ESCAPE
European Science Cluster of Astronomy & Particle physics ESFRI research Infrastructures

European
Data Provider Forum
and Training Event

23 November 2021

VO publication
&
EOSC publication

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ESCAPE - The European Science Cluster of Astronomy & Particle Physics ESFRI Research Infrastructures has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement n° 824064.

Outline

- IVOA Euro-VO ESCAPE/CEVO EOSC
- Repositories & Metadata
- IVOA Registry
- EOSC Portal
- Current integration & ongoing work

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VO resources architecture and EOSC integration

- IVOA (International Virtual Observatory Alliance)
  - focuses on the development of standards to facilitate the international development and deployment of the tools, systems and organizational structures necessary to enable the utilization of astronomical archives as an integrated and interoperating virtual observatory
- Euro-VO
  - brings together the European initiatives, community
  - funded through Euro-VO Tech, DCA, AIDA, ICE; CoSADIE; ASTERICS/DADI and now ESCAPE/CEVO
- ESCAPE/CEVO (Connecting ESFRI projects to EOSC through the VO)
  - architecture integration and assessment
  - VO standards updates through ESFRI requirements
  - stewardship and added value to astronomy archives
- EOSC (European Open Science Cloud)
  - develop a web of FAIR Data and services for science in Europe: a multi-disciplinary environment to publish, find and re-use data, tools and services
  - federated system of systems

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Repositories & Metadata

- Repositories
  - resource(s) metadata catalogues
  - general or domain specific
    - granularity
  - fit the [F4] FAIR guiding principle
    - (meta)data are registered or indexed in a searchable resource
    - Access, Interoperability and Re-usability may/should plug in here
  - more than simple resource listings
    - resource accessibility
  - struggle with the metadata model to encompass requirements
- Metadata Models
  - general purpose or domain fine grained
  - minimal metadata
  - mappings and cross walks

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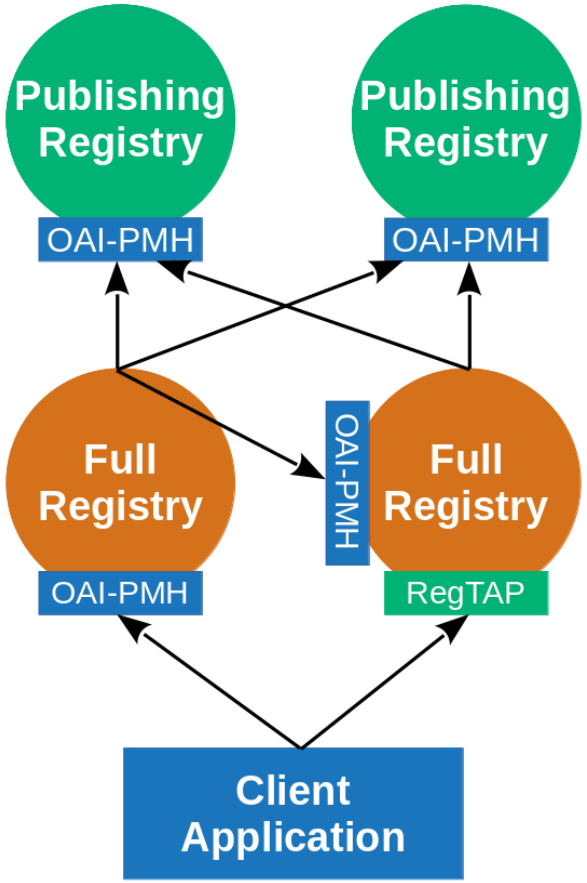
IVOA Registry: architecture

- Registry of Registries
  - a starting point to enter the (Full) Registries conten
- Full Registries
  - (continuous) harvesting of resource records
    - from other Full/Publishing Registries
- OAI-PMH interface
  - to access full resource documents
  - for cross-domain interoperability
- RegTAP interface
  - for resource filtering
  - domain specific
  - task/activity specific



