



11th Iberian Grid Conference
Faro, 10th – 13th October 2022

LifeWatch ERIC Tesseract



Antonio José Sáenz-Albanés

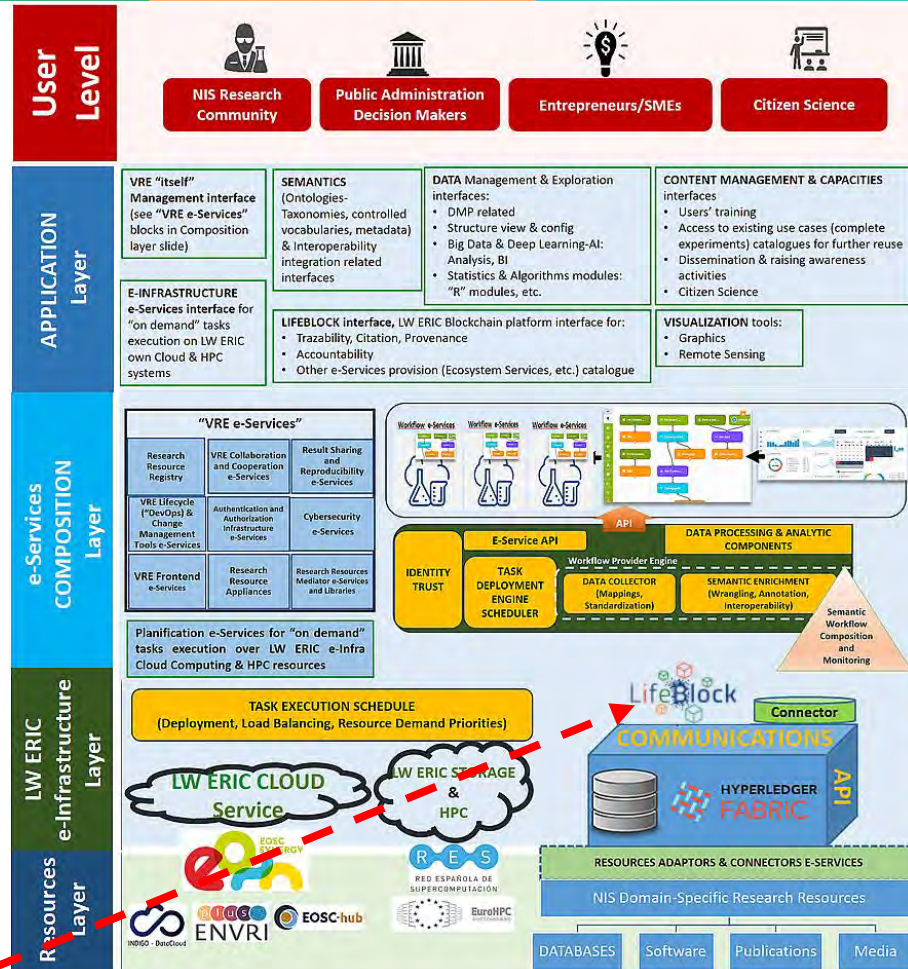
ICT Core e-Infrastructure Operations Coordinator



EUROPEAN UNION
European Regional
Development Fund
"A way to build Europe"

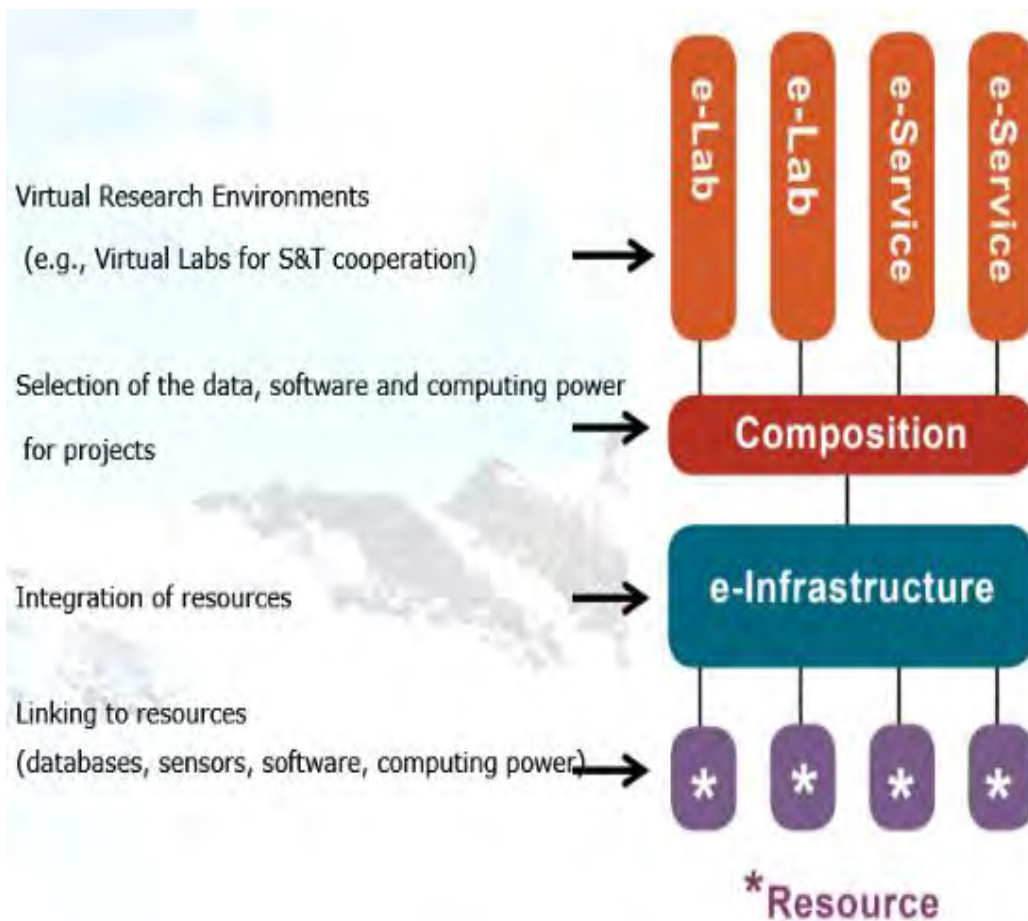
Reference Architecture

1. AAAI: Backend of authorization, accountability authentication & identification, including global cybersecurity issues
2. Linking Workflows to VREs: Workflow Catalogue
3. "On demand" e-Services to Cloud –EOSC– & (RES-EuroHPC)
4. Semantics applications & e-tools (taxonomic backbone)
5. Statistics packets (R, Jupiter python-based, etc.) for vLabs
6. DMPs and external databases access mechanisms
7. Big Data & AI-Deep Learning applications for Modelling
8. VREs management and admin components
9. Visualization: GIS-Remote Sensing & graphical analytic: KPI & socioeconomic impact visualization, including EBVs & ecosystem services analysis tools
10. Interfaces to online Training Seminars; "Success case studies"; Dissemination (publications, media) thematic-related resources (e.g. on NIS-IAS); and links to thematic-related Citizen Science activities
11. LifeBlock: Transparent to users, not existing any "specific" interface, but embedded to all of system e-Services provided.



