

Tech4You Enabling Platform

Critical Design Review

MARZO 2024

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- **Definizioni e ambito**
- **Architettura logica**
- **Processing chain**
- **Geoportal**
- **Geonavigation**
- **Tecnologie**



Per approfondimenti

- D1.1.2 Design document for the enabling platform
- D.1.1.3 Environment and tool
- D.2.1.6 Initial modeling of applications
- D2.1.7 Design backend IoT

(in /03 – DDF Design Definition Files/Common/)

Questa presentazione in : “/00 - Management Files/Presentazioni/”



Definizioni

Qualified definitions of the provided service are:

THEMATIC SERVICES: value-added services integrated into a platform for Soil/Earth monitoring (landslides, fire monitoring, etc.)

Esempi di servizi tematici T4Y : monitoraggio delle esondazioni del bacino del fiume Crati, monitoraggio incendi parco della Sila, monitoraggio trasporto urbano.

CORE SERVICES: services provided by the Enabling Platform, that allow the implementation of the *thematic services* (acquisition, data processing, data archiving, data consultation, data cataloguing).

THEMATIC PRODUCT = Value added product : the outcome of the processing and feature extraction




Requisiti generali

Enabling Platform: fornisce funzionalità di base per integrare i *servizi tematici* all'interno di una piattaforma generica basata su cloud.

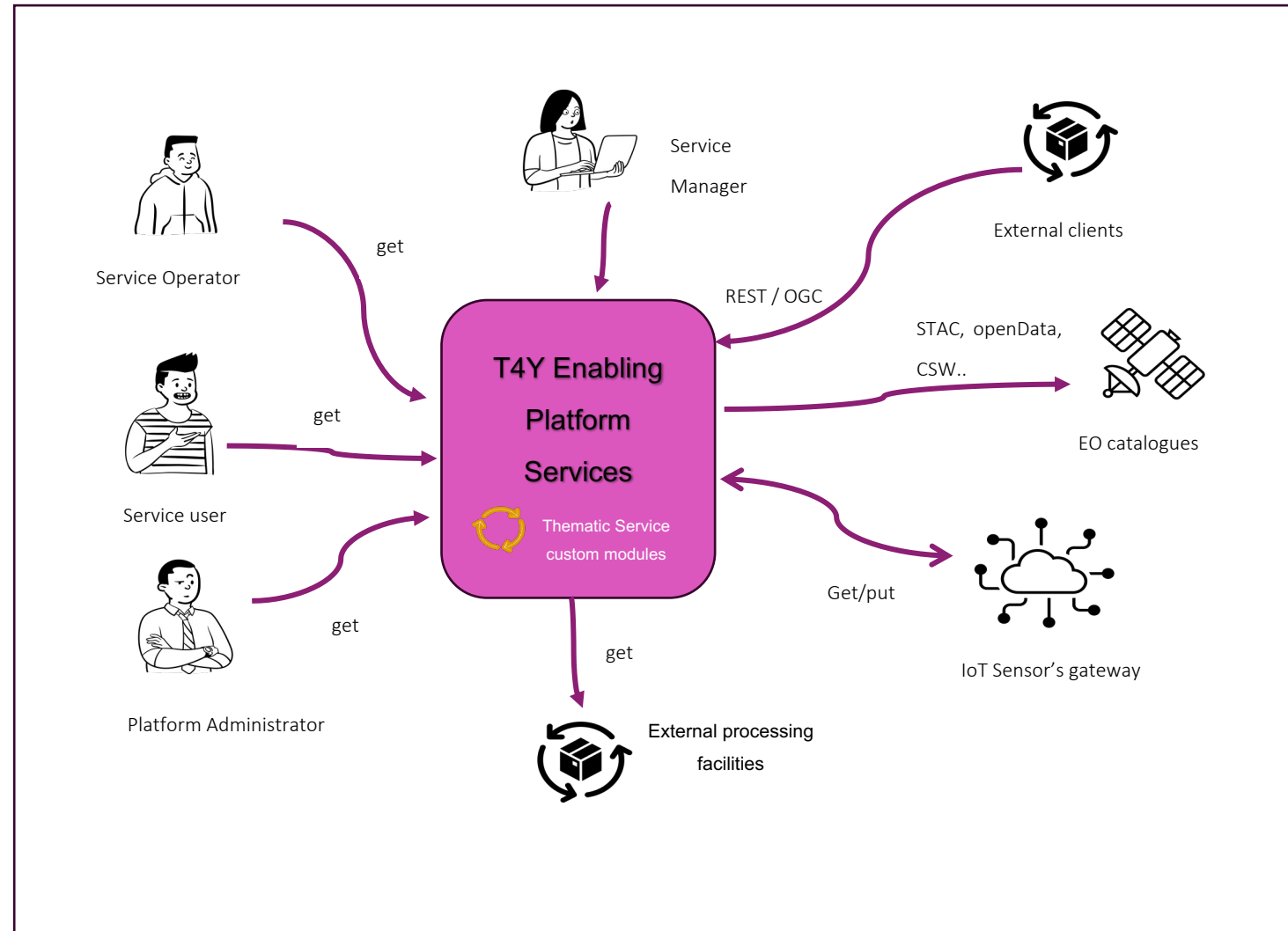
Le funzionalità implementate dovranno garantire **un'integrazione relativamente semplice** di nuovi servizi tematici a valore aggiunto, forniti da terze parti

Space Data
Infrastructure
(SDI)

- 
1. Acquisizione dati
 2. Generazione prodotti tematici
 3. Archiviazione prodotti
 4. Pubblicazione prodotti
 5. Catalogazione prodotti
 6. Navigazione e analisi