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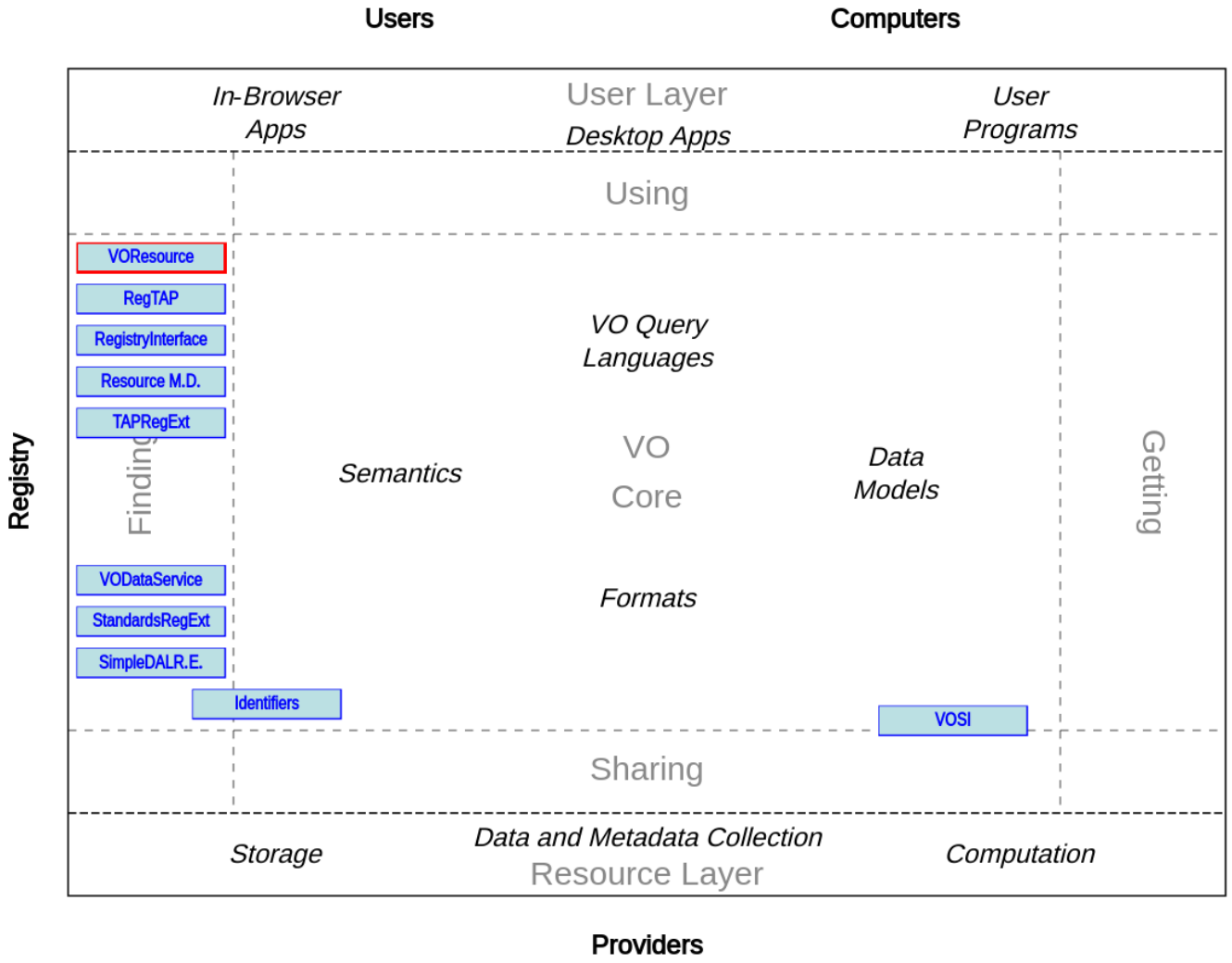
IVOA Registry: metadata model

- VOResource
  - global types then used in application specific schemas
- extension mechanism
  - Data Service
  - Simple Data Access
  - Table Access
  - …
- global uniqueness based on authority resource identifier and management



