INTELCOMP PROJECT

A COMPETITIVE INTELLIGENCE CLOUD/HPC PLATFORM FOR AI-BASED STI POLICY MAKING

(GRANT AGREEMENT NUMBER 101004870)

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CONTENTS

FIGURES

ACRONYMS

ACRONYM	DESCRIPTION
AAI	Authentication Authorization Infrastructure
AI	Artificial Intelligence
API	Application Programming Interface
CMS	Content Management System
EU	European Union
EWB	Evaluation Workbench
GPL	Gnu Public License
HTTP	Hyper Text Transfer Protocol
IMT	Interactive Model Trainer
JSON	Javascript Object Notation
KPI	Key Performance Indicator
NLP	Natural language processing
REST	Representational State Transfer
SPA	Single Page Application
STI	Science Technology Innovation
TRL	Technology Readiness Level
UI	User Interface
URL	Uniform Resource Locator
WP	Workpackage

EXECUTIVE SUMMARY

The IntelComp tools are the software "products" of the IntelComp platform that directly target its end users. Through those, the output of metadata and text analysis performed by IntelComp's "algorithmic" components reaches its audience. The products are three:

- *STI Viewer*: An analytics visualisation tool that offers Science, Technology and Innovation (STI) measurements.

- *Evaluation Workbench*: A tool designed for Public Administration officials to assist them in the assessment of grant proposals.

- *STI Policy Participation Portal*: A portal, empowered by the STI Viewer and survey tools, that allows policy stakeholders to provide structured and informed feedback on STI policy.

The three products are presented in respective sections along their architecture and breakdown in logical components, showing the modularity and versatility of IntelComp's general architecture that allows different technologies and processes to integrate seamlessly for achieving project's objectives.

All technologies employed for the implementation of IntelComp Platform Tools are mainstream technologies, widely accepted and maintained which significantly enhances their sustainability outlook. All software is licensed as open source under various licenses (e.g. EUPL, MIT). In cases, a few easily replaceable closed-source public libraries or subsystems may also be utilized, without raising restrictions in the use of the software.

The tools have been co-created with experts thus in most cases no further major functional changes are expected to emerge during their validation, which is in different stages for the various products. More particularly, all software is deployed on IntelComp's production infrastructure. STI Viewer being the most mature and openly accessed has been repeatedly reviewed and obtained feedback that has been to a large extent addressed. The STI Policy Participation Portal software has been delivered and is currently under shaping via collaboration of a team of field experts. Last, the Evaluation Workbench has been implemented with a particular set of features and its delivery for validation by its audience is due by the start of fall 2023.

1. INTRODUCTION

1.1. Context

IntelComp is a project funded by the European Commission whose main objective is the development of a software platform that, using the latest generation of Artificial Intelligence (AI) and Natural Language Processing (NLP) services, provides relevant information for the management of public policies in the area of Science, Technology, and Innovation (STI). To do this, the platform analyzes various documentary sources (e.g., scientific production documents, publicly funded projects, information on companies available on the Internet, etc.), some of them involving hundreds of millions of documents, and, through the application of AI techniques and models, it extracts information with a level of detail greater than that available in the metadata that usually accompanies these data sources.

1.2. IntelComp Platform Tools Description

Intelcomp Platform Tools refer to the software that targets the end users of IntelComp under the shape of individual products. Those are as follows:

- **STI Viewer**: A platform hosting and delivering to targeted users STI indicators under various visualisations. The platform is based on KPI Viewer core visualisation component, configured so as to address the visualisation needs of the product on top of the provided indicator data.

- **Evaluation Workbench**: A tool designed for Public Administration officials to assist them in the assessment of grant proposals.

- **STI Policy Participation Portal**: A portal designed to facilitate surveys with integrated STI Viewer visualizations. It enables various groups (citizen, academic, industrial) to provide input that is subsequently fed back into the STI Viewer, promoting a cycle of participatory decision-making in STI policy. The tool utilises several existing technologies and core visualisation components, including a web CMS, the Survey tool and STI Viewer.

This document does not present other IntelComp's tools, such as the Interactive Model Trainer and the Graph Visualisation system, which are not intended for general public access, and are targeting either internal experts or delivering features of the Platform.

1.3. Objective and structure of this document

This document briefly describes the software forming the IntelComp Platform tools. The actual deliverable is the software itself which resides on IntelComp's repository. Software that is not specifically implemented for IntelComp resides in 3rd party repositories and only its customisations may be located in IntelComp space.

The structure of the document is as follows:

- Section 2 presents all the products released as part of the IntelComp Platform Tools, namely covering in separate subsections the STI Viewer, the Evaluation Workbench and the STI Policy Participation Portal.

- Section 3 presents the logical Architecture of IntelComp Platform Tools and their placement in the IntelComp Platform, along with the integration techniques employed for their delivery and the structure of their deployment.

- Section 4 presents the status of the implementation and operation of the Tools as well as next steps for their evolution.

2. SOFTWARE RELEASED

2.1. STI Viewer

Overview

STI Viewer is an instantiation of the KPI Viewer (UI), API (backend) and Data Service (Store) systems that have been designed and implemented to serve the purposes of IntelComp in a generalized manner, commonly abbreviated in this document as KPI Viewer as it forms the front face of the system. In brief, KPI Viewer is a generic web platform for management, documentation, delivery, presentation and integration of indicator data which may originate from various domains. Under a specific, massive in terms of elements, configuration it realizes the STI Viewer application of IntelComp.

