

Validating services and assessing their TRL

Mark van de Sanden

Technical Specialist @SURF

Technical Coordinator @EUDAT



Outline

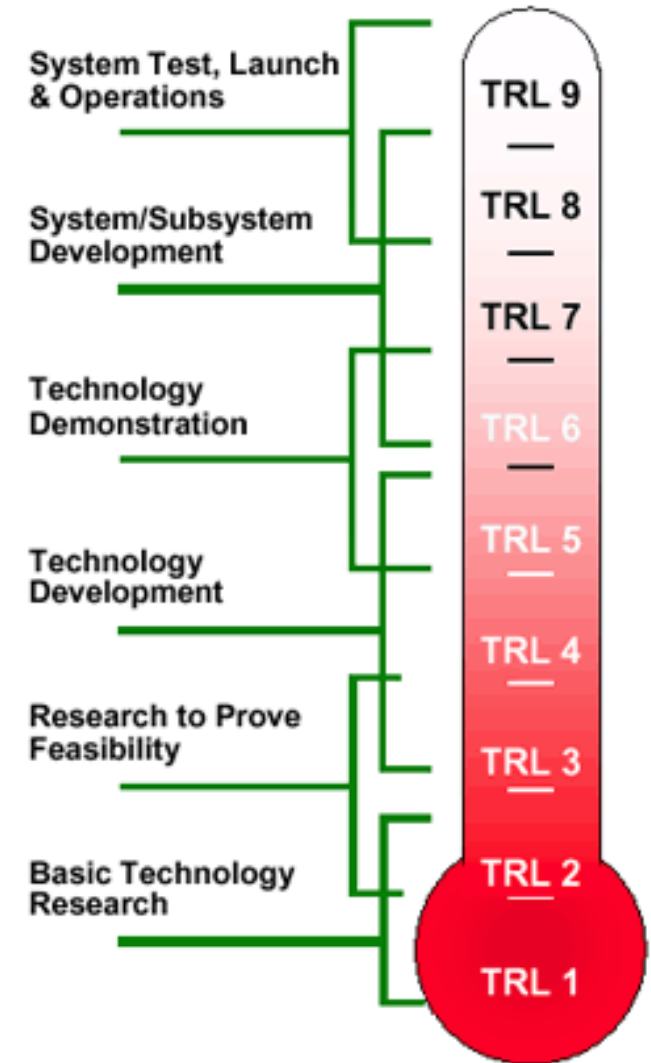
- Introduction to Technology Readiness Levels
- Service Portfolio Management
- Service validation



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 scale 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

Development

Production

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



Service Portfolio Management

Service Portfolio Management

FitSM process model



FitSM Service Portfolio Management

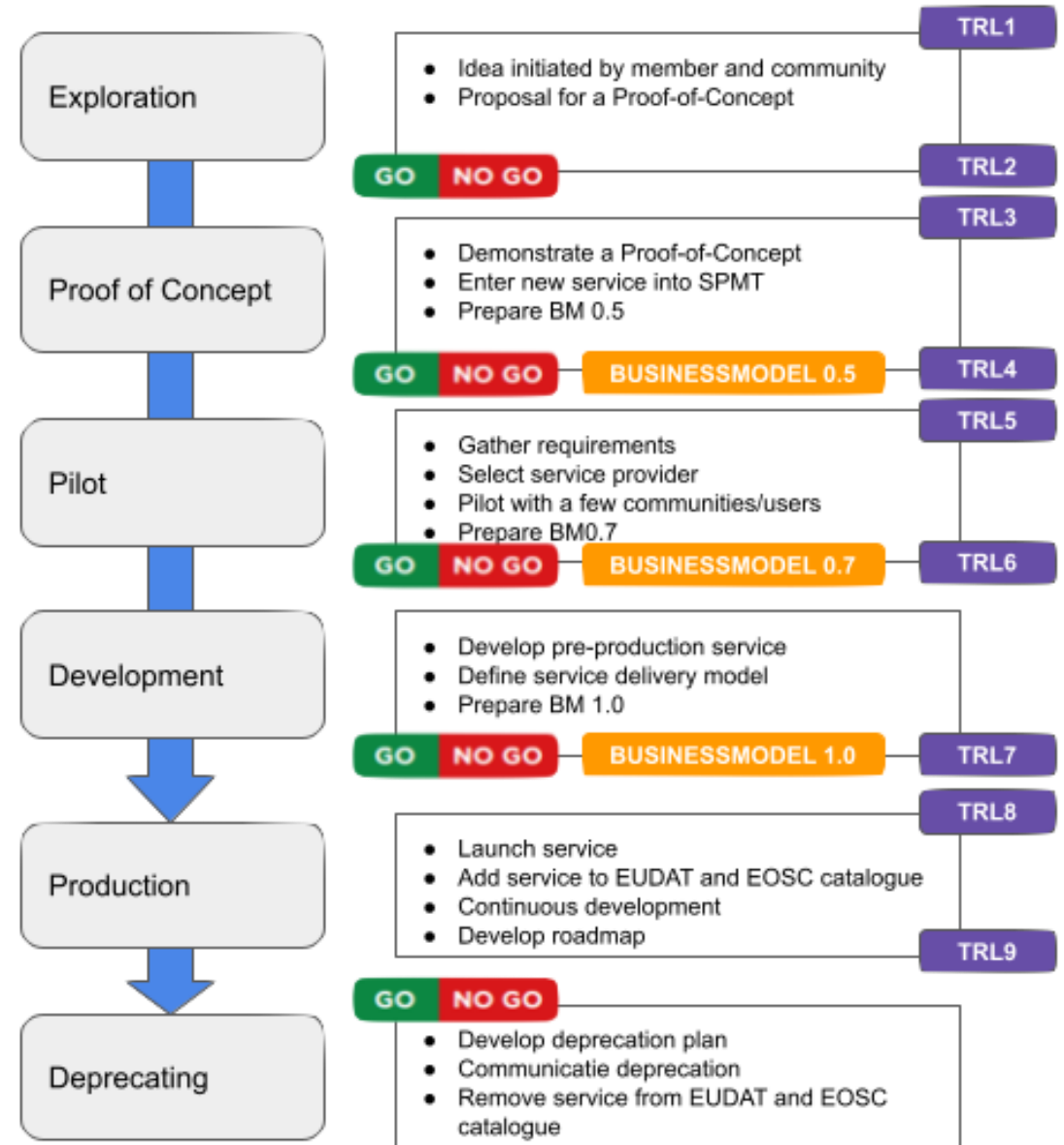
PR1 Service Portfolio Management (SPM)