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IVOA Registry: records

- Record basic metadata blocks
  - Identity
  - Curation
  - Content (general)
  - quality flag
- Extensions
  - vr:Service
    - Capability
- standardID(s)
  - to link URL for standard interfaces

```
<capability standardID="ivo://ivoa.net/std/SIA#query-2.0">
    <!-- this describes a SIA version 2 "face" of the service -->
    <interface role="std" xsi:type="vs:ParamHTTP">
      <accessURL use="base">http://example.com/asvc/sia2.xml?</accessURL>
      <queryType>GET</queryType>
      <resultType>application/x-votable+xml</resultType>
      <param std="true">
        <name>POS</name>
        <description>Specification of a region of...</description>
        [... enumerate the parameters supported for SIAv2...]
      </param>
    </interface>

    <imageServiceType>Pointed</imageServiceType>
    <maxRecords>10000</maxRecords>
    <testQuery>
      <pos>
        <long>230.444</long>
        <lat>52.929</lat>
      </pos>
      <size>
        <long>0.1</long>
        <lat>0.1</lat>
      </size>
    </testQuery>
</capability>
```

```
<ri:Resource xsi:type="vr:Organisation"
         xmlns:vr="http://www.ivoa.net/xml/VOResource/v1.0"
         ...
         created="2009-02-15T12:00:00"
         updated="2009-02-15T12:00:00"
         status="active">
    <validationLevel validatedBy="ivo://archive.stsci.edu/nvoregistry">2</validationLevel>

    <title>NCSA Radio Astronomy Imaging</title>
    <shortName>NCSA-RAI</shortName>
    <identifier>ivo://rai.ncsa/RAI</identifier>

    <curation>
        <publisher ivo-id="ivo://ncsa.uiuc/NCSA">
            National Center for Supercomputing Applications
        </publisher>
        <creator>
            <name> Crutcher, Richard </name>
            <logo>
                http://rai.ncsa.uiuc.edu/rai.jpg
            </logo>
        </creator>
        <date>1993-01-01</date>
        <contact>
            <name>Plante, R.</name>
            <email>rplante@ncsa.uiuc.edu</email>
        </contact>
    </curation>

    <content>
        <subject>radio astronomy</subject>
        <subject>data repositories</subject>
        <subject>digital libraries </subject>
        <subject>grid-based processing</subject>
        <description>
            The Radio Astronomy Imaging Group at the National Center for
            Supercomputing Applications is focused on applying
            high-performance computing to astronomical research. Our
            projects include the NCSA Astronomy Digital Image Library,
            the BIMA Data Archive, the BIMA Image Pipeline, and the
            National Virtual Observatory.
        </description>
        <referenceURL>http://rai.ncsa.uiuc.edu/</referenceURL>
        <type>Organisation</type>
        <contentLevel>Research</contentLevel>
    </content>

    <facility>Berkeley-Illinois-Maryland Array (BIMA)</facility>
    <facility>
        Combined Array for Research in Millimeter Astronomy (CARMA)
    </facility>

</ri:Resource>
```


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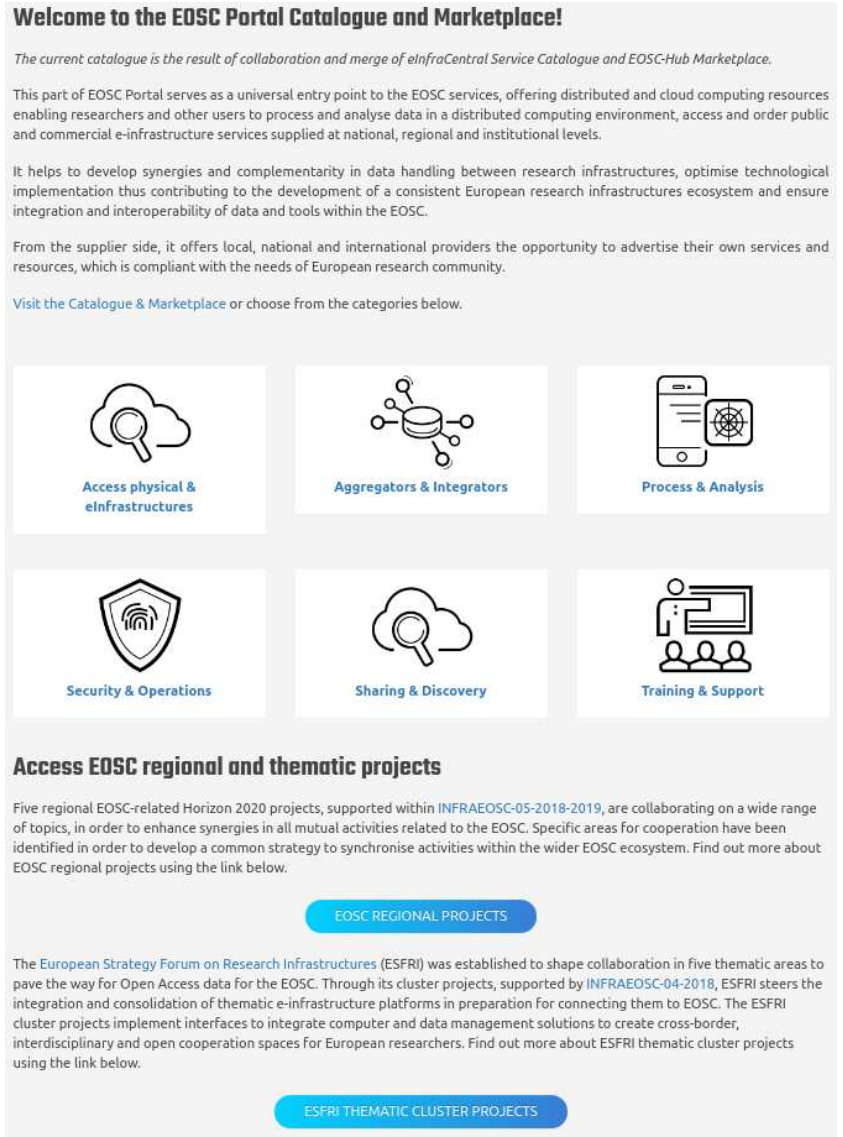
EOSC Portal