Based on the Orchestra model

ORCHESTRA model-based Service Oriented Architecture



User Level



**NIS Research
Community**



**Public
Administration
Decision Makers**



Entrepreneurs/SMEs



Citizen Science

THEREFORE, Application layer must gather (at least) next user-friendly interfaces

**A
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n**

**VRE "itself"
Management
interface** (see "VRE
e-Services"
blocks in
Composition layer
slide)

SEMANTICS
(Ontologies-Taxonomies,
controlled vocabularies,
metadata) &
Interoperability
integration related
interfaces

DATA Management &
Exploration interfaces:

- DMP related
- Structure view & config
- Big Data & Deep Learning-AI:
Analysis, BI
- Statistics & Algorithms
modules: "R" modules, etc.

**CONTENT MANAGEMENT &
CAPACITIES** interfaces

- Users' training
- Access to existing use cases
(complete experiments) catalogues for
further reuse
- Dissemination & raising awareness
activities
- Citizen Science

**E-INFRASTRUCTURE
e-Services interface** for
"on demand" tasks
execution on LW ERIC
own Cloud & HPC
systems

LIFEBLOCK interface, LW ERIC Blockchain platform interface for:

- Trazability, Citation, Provenance
- Accountability
- Other e-Services provision (Ecosystem Services, etc.) catalogue

VISUALIZATION tools:

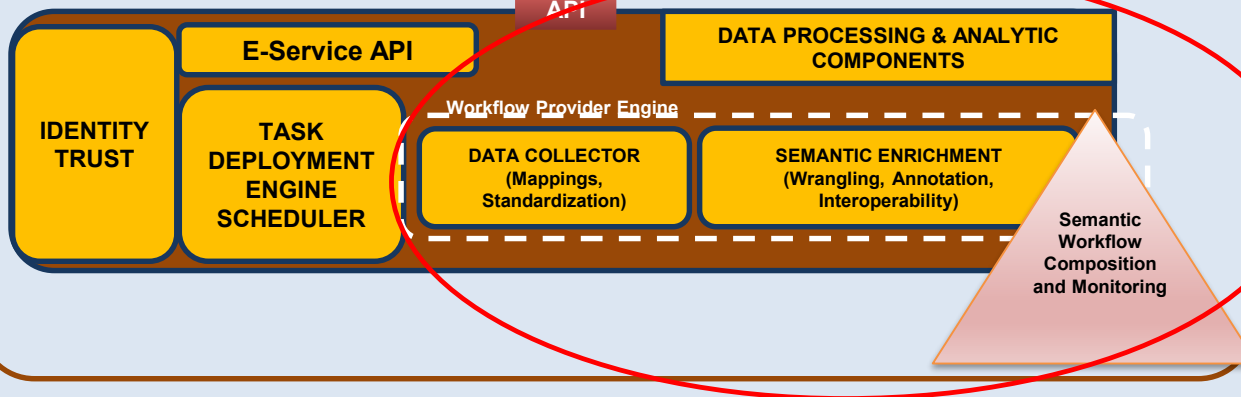
- Graphics
- Remote Sensing

“VRE e-Services”

Research Resource Registry	VRE Collaboration and Cooperation e-Services	Result Sharing and Reproducibility e-Services
VRE Lifecycle (“DevOps”) & Change Management Tools e-Services	Authentication and Authorization Infrastructure e-Services	Cybersecurity e-Services
VRE Frontend e-Services	Research Resource Appliances	Research Resources Mediator e-Services and Libraries

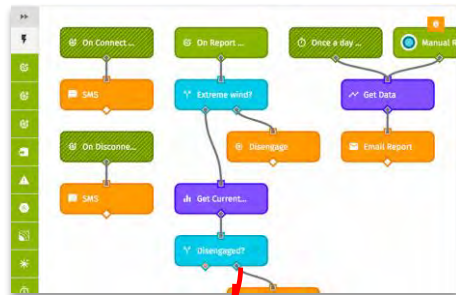
Planification e-Services for “on demand” tasks execution over LW ERIC e-Infra Cloud Computing & HPC resources

Study cases on NIS Catalogue

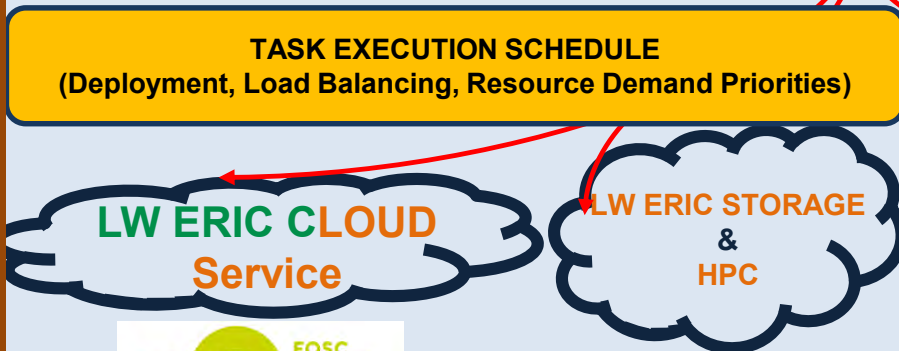


LW ERIC e-Infrastructure & Resources layers

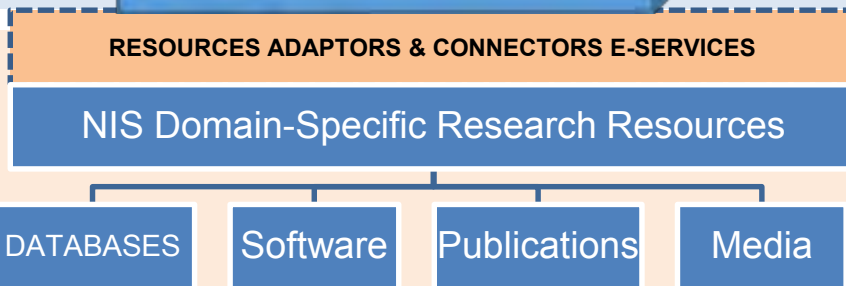
Each data processing/analytic execution tasks will be scheduled and deployed according to its specific resources requirement