The underlying platform is empowered by an open data model for storing and manipulating indicators and data (KPIs being one potential flavor of those) and can support various on-the-fly aggregations of their data which may be rendered under various graphs, organized in various layouts and groups by its web-based frontend, which adapts to the indicator data at hand to be presented.

An indicative list of supported visualization is as follows:

- Area/Line Chart.
- Stacked Area/Line Chart.
- Bar Chart.
- Stacked Column Chart.
- Stacked Bar Chart on Polar (Radial) Chart.
- Polar Bar Chart.
- Scatter Chart.
- Map Chart.
- Radar Chart.
- Treemap Chart.
- Sankey Chart.
- Pie Chart.
- Nightingale Chart.
- Doughnut Chart.

The platform can scale to confront increased load as it utilizes a powerful scalable storage layer for its KPI Data store and a REST backend (API) for accessing its functionality.

It is fully integrated with IntelComp's AAI providing powerful data access control capabilities.

The KPI Viewer Visualisation Subsystem and Data Service have been introduced as core visualization components in D4.1 "Core Visualization Components". Their application to support the STI Viewer instance has led to several enhancements and extensions of the tools, while additional components have been implemented and presented below.

Architecture

The following diagram depicts the KPI Viewer Architecture as this has evolved since the initial delivery of the tools introduced as IntelComp Core Visualisation Components.
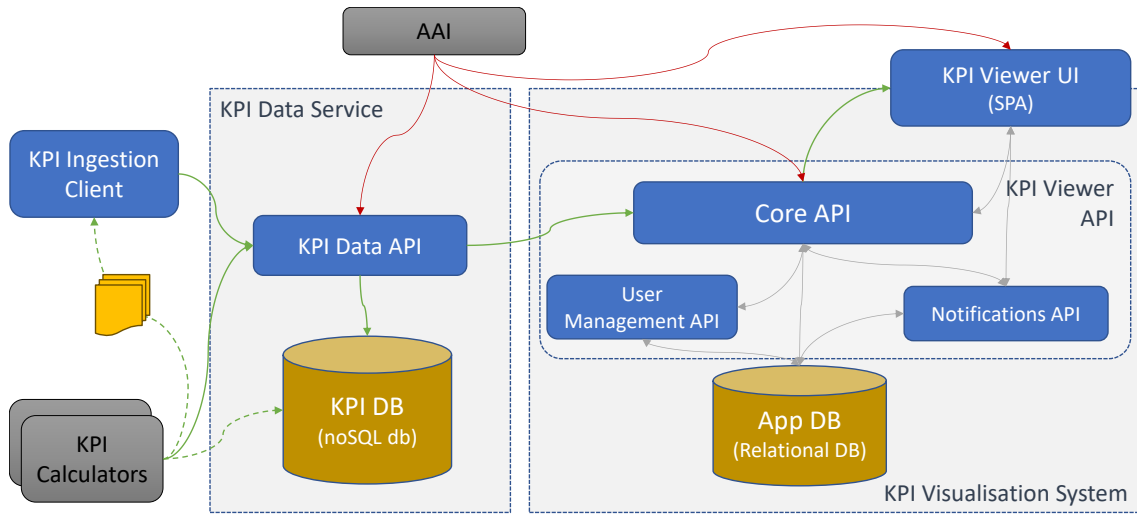
Figure 1: KPI Viewer Architecture

The key logical components of the architecture are presented in the following sections.

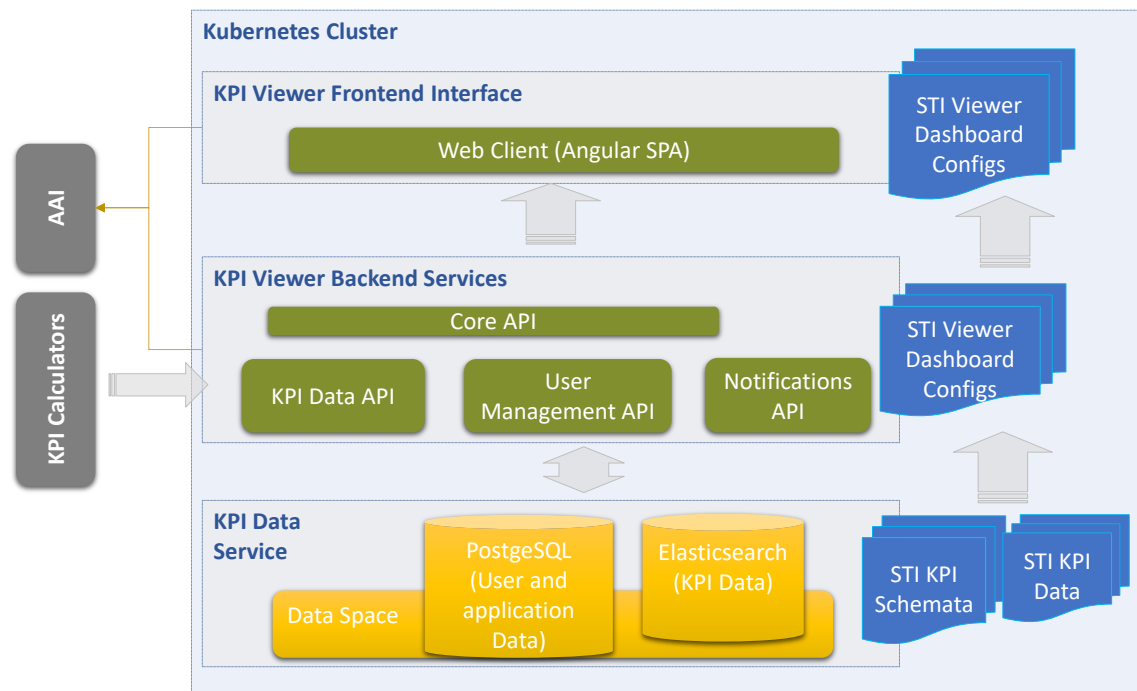The following diagram depicts the logical form of STI Viewer utilising instances of the KPI Viewer components.