- The current catalogue is the result of collaboration and merge of
  - eInfraCentral Service Catalogue
  - EOSC-Hub Marketplace
- This part of EOSC Portal serves as a universal entry point to the EOSC services, offering distributed and cloud computing resources enabling researchers and other users to process and analyse data in a distributed computing environment, access and order public and commercial e-infrastructure services supplied at national, regional and institutional levels
- From the supplier side, it offers local, national and international providers the opportunity to advertise their own services and resources, which is compliant with the needs of European research community



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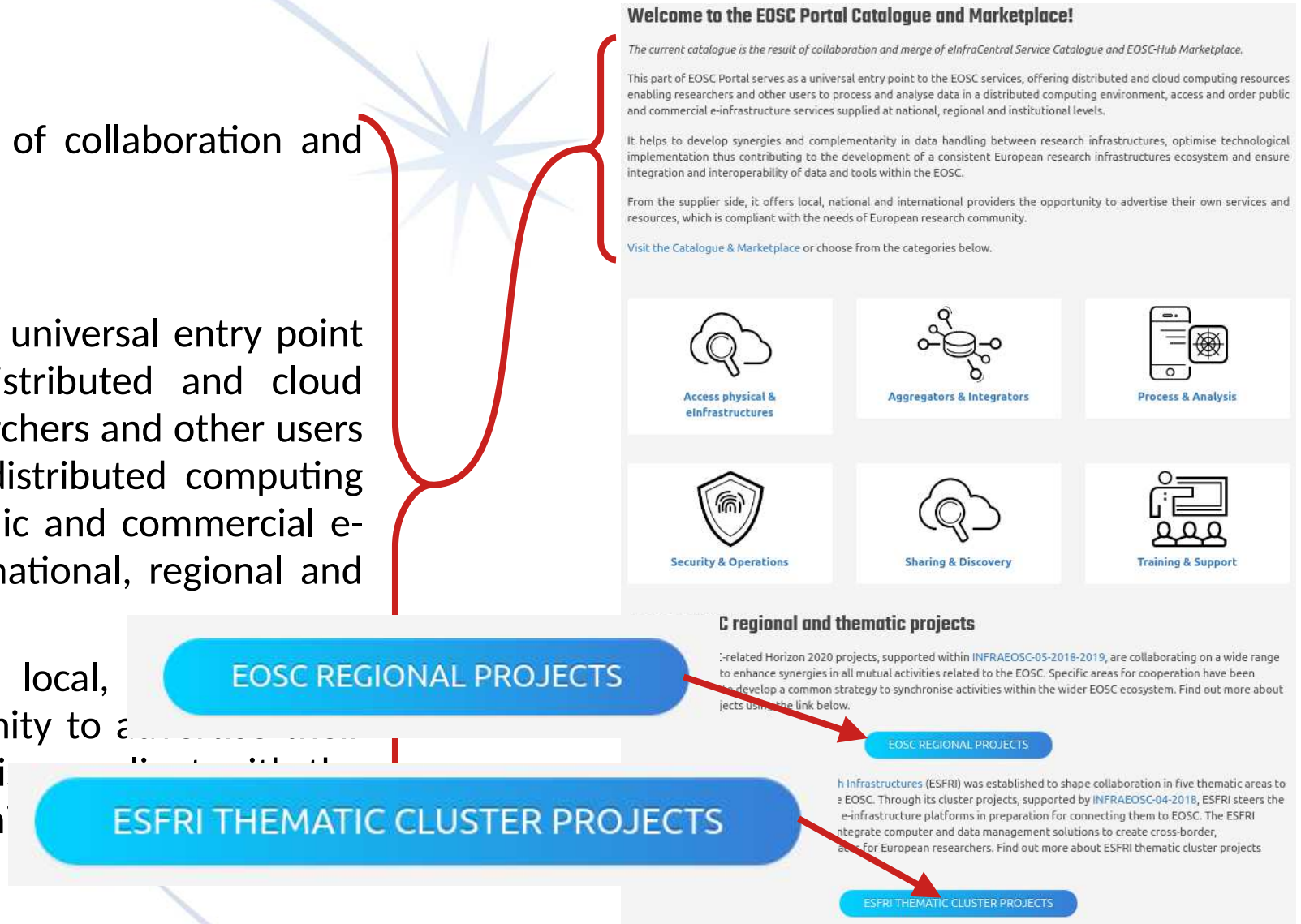