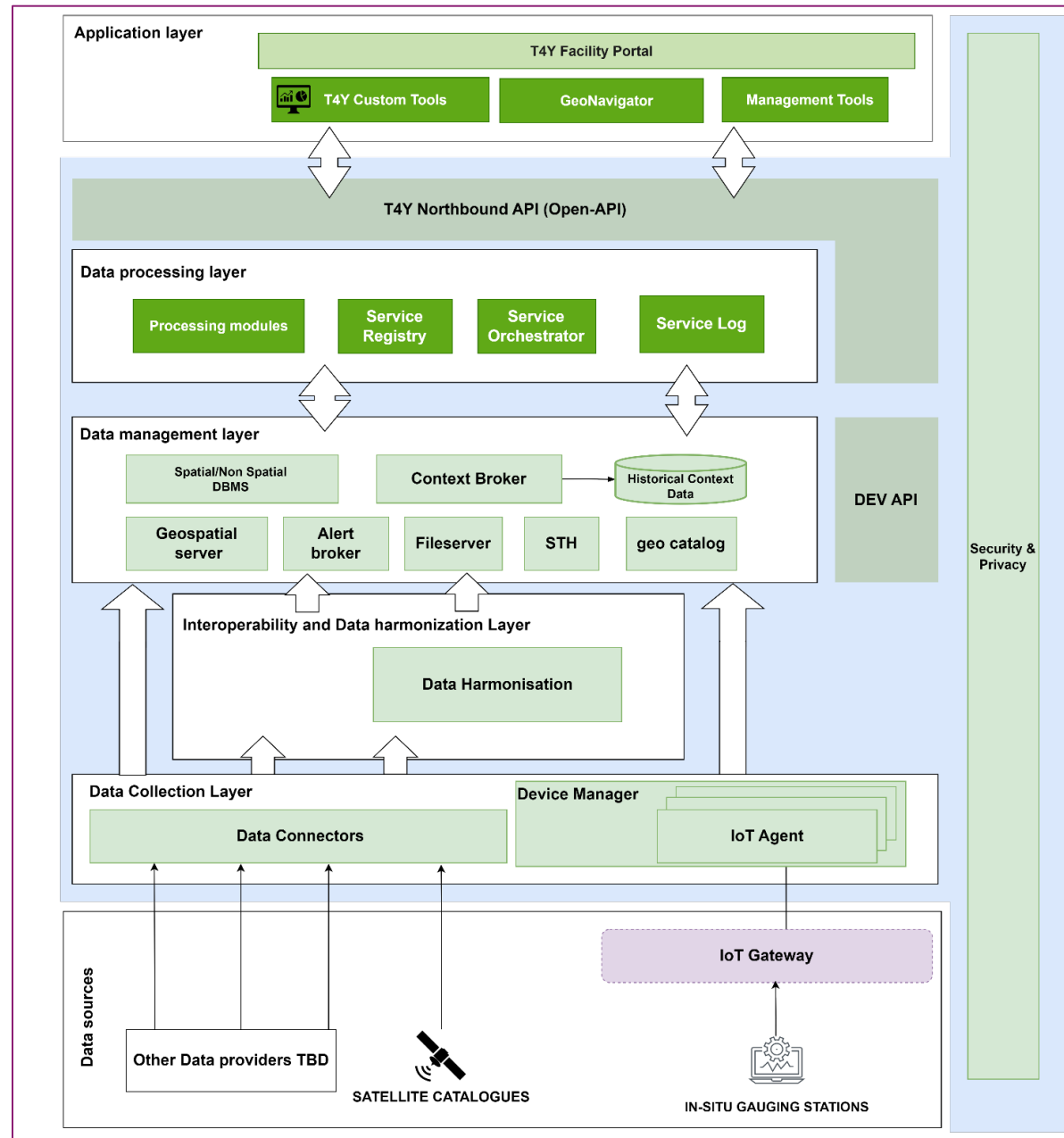
Analisi di contesto



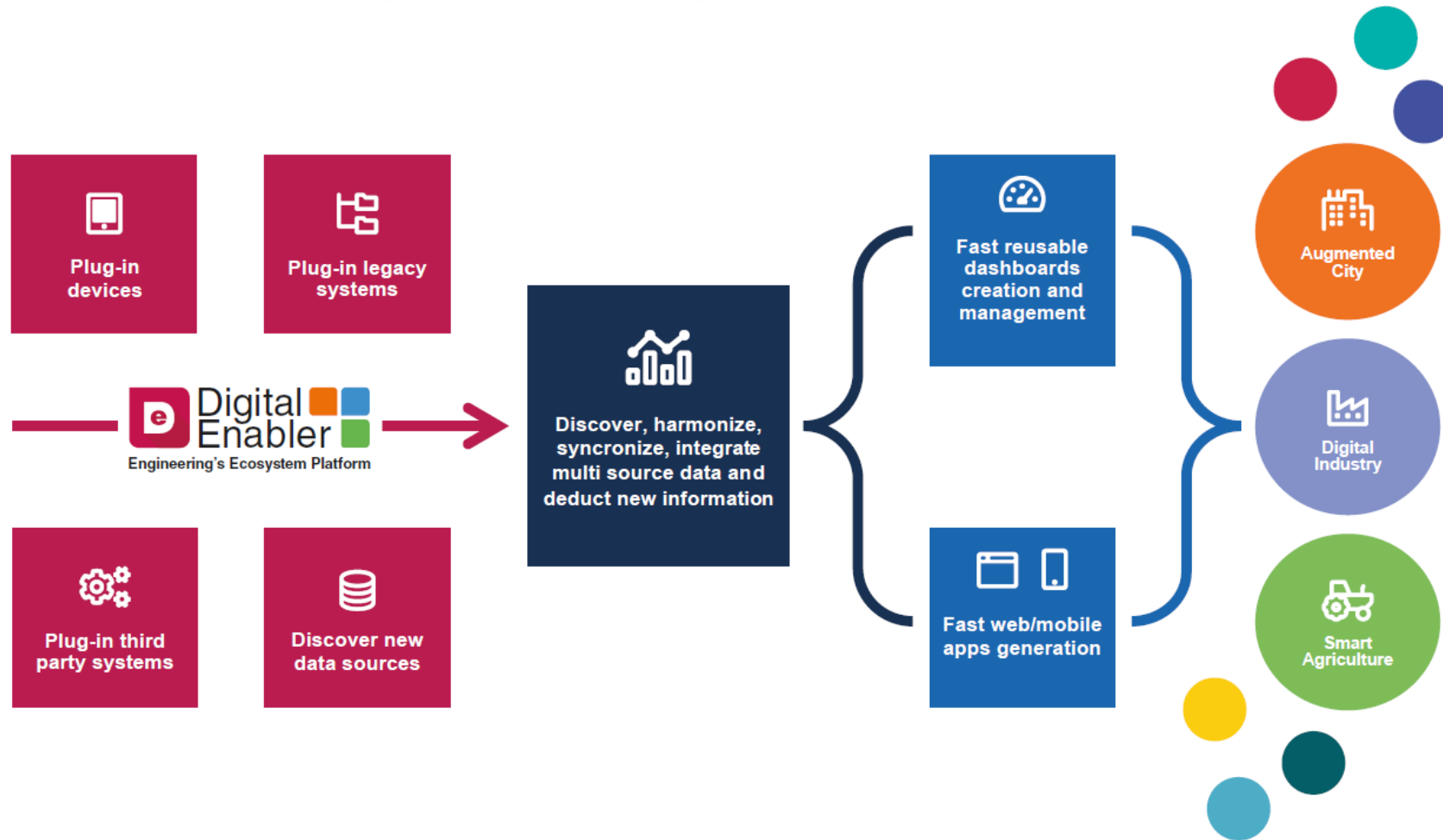
OGC = Open Geospatial Consortium (servizio di interoperabilità GIS)



Architettura logica



Digital Enabler



Documentazione online Digital Enabler: <https://docs.digital-enabler.eng.it/>



Servizi Core della piattaforma

- PROFILING AND SECURITY SERVICES
 - THEMATIC SERVICES MANAGEMENT
 - ORCHESTRATION SERVICES
 - DATA ACQUISITION AND EVENT BROKER SERVICES
 - IoT AGENTS SERVICES
 - IoT DEVICE MANAGER SERVICES
 - ALERT BROKER SERVICES
 - DATA HARMONIZATION SERVICES
 - DATA CONNECTORS
 - DATA STORAGE SERVICES
 - GEOSPATIAL DATA PUBLISHING SERVICES
 - CATALOG SERVICES
 - DATA PRESENTATION
 - EXTERNAL PROCESSING SERVICES
- 
- PROFILAZIONE E SICUREZZA
 - GESTIONE DEI SERVIZI TEMATICI
 - SERVIZI DI ORCHESTRAZIONE
 - SERVIZI DI ACQUISIZIONE DATI E INTERMEDIAZIONE EVENTI
 - SERVIZI PER AGENTI IoT
 - SERVIZI DI GESTIONE DISPOSITIVI IoT
 - SERVIZI DI INTERMEDIAZIONE ALLERT
 - SERVIZI DI ARMONIZZAZIONE DATI
 - CONNETTORI DATI
 - SERVIZI DI ARCHIVIAZIONE DATI
 - SERVIZI DI PUBBLICAZIONE DATI GEOSPATIALI
 - SERVIZI DI CATALOGAZIONE
 - PRESENTAZIONE DATI
 - SERVIZI DI ELABORAZIONE ESTERNA

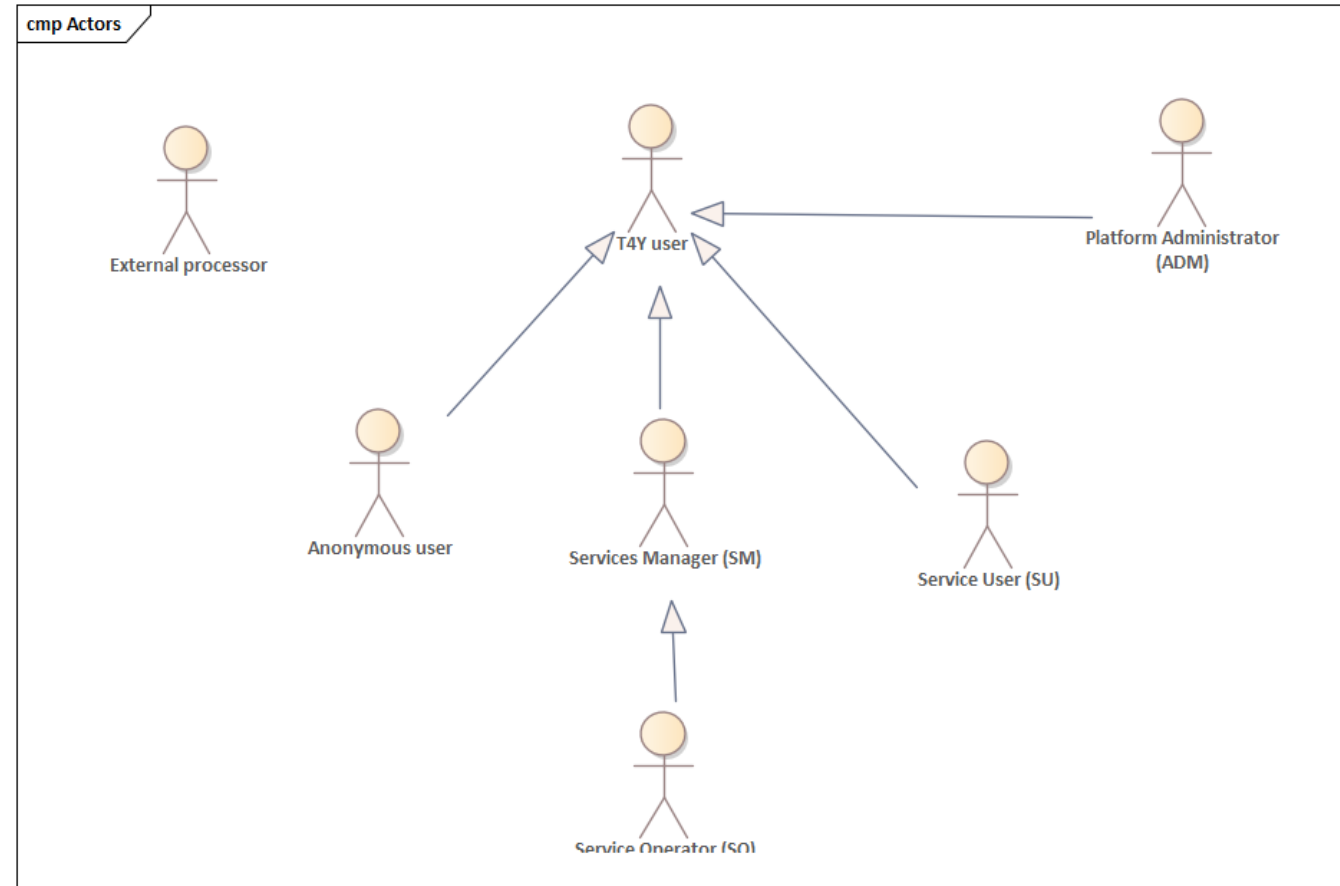


Attori della piattaforma

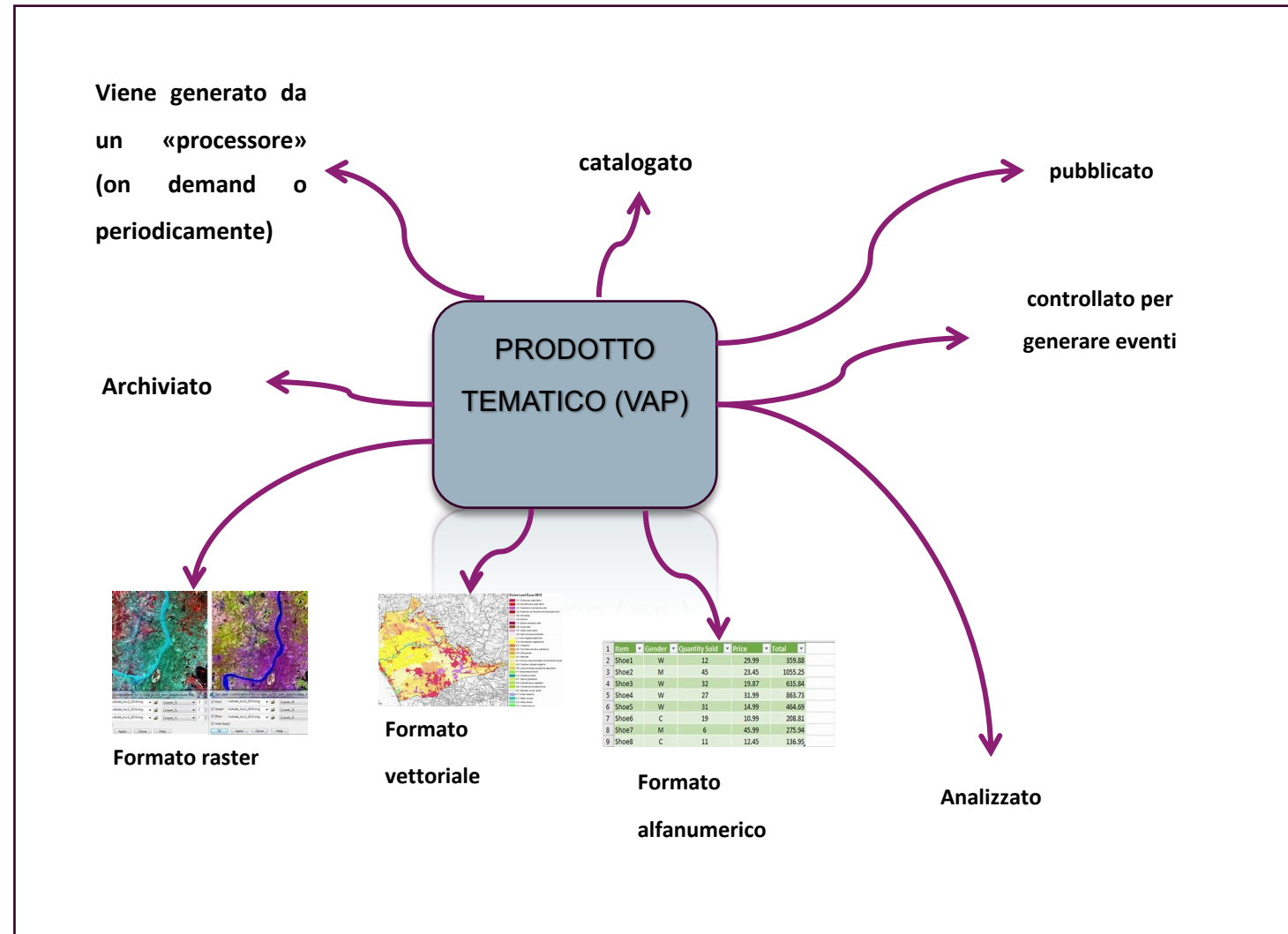
Service manager: gestisce un servizio tematico