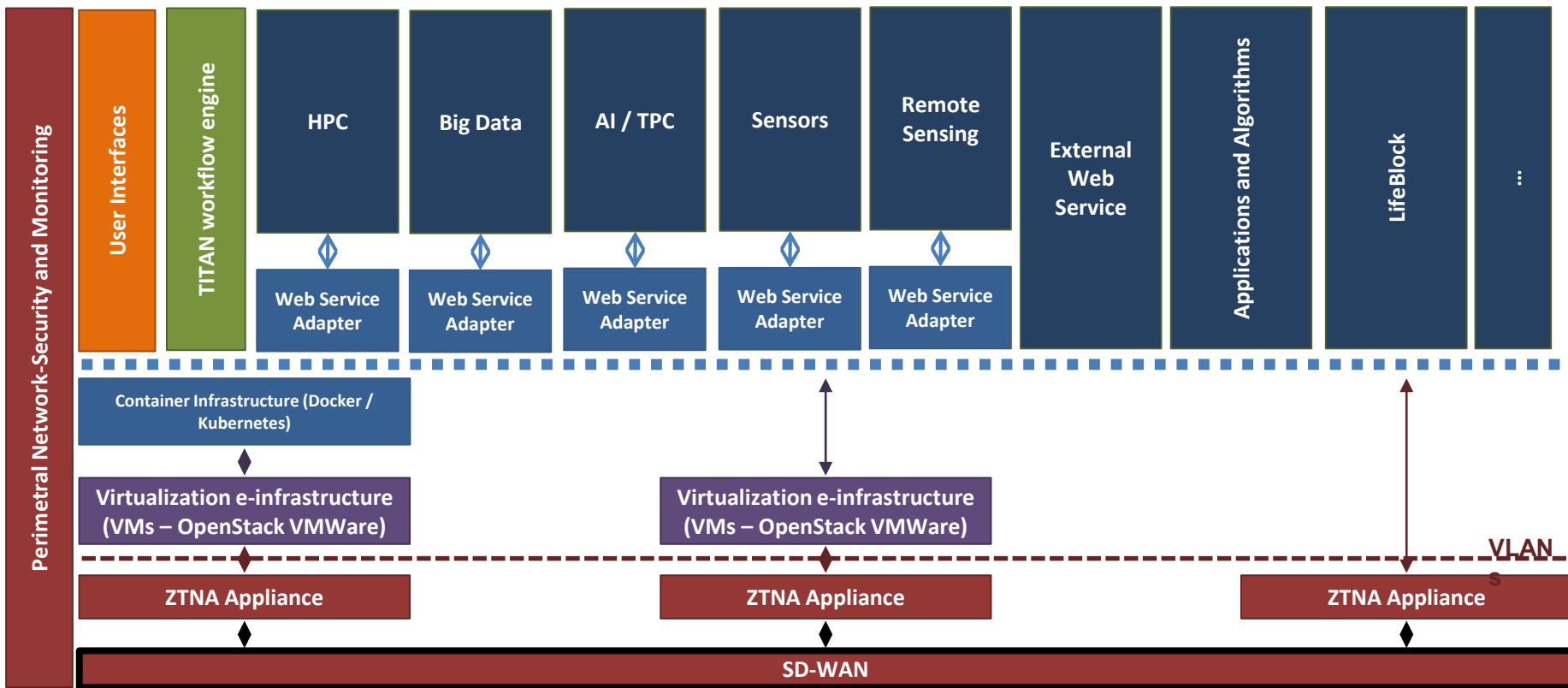
LW ERIC
e-Infrastructure
Layer



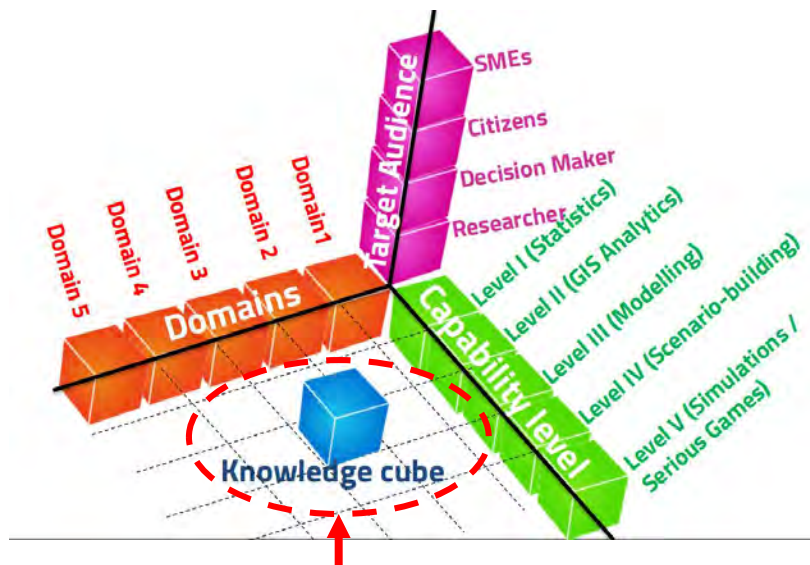
Resources
Layer



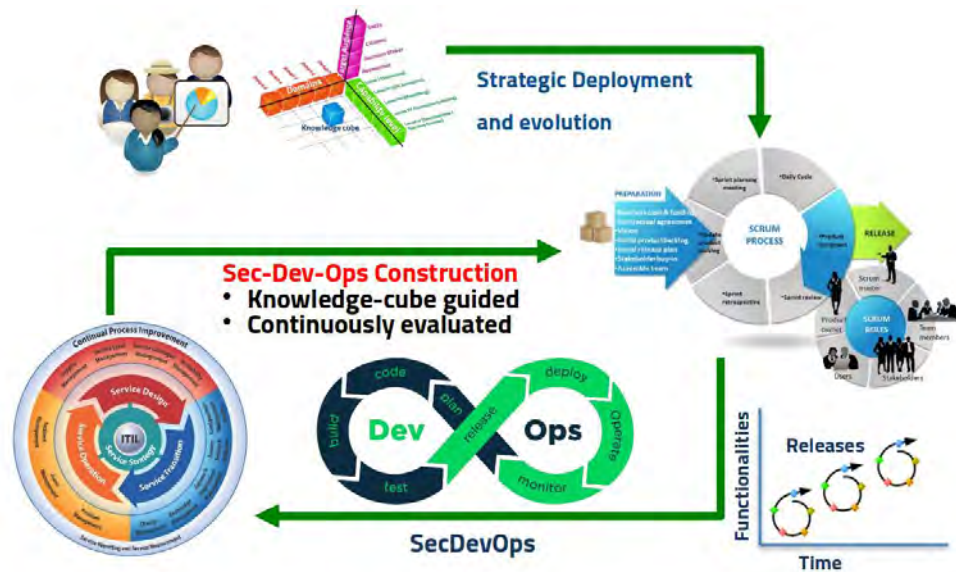
Functional Layers where components are deployed



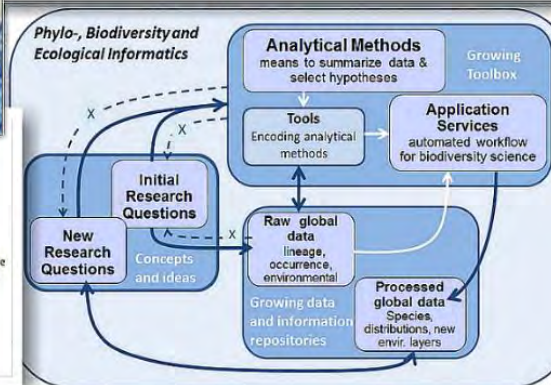
Knowledge-cube requirement elicitation methodology and SecDevOps



Use-case, key points, requirements



The selection and prioritization of knowledge cubes were guided by the IJI-NIS Initiative



www.lifewatch.eu



@LifeWatchERIC

Thanks!