Figure 2: STI Viewer Logical Structure

Software Components

As mentioned previously, the majority of the components presented below are product of the evolution of those introduced in IntelComp Core Visualisation Tools report (D4.1).

KPI Viewer UI

Component Id	*kpi-viewer*		
Summary	This component includes the web user interface to present the indicator data. Multiple charts, navigation and user screens are available for better data representation and usability.		
Version	*1.0.0*	TRL	8
Copyright Owner	CITE, ARC	Software License	EUPL 1.2
Dependencies	IntelComp AAI, KPI Viewer API		
Detailed Description	This is an Angular 14 web application that allows IntelComp's users to access indicator data after authenticating using IntelComp's AAI. The indicator's data are presented in dashboards, exploiting multiple charts (line, bar, map, polar, etc) for rendering those data. Users are able to search in, or browse, the available topics by selecting Fields or Categories. Public indicator data can be presented for topics or aggregated for categories and fields. All presented indicator data dashboards can be saved as favorites for quick access. InApp Notifications are also delivered to the user for significant system events. Full reports, or individual charts can be shared / embedded to other applications, by generating authenticated http hyperlinks that may be used inside an IFRAME.		
Repository URL	https://github.com/IntelCompH2020/sti-viewer		
Product	*STI Viewer*		
Next Major Release Month	M33	Estimated Final Release Month	M36
Next Release Plan	Generate shareable chart / report http links that may be used in an iframe to embed the charts in other applications.		
Beyond next release	Maintenance, bug fixes and final alignments.		

KPI Viewer API

Component Id	*kpi-viewer-api*

Summary	The set of APIs that serve the KPI Viewer UI and handle the interaction of the front-end with the backend regarding access to and visualization of indicator data.		
Version	*1.0.0*	TRL	8
Copyright Owner	CITE, ARC	Software License	EUPL 1.2
Dependencies	IntelComp AAI, KPI Data Service		
Detailed Description	This is a SpringBoot backend REST API that supports all the functionality offered by the STI Viewer frontend (KPI Viewer UI). The APIs are stateless and horizontally scalable. A PostgreSQL database is used for storing application entities such as user data, notification data, user profile data, etc. The KPI Viewer API also acts as the middleware between the KPI Viewer UI and the KPI Data Service. The service handles user authentication, enforces authorization by evaluating user permissions, executes indicator data transformations for chart representation, validates all user inputs, manages users, sends email and in-app notifications. Additionally, the business logic, access requests, admin approval/denial are all handled by the service. Finally, it offers a highly configurable querying layer for requesting / filtering exactly the data that are required for each chart.		
Repository URL	https://github.com/IntelCompH2020/sti-viewer		
Product	*STI Viewer*		
Next Major Release Month	M33	Estimated Final Release Month	M36
Next Release Plan	API support to generate http links for chart/report sharing. These are authorized in order to provide only the data required by drawn charts.		
Beyond next release	Maintenance, bug fixes and final alignments.		

KPI Data Service

Component Id	*kpi-data-service*		
Summary	Responsible for validating, organizing, storing and querying the indicator data. Data are stored in a high-performance infrastructure to ensure an efficient and responsive user experience.		
Version	*1.0.0*	TRL	8
Copyright Owner	CITE, ARC	Software License	EUPL 1.2

Dependencies	IntelComp AAI, KPI Calculation Service
Detailed Description	The service offers a REST API to KPI Calculation Service for incrementally ingesting indicator data in a tabular format. These data are stored in an ElasticSearch database on a different index per indicator schema. The schema of the indicator must be described in order for KPI Data Service to create these indices in ElasticSearch, which is in turn required for storing the Data. The Schema includes among others: the data type of each field, the name and description, the dependencies on other fields, and the validation/accepted values for this field. When data are pushed to it, the KPI Data Service validates them using the validations described in the schema and, if needed, transforms them in order to enhance filtering and calculation performance. The API is implemented using SpringBoot. All the requests to the API are authenticated against IntelComp's AAI. Authorization is applied so that only specific roles or service clients can push indicator data to the service.
Repository URL	https://github.com/IntelCompH2020/sti-viewer
Product	*STI Viewer*

Next Major Release Month	M33	Estimated Final Release Month	M36
Next Release Plan	Performance improvements for handling tens of millions data points.		
Beyond next release	Maintenance, bug fixes and final alignments.		