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

Welcome to the EOSC Portal Catalogue and Marketplace

Integrated platform that allows easy access to lots of resources for various research domains along with integrated data analytics tools. Browse by scientific domain, resource category or provider and, if you need help, we are here for you!



Find EOSC Resources that suit your use case yourself

Describe your use case and get support from our experts

→ Browse through catalogue

→ Go to your projects

Scientific Domains

Categories



Access physical & e-infrastructure



Aggregators & Integrators



Processing & Analysis



Security & Operations



Sharing & Discovery



Training & Support

Browse all resources

In total

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

The screenshot displays the EOSC Marketplace interface. At the top, there is a search bar with the text "EGE Cloud Compute" and a search button. Below the search bar, there are three panels showing search results for "Zenodo" and "B2DROP".

The first panel shows the search results for "Zenodo". It includes the EOSC logo, the text "EUROPEAN OPEN SCIENCE CLOUD", and a search bar with "Zenodo" entered. Below the search bar, there is a "Resources" section with a "Zenodo" icon and a "Details" button.

The second panel shows the search results for "B2DROP". It includes the EOSC logo, the text "EUROPEAN OPEN SCIENCE CLOUD", and a search bar with "B2DROP" entered. Below the search bar, there is a "Resources" section with a "B2DROP" icon and a "Details" button. The details section for B2DROP includes the following information:

