IBM SmartCloud Orchestrator   Felix Sutter, IBM

- **Practical Scenario**   **Felix Sutter, IBM**
  - **Such a scenario contains elements which could be used by universities, students and spinoffs**
  - **Following Speech from Dr. Tilo Steiger shows the current implementation at ETH Zürich**

- Self-Service Storage Cloud at ETH Zürich   Dr. Tilo Steiger, ETH

Cloud Orchestration @ ETH – High Level Overview

The subsequent slides show the following elements of an orchestrated workflow:

1.) Service Catalog
2.) User Interface
3.) Underlaying Business Process

2.)

IBM SmartCloud Orchestrator

| Welcome | Service Catalog | Service Requests | Instances |

Service Catalog >>

My Favorites
The service offerings which you marked with the label **favorites**.

1.) Service Catalog

3.) Orchestration

Monitor

Backup & Restore

Security Compliance

Unified Pattern & Image Management

Multi tier Application

IBM Business Process Manager

Infrastructure-as-a-Service (IaaS)

openstack™

| VMware | Power VM | KVM Hyper_V Xen | Network | Storage | and more |

9

Cloud Orchestration @ ETH – Self-service Catalog View

Cloud Orchestration @ ETH – Self-service UI

Cloud Orchestration @ ETH – Business Process Composition

Graphical editor for composing and connecting workflows

Rich set of actions types, flow control, data handling primitives that simplify creation of complex automations
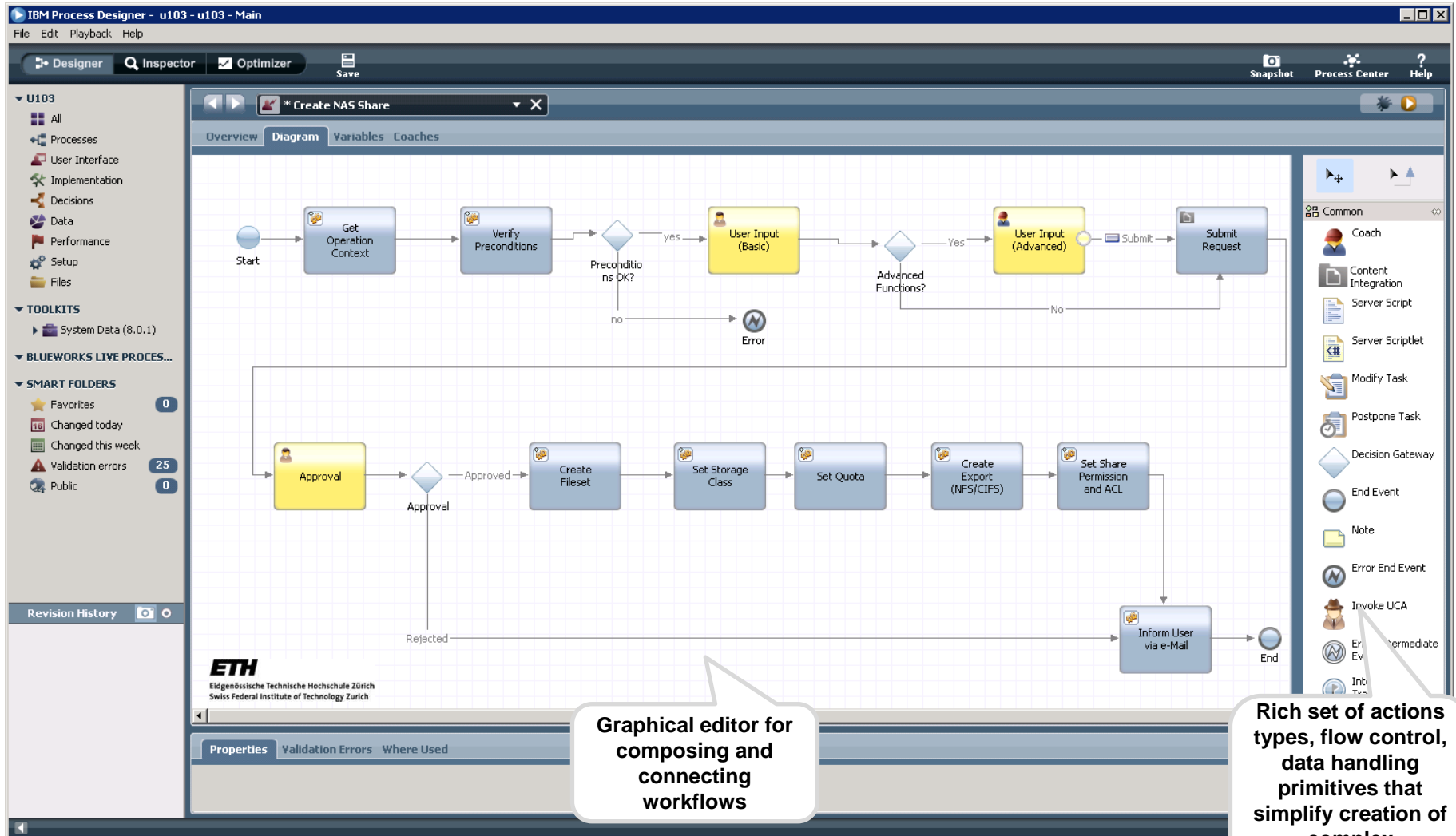
Self-Service Storage Cloud