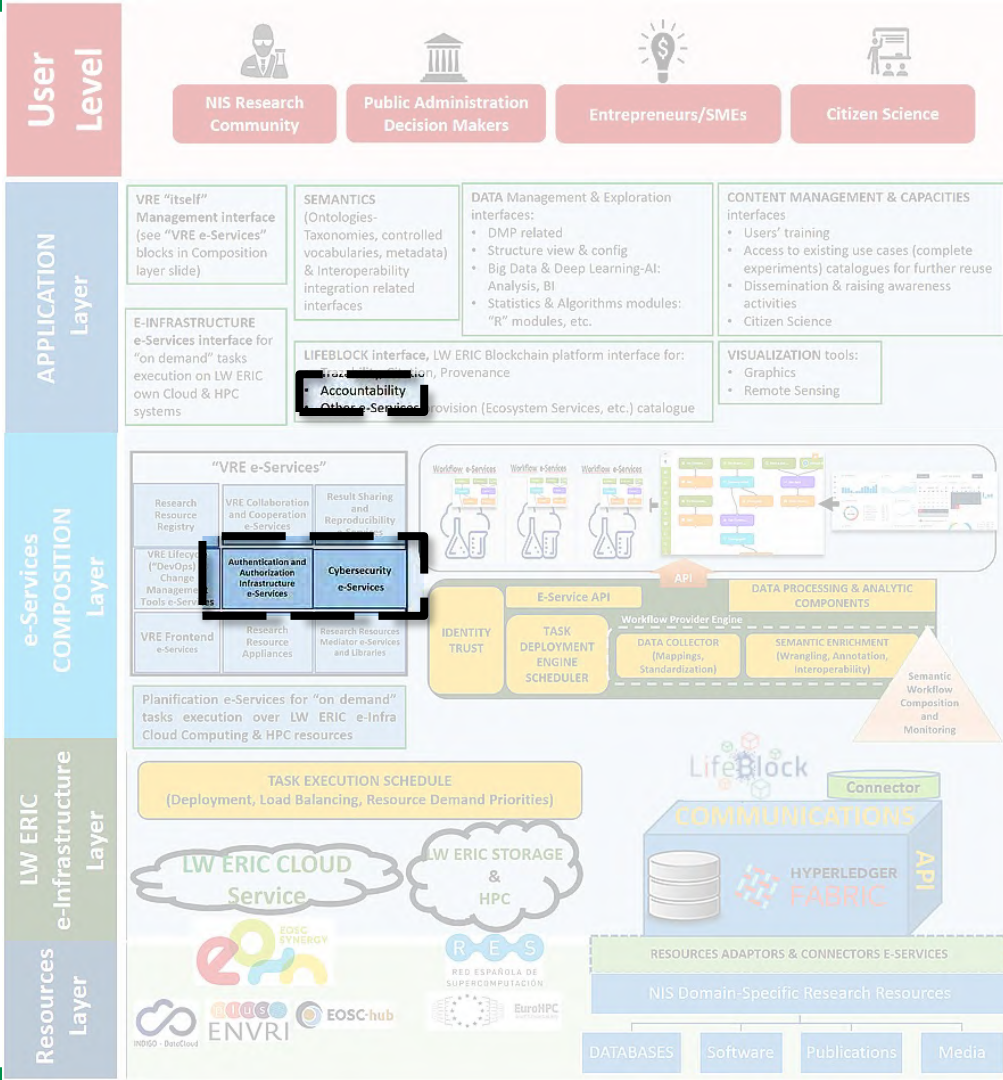




Detailed Goals by Working Group

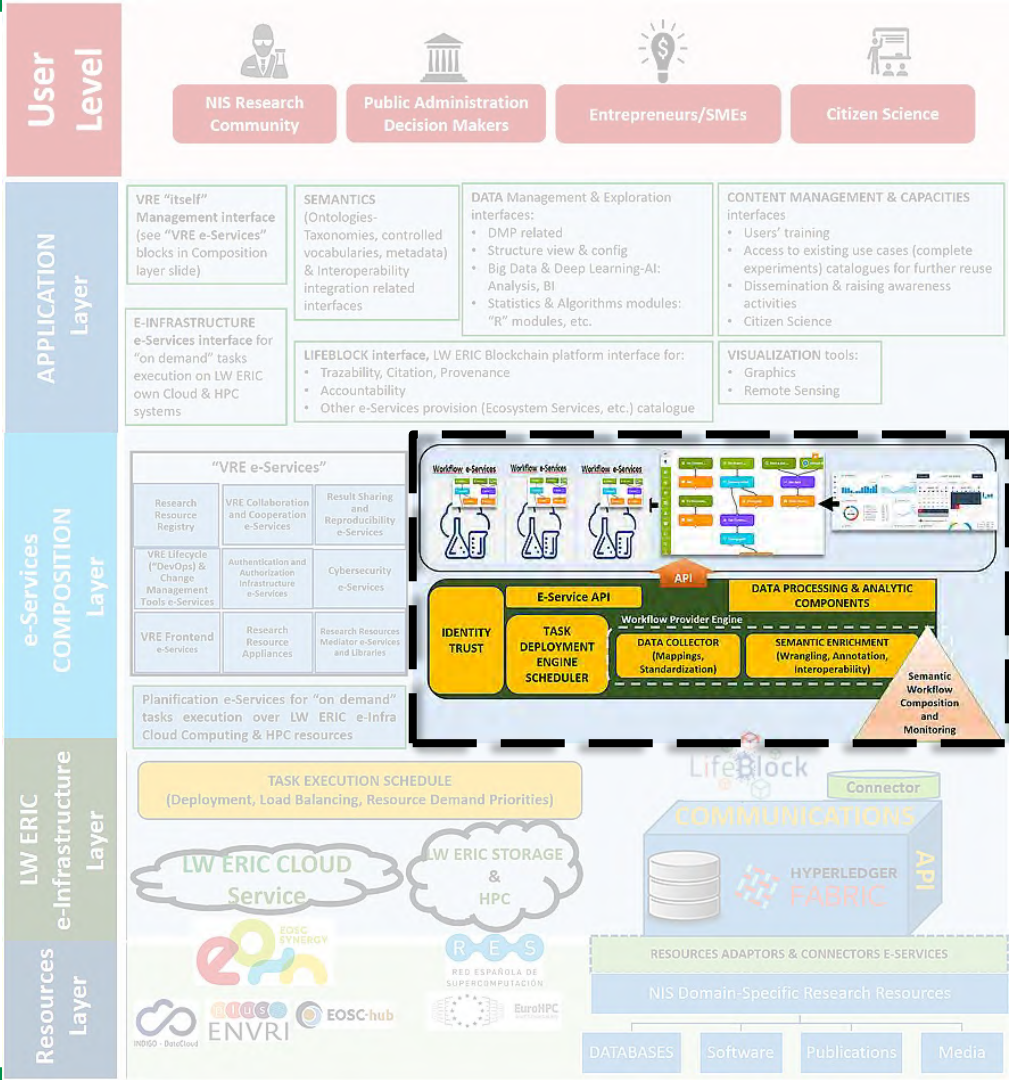
WG A

Providing AAAI components:
Backend of authorization,
accounting, accountability,
authentication & identification,
including global cybersecurity
issues.