Service operatore : lancia un processamento

Service user : fa uso dei prodotti tematici



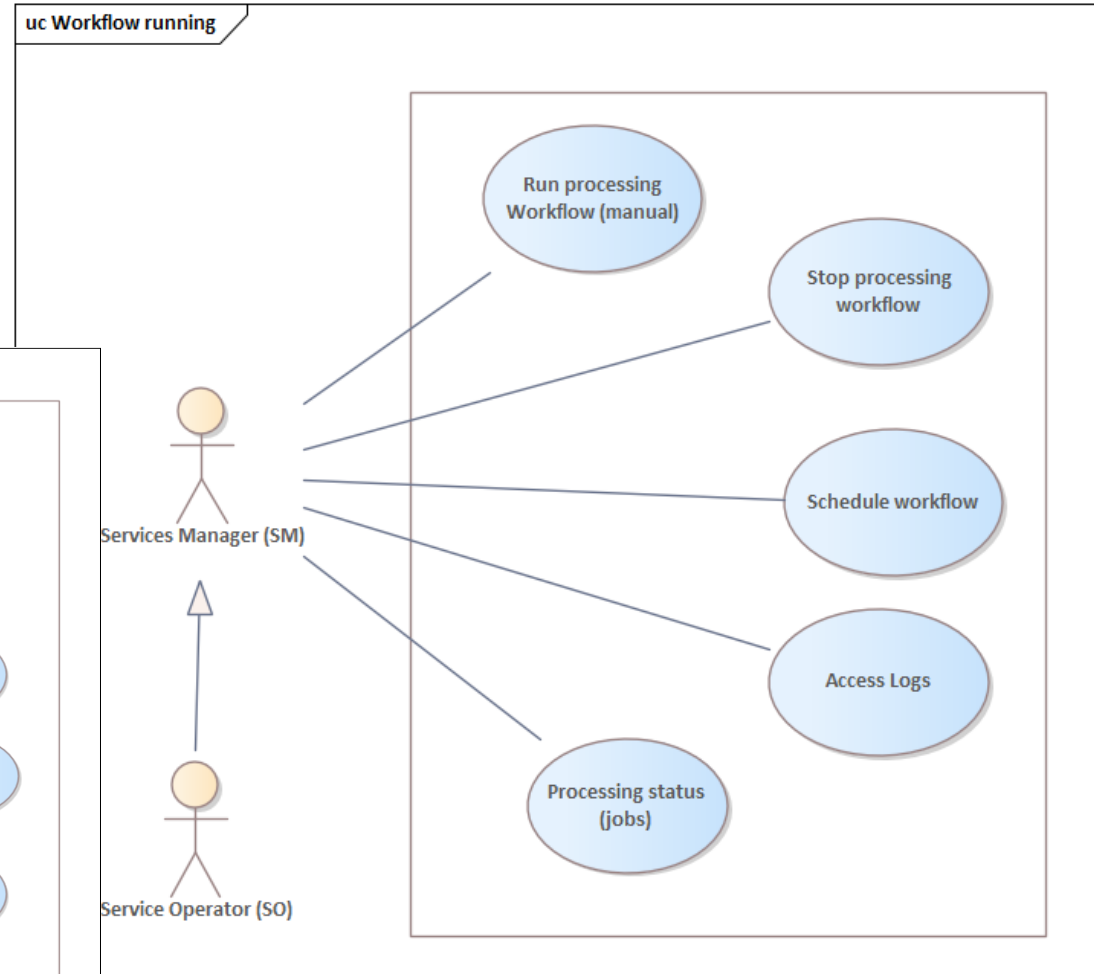
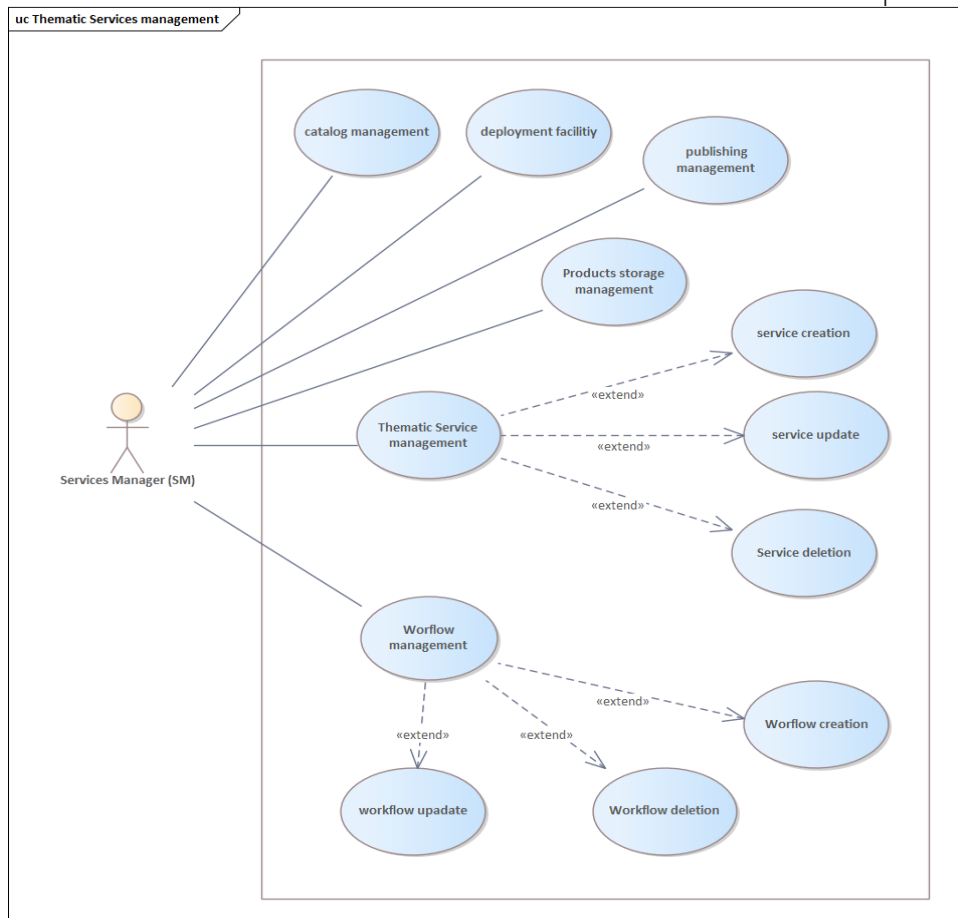
THEMATIC PRODUCT = Value added product : the outcome of the processing and feature extraction



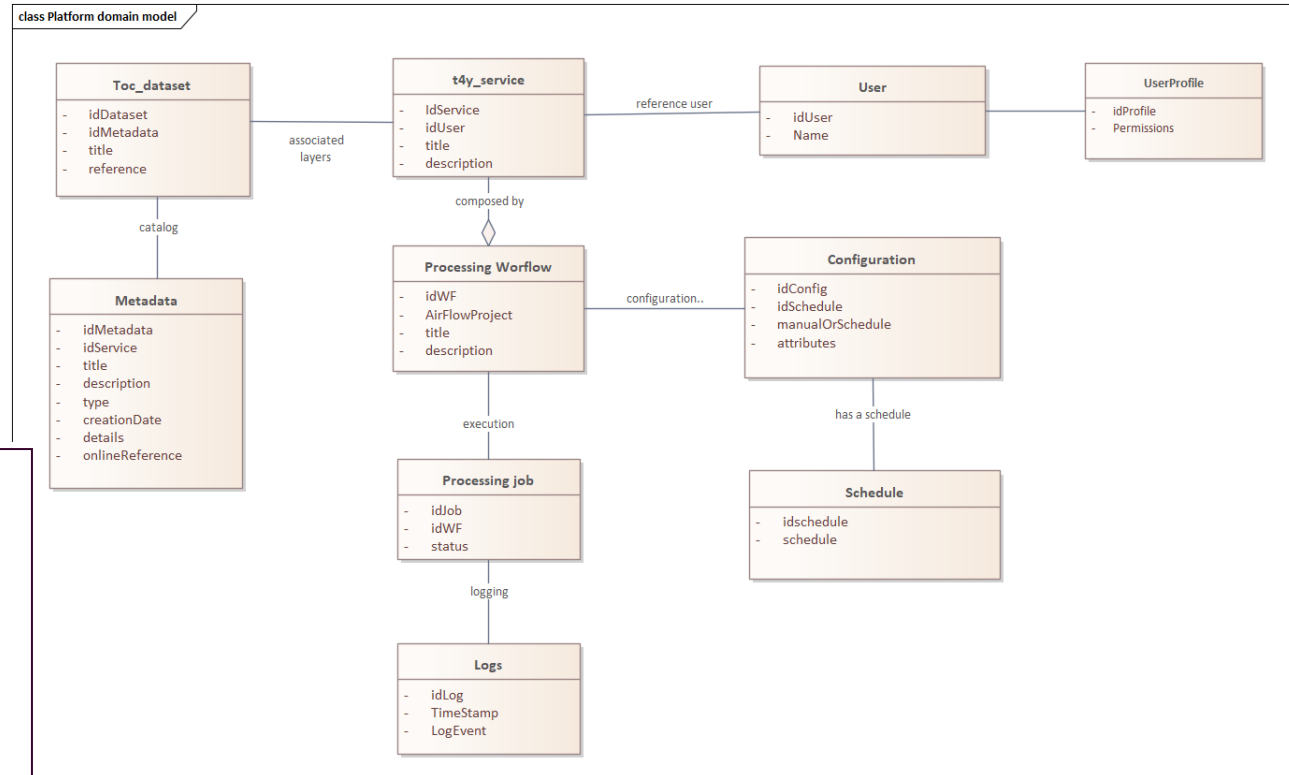
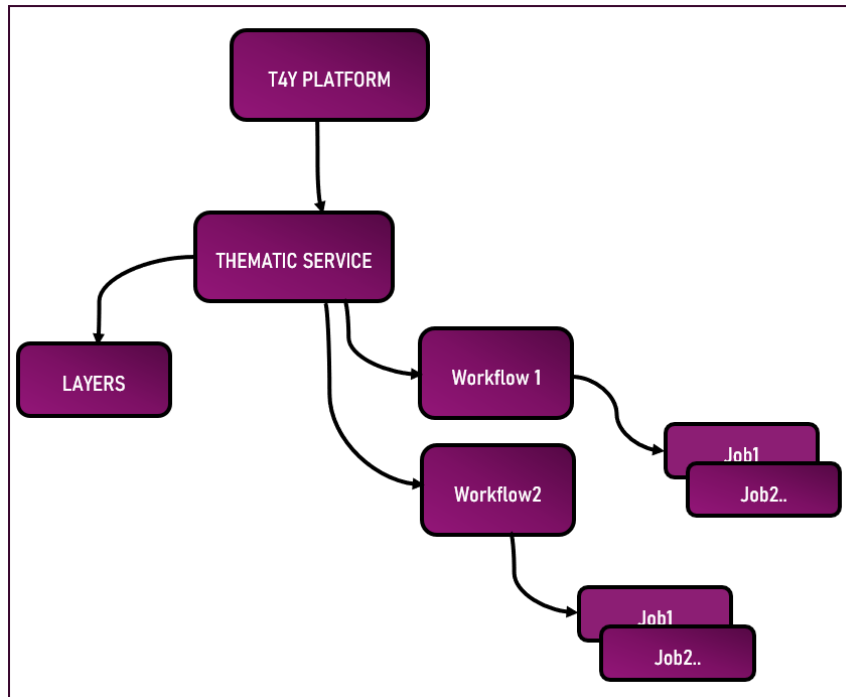
Item	Gender	Quantity Sold	Price	Total
Shoe1	W	12	29.99	359.88
Shoe2	M	45	23.45	1055.25
Shoe3	W	32	19.87	635.84
Shoe4	W	27	31.99	863.73
Shoe5	W	31	14.99	464.69
Shoe6	C	19	10.99	208.81
Shoe7	M	6	45.99	275.94
Shoe8	C	11	12.45	136.95



