

**IMPROVING SERVICE MANAGEMENT
FOR FEDERATED
RESOURCES TO SUPPORT VIRTUAL
RESEARCH
ENVIRONMENTS**

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- ❑ European Open Science vision
- ❑ common research infrastructure
 - ❑ reusability of the existing e- and research infrastructures
 - ❑ federate existing resources across data centres, e-Infrastructures and research infrastructures
 - ❑ store, manage, process, analyse and re-use research data across border and domains
- ❑ e-Science
 - ❑ paradigm for distributed networked, computationally- or data-intensive science
 - ❑ aimed at research problems that require collaboration using computational tools and infrastructures

Virtual Research Environments (VRE)



- ❑ scientists need a uniform way of requesting services
 - ❑ focus on their primary research activities,
 - ❑ stop wasting time on learning how to access and provision the services
- ❑ innovative, web-based, community-oriented, comprehensive, flexible, and secure working environment that serves the needs of modern science
 - ❑ seamlessly access data, software, and processing resources that are managed by various systems in different administration domains

Overcoming the VRE challenges



Large scale integration

- heterogenous resources with seamless access

interoperability

- set of open APIs that can be integrated with additional systems

Sustainability

- interdisciplinary approach

Adoption

- training events
- liaisoning with research communities representatives
- highly international environment

Service management in the VRE



- ❑ provide users ease of access and use in a collaborative federated environment
- ❑ sustain cross-domain experimental facilities via centralised services
- ❑ service oriented design
 - ❑ enabling end users to browse, access and use common and specific domain services in a unified manner
- ❑ development based on a service management approach
 - ❑ from defining the foundations of policies and practices
 - ❑ to the implementation of a fully functional service catalogue and portfolio.