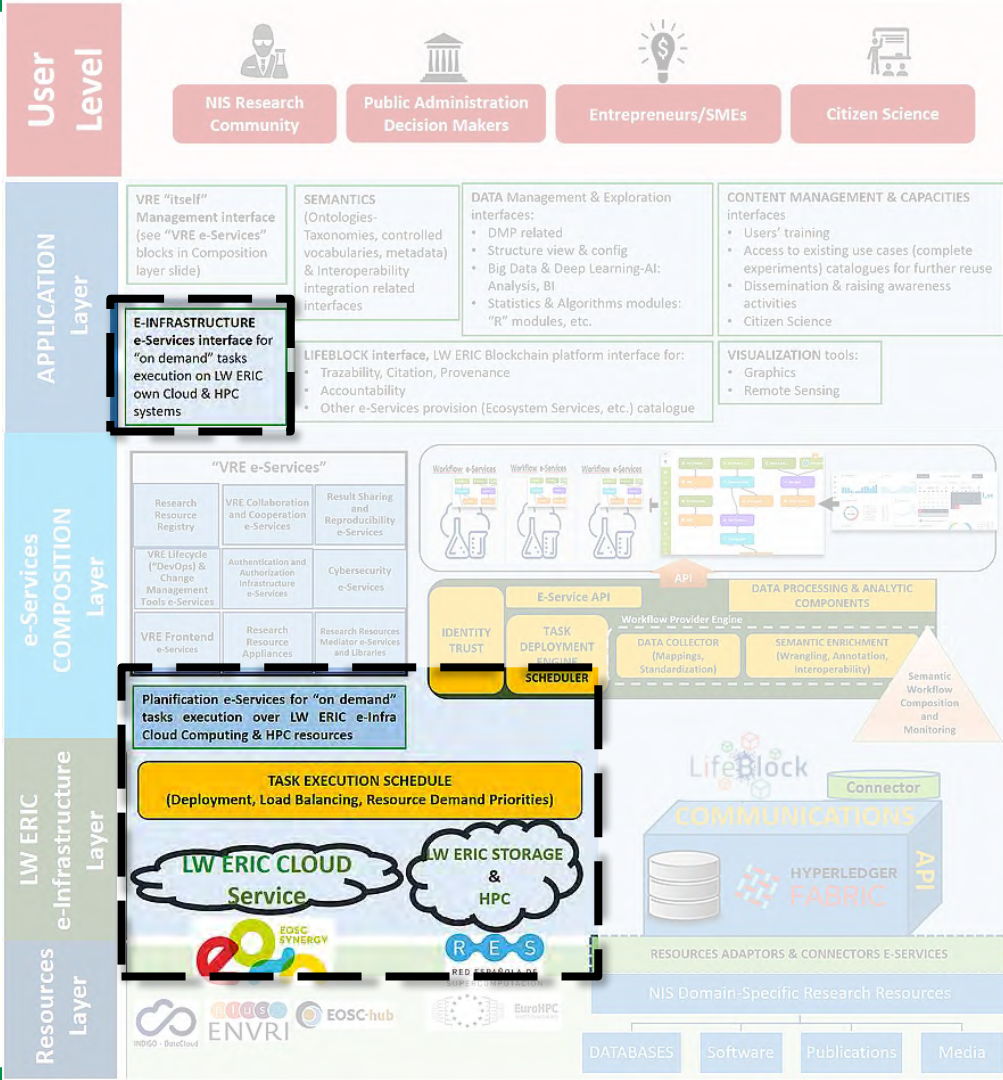
WG B

Linking every of the workflows to Tesseract VRE in the form of a Workflow Catalogue.



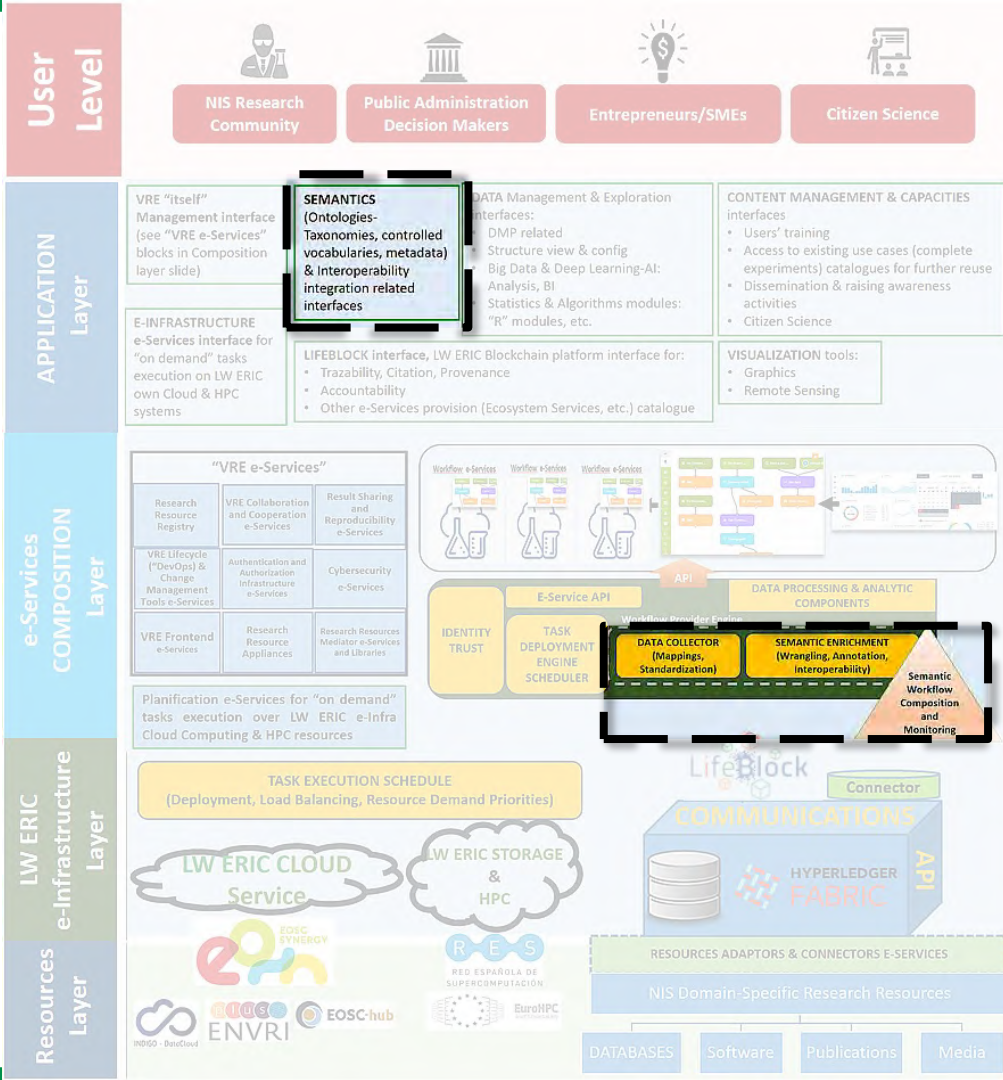
WG C

Providing “on demand”
e-Services to Cloud –EOSC–
& HPC (RES-EuroHPC)
resources.