Processing use cases

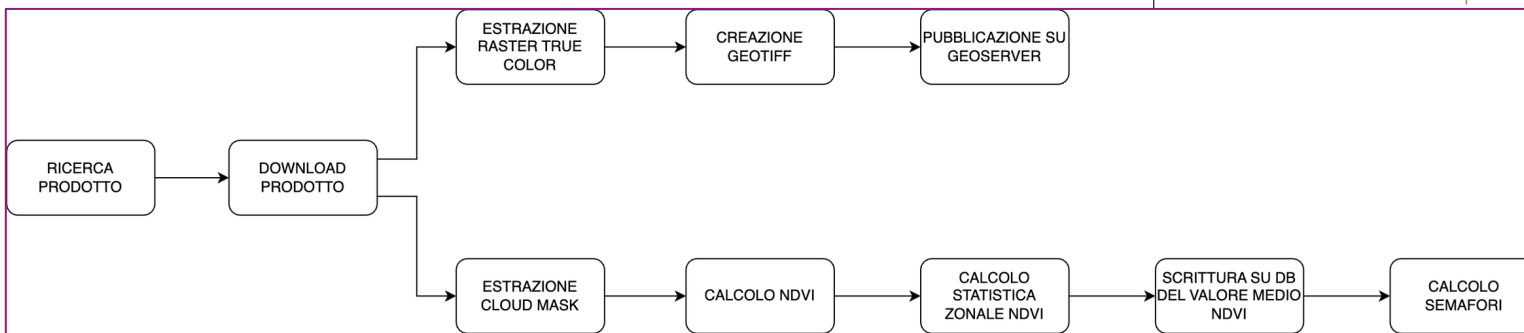
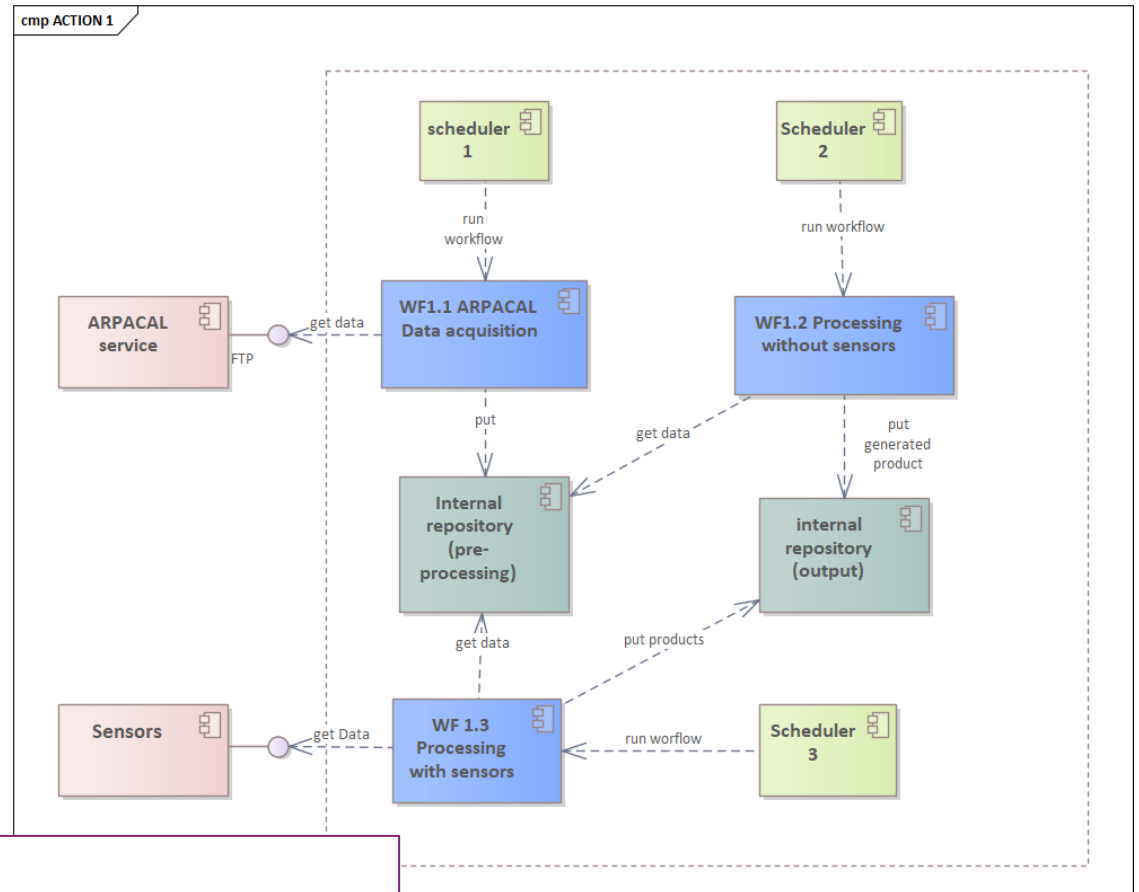


Domain model



Workflow di creazione di prodotti tematici (=processing chain = pipeline)