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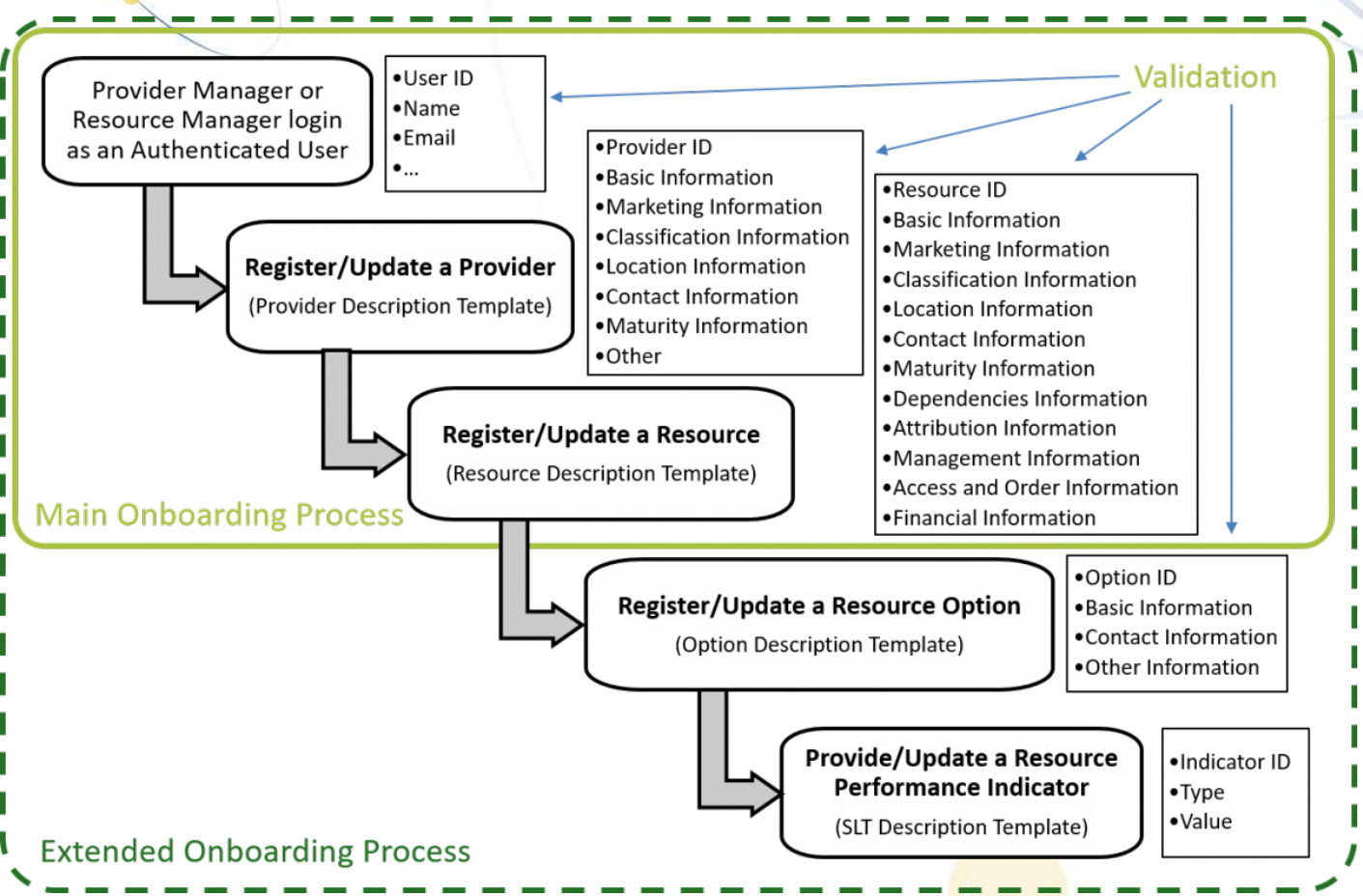
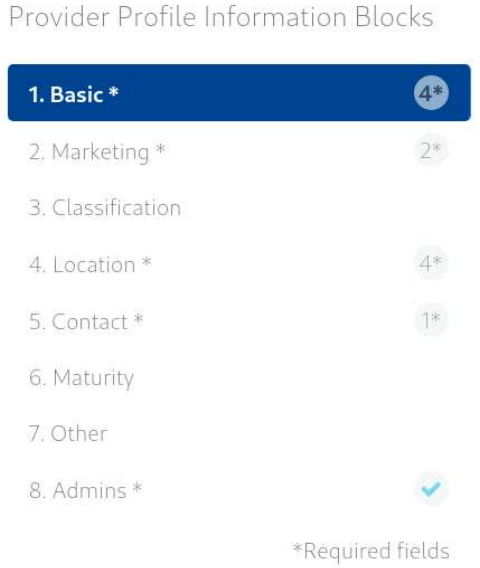
EOSC Portal: Provider