at ETH Zürich

Dr. Tilo Steiger

ID Systemdienste
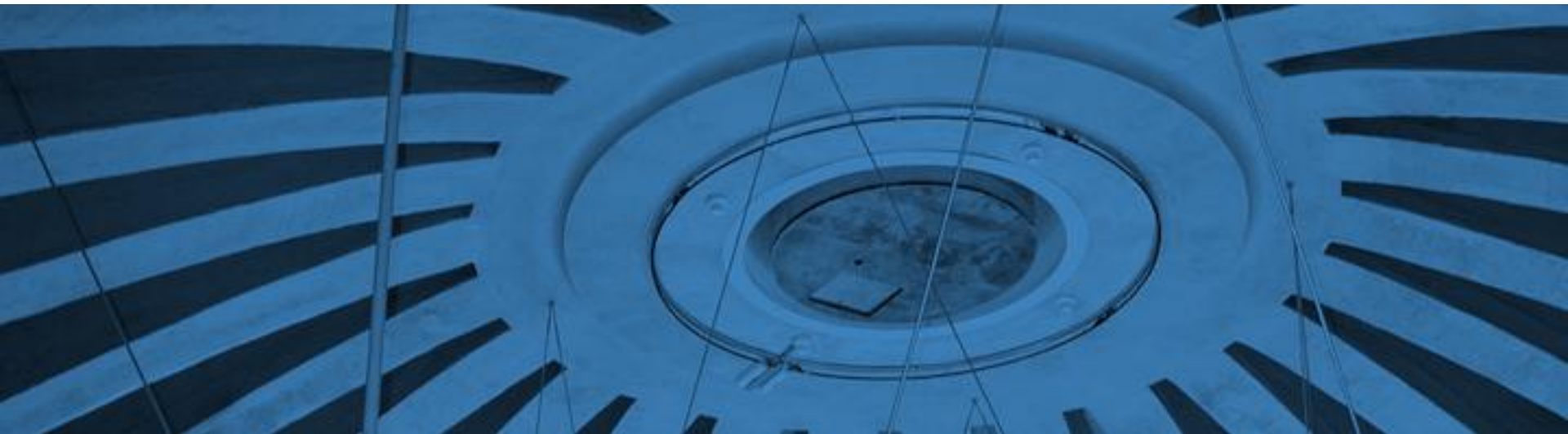
Storage Cloud Project History

- 2010   Storage Concept addressed a Self Service Portal

- 2011   WTO call for tender (ETH Storage renewal Project)

         which included a Self Service Portal

- 2012   Storage Metering (Phase I) productive

         Planning for storage provisioning started

         (Phase II, based on SmartCloud Orchestrator)

