Validating services and assessing their TRL

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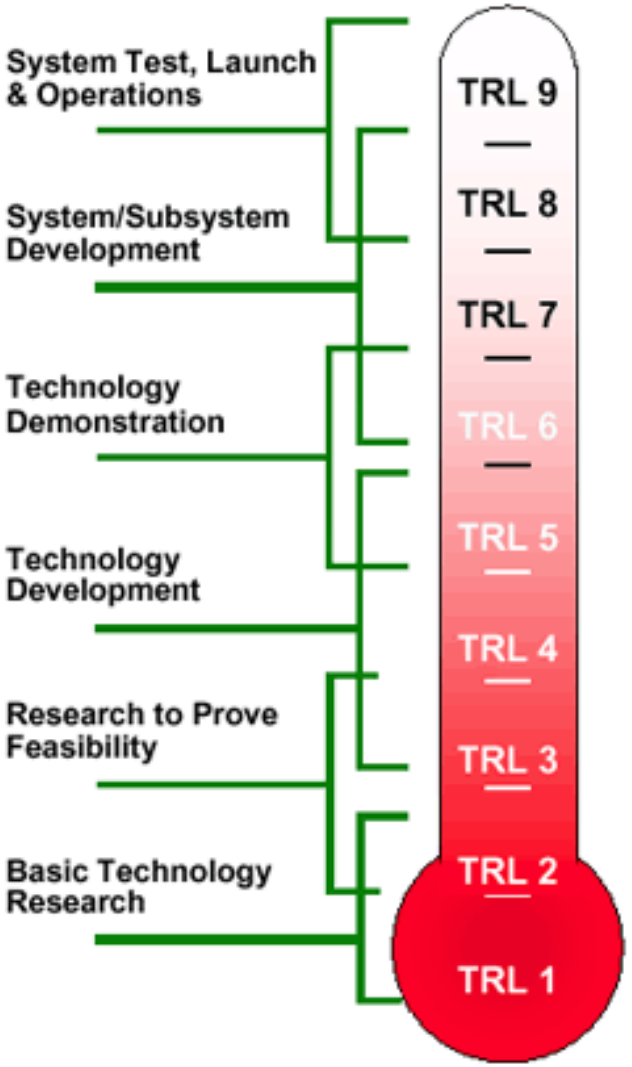
Outline

- Introduction to Technology Readiness Levels
- Service Portfolio Management
- Service validation

Introduction to Technology Readiness Levels

Introduction to Technology Readiness Levels

- Technology Readiness Levels are a method for estimating the maturity of technologies
- Method has been developed at NASA during the 1970s
- TRLs enables consistent, uniform discussions of technical maturity across different types of technology
- HLEG Key Enabling Technologies advised to use the scape in EU-funded research and innovation projects
- TRL outlines in detail the different research and deployment steps from innovation to production
- TRLs are consequently used in H2020 and HE programs



https://esto.nasa.gov/trl/
https://en.wikipedia.org/wiki/Technology_readiness_level

EC Technology Readiness Levels

G. Technology readiness levels (TRL)

Where a topic description refers to a TRL, the following definitions apply, unless otherwise specified:

Definition

- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated

Development

- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab
- TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 7 – system prototype demonstration in operational environment