KPI Ingestion Tool

Component Id	*kpi-ingestion-tool*		
Summary	Command line utility that can be used to import indicator data to the KPI Data Service.		
Version	*1.0.0*	TRL	8
Copyright Owner	CITE, ARC	Software License	EUPL 1.2
Dependencies	IntelComp AAI, KPI Data Service		
Detailed Description	This command line tool can read a set of indicator data in json format from a local filesystem and deposit them at the KPI Data Service using the API provided by the latter. In order to authenticate users and ensure authorized deposition of data, the Intecomp's AAI is used. The tool can handle large amounts of data, since a configurable batching		

	mechanism is implemented to split large datasets in smaller batches. A retry policy is also enabled, in case a temporary failure occurs. Finally, progress is estimated and provided to the user of the tool as feedback, so that one can monitor the operation.		
Repository URL	https://github.com/IntelCompH2020/sti-viewer		
Product	*STI Viewer*		
Next Major Release Month	M33	Estimated Final Release Month	M36
Next Release Plan	Performance improvements for large input files (> 1GB).		
Beyond next release	Maintenance, bug fixes and final alignments.		

STI Viewer Configuration

To deliver STI Viewer the following configurations have been implemented, up to the delivery of this document. The list is indicative and may change in the following period as feedback is collected and additional STI indicators may be requested.

- AI/EU (4 charts): The AI in Europe report presents a set of indicators designed to support policy makers and analysts in forming agendas concerning AI-related science, technology, and industry.
- Climate/EU/Agrifood (54 charts): The Agrifood report provides crucial metrics for assessing and directing policies related to scientific, technological, and industrial developments in the agricultural and food sectors.
- Climate/EU/Energy (38 charts): The Energy in Europe report offers key indicators that guide policy makers and analysts in their agenda setting for energy-related science, technology, and industry.

2.2.   Evaluation Workbench

Overview

The Evaluation Workbench (EWB) is a toolset designed for public administration officials to evaluate grant proposals. It streamlines and standardizes the evaluation process, saving time and increasing efficiency. With a user-friendly interface, it is accessible to non-experts. EWB includes features like documents topics evaluation, similarity search, and automatic classification.

Architecture

The Evaluation Workbench (EWB) is built on an architecture that combines an Angular-based frontend with a SpringBoot backend API. This architecture seamlessly integrates multiple Python Dockers, enhancing the functionality of the EWB. The frontend provides users with a user-friendly interface, facilitating easy navigation and interaction with the EWB's features. The SpringBoot API serves as the core engine, effectively managing the evaluation logic and generating insightful visualizations based on data extracted from the integrated Python Dockers through the Python-based RESTful API (ewb-restapi).

The diagram below illustrates the EWB architecture and the following tables describe each of the mentioned components separately.
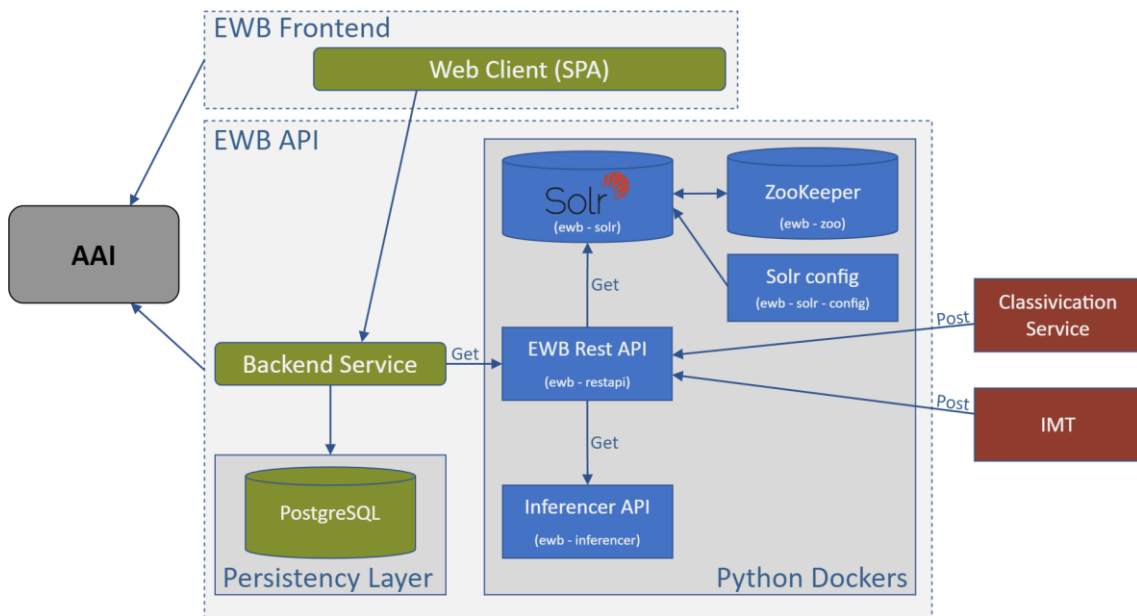