- 2013   Started with SCO Beta (in April) and

         first business process implementations

Drivers

Customer RQs → Value add actions → Customer achievements
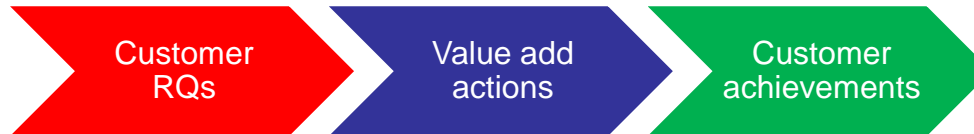
- **Customer Requirements**

  state of the art provisioning of services

- **KPIs**

- **Capacity Mgt.**

- **Workload**

- **Cost Savings**

- **Experience**

- **Self Provisioning**

NAS Numbers 2009- 2013
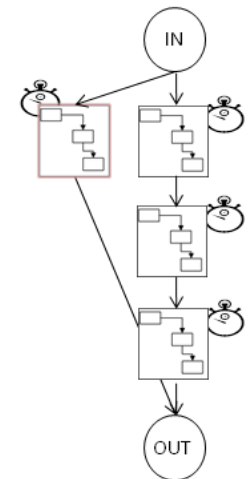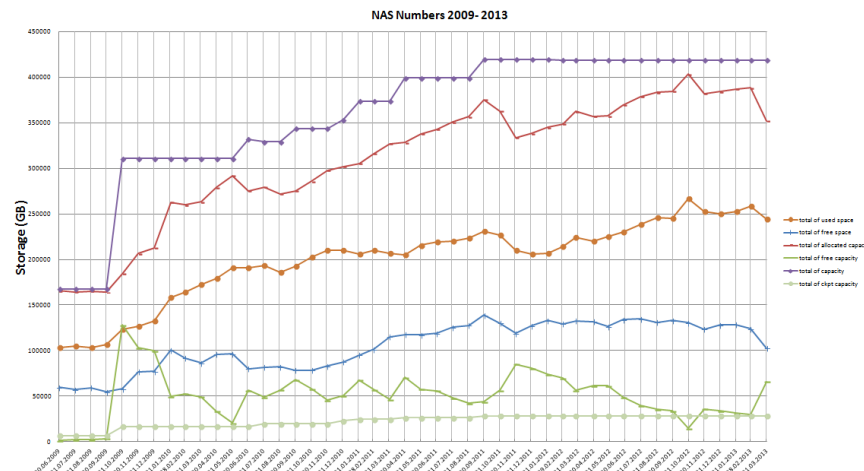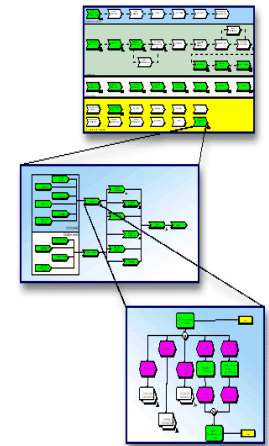
Context / Scope of the Storage Portal

The initial scope is surrounded by the grey cloud symbol. It includes user interaction with the portal and integration with Storage Subsystem.

Later extensions of the scope are:

- Maintenance of a service catalog
- Server Ordering
- Archival Storage
- TSM Backup