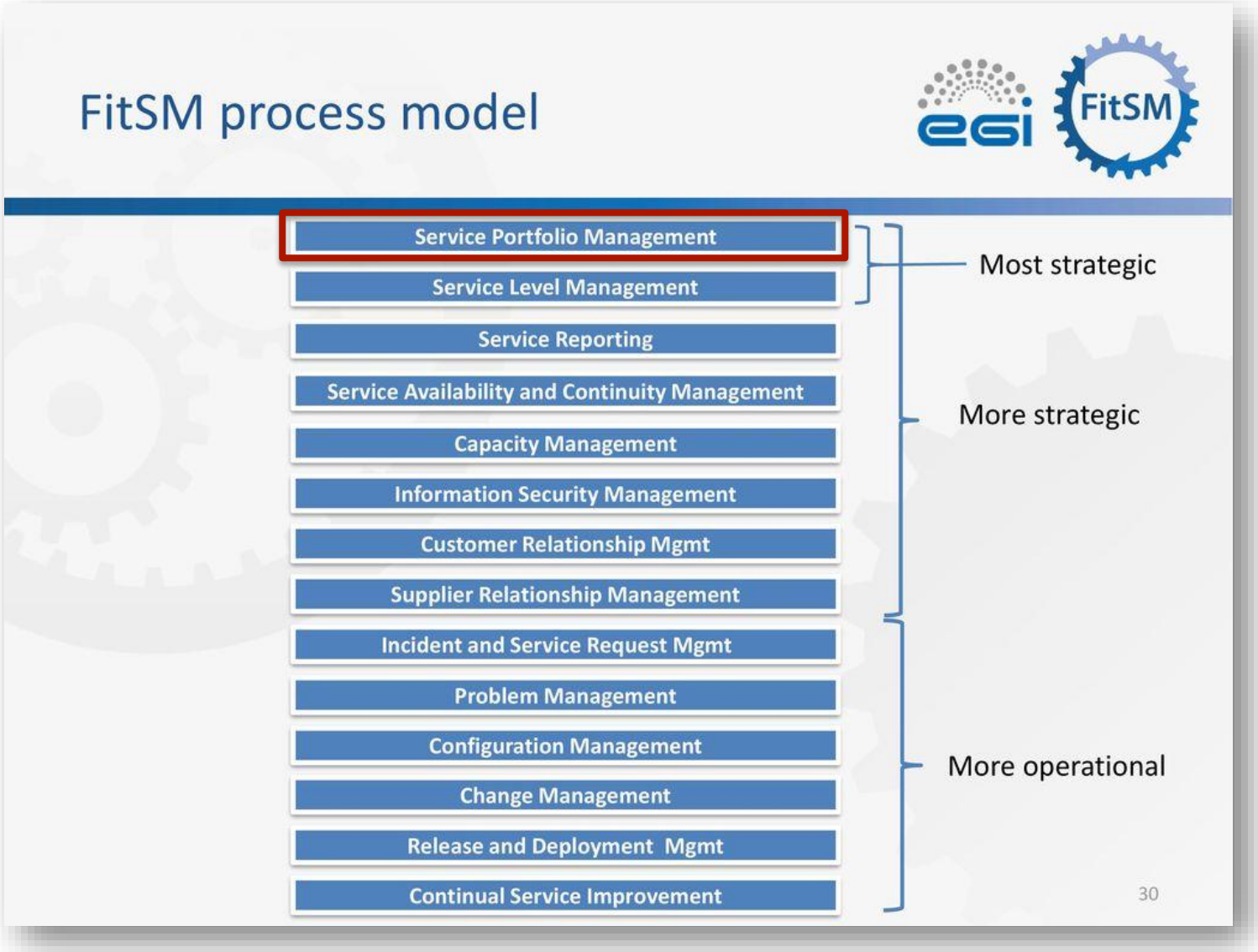
Production

- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf

Service Portfolio Management

Service Portfolio Management



FitSM Service Portfolio Management

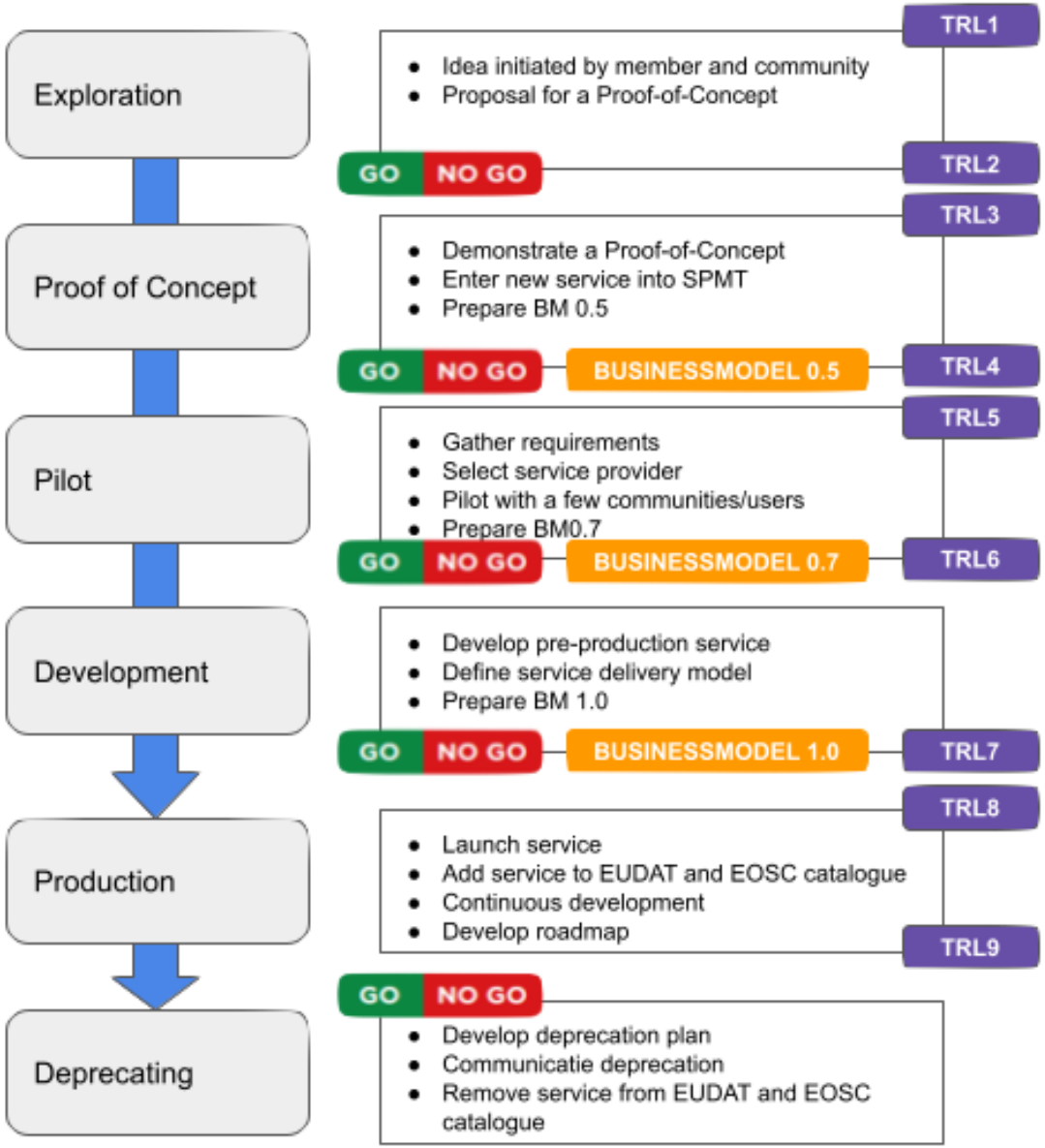
PR1 Service Portfolio Management (SPM)

REQUIREMENTS

- PR1.1 A service portfolio shall be maintained. All services shall be specified as part of the service portfolio.
- PR1.2 Proposals for new or changed services shall be evaluated based on predicted demand, required resources and expected benefits.
- PR1.3 Design and transition of new or changed services shall be planned considering timescales for realisation, responsibilities, new or changed technology, communication and service acceptance criteria.
- PR1.4 For each service, the internal and external suppliers involved in delivering the service shall be identified, including, as relevant, federation members. Their contact points, roles and responsibilities shall be determined.