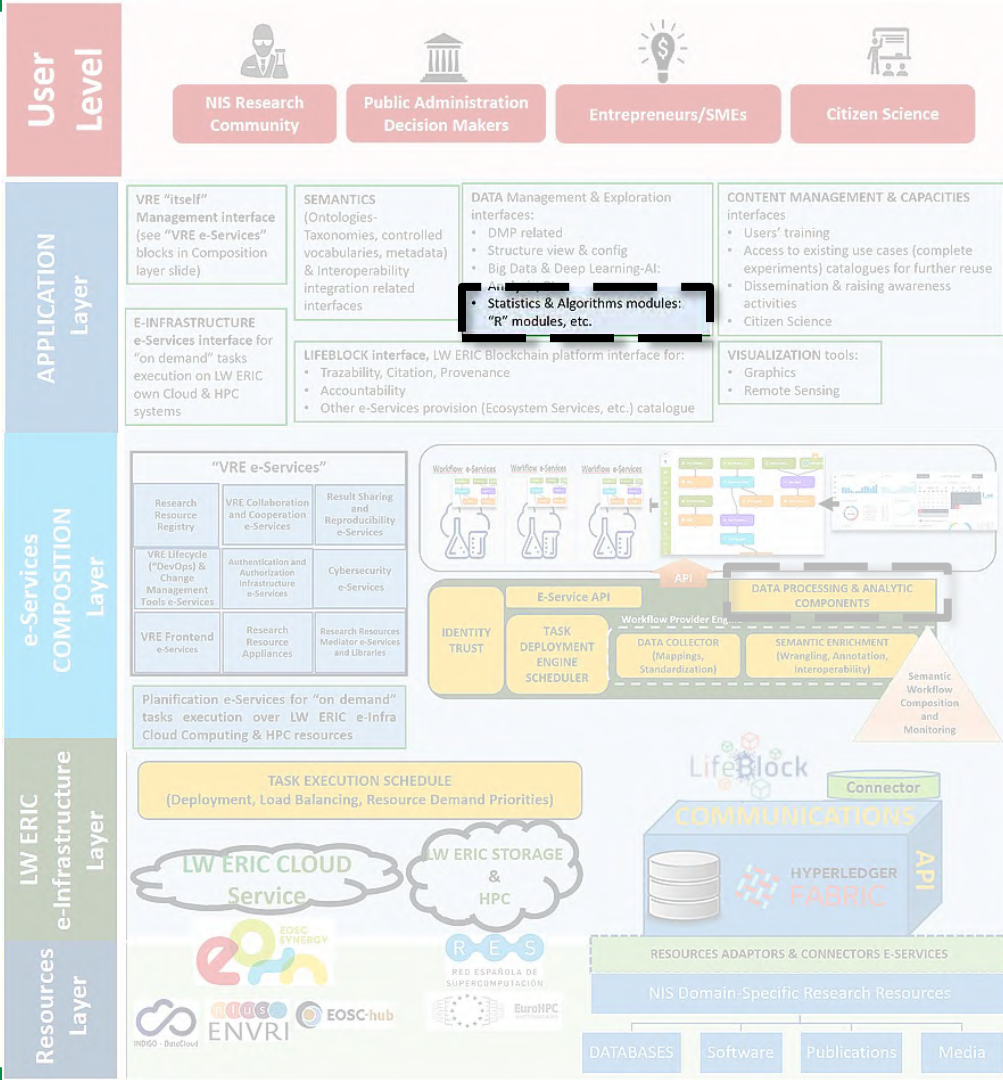
WG D

Providing semantics applications & e-tools interface (including taxonomic backbone).



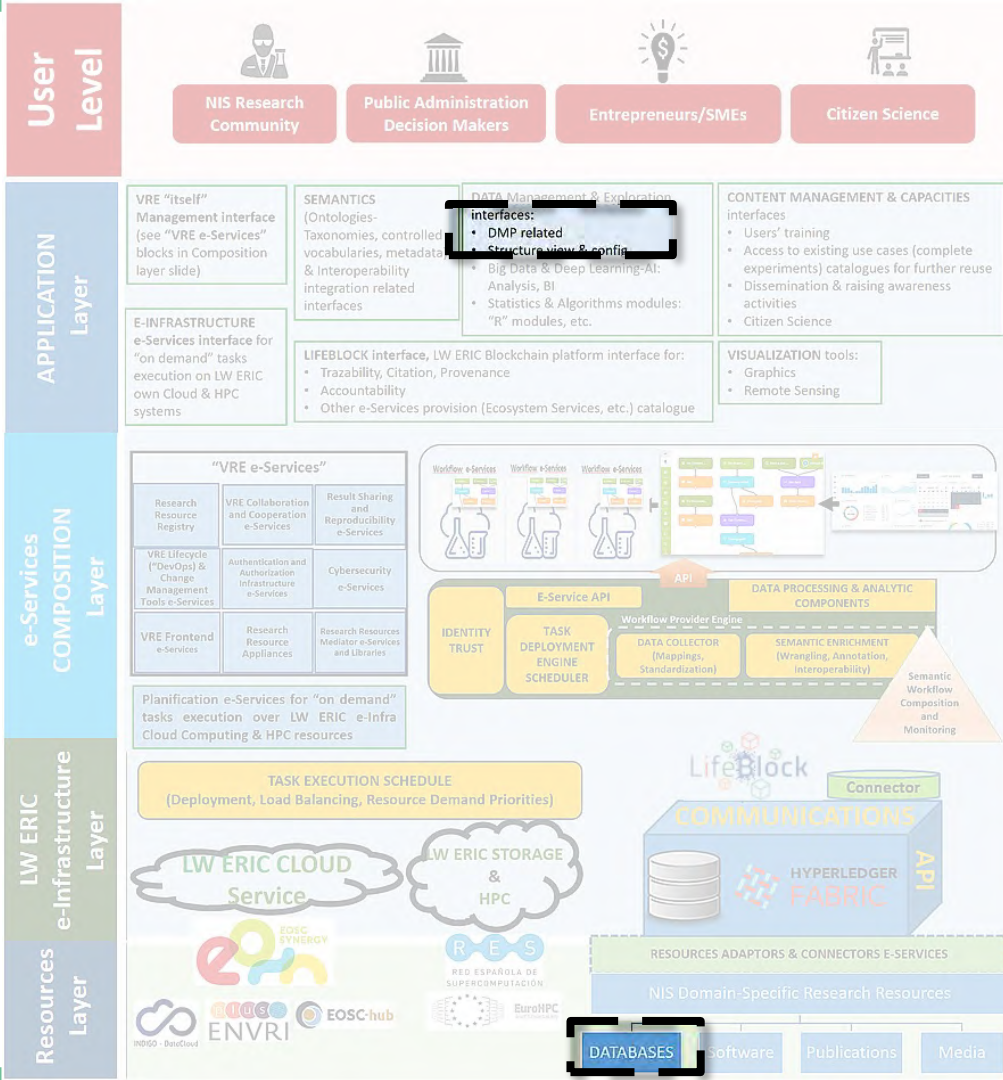
WG E

Providing statistics packets (R, Jupiter python-based, etc.) virtual labs interface (apart from their proper integration into workflows themselves) semantics applications & e-tools interface (including taxonomic backbone).



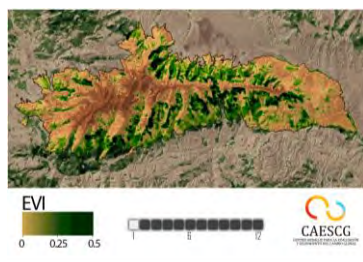
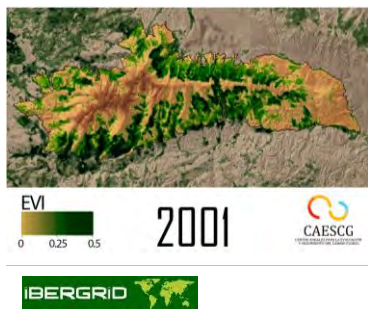
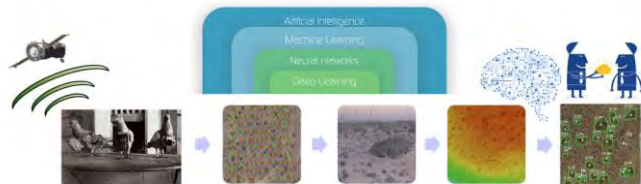
WG F

Providing DMP and external databases access mechanisms (INTERNAL TO APPs & ADMINs, e.g., see point j. LifeBlock).



WG G

Big Data & AI-Deep Learning applications for Modelling.