ETH considers to extend the portal beyond storage provisioning functions and therefore the initial solution (SCSA) will be extended by more sophisticated SCO functionality.
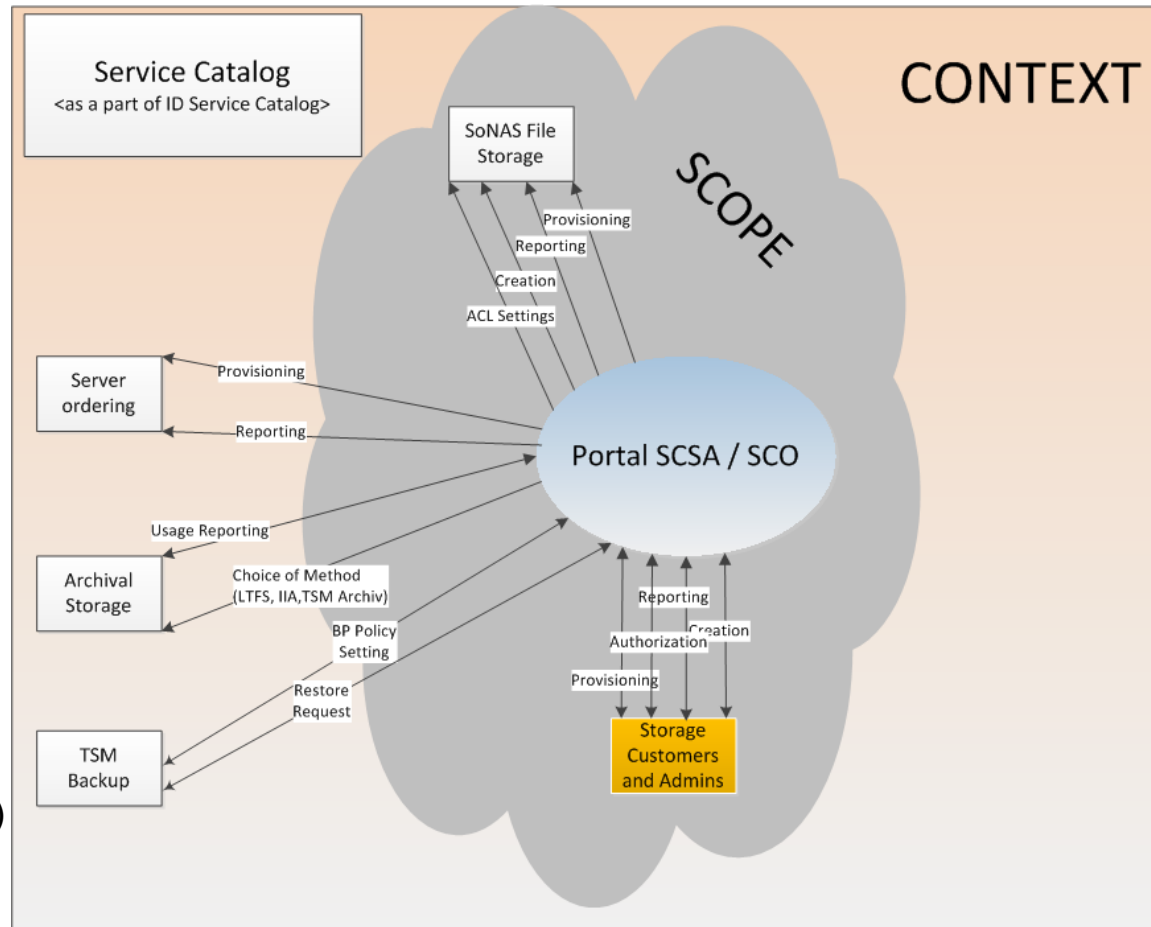
Storage Big Picture - STO Environment at ETH Zürich

TSM Back up

Application

Dept-Servers

PC/Exp.

WSS Bulk Object Storage

NFS, CIFS

PC

ETH Library Services

Docu Pack
User Decision pending

NAS (Data Classes)