EUDAT Service Portfolio Management

- Maintain the service portfolio
- Manage updates to the service portfolio
- Review the service portfolio at planned intervals
- Ensure new or changed services are planned and designed according to the SPM process



Service Validation

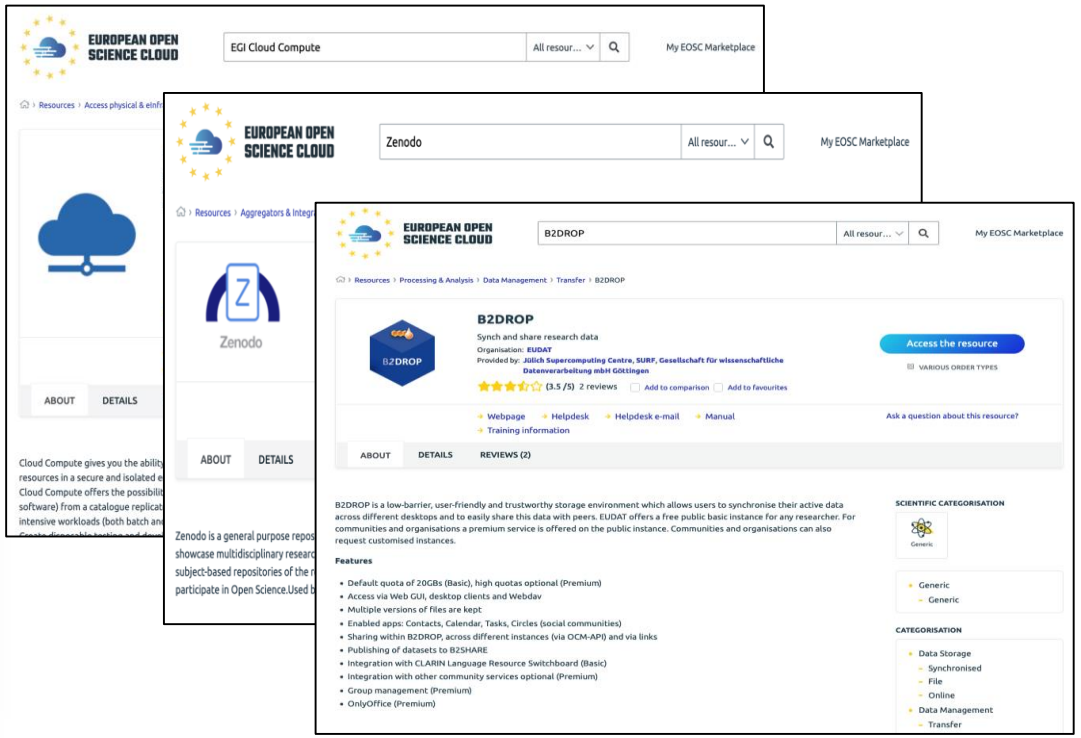
Why Service Validation

- Manage expectations from providers to users
- Manage services through it's life cycle
- To ensure QoS and Information
- To comply to defined inclusion criteria
  - (e.g. RI, ENVRI-FAIR hub, EOSC Catalogue, …)