Figure 3: Overview of the Evaluation Workbench Architecture

Software Components

Evaluation Workbench Frontend

Component Id	*evaluation-workbench*		
Summary	This component encompasses the web user interface of the Evaluation Workbench. It provides two distinct views based on the selection of a corpus and a topic or classification model. The first view enables users to explore the characteristics of the corpus w.r.t to the selected topic model. The second view facilitates the analysis of specific features of the corpus w.r.t the chosen classification model.		
Version	*1.0.0*	**TRL**	7
Copyright Owner	CITE	**Software License**	EUPL 1.2

Dependencies	IntelComp AAI, Evaluation Workbench API
Detailed Description	This is an Angular 14 web application that grants access to IntelComp's users to the Evaluation Workbench's web interface. Users can authenticate through IntelComp's AAI to securely access the platform. The application provides views for the analysis of corpora based on topic and classification models. Users have the flexibility to select the specific corpus and topic/classification model they wish to work with. In the topic analysis view, users can determine which topics are of greater importance to them, information that is collected by the web application and internally ingested into the Solr system.
Repository URL	https://github.com/IntelCompH2020/EWB-Webtool
Product	Evaluation Workbench

Next Major Release Month	M33	Estimated Final Release Month	M36
Next Release Plan	Add similarity charts in order to enhance the visualization of the model differences.		
Beyond next release	Addressing feedback from users.		

Evaluation Workbench API

Component Id	evaluation-workbench-api		
Summary	API that serves the Evaluation Workbench Frontend. This API acts as a middleware between the Evaluation Workbench Frontend and the EWB Python Dockers.		
Version	1.0	TRL	7
Copyright Owner	CITE	Software License	EUPL 1.2
Dependencies	IntelComp AAI		
Detailed Description	SpringBoot backend REST API that supports all the functionality offered by the Evaluation Workbench Frontend. The API is stateless and horizontally scalable. A PostgreSQL database is used for storing user data, authentication, and authorization data, etc. The Evaluation Workbench API acts as a middleware between the Evaluation Workbench Frontend and the EWB Python Dockers. The service also handles user authentication and enforces authorization by evaluating user permissions.		
Repository URL	https://github.com/IntelCompH2020/EWB-Webtool		

Product	Evaluation Workbench		
Next Major Release Month	M33	Estimated Final Release Month	M36
Next Release Plan	Similarities calculation and API additions to serve these data to the Evaluation Workbench Frontend.		
Beyond next release	Addressing feedback from users.		

Evaluation Workbench Python Dockers

Component Id	evaluation-workbench-python-dockers		
Summary	The Evaluation Workbench Python Dockers form a multi-container application that includes essential components such as the Solr search engine, a RESTful API for ingestion and information retrieval, and an inference service. These Docker containers enable data ingestion, information retrieval, and topic and class inference capabilities within the Evaluation Workbench.		
Version	1.0.0	TRL	7
Copyright Owner	UC3M	Software License	MIT
Dependencies	Python requirements files: https://github.com/IntelCompH2020/EWB/blob/main/restapi/requirements.txt https://github.com/IntelCompH2020/EWB/blob/main/inferencer/requirements.txt Mallet package: It needs to be downloaded from Mallet's official website into the following route: "/inferencer/src/core/models/mallet-2.0.8".		
Detailed Description	The Python Dockers define a multi-container application whose core component is the Solr system (ewb-solr), which includes an embedded zookeeper server (ewb-zoo) and a separate configuration docker (ewb-solr-config). The Python-based RESTful API (ewb-restapi) serves as an intermediary between Solr and the SpringBoot backend, facilitating data ingestion from the IMT and the Classification Service into the Solr cluster, and information retrieval from the latter. The Python-based RESTful API connects with the inference service (ewb-inferencer), delivering topic and inference capabilities to the EWB.		
Repository URL	https://github.com/IntelCompH2020/EWB		
Product	Evaluation Workbench		

Next Major Release Month	M33	Estimated Final Release Month	M36
Next Release Plan	Final release after new functionality has been implemented to satisfy the requirements of EWB owners.		
Beyond next release	In future iterations, the Evaluation Workbench Python Dockers may undergo further improvements and optimizations. Efforts may focus on addressing specific requirements from the EWB owners and incorporating user feedback to continually enhance functionality and user experience.		

2.3.   STI Policy Participation Portal

Overview

The Participation Portal is a platform designed to facilitate the integration of diverse stakeholder input into STI policy-making processes. It offers a user-friendly interface where comprehensive surveys, enriched with data visualizations from the STI Viewer, can be conducted. This promotes active participation from various groups engaged in STI.

The core functionality of the Participation Portal is its seamless interaction with the STI Viewer. The valuable feedback collected through the portal's surveys is directly channeled back into the STI Viewer, creating a continuous loop of data sharing and analysis. This bilateral flow of information significantly improves the quality and inclusivity of decision-making in STI policy formulation.

Serving as a vital bridge between policy stakeholder groups (citizen, academic, industrial) and policy makers, the Participation Portal fosters a collaborative and transparent policy-making environment. By democratizing the STI policy-making process, it ensures that decisions are not only data-driven but also responsive to societal needs and industry challenges.