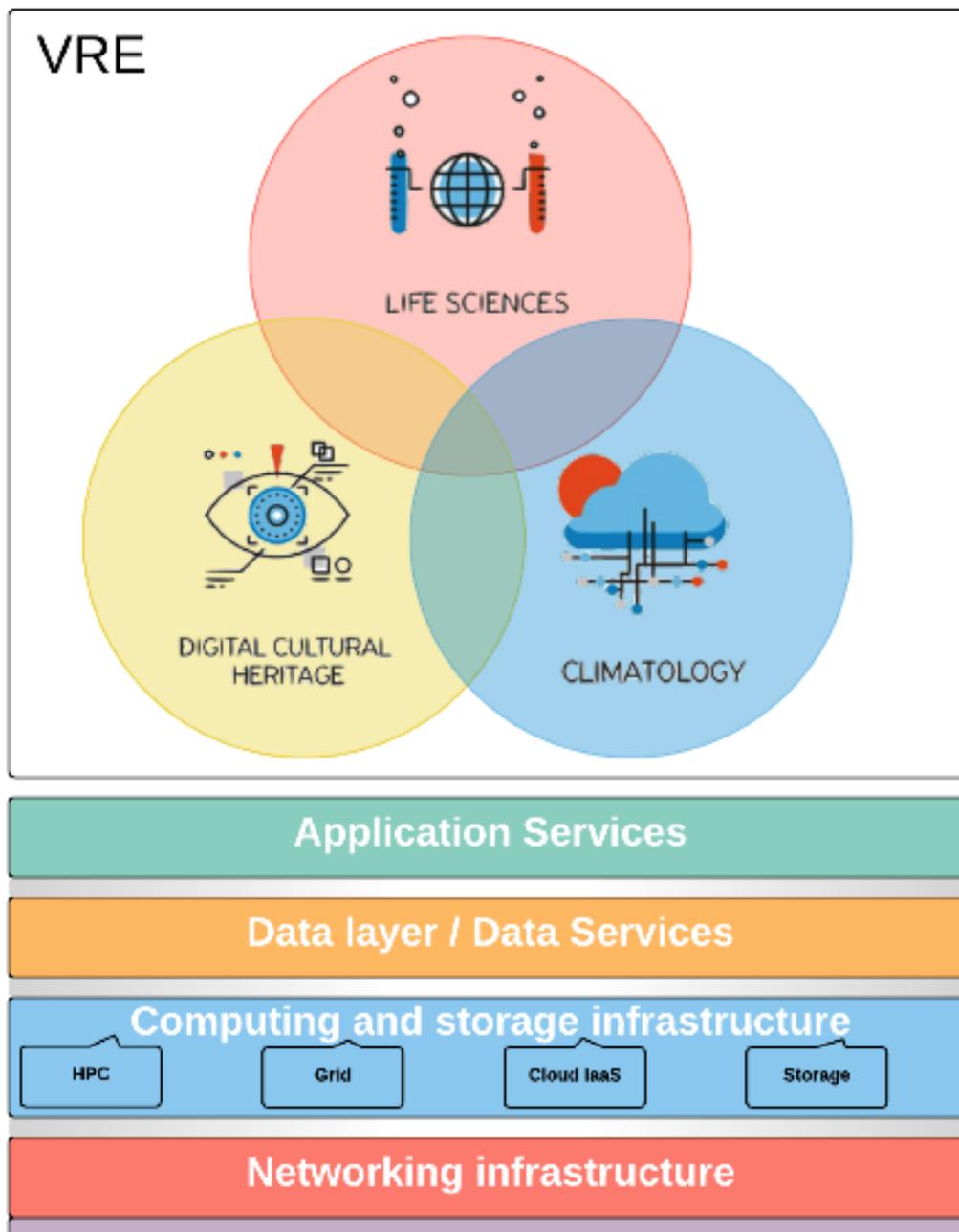
Service oriented VRE



- ❑ Goal: provide an improved service provisioning for researchers within a unified Virtual Research Environment

- ❑ deliver value by facilitating outcomes end users want to achieve
- ❑ all underlying e-Infrastructure can be offered to the VRE end users via a set of well defined services
 - ❑ constructed in a way that enables the end users to achieve their requirements with minimum additional overhead in terms of service management and workflow definition

- ❑ user-friendly integrated e-Infrastructure platform for regional cross-border Scientific Communities