User Level



NIS Research Community



Public Administration Decision Makers



Entrepreneurs/SMEs



Citizen Science

APPLICATION Layer

VRE "itself" Management interface (see "VRE e-Services" blocks in Composition layer slide)

SEMANTICS (Ontologies-Taxonomies, controlled vocabularies, metadata) & Interoperability integration related interfaces

DATA Management & Exploration interfaces:

- DMP related

- Structure-based modeling

- Big Data & Deep Learning: Analysis, BI

- "R" modules, etc.

CONTENT MANAGEMENT & CAPACITIES interfaces

- Users' training
- Access to existing use cases (complete experiments) catalogues for further reuse
- Dissemination & raising awareness activities
- Citizen Science

VISUALIZATION tools:

- Graphics
- Remote Sensing

E-INFRASTRUCTURE e-Services interface for "on demand" tasks execution over LW ERIC own Cloud & HPC systems

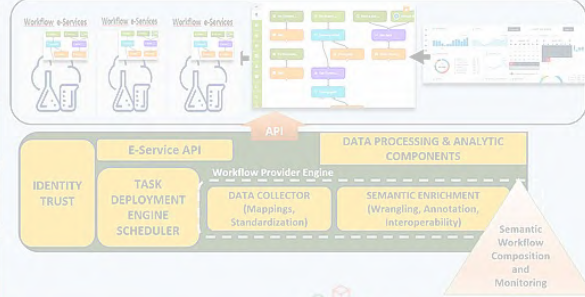
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- Traceability, Citation, Provenance
- Accountability
- Other e-Services provision (Ecosystem Services, etc.) catalogue

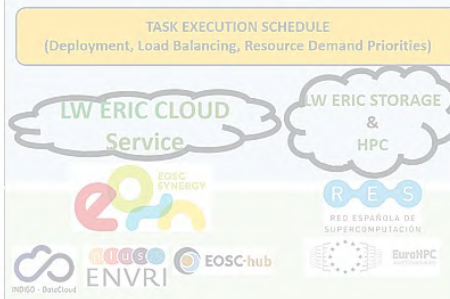
e-Services COMPOSITION Layer

"VRE e-Services"		
Research Resource Registry	VRE Collaboration and Cooperation e-Services	Result Sharing and Reproducibility e-Services
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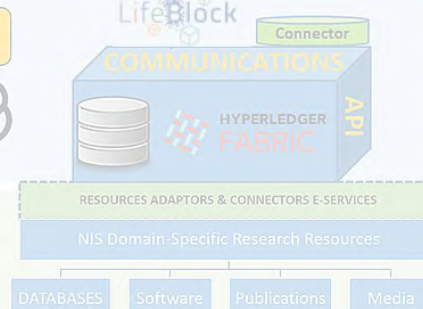
Planification e-Services for "on demand" tasks execution over LW ERIC e-Infra Cloud Computing & HPC resources