Architecture

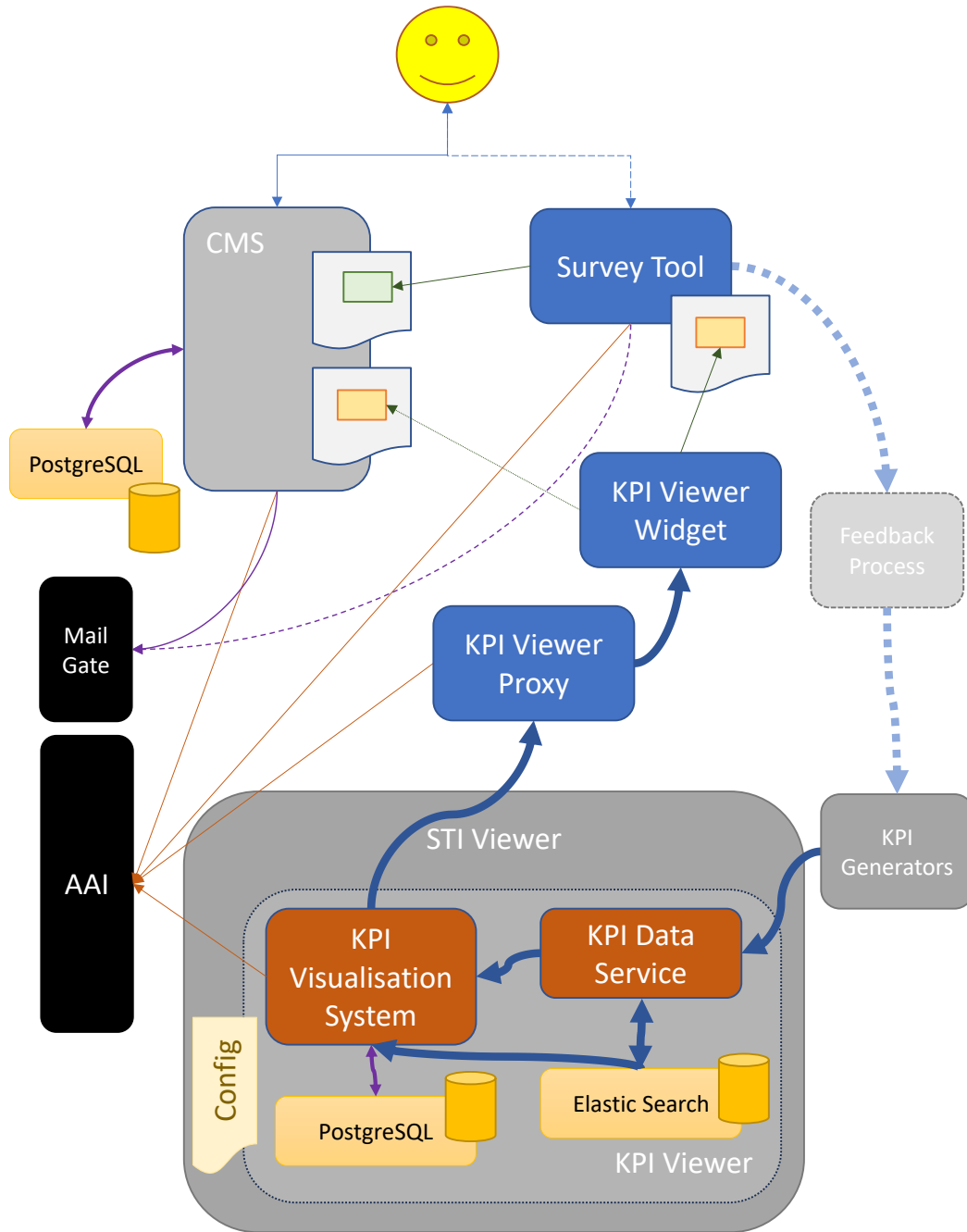The following diagram depicts the overall architecture of the STI Policy Participation Portal.

Figure 4: STI Policy Participation Portal Architecture

Software Components

Survey Tool - Backend

Component Id	*survey_tool_back*
Summary	The set of APIs that serve the Survey Tool. These APIs handle the interaction of the front end application with the underlying data sources: Postgres and Elastic .

Version	*1.0.0*	TRL	*9*
Copyright Owner	*OpenAIRE*	Software License	*Apache-2.0*
Dependencies	*PostgresQL, ElasticSearch, JMS, IntelComp AAI*		
Detailed Description	SpringBoot backend REST APIs that support all the functionality offered by the Survey Tool frontend. The APIs are stateless and horizontally scalable. A PostgreSQL database is used for storing the minimal required user data, the surveys, the answers to surveys, etc. The data is replicated to ElasticSearch for easier and faster querying. The service handles user authentication, enforces authorization by evaluating user permissions, and validates all user inputs.		
Repository URL	https://github.com/madgeek-arc/eosc-observatory		
Product	*STI Policy Participation Portal*		
Next Major Release Month	M33	Estimated Final Release Month	M36
Next Release Plan	Following any updates from survey tool further development.		
Beyond next release	Addressing feedback from users.		