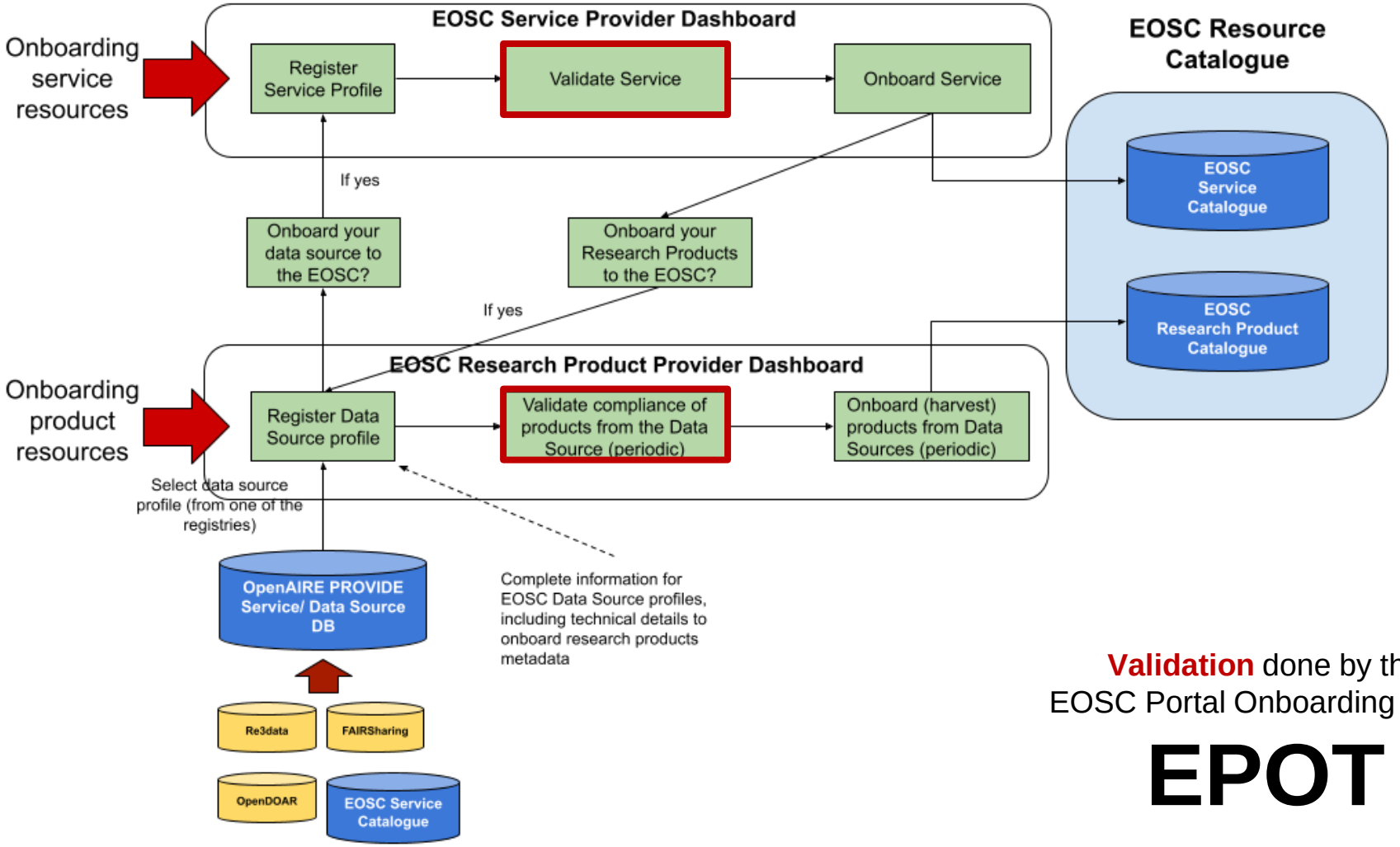
EOSC Catalogue and Marketplace

In total

- 322 Onboarded services
- From 237 Providers (https://marketplace.eosc-portal.eu/providers)
- 4500 new/unique users/month in the EOSC Exchange