- a Representative
  - goes to the portal
  - Registers
    - using an identity from a supported AAI
  - logs in
  - asserts s/he is authorised by the Provider
  - applies for onboarding …



https://eosc-portal.eu/sites/default/files/EOSC-Profiles-v3.00.pdf

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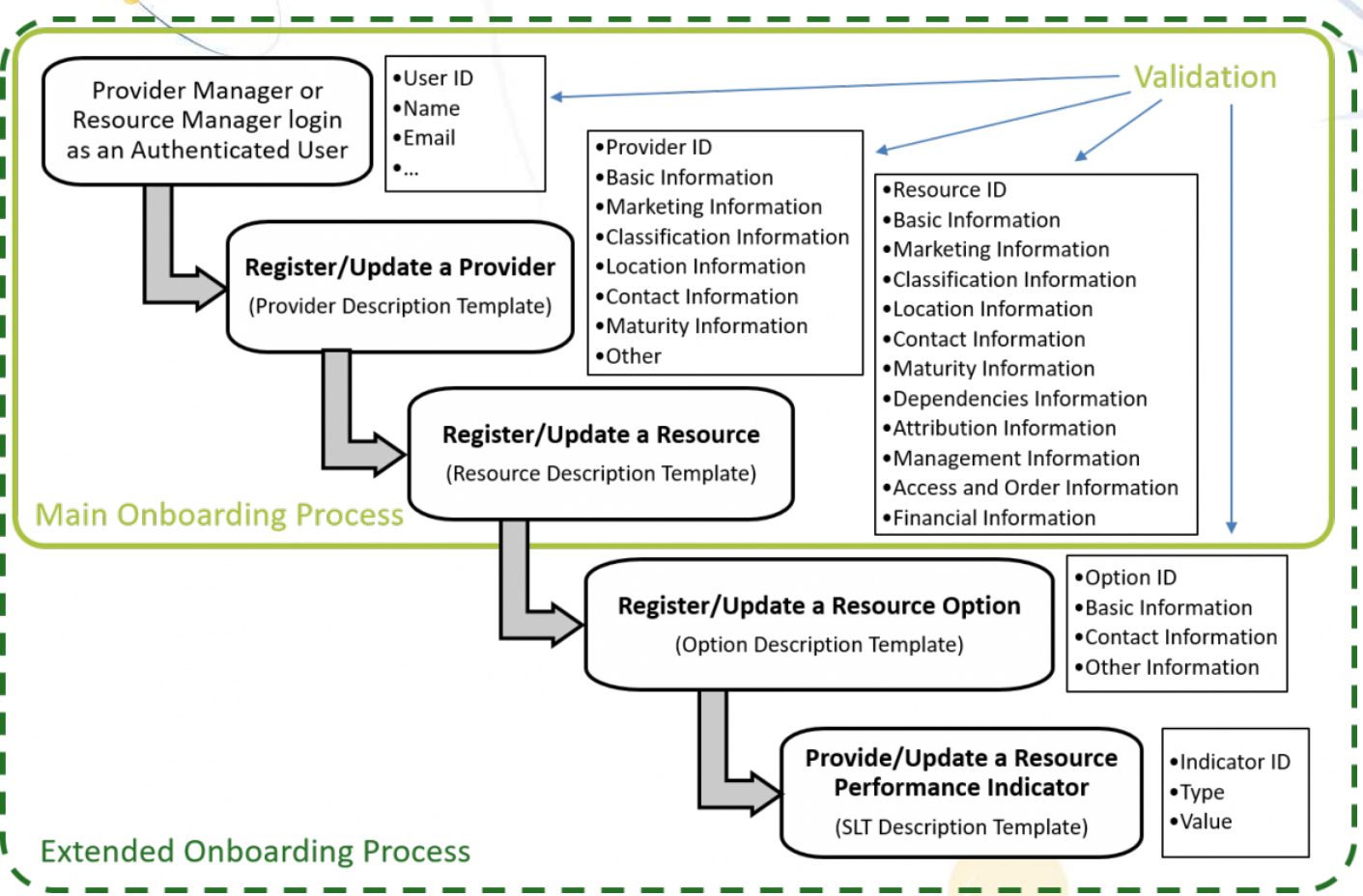
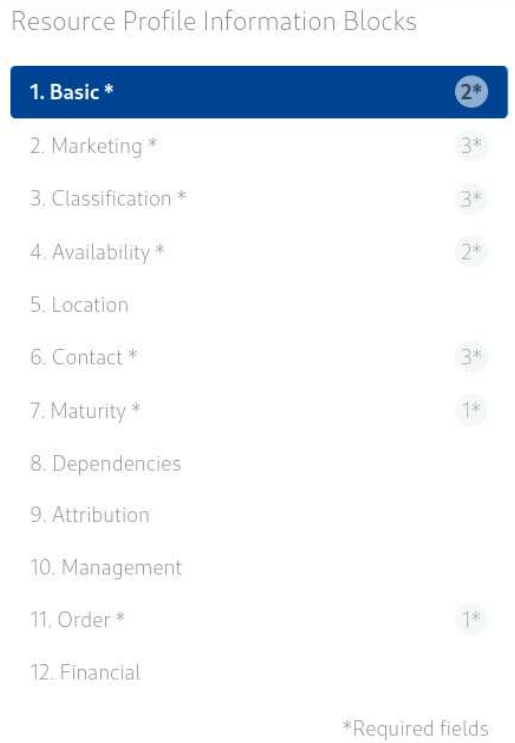
EOSC Portal: Resource