Survey Tool - Frontend

Component Id	*survey_tool_front*		
Summary	This component includes the web user interface where users interact with the surveys and data collected from the surveys		
Version	*1.0.0*	TRL	9
Copyright Owner	*OpenAIRE*	Software License	*Apache-2.0*
Dependencies	SurveyTool Backend		
Detailed Description	This is an Angular 13 web application that allows IntelComp's users to access the surveys after authenticating using IntelComp's AAI. The users (depending on the privileges granted) can submit answers to active surveys, and browse through the answers and statistics of past and present surveys.		
Repository URL	https://github.com/madgeek-arc/observatory-ui		

Product	*STI Policy Participation Portal*		
Next Major Release Month	M33	Estimated Final Release Month	M36
Next Release Plan	Following any updates from survey tool further development.		
Beyond next release	Addressing feedback from users.		

KPI Viewer Proxy

| Component Id	*kpi-viewer-proxy*		
Summary	This component provided the integration between STI Policy Participation Portal and the STI Viewer. Individual charts from the STI Viewer can be shared and presented within the STI Participation Portal to be reviewed by the users.		
Version	*1.0.0*	TRL	8
Copyright Owner	CITE, ARC	Software License	EUPL 1.2
Dependencies	IntelComp AAI, KPI Viewer		
Detailed Description	Specific charts from the KPI Viewer are embedded to Policy Participation Portal by generating authenticated http hyperlinks that can be used in an iframe. This functionality uses authentication tokens that are included in the generated URLs and validated against IntelComp's AAI. All charts and chart types that supported by the KPI Viewer can be shared using this component.		
Repository URL	https://github.com/IntelCompH2020/sti-viewer		
Product	*STI Policy Participation Portal*		
Next Major Release Month	M33	Estimated Final Release Month	M36
Next Release Plan	Following any updates from KPI Viewer further development.		
Beyond next release	Addressing feedback from users.		

Policy Participation CMS

Component Id	*drupal-cms*

Summary	CMS Engine for delivering information to policy makers' representatives encapsulating feedback gathering process.		
Version	*10.0*	TRL	9
Copyright Owner	Various (see https://drupal.org/)	Software License	GPL2 / GPL3
Dependencies	- Survey Tool - KPI Viewer Proxy - STI Viewer (KPI Viewer) - AAI		
Detailed Description	The Policy Participation CMS is based on an open widely appreciated Web CMS, Drupal. The CMS is styled to match intelcomp's visual identity and is configured to host its tools. It is also populated with content open to the public that may come from data sources or may be statically authored. It is being integrated with IntelComp AAI to accommodate user identification and hosts a number of tools in order to offer its functionality. It embeds the Survey tool for gathering structured user feedback. It may optionally directly utilise the KPI Viewer Proxy and the STI Viewer tool, in order to present indicator data to the visitor of the portal, at any place that may serve in the future. Beside those integrations, the engine offers additional features that may be activated and utilised according to user feedback, such as: - Unstructured content rating and commenting. - User - to - user direct messaging - User profile management - Newsletter - and many more		
Repository URL	N/A		
Product	*STI Policy Participation Portal*		
Next Major Release Month	33	Estimated Final Release Month	35
Next Release Plan	Styling updates and refinements of integrations		
Beyond next release	Accommodation of user feedback, potentially activating additional platform tools.		

3. ARCHITECTURE, INTEGRATION AND DEPLOYMENT

3.1. Architecture

The following diagram depicts the overall architecture of IntelComp Platform Tools, covering the components described in this document and other elements.
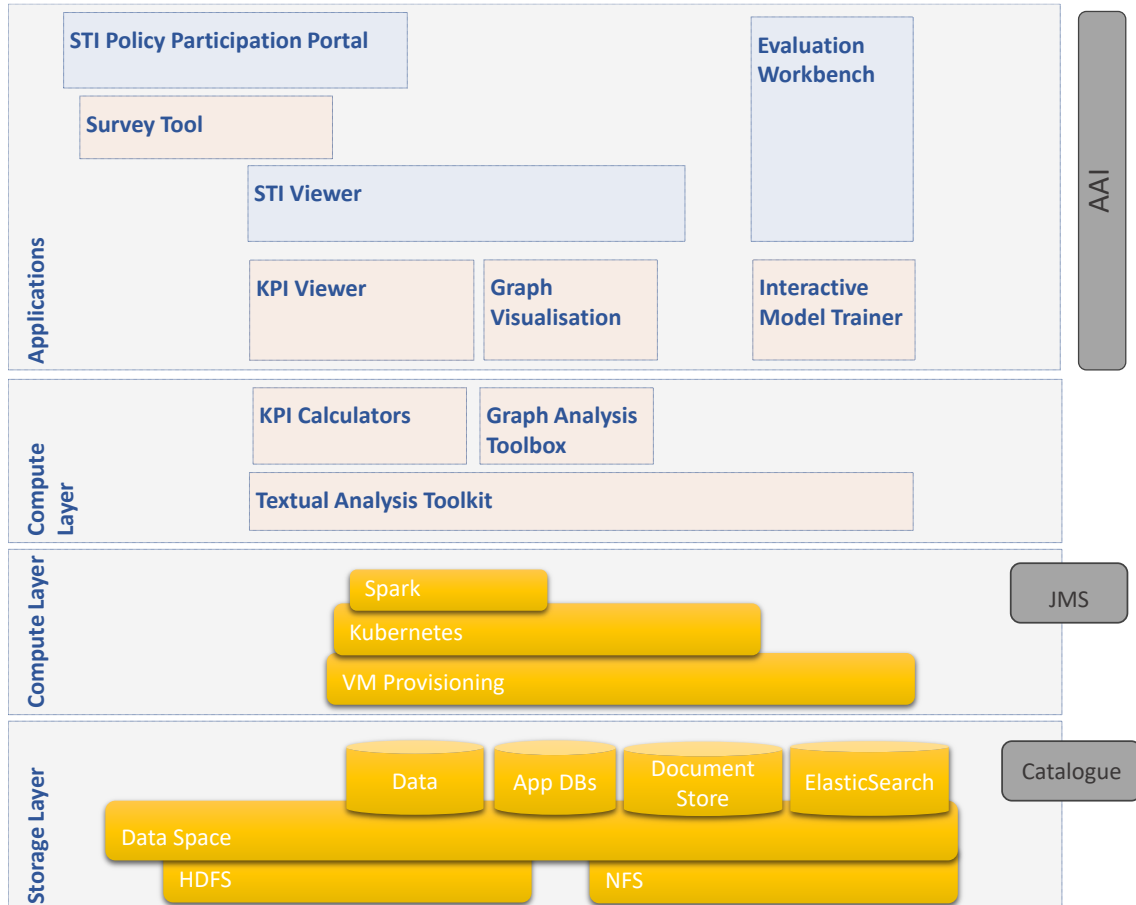
Figure 5: Overview of IntelComp Platform Tools Architecture