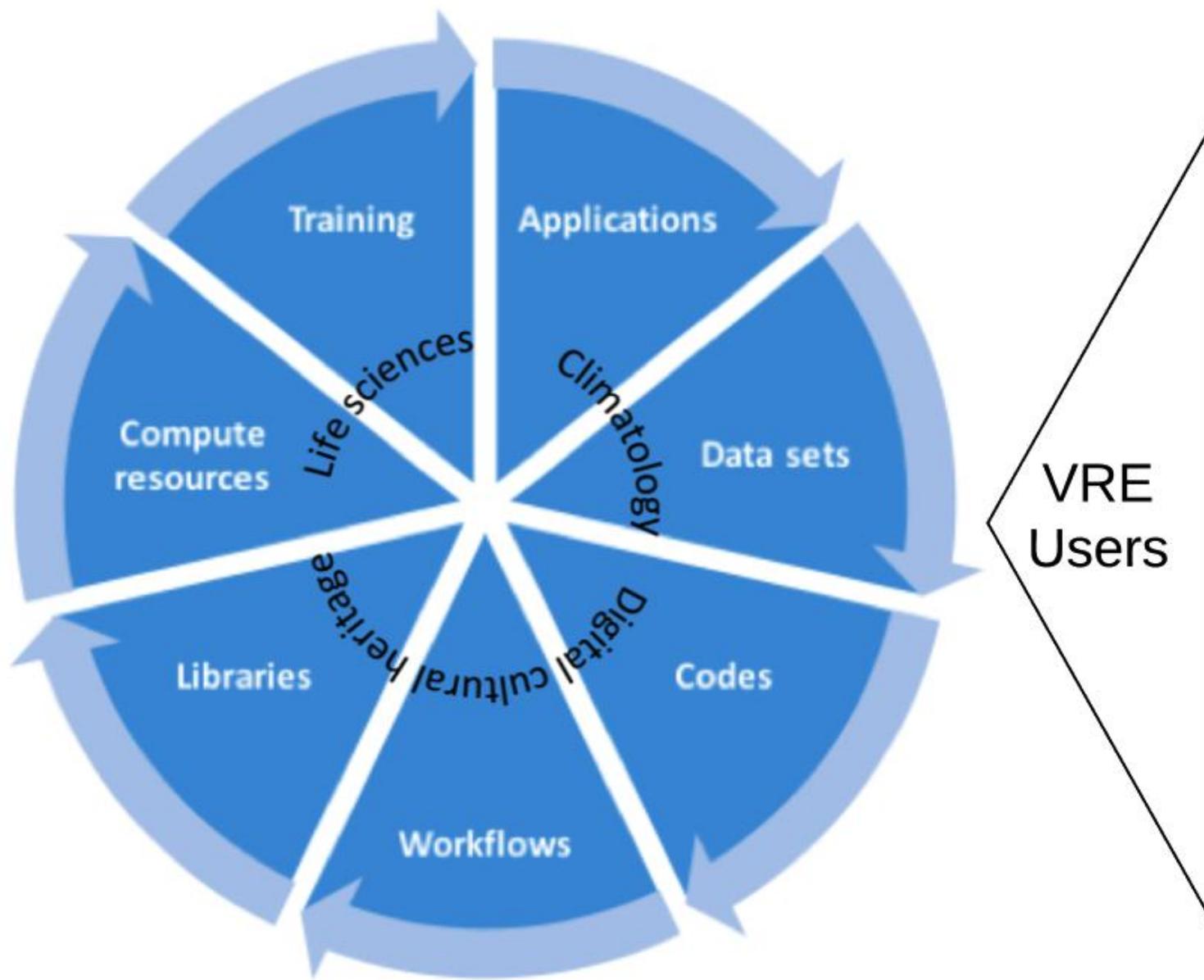


Authentication and
authorisation
management

Application service
management

Data management

Infrastructure
management



VRE
Users



Service orientation

Services are loosely coupled

Federative organization

Services abstract underlying logic

Local details – global service

Services are autonomous

Federated service management

Services can be composed

Defined interdependencies

Services are reusable

Elementary service components

Services are stateless

Requirement in scientific workflows

Services are discoverable

Registry / Catalogue / VRE portal

- ❑ underlying components for service composition, management and monitoring
- ❑ ITSM guidance to plan, design, develop, deploy and support business aligned IT Services in the federation
- ❑ Key elements
 - ❑ Service management system
 - ❑ Service registry
 - ❑ Monitoring system
 - ❑ OLAs and SLAs
- ❑ support the delivery of IT services
 - ❑ all processes need to be successfully operating and interacting

Service Management Standards and Best Practices



- ❑ IT Infrastructure Library (ITIL)
 - ❑ descriptive framework of best practices for the delivery of the components of the IT infrastructure as a set of services to the enterprise
- ❑ FitSM (federated ITSM)
 - ❑ clear, pragmatic, lightweight and achievable standard that allows for effective IT service management
 - ❑ version of ITSM that can cope with federated environments
 - ❑ baseline level of ITSM than can act to support management interoperability in federated environments where disparate or competing organizations must cooperate to manage services

Implementing VI-SEEM Service management



- ❑ Key components:
 - ❑ Service Portfolio & Service Catalogue

- ❑ Functional requirements
 - ❑ User roles: end users, service managers, service owners
 - ❑ Public vs private information
 - ❑ Service versions and statuses
 - ❑ Customer facing and resource facing services
 - ❑ Service dependencies
 - ❑ RESTful API
 - ❑ Default web UI