- the Representative
  - waits for approval of the Provider
  - applies for onboarding a Resource
    - web interface
    - programmatic API
      - JSON / HTTP POST



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EOSC Portal: Profile Model

https://eosc-portal.eu/sites/default/files/EOSC-Profiles-v3.00.pdf

EOSC Provider + Add Resource

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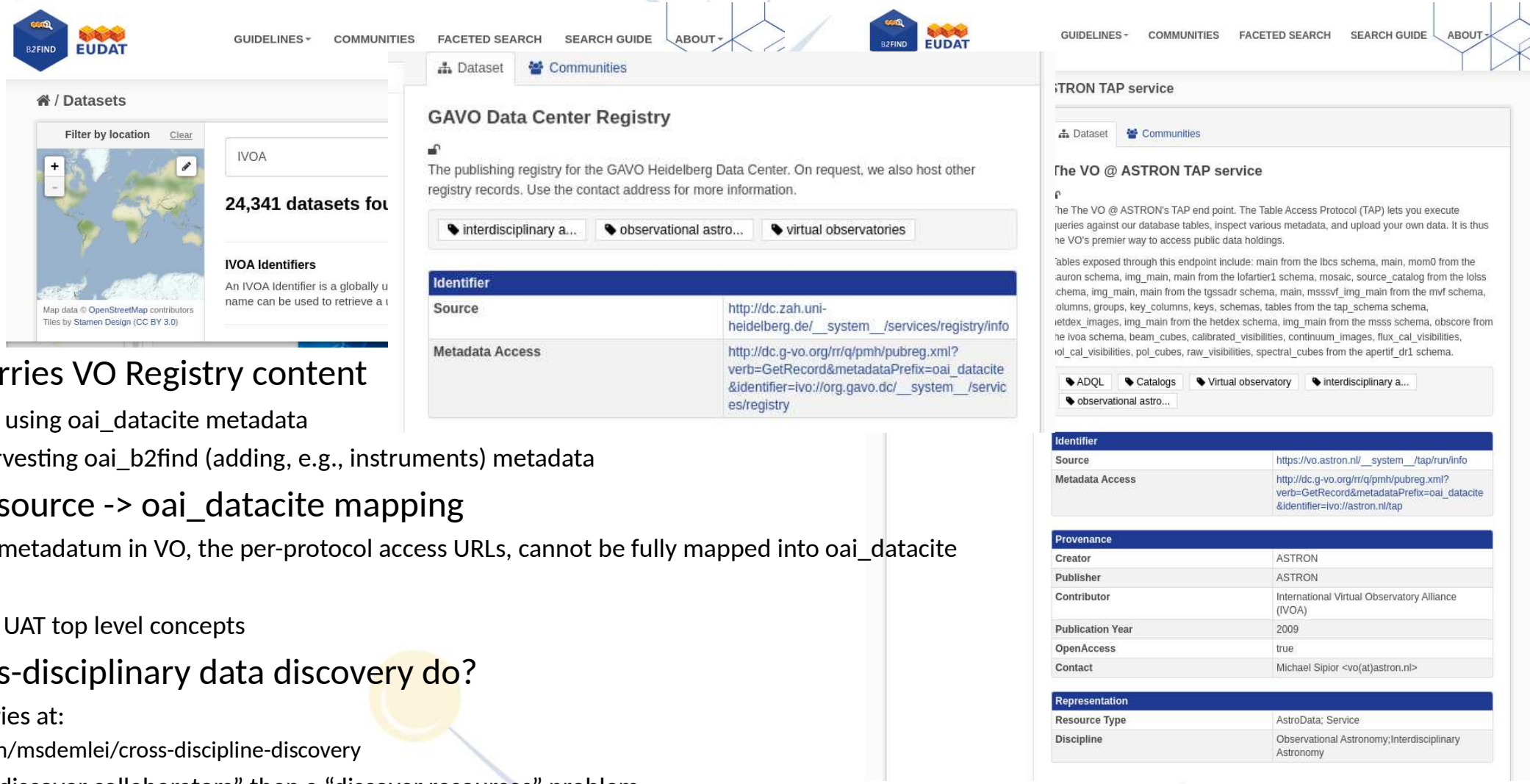
IVOA Registry integration in the EOSC landscape



- EUDAT B2FIND carries VO Registry content
  - harvesting OAI-PMH using oai_datacite metadata
  - working towards harvesting oai_b2find (adding, e.g., instruments) metadata
- Incomplete VOResource -> oai_datacite mapping
  - the most important metadatum in VO, the per-protocol access URLs, cannot be fully mapped into oai_datacite
  - also: no tablesets
  - mapping subjects to UAT top level concepts
- What should cross-disciplinary data discovery do?
  - sketches of user stories at:
    - https://github.com/msdemlei/cross-discipline-discovery