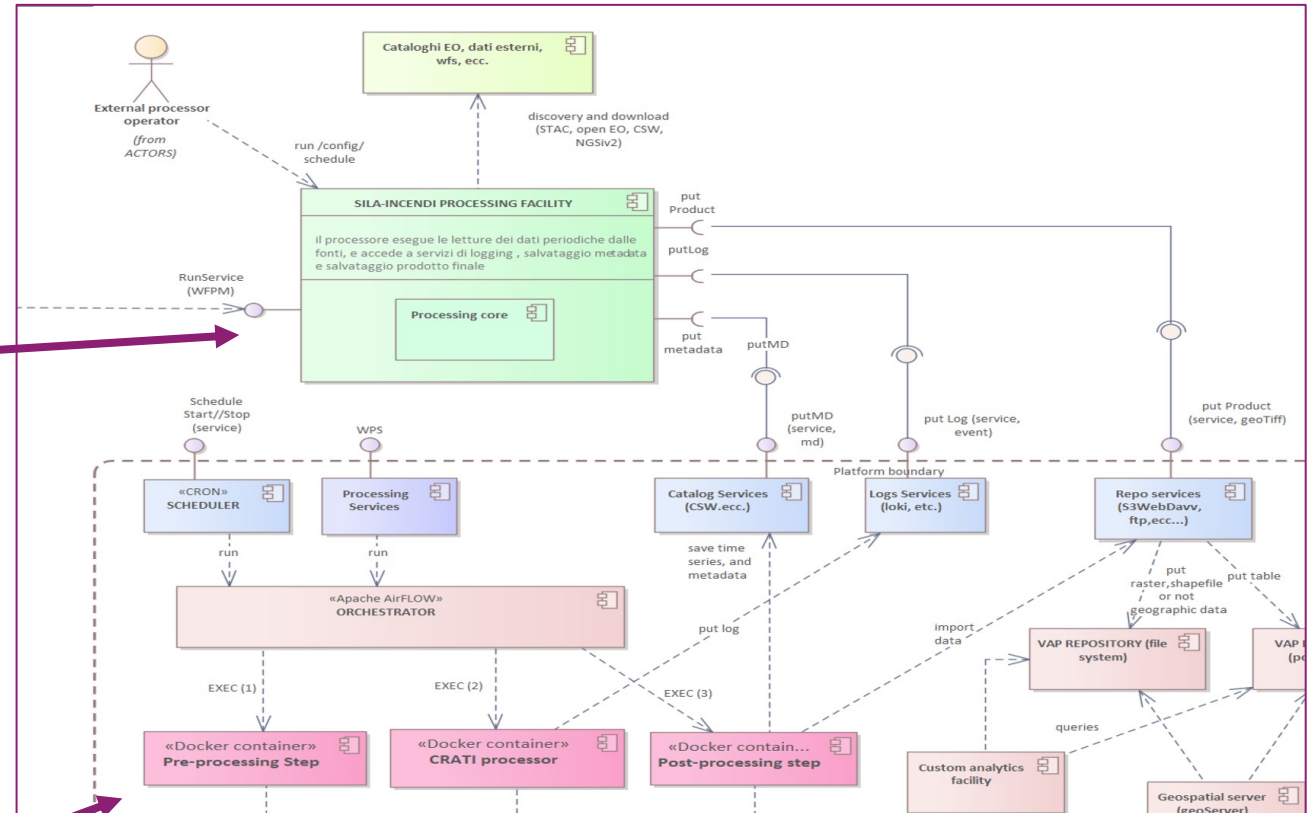
- Ondemand
- Schedulati



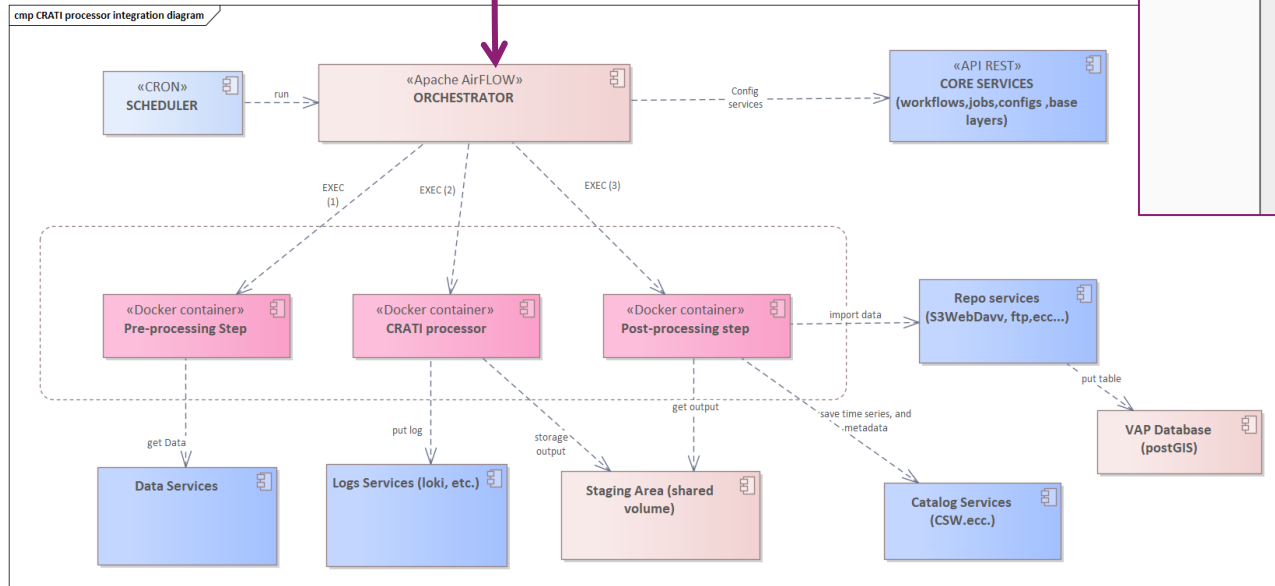
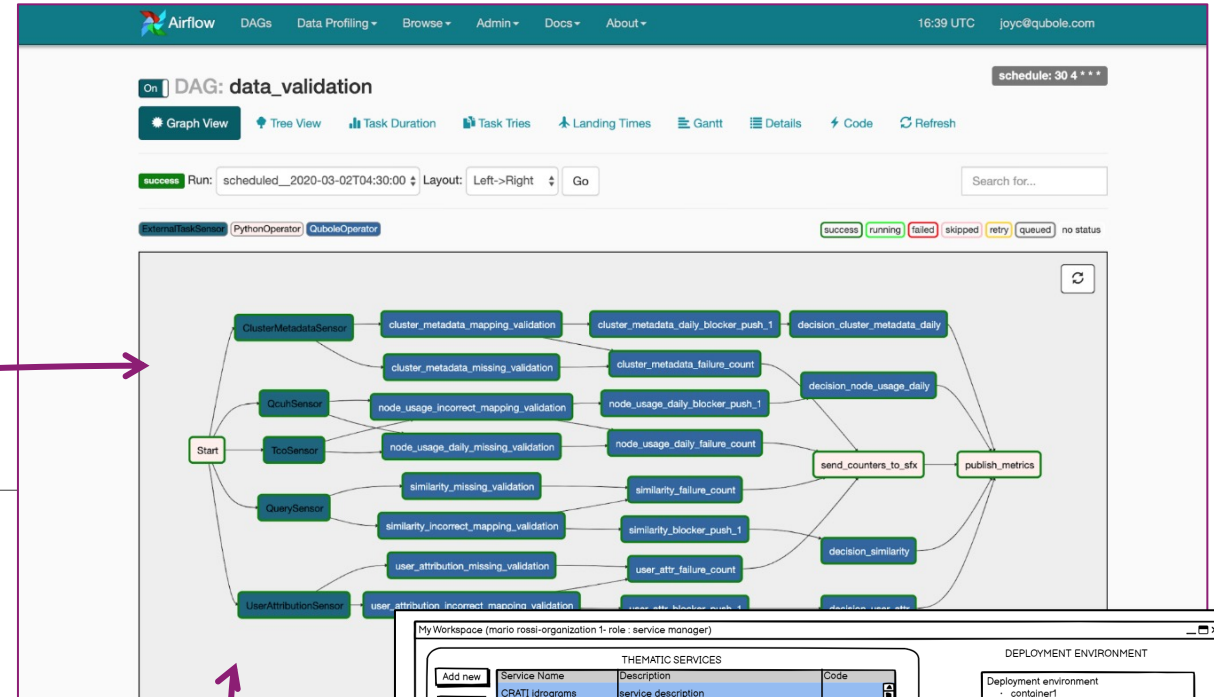
Distribuzione di un processore

richiamabili esternamente con apposite API

installati nella piattaforma come container



Orchestratore : Progetto Airflow



My Workspace (mario rossi-organization 1- role : service manager)

THEMATIC SERVICES		
Service Name	Description	Code
CRATI idrograms	service description	
INCENDI-SILA	servizio monitoraggio incendi	

WORKFLOWS (CRATI idrograms)					
code	workflow	wf project	status	auto/manual	schedule
wf_1_crati	automatic sentinel 2 download d	wf_1-crati-Airflow	ready	auto	0 0 1 5 *
wf_2_crati	manual execution download data	wf_1-crati-Airflow	ready	manual	

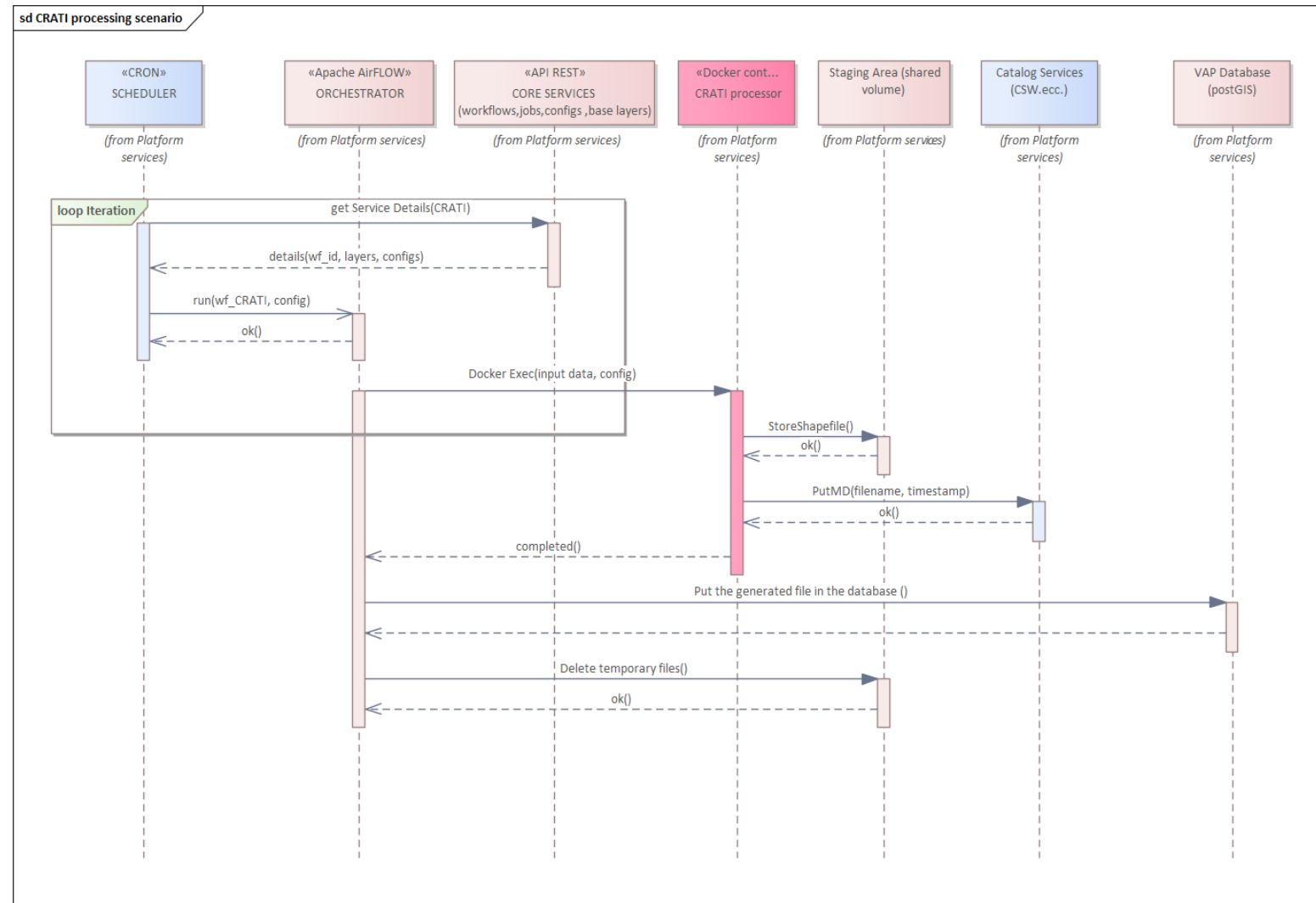
JOBS (all workflows)				
date/time	jobcode	workflow	wf project	status
10.10.2010	001	wf_1_crati	wf_1-crati-Airflow	running
10.10.2010	002	wf_1_crati	wf_1-crati-Airflow	ready
10.10.2010	003	wf_2_crati download data	wf_1-crati-Airflow	error

Deployment environment: container1, config, VAR1=100, VAR2=200, container2, Volumes: input data, output db, output folder

Event logs: 10.10.2010 Service CRATI idrograms - wf_1_cra running, 10.10.2010 Service CRATI idrograms - wf_1_cra running, 10.10.2010 Service CRATI idrograms - wf_1_cra running, 10.10.2010 Service CRATI idrograms - wf_1_cra running

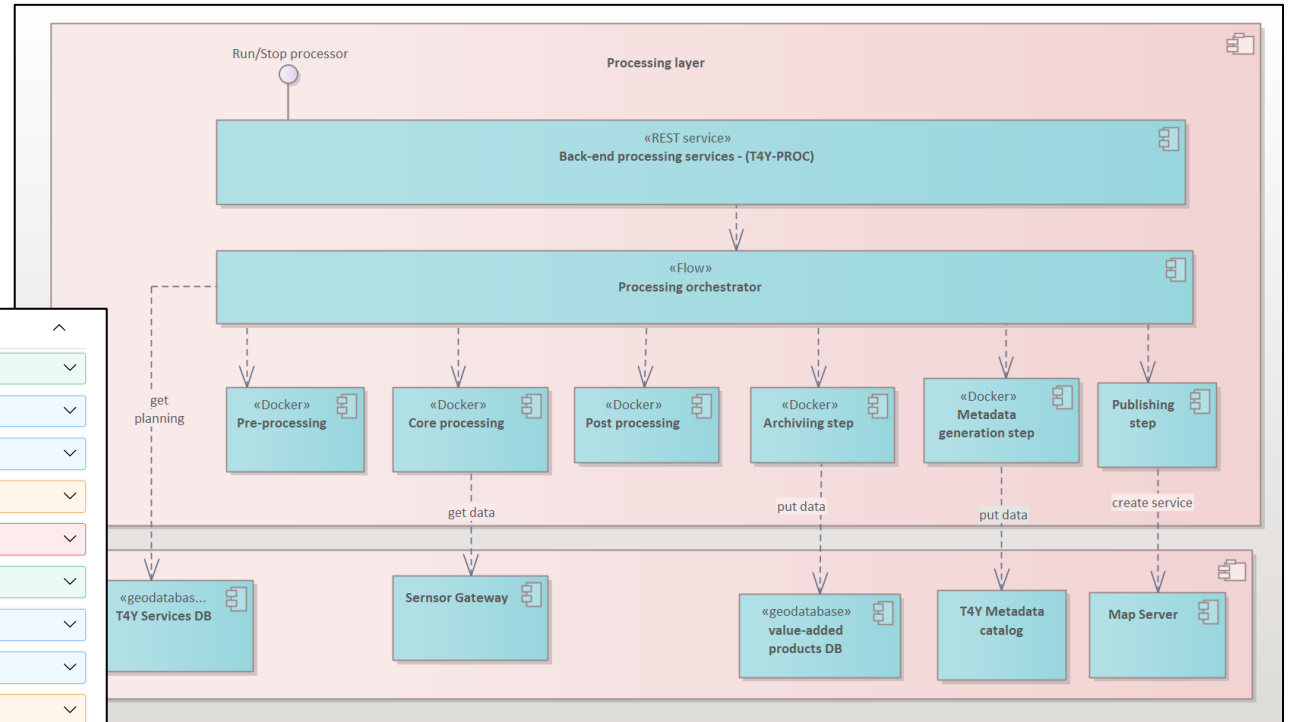


Esecuzione di un processo di elaborazione (processore Crati)