Service Portfolio activities

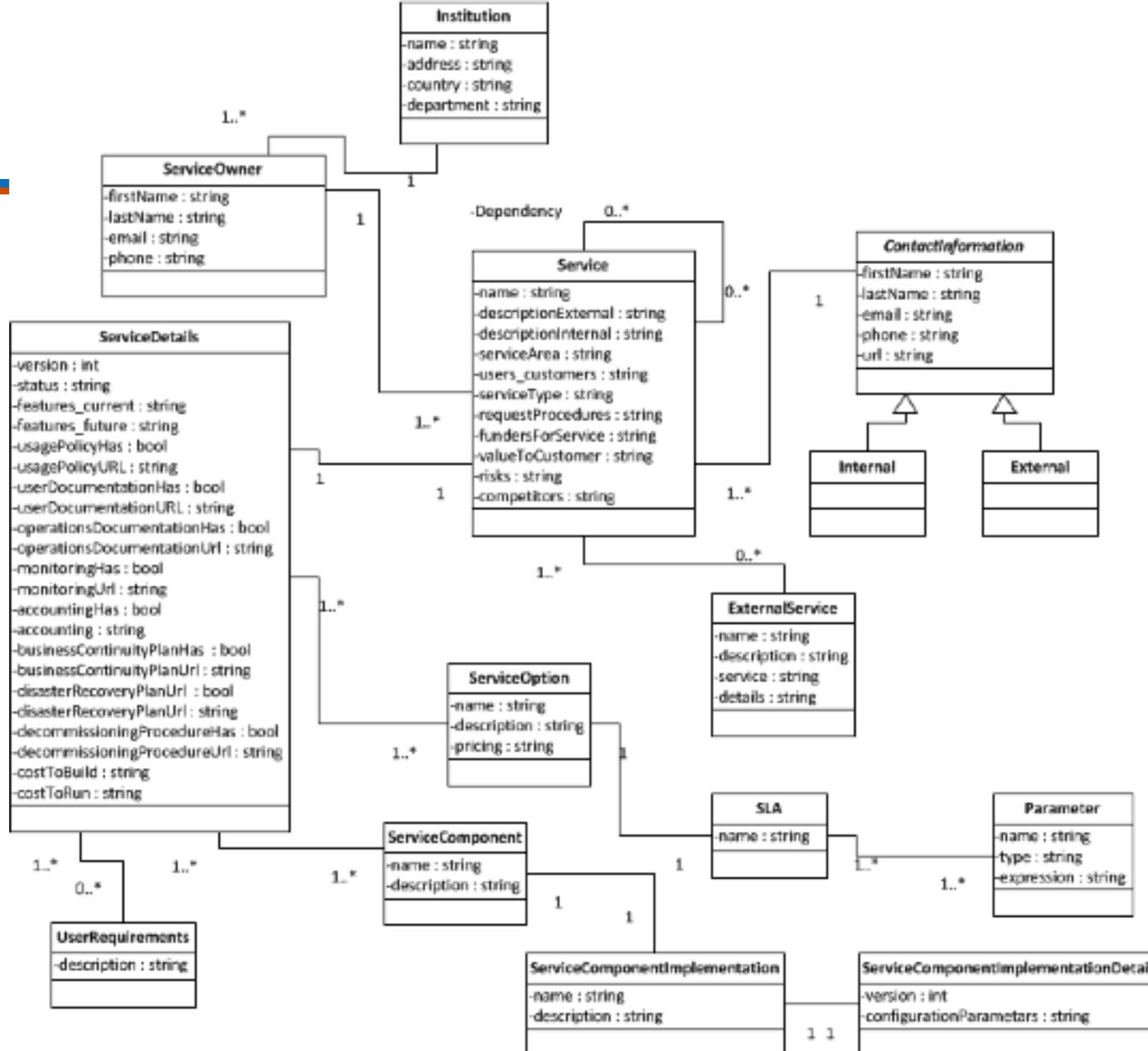


- ❑ Initial Process Setup
 - ❑ Define a way to document the service portfolio
 - ❑ Define a way to describe / specify a specific service
 - ❑ Set up an initial service portfolio (including service specifications)
 - ❑ Create a map of the bodies / parties (organisations, federation members) involved in delivering services
- ❑ Ongoing process execution
 - ❑ Manage and maintain the service portfolio
 - ❑ Manage the design and transition of new or changed services
 - ❑ Manage the organisational structure involved in delivering services

Service Catalogue activities



- ❑ Initial Process Setup
 - ❑ Define the structure and format of the service catalogue
 - ❑ Create an initial service catalogue based on the service portfolio;
 - ❑ Define a basic/default SLA valid for all services provided to customers
 - ❑ where no specific/individual SLA are in place
 - ❑ Define templates for individual SLAs, OLAs and UAs
 - ❑ Identify the most critical supporting service components
 - ❑ Agree individual SLAs with customers for the most important/critical services
- ❑ Ongoing process execution
 - ❑ Maintain the service catalogue
 - ❑ Manage SLAs
 - ❑ Manage OLAs and UAs



Roles and responsibilities



Role	Responsibilities
Service Portfolio/Catalogue Process Owner	Controls the SPM and SLM processes, maintains the catalogue and portfolio and reports to senior management
Service Technical Coordinator / Architect	Global technical view of services being developed or operated in the organization
Customer Relationship Manager	Gathers requests for new features Initiates a change to the service portfolio
Service Portfolio Approval Committee	Reviews and approves new services or changes to services
Service Owner	Overall responsibility for one specific service Primary contact point
Service Design Team	The team responsible for the design, implementation and maintenance of a service

Data Storage

-  VI-SEEM Data Discovery Service
-  VI-SEEM Archival Service
-  VI-SEEM Simple Storage
-  VI-SEEM Repository

Compute

-  VI-SEEM Cloud
-  VI-SEEM HPC
-  VI-SEEM Grid

Application Level

-  Subtract
-  ChemBioServer
-  VI-SEEM Regional Community

Datasets

-  VI-SEEM Live Access Server
-  AFMM
-  VI-SEEM Scientific Application

Environment

-  VI-SEEM Workflow, software tools repository
-  NANO-Crystal
-  DICOM
-  VI-SEEM Clowder

Authentication and Authorisation

-  VI-SEEM Login

Service provisioning

-  VI-SEEM Service Portfolio Management System

- ❑ VRE portal
 - ❑ support the next generation of researchers by providing them with a consolidated access to all resource
 - ❑ cross-domain federation of e-Infrastructures from the SEE and EM region
 - ❑ three different communities: life sciences, climate, and digital cultural heritage
 - ❑ interdisciplinary activities
- ❑ Service management aspects are a crucial aspect of the VRE creation
- ❑ Design based on
 - ❑ Service orientation paradigms
 - ❑ Open interoperable APIs
 - ❑ FitSM for core processes and components
- ❑ Can be used as a blueprint for building a federated service management system

Questions?

THANK YOU!