  - could be more of a “discover collaborators” then a “discover resources” problem

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VO Resources direct onboarding in the EOSC portal

- **Onboarding**
  - assesment & contribution guidelines
  - ✔ setup a Provider within EOSC
  - ✔ test the onboarding procedure
    - using non VO Registered resources
  - ✗ test the onboarding procedure
    - starting from VO Registered resources
  - ✗ report guidelines
    - to minimise duplicated efforts

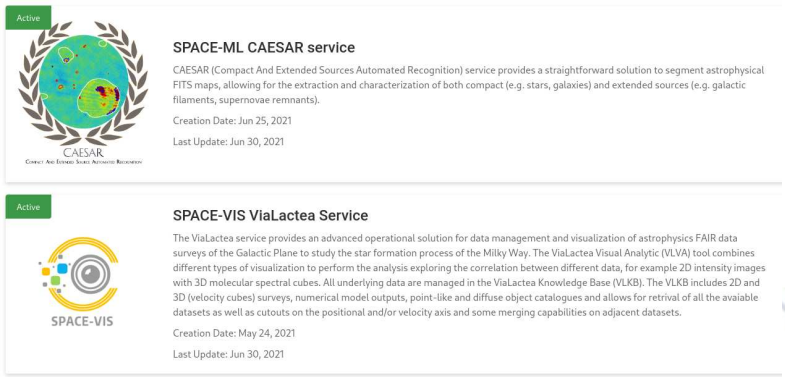
differences

IVOA

- authority
- Model
  - Flexible, complex, extensible
- distribute & harvest
- emphasis on declaring APIs available per data collection
- metadata granularity
- matured over time
- community “weather reports”

EOSC

- provider, AARP
- Model
  - single resource, general domain
- form based
  - programmatic API available
- external repositories inclusion:
  - domain, national, cluster (?)
- emphasis on policies



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Thank you for your attention!

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