The presented high level architecture depicts the following dependencies:

- The STI Policy Participation Portal is powered mainly by the Survey tool and utilises STI Viewer to deliver STI indicators to the audience.
- The STI Viewer tool is powered by the KPI viewer and is supported by Graph Visualisation, which in turn are supported by KPI calculators and the Graph Analysis Toolbox.
- The Evaluation Workbench is supported by the Interactive Model Trainer.
- All the lower layers mentioned above are powered by the compute and storage layers.
- Finally, the AAI takes action at the higher level of the infrastructure.

3.2. Integration

Integration techniques employed substantially vary among the tools, due to their nature, requirements and pre-existing capabilities or limitations (where this may apply).

To name a few, the following integration techniques are applied:

- Storage space file exchange: This technique is employed by tools manipulating large data volumes acting directly on files deposited on high performance and availability storage of the system.
- Web embedding: utilisation of IFrames for the integration of visual components inside web UI containers. The technique is facilitated by additional tools such as proxying.
- Proxying: dedicated proxying of visualisation components to bypass authentication and authorisation restrictions for selected integration scenarios.
- SSO: seamless navigation among applications without requiring the user to supply additional credentials.
- REST API: invocation of services backends from front-ends or other potential clients.
- Command line invocations: managed by virtualisation platform features, the option of invoking system functionality via command line tools is utilised for specific cases where other APIs may not be offered. A RESTful API is usually implemented to encapsulate those CLI cases.

3.3. Deployment

Intelcomp Platform Tools utilize the infrastructure provided to them by WP5 of the project, on resources drawn from the infrastructure of BSC. In total the following resources are engaged:

STI Viewer

STI Viewer is powered by KPI Viewer software, and all the software components including the PostgreSQL database are deployed on the BSC Kubernetes cluster.

It utilizes the common ElasticSearch instance of the infrastructure, offered to it as a service.

All services can be dynamically scaled based on the individual load they handle.

Evaluation Workbench

Evaluation Workbench software components including the PostgreSQL database and the SOLR database are deployed on the BSC Kubernetes cluster. All services can be dynamically scaled based on the individual load they handle.

STI Policy Participation Portal

STI Policy Participation portal is deployed on VM instances outside the Kubernetes cluster as no requirement for high performance computations is employed at their operation. Two new virtual instances are installed:

- CMS engine.

- Survey tool.

KPI Viewer Proxy is deployed next to KPI Viewer instance that empowers STI Viewer.

The STI Viewer is utilized by STI Policy Participation Portal to deliver KPI results to the end user.

4. STATUS AND NEXT STEPS

At the time of the writing of this short report, all IntelComp Platform Tools have been deployed onto their operation infrastructure. Initial resources to support their operation are allocated as required, however the infrastructure will be closely monitored to size the stress placed to it by the usage, so that the allocated resources are readjusted as needed.

From the software implementation standpoint, all the tools have been put through extensive tests during their implementation by teams led by their appointed product manager and have been found to be quite robust and consistent. This allowed them to be deployed on the production infrastructure offered by BSC, from where they will be finally delivered to their intended audiences for extensive validation and use.

The progress of the latest step varies, depending on the maturity of the software. STI Viewer being the most mature and openly accessed, has been repeatedly reviewed by users and the implementation team supporting it has obtained feedback that has been addressed to a large extent, yielding no plan for new major features, other than ingestion of additional indicators. The STI Policy Participation Portal software has been delivered to an expert team and is currently under shaping via collaboration of various actors, however no new major features are expected to emerge. Last, the Evaluation Workbench has been implemented with a particular set of features and its delivery for validation by its audience is due by the start of fall 2023 and requests for additional features are expected and will be evaluated.

As users will start onboarding on latest deliveries, it is expected that requests for adjustments and fixes will rise and those will be fixed as needed in the remaining period of the project.