Smart Cloud Provisioning 2013 and Usage Reporting

$$$

METS

Rosetta

TSM Back up

HSM

NFS

$$$

$$$

NFS, CIFS

NFS, CIFS testing Q2 2013

IBM LTFS/ Jaguar

polybox.ethz.ch

$$$

V7000

Strong box

LTFS/ Jaguar

ESX Server
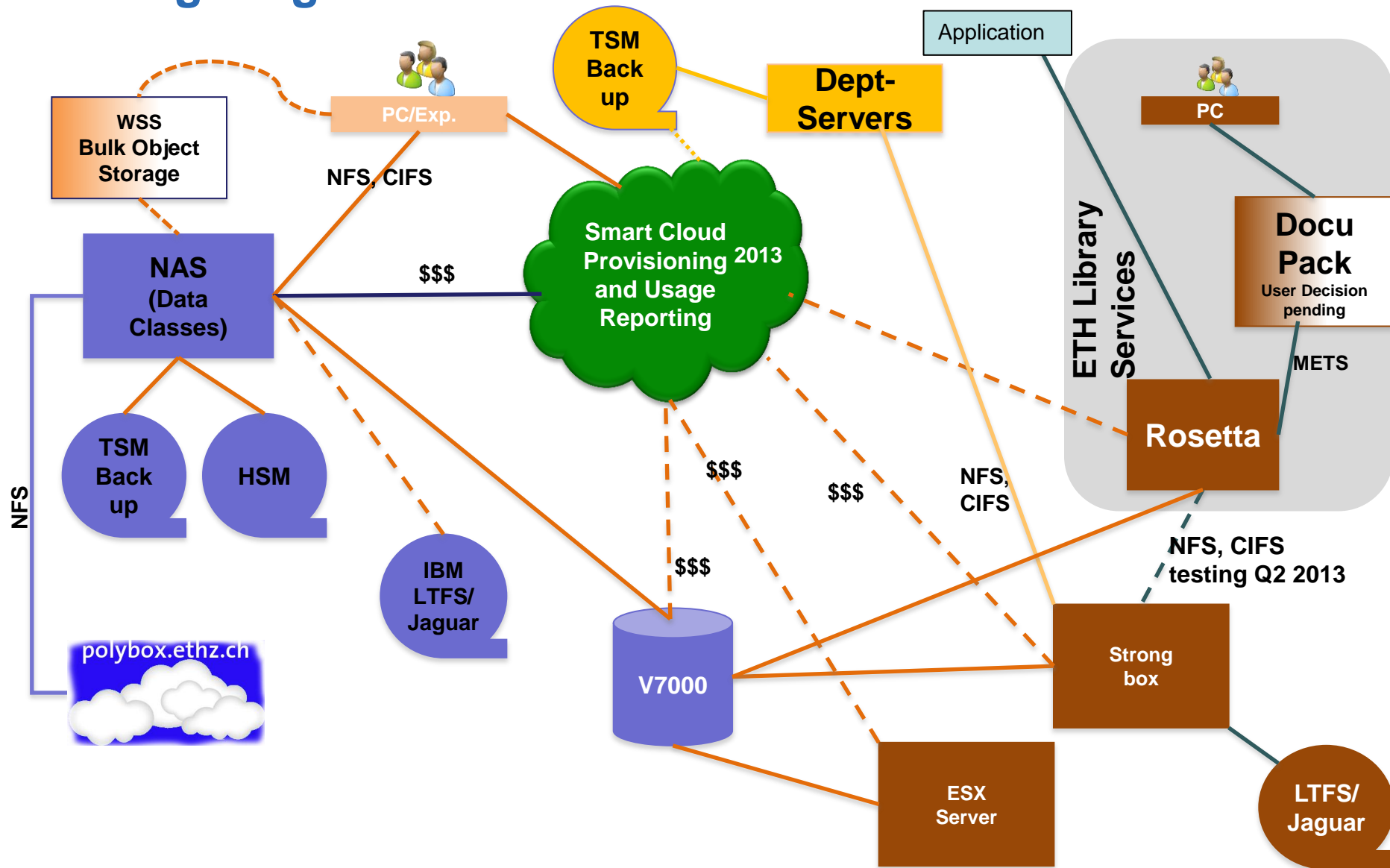
Solutions

- **SCSA**
  <Smart Cloud Storage Access>

- **SCO => IBM speech**
  before

  <Smart Cloud Orchestrator>

ETH Library Services

Application, e.g.
- LIMS
- Digital Lab Notebook
- Data Mgmt. Platform
- Virtual Research Environment

Researcher's PC or group share

ETH Archives

Stable version of data to be preserved

Docupack
User decision pending, archiving on demand

Documill

Archival records from ETH units

Discovery and Delivery of public content via the Knowledge Portal

Stable version of data to be preserved

Submission Application

METS

Public?

METS

YES

ETH-Bibliothek's content

Submission Application

ETH Library Services

NO

DOI-Registration

Digital Preservation System (Rosetta)

ETH-Bibliothek, M. Töwe

Smart Cloud Provisioning and Usage Reporting

« Storage Cloud @ ID »

V7000

box

LTFS/ LTO 5

LTFS/ Jaguar

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Thank You!

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