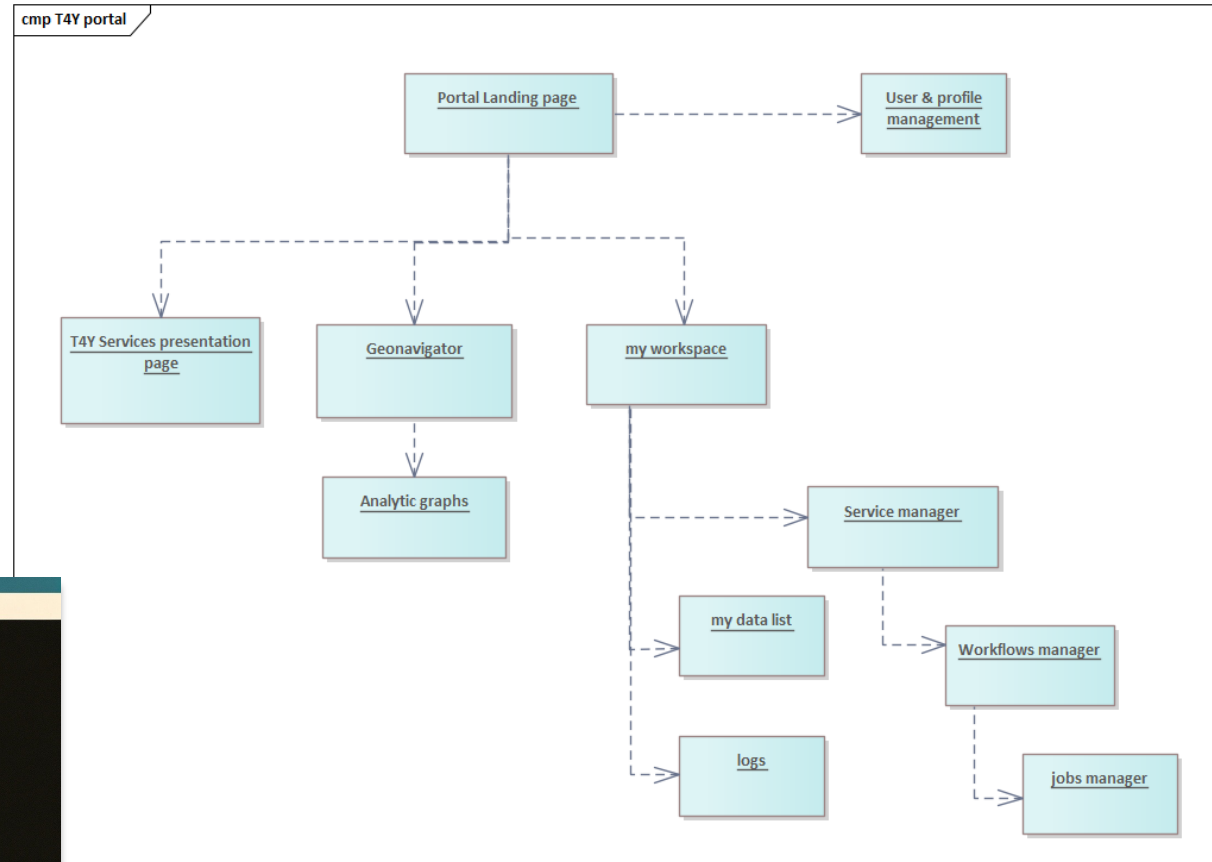


Architettura di back-end

default	
POST	/services Add a new T4Y service
GET	/services Get the list of all services
GET	/services/{serviceId} Details of a specific service
PUT	/services/{serviceId} Modify an existing service
DELETE	/services/{serviceId} Delete a service
POST	/services/{serviceId}/workflows Add a new workflow to the service
GET	/services/{serviceId}/workflows Get the list of workflows of a service
GET	/services/{serviceId}/workflows/{workflowId} Details of a specific workflow
PUT	/services/{serviceId}/workflows/{workflowId} Modify an existing workflow
DELETE	/services/{serviceId}/workflows/{workflowId} Delete a workflow
POST	/jobs Create a new job from a workflow
GET	/jobs Get the list of all running jobs
GET	/jobs/{jobId} Details of a specific job
PUT	/jobs/{jobId} Modify the status of a job
DELETE	/jobs/{jobId} Stop or delete a job
POST	/jobs/{jobId}/start Start the processing of the job
POST	/jobs/{jobId}/stop Stop the processing of the job