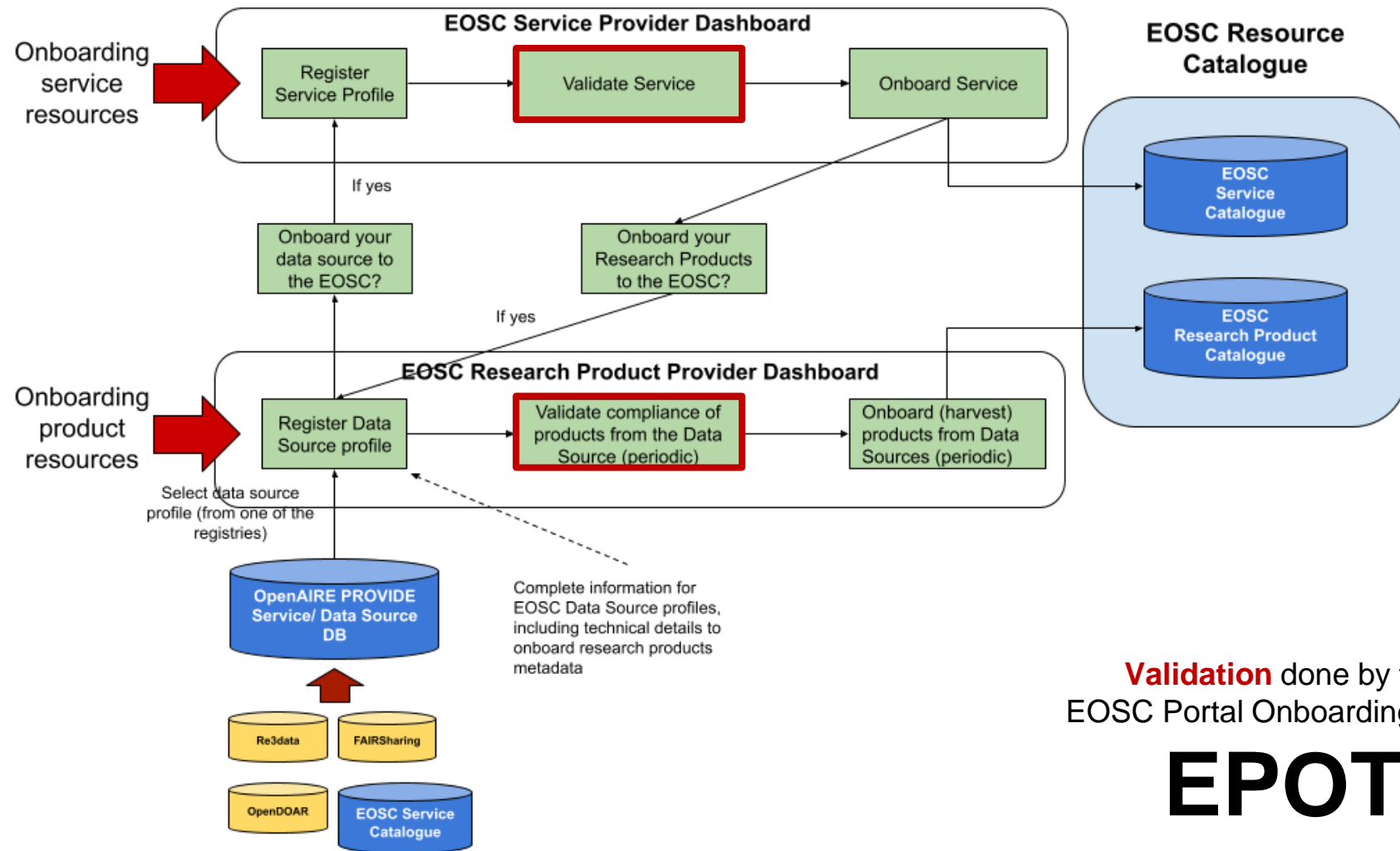
- B2DROP**
- Synch and share research data
- Organisation: EUDAT
- Provided by: Jülich Supercomputing Centre, SURF, Gesellschaft für wissenschaftliche Datenverarbeitung mbH Göttingen
- Rating: 3.5/5 (2 reviews)
- Buttons: Add to comparison, Add to favourites
- Links: Webpage, Helpdesk, Helpdesk e-mail, Manual
- Text: Ask a question about this resource?

Below the details section, there is a "Features" section with the following list:

- Default quota of 20GBs (Basic), high quotas optional (Premium)
- Access via Web GUI, desktop clients and Webdav
- Multiple versions of files are kept
- Enabled apps: Contacts, Calendar, Tasks, Circles (social communities)
- Sharing within B2DROP, across different instances (via OCM-API) and via links
- Publishing of datasets to B2SHARE
- Integration with CLARIN Language Resource Switchboard (Basic)
- Group management (Premium)
- OnlyOffice (Premium)

At the bottom of the screenshot, there is a "SCIENTIFIC CATEGORISATION" section with a "Generic" icon and a "CATEGORISATION" section with a list of categories: Data Storage, Synchronised, File, Online, Data Management, and Transfer.

EOSC Portal Resources onboarding processes



Validation done by the
EOSC Portal Onboarding Team

EPOT

EOSC Portal Inclusion Criteria

Provider profile		Resource profile		
Basic information	Marketing information	Basic information	Marketing information	Maturity information
Classification information	Location information	Classification information	Geographical and language information	Dependencies information
Maturity information	Other information	Resource location information	Contact information	Attribution information
		Management information	Access and order information	Financial information

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.MTL.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.MTL.2	Life Cycle Status	Phase of the Resource life-cycle.	List of controlled values:	1	Optional	Yes
ERP.MTL.3	Certifications	List of certifications obtained for the Resource (including the certification body).	String (max 100)	Multiple	Optional	Yes
ERP.MTL.4	Standards	List of standards supported by the Resource.	String (max 100)	Multiple	Optional	Yes
ERP.MTL.5	Open Source Technologies	List of open source technologies supported by the Resource.	String (max 100)	Multiple	Optional	Yes
ERP.MTL.6	Version	Version of the Resource that is in force.	String (max 10)	1	Optional	Yes
ERP.MTL.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

EOSC Portal Resource Maturity Classification

TRL 7 - Beta	<p>EC definition: "System prototype demonstration in an operational environment"</p> <ul style="list-style-type: none">• 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	<p>EC description: "System complete and qualified"</p> <ul style="list-style-type: none">• 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	<p>EC description: "Actual system proven in an operational environment"</p> <ul style="list-style-type: none">• 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

Mark van de Sanden

mark.vandesanden@surf.nl