LW ERIC e-Infrastructure Layer

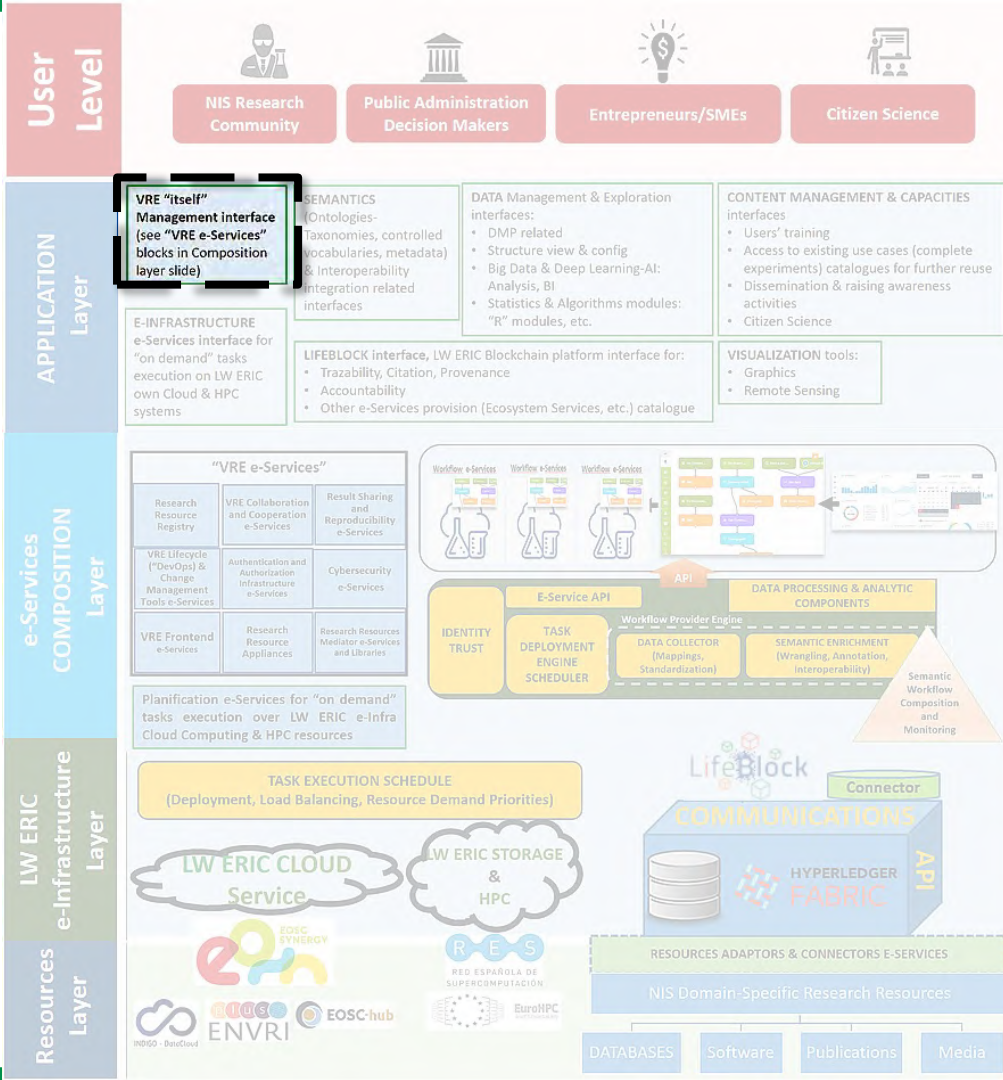


Resources Layer



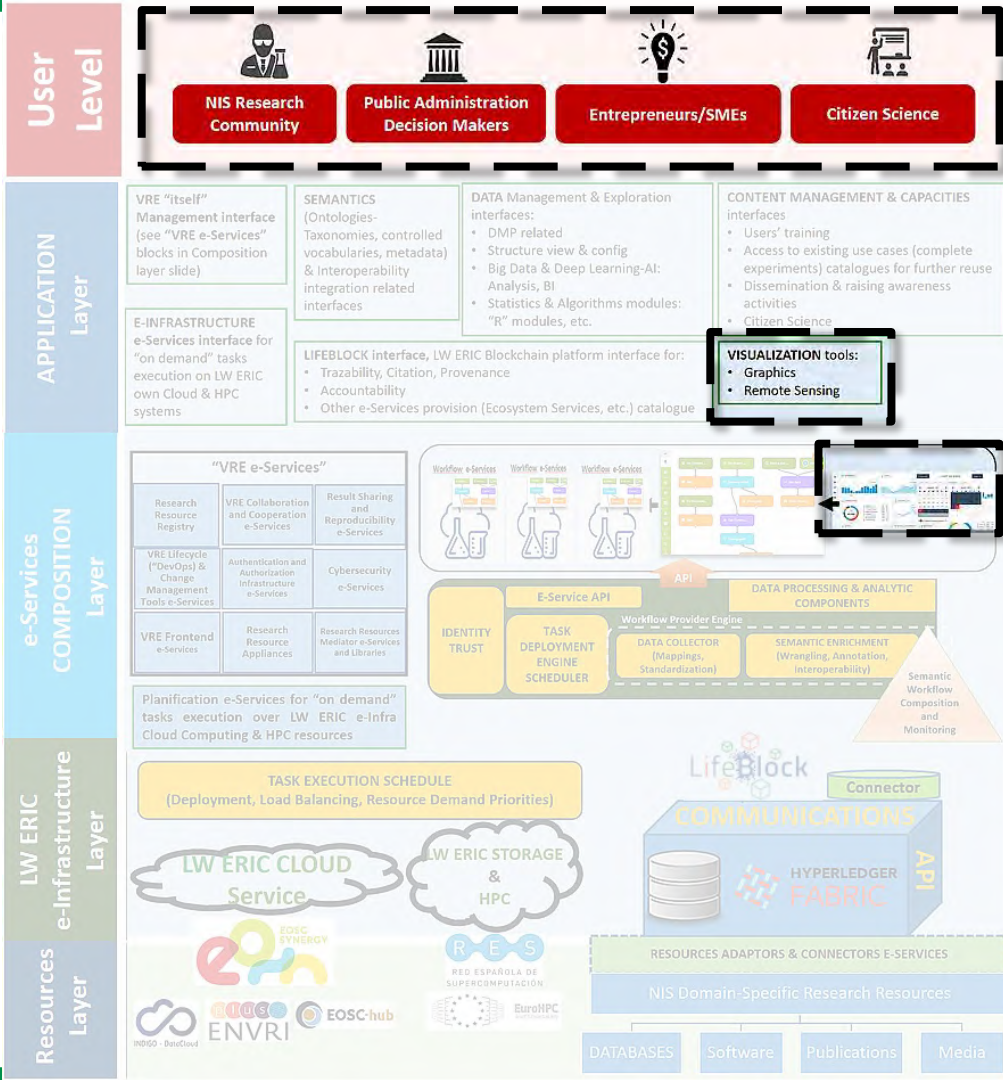
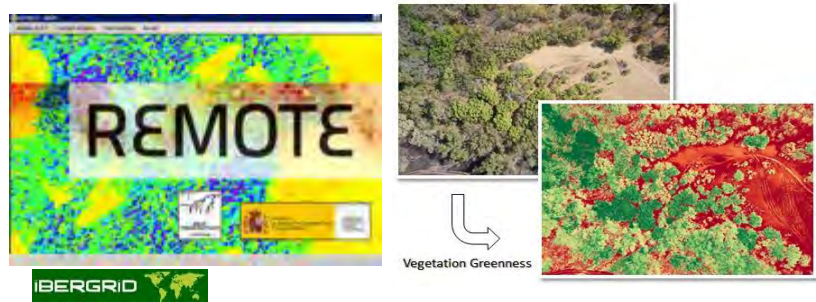
WG H

Providing VRE management components (INTERNAL TO APPS & ADMINs).



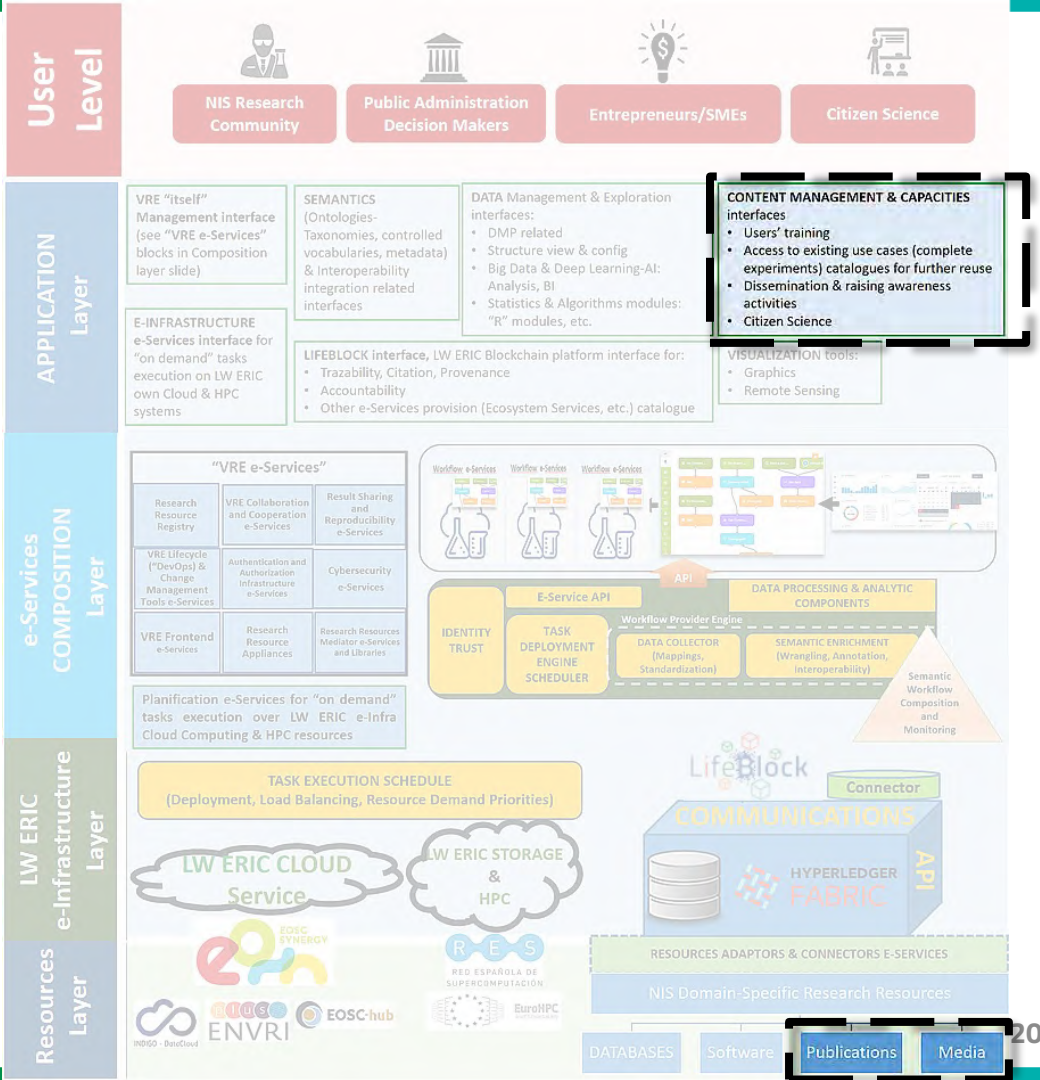
WG I

Providing visualization:
GIS-Remote Sensing &
graphical analytic: KPI &
socioeconomic impact
visualization, including EBVs &
ecosystem services analysis
tools.



WG J

Providing interfaces to online Training Seminars; “Success case studies”; Dissemination (publications, media) thematic-related resources (e.g. on NIS-IAS); and links to thematic-related Citizen Science activities.



WG K

LifeBlock: Transparent to users, not existing any “specific” interface, but embedded to all of system e-Services provided. Therefore, cross-cutting to previous a. to j. set of components (INTERNAL TO APPS & ADMINS)