T4Y Platform geoportal

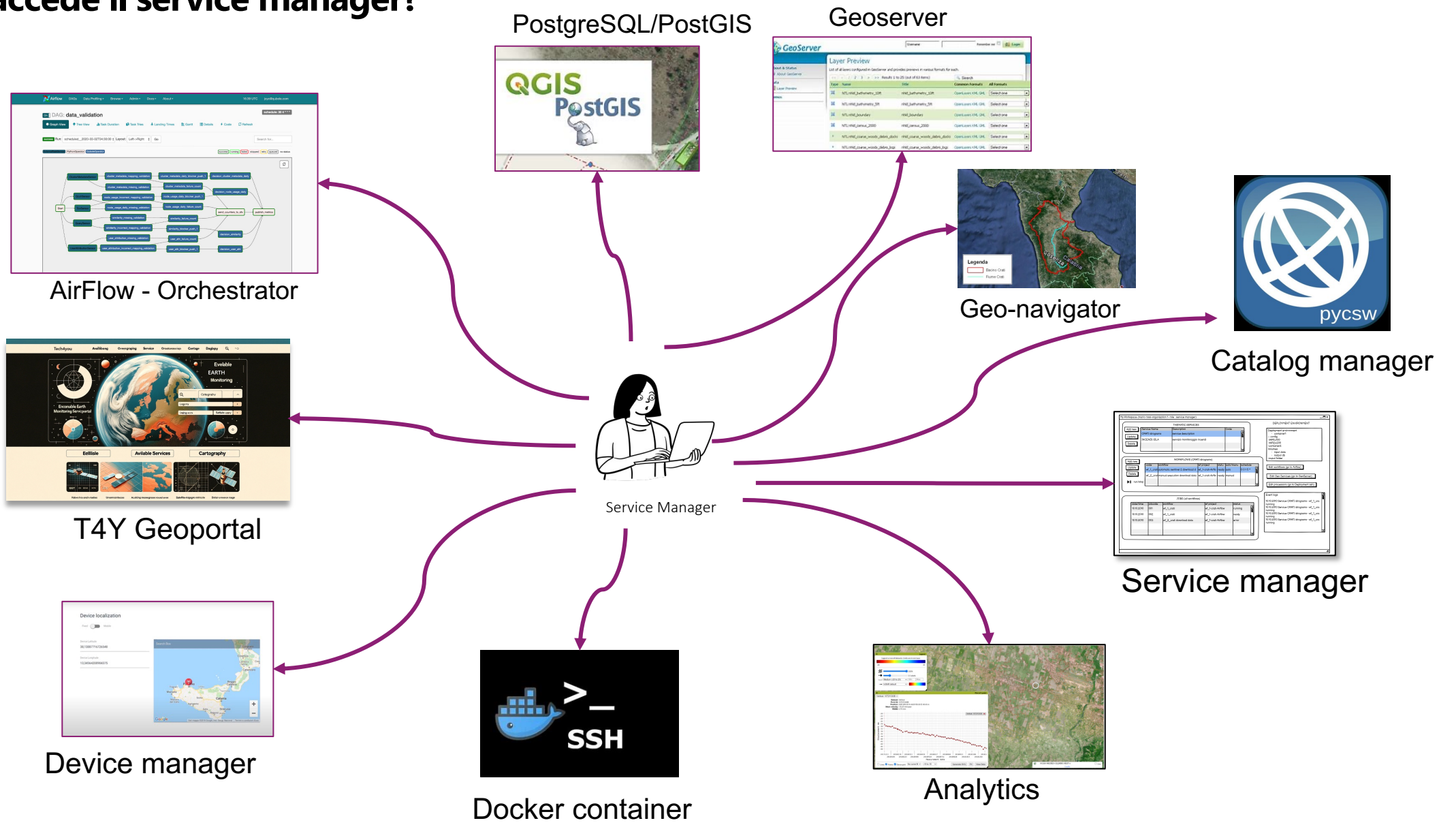


Utenti : Profilazione ed autenticazione

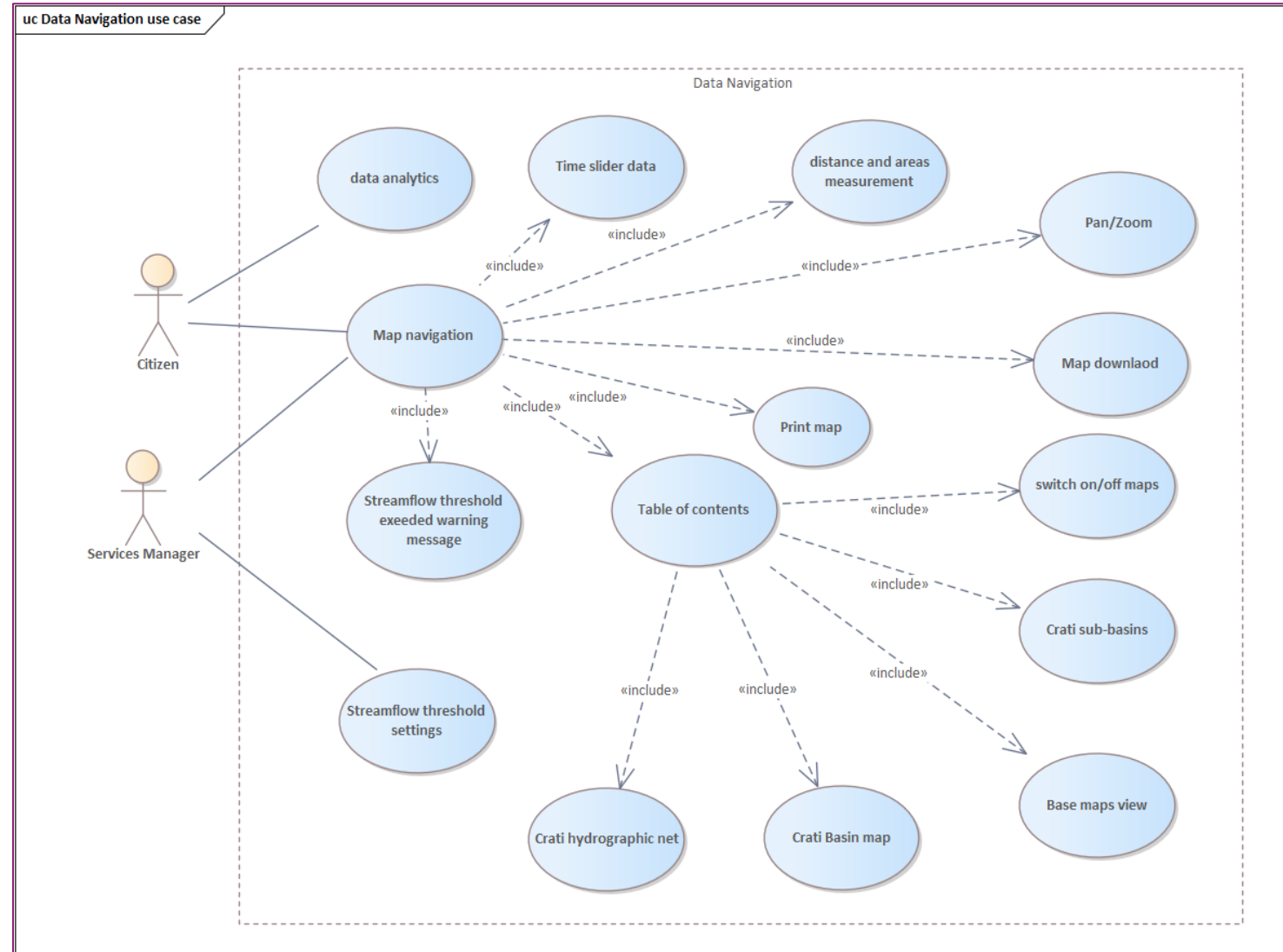
User profile/ Functionality	Geoportal public sections	Geo- navigator	Thematic Services authoring	Workflow server manager	Run/stop processing	Analytics	User mgmt.	API REST services
Anonymous	X	X	-	-	-	-	-	-
Registered user	X	X	-	-	-	X	-	-
Service manager	X	X	X	X	X		-	-
Service operator	X	X	-	-	X	-	-	-
Administrator	X	X	-	-	-	-	X	-
External client	X	X	-	-	-	-	-	X



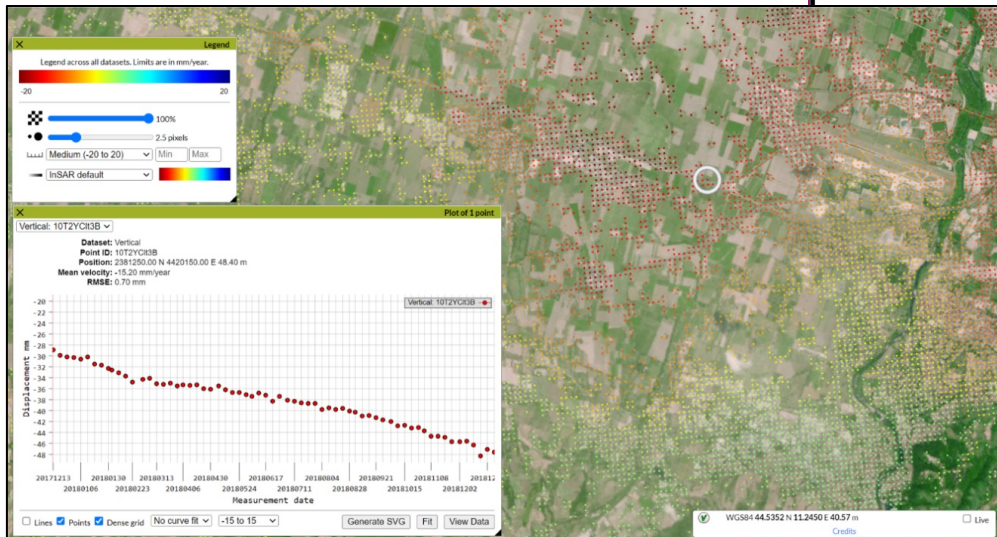
A cosa accede il service manager?



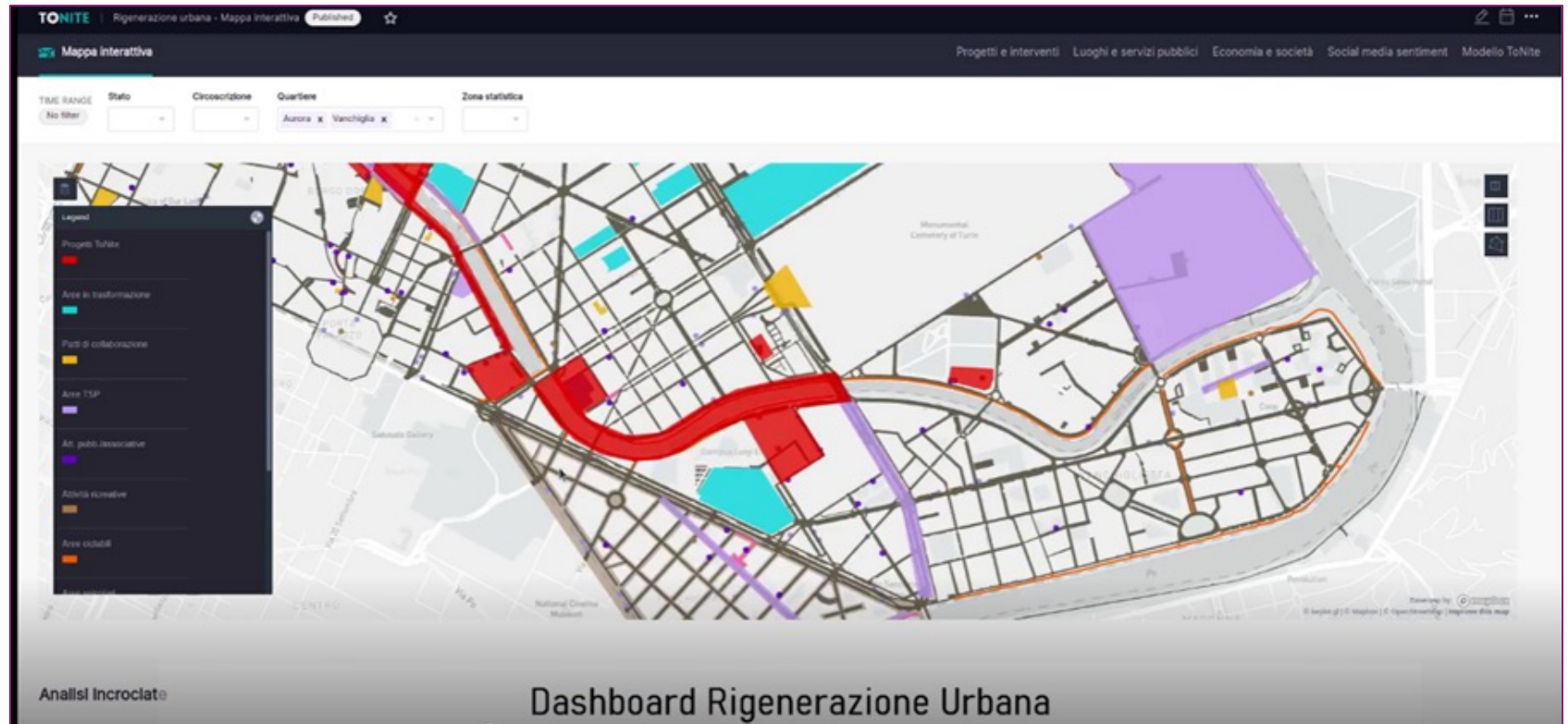
Geodata navigation



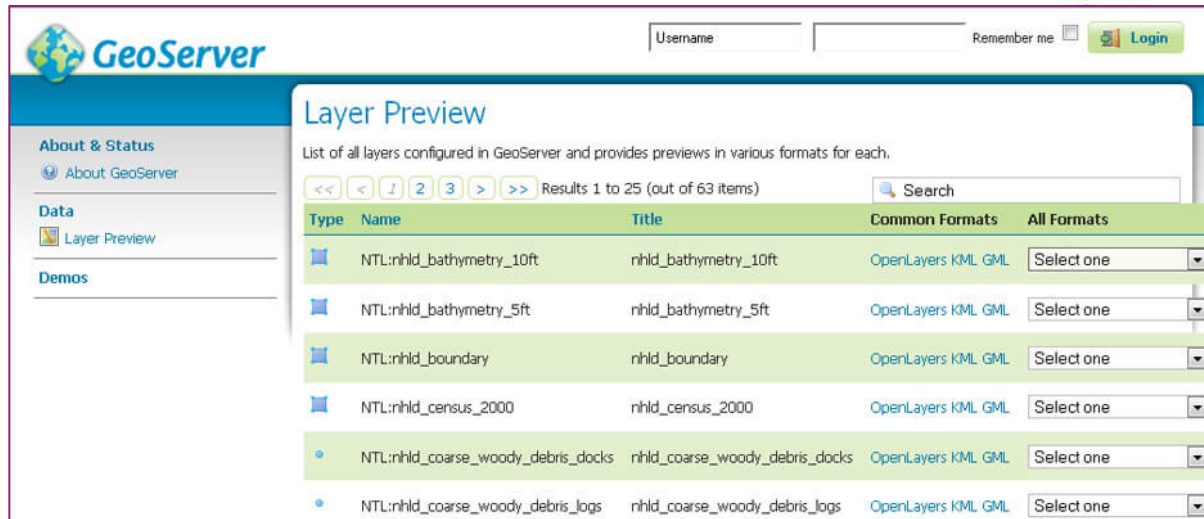
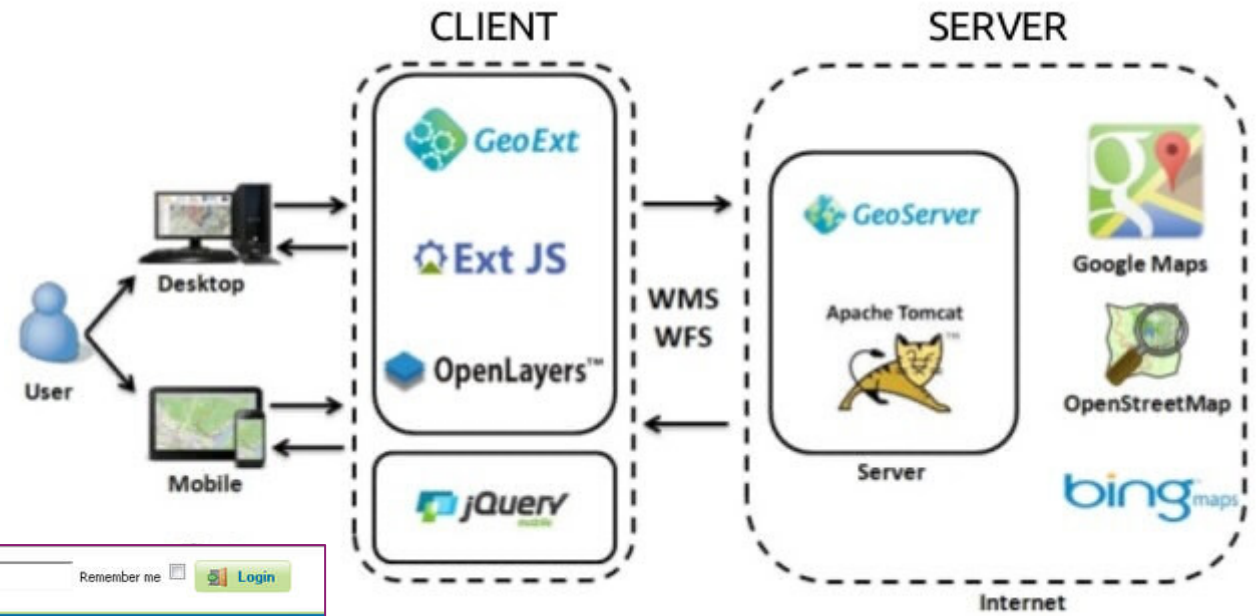
GeoNavigatore e tools analitici