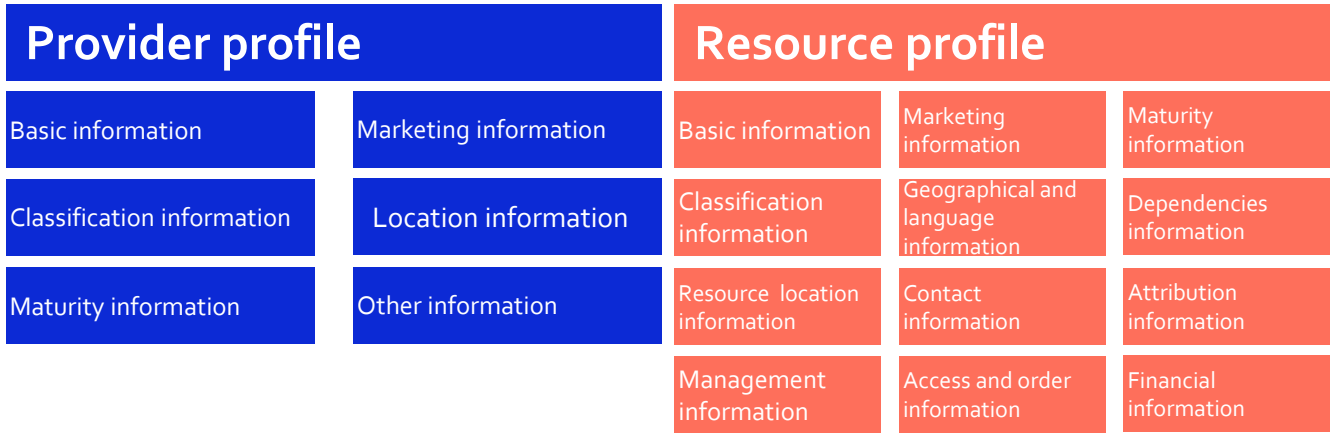
EOSC Portal Resources onboarding processes



Validation done by the
EOSC Portal Onboarding Team

EPOT

EOSC Portal Inclusion Criteria



Criteria 1: Acceptable onboarding groups

- Representative of Provider **fulfilling necessary information** in the Provider Profile
- **Legal entities**

Criteria 2: Acceptable onboarding providers

- **Deliverer of resource**
- In the case of a federated resource**, organisation onboarding** the resources should be **lead provider**

Criteria 3: Acceptable resource

- Specific service offered **'live'** to customers. Not a research product (software/document)
- **Sufficient maturity** (>=TRL7)
- **Targeted** to **EOSC/EOSC communities** OR build on/leverage EOSC capability

Criteria 4: Completed profile meeting following requirements

- Provider/resource profile with (at least) **all required fields,** in **English**
- **Basic information** of resource, policies etc. in **English**
- **Helpdesk/support** function capable of answering queries in **English**
- Resource available in Europe (and in a European language)

Criteria 5: Maintain up-to-date information

- Agreement to **keep** EOSC Profile information (and resource) **updated**

EOSC Portal Profiles (v4.0)

v4.00 EOSC Resource Profile Tables

Data Model

Basic Information

Code	Attribute Name	Definition	Type	Multiplicity	Required	Public
ERP.BAI.0	**ID**	A persistent identifier, a unique reference to the Resource in the context of the EOSC Portal.	String (max 30)	1	Mandatory (Assigned by the EOSC Portal)	Yes
ERP.BAI.1	**Abbreviation**	An abbreviation of the Resource Name as assigned by the Provider	String (Max 20)	1	Mandatory	Yes
ERP.BAI.2	**Name**	Resource Full Name as assigned by the Provider.	String (max 80)	1	Mandatory	Yes
ERP.BAI.3	**Resource Organisation**	The name (or abbreviation) of the organisation that manages or delivers the resource, or that coordinates resource delivery in a federated scenario.	Provider ID	1	Mandatory (Filled in by the EOSC Portal)	Yes
ERP.BAI.4	**Resource Providers**	The name(s) (or abbreviation(s)) of Provider(s) that manage or deliver the Resource in federated scenarios.	Provider IDs	Multiple	Optional	Yes
ERP.BAI.5	**Webpage**	Webpage with information about the Resource usually hosted and maintained by the Provider.	URL	1	Mandatory	Yes

Marketing Information

Code	Attribute Name	Definition	Type	Multiplicity	Required	Public
ERP.MRI.1	**Description**	A high-level description in fairly non-technical terms of a) what the Resource does, functionality it provides and Resources it enables to access, b) the benefit to a user/customer delivered by a Resource; benefits are usually related to alleviating pains (e.g., eliminate	String (max 1000)	1	Mandatory	Yes