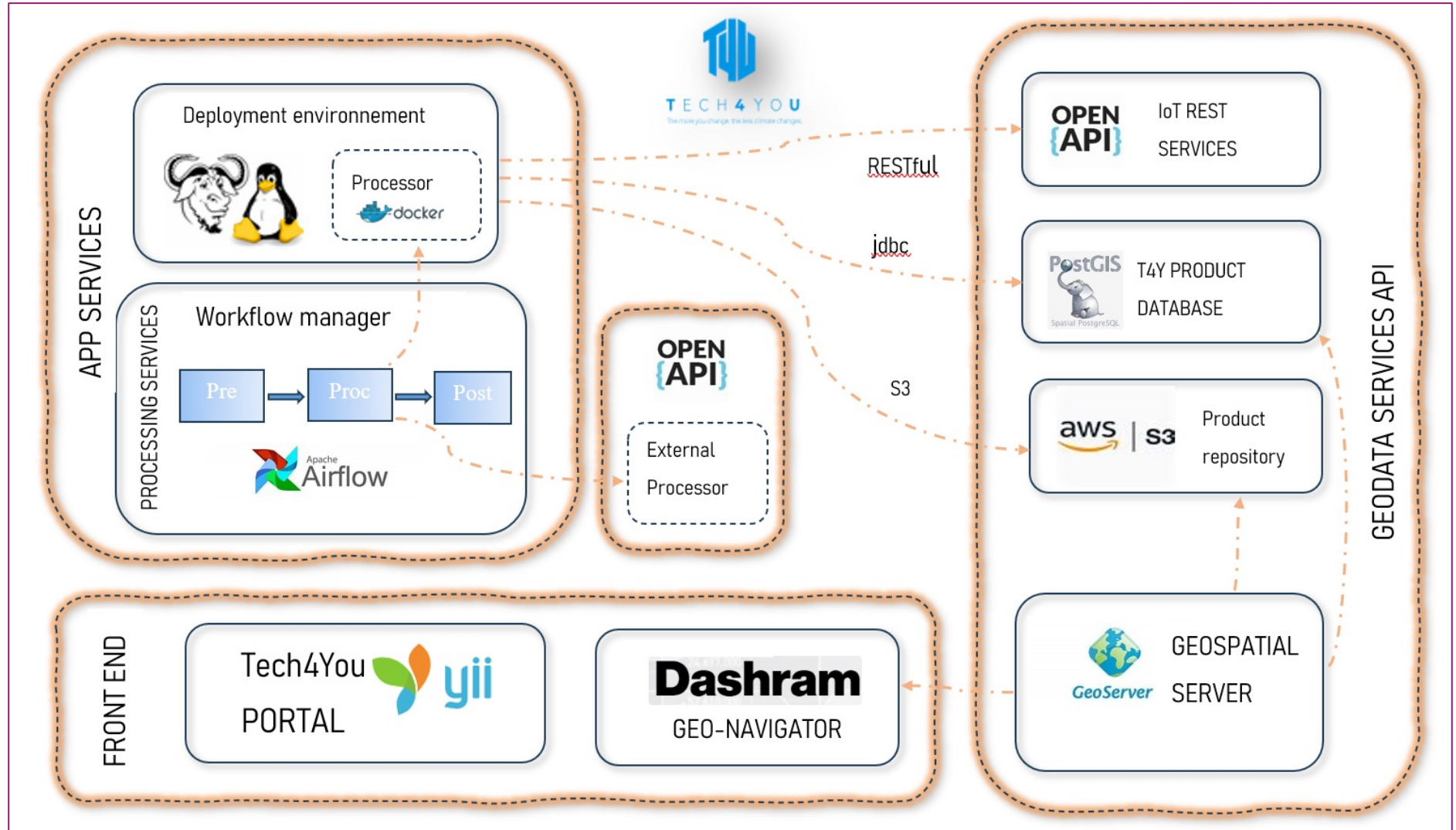
DashRAM



Geospatial Server (GeoServer)



Architettura tecnologica

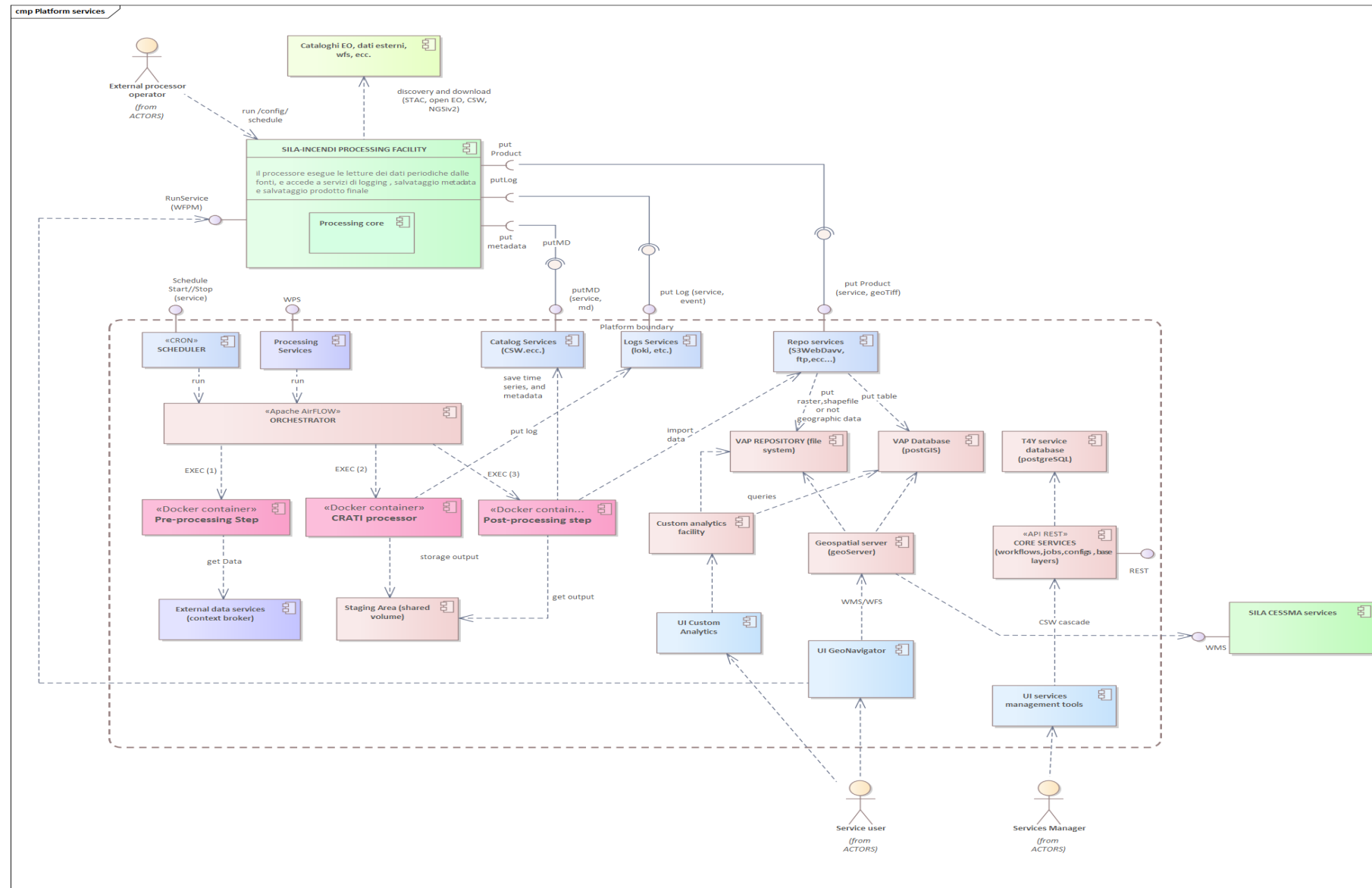


Tecnologie e tools previsti

#	Software COTS	Description	Reference	Licence	Ver.
1	GeoServer	Geospatial server	geoserver.org	GNU GPL v2	2.24.2
2	Apache AirFlow	Workflow manager	airflow.apache.org	Apache 2.0	2.8.2
3	PostGIS	Geodatabase	postgis.net	GNU GPL	3.4.0
4	Docker	Container Framework	docker.com	Apache 2.0	25.0.2
5	Digital Enabler	IoT Enabling Platform	digital-enabler.eng.it	ENG-FOSS	-
6	Yii	Content Manager	yiiframework.com	New BSD	2.0
7	Geonetwork	Catalog Manager	geonetwork-opensource.org	GNU GPL v2	4.4.2
8	Dashram	Geo-navigation and analytics tool	Dashram: a new tool for data analysis (eng.it)	ENG-FOSS	-
9	keyCloack	Identity and Access management	keycloak.org/	Apache 2.0	23.0.6
10	Perseo	Alert Broker	iware-perseo-fe.readthedocs.io	FOSS	-
11	Orion	Context Broker	fiware-orion.readthedocs.io	FOSS	-
12	Flask	REST back-end services	flask.palletsprojects.com	BSD Licence	3.0.1



Platform Component diagram



End of the Presentation

Grazie per l'attenzione

Thank you for your attention

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