Maturity Information

Code	Attribute Name	Definition	Type	Multiplicity	Required	Public
ERP.MTI.1	**Technology Readiness Level**	The Technology Readiness Level of the Resource (to be further updated in the context of the EOSC).	List of controlled values: EOSC Resource Profile v4.00#Resource TRL	1	Mandatory	Yes
ERP.MTI.2	**Life Cycle Status**	Phase of the Resource life-cycle.	List of controlled values:	1	Optional	Yes
ERP.MTI.3	**Certifications**	List of certifications obtained for the Resource (including the certification body).	String (max 100)	Multiple	Optional	Yes
ERP.MTI.4	**Standards**	List of standards supported by the Resource.	String (max 100)	Multiple	Optional	Yes
ERP.MTI.5	**Open Source Technologies**	List of open source technologies supported by the Resource.	String (max 100)	Multiple	Optional	Yes
ERP.MTI.6	**Version**	Version of the Resource that is in force.	String (max 10)	1	Optional	Yes
ERP.MTI.7	**Last Update**	Date of the latest update of the Resource.	Date (dd/mm/yyyy)	1	Optional	Yes

Management Information

Code	Attribute Name	Definition	Type	Multiplicity	Required	Public
ERP.MGI.1	**Helpdesk Page**	The URL to a webpage to ask more information from the Provider about this Resource.	URL	1	Optional	Yes
ERP.MGI.2	**User Manual**	Link to the Resource user manual and documentation.	URL	1	Optional	Yes
ERP.MGI.3	**Terms Of Use**	Webpage describing the rules, Resource conditions and usage policy which one must agree to abide by in order to use the Resource.	URL	1	Mandatory	Yes
ERP.MGI.4	**Privacy Policy**	Link to the privacy policy applicable to the Resource.	URL	1	Mandatory	Yes
ERP.MGI.5	**Access Policy**	Information about the access policies that apply.	URL	1	Optional	Yes
ERP.MGI.6	**Resource Level**	Webpage with the information about the levels of performance that a Provider is expected to deliver.	URL	1	Optional	Yes
ERP.MGI.7	**Training Information**	Webpage to training information on the Resource.	URL	1	Optional	Yes
ERP.MGI.8	**Status Monitoring**	Webpage with monitoring information about this Resource	URL	1	Optional	Yes
ERP.MGI.9	**Maintenance**	Webpage with information about planned maintenance windows for this Resource	URL	1	Optional	Yes

https://wiki.eoscfuture.eu/display/PUBLIC/B.+v4.00+EOSC+Resource+Profile

EOSC Portal Resource Maturity Classification

TRL 7 - Beta	EC definition: "System prototype demonstration in an operational environment" • Resource has passed through the development and is an advanced stage of pre-production: the software is stable, reliable and has been deployed in an operational environment • Functionality as required by the target users is documented, understood, validated with target sample users and accepted by them. • An assessment has been made of the required load of the system once the transition into production is complete and a plan has been made to serve this load. • An SLA is optional.
TRL 8 - Production	EC description: "System complete and qualified" • There are users who are making real use of the resource and rely on it for their work. • Resource documentation for end-users exists and is made available. • An Acceptable Use Policy/Terms of Use/SLA/SLS is in place • Evidence that the Resource is being delivered in a way consistent with user expectations • Provision is made for user support, with the response to an incident and problem management
TRL 9 - Production	EC description: "Actual system proven in an operational environment" • All requirements of TRL 8 are met. • Customer feedback is gathered and documented. The Resource has been in a production state and relied upon by users for at least 1 year and evidence is provided to show this. • There are quantitative outputs as a direct result of resource usage.

Take aways

1. TLRs is within the Horizon Europe work program the main method to measure technology and service maturity
2. (Un)Fortunately EC TRLs are only defined on a high-level
3. Service validation is important because
    a. It ensures correctness of information
    b. It manages expectations

Thank You

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