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Social Media Policy Campaigning and Feedback Collection tool

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List of Abbreviations

ATC	ATHENS TECHNOLOGY CENTER SA
API	Application Programming Interface
EDR	EVOTION Data Repository
HTML	Hyper Text Markup Language
JPA	Java Persistence API
PDF	Portable Document Format
PHPDM	Public health policy decision making models
REST	Representational State Transfer
SDK	Software Development Kit
SMPC	Social Media Policy Campaigning & Feedback Collection
UNIMI	UNIVERSITA DEGLI STUDI DI MILANO

1 Executive Summary

This document is accompanying the Social Media Policy Campaigning and Feedback Collection tool (SMPC) and provides a technical description of it, as developed within the WP5 work package. The Social media campaigning and feedback collection tool is able to create social media campaigns on Twitter based on policies generated by PHPDM models (e.g. information about the final decisions, the issues considered, the expected benefits, highlights of the evidence underpinning the policies) and subsequently collect and analyse feedback from different stakeholder groups for the policies. It is a tool that allows publishing and collecting social information from Twitter. Following an easy-to-use modern design, the component is responsible not only to send all the aggregated policy feedback information to the main platform, but also to receive results from the analysis having taken place by the platform.

Please note that the formal deliverable is the demonstrator of the Social Media Policy Campaigning and Feedback Collection tool, however this document serves the purpose of an extended technical description. The information found herein includes:

- An overview of the Social Media Policy Campaigning and Feedback Collection tool.
- A description including the design and implementation details of the tool.
- A user manual on how to use it.

Following on, the next section (section 2), provides a short overview of the component. Section 3 focuses on the design principles regarding the Social Media Policy Campaigning and Feedback Collection tool as well as the methodological development approach is presented and the component architecture is described in detail. Section 4 describes the technology stack, the invitation mechanism, a security and privacy assessment and the integration with EVOTION platform and the EVOTION API used. A video user manual for the policy makers of the Social Media Policy Campaigning and Feedback Collection tool is presented in section 5. Finally, section 6 summarizes the conclusions, while the user manual and the complete API list are presented in the Annex.

2 Component overview

2.1 TruthNest Tool

The component is based on ATC's commercial product TruthNest[1]. It is a web application which performances as a social media Content Management system and acts as a powerful collaboration platform, which can be used for the collaborative aggregation, management and verification of social media items. It facilitates the business workflow of a team, which aims at searching, storing and organizing social media items and other articles from the internet. The members of a team can easily search content with advanced filters, ingest it inside collections in order to work collaboratively with it by adding annotations, assigning tasks and extracting information. Moreover, TruthNest offers a way to start an aggregation campaign, collecting automatically multiple documents and social media items related to a specific topic and providing statistics. With TruthNest, a team can also create an editorial report based on the material and foundings of a collection and post the report on Twitter, Facebook or as HTML in a website.

Its main role is to analyse a Twitter source or a tweet in order to produce analytics and aggregated statistics. It is mainly used by journalists for verification purposes but it can also be used as a marketing or investigation tool by anyone wishing to analyse a source in Twitter and get insights about his behavior and network. The results are covering the past activity, the network of friends and followers as well as the influence of the source. Finally, TruthNest offers a powerful way to search in Twitter, focusing on different visualizations, which enrich Twitter,'s advanced search such as: fetching the first tweet which mentions a hashtag or providing a timeline view of the most important tweets related to a topic during the last week.

In the scope of EVOTION, TruthNest is customized from the ATC's off the shelf products to monitor and collect information from social media networks in order to detect trends or reactions from different stakeholder groups or communities. In EVOTION it is also used for getting a deeper understanding of the aggregated content by extracting statistics, visualizations and metadata. Finally, it is used as a collaborative platform in order to produce reports to be used either for social media campaigns or for policy making decisions.

A summary of the functionality supported by the TruthNest tool follows:

- Allow Social Media monitoring (Twitter, YouTube, Facebook, RSS) in order to detect trends and topics (e.g. people's opinion on new bus itineraries, current roadworks etc).
- Provide aggregated statistics (e.g. sentiment analysis, named entity extraction) on monitored topics.
- Allow advanced searching in Social Media (Facebook, YouTube, Twitter).
- Provide mechanism to easily ingest content from various sources (photo/video, Social Media, web articles) in various ways (manual upload, Chrome extension, copy/paste link).
- Allow management of collected material (Social Media items, custom content, articles etc.)
- Allow team collaboration on collected material (real-time notifications, chat, private messages, annotations etc.)
- Allow report creation and publishing to various sources (PDF, HTML, Facebook, Twitter).

[1] https://www.truthnest.com/

- Track history of modifications on an item to preserve the chain of responsibility when dealing with content gathering and annotation.
- Provide integration with third party tools for fact-checking and verification.

2.2 Social Media Policy Campaigning and Feedback Collection Tool

The EVOTION SMPC tool is the part of the EVOTION ecosystem that serves the need of communicating a health policy to the social network communities. Specifically, a policy maker can create a campaign based on the contents of a health policy (rationales, goals, actions etc.) by publishing a series of Twitter posts that are tagged with appropriate hashtags to reach Twitter communities that are interested in the area of health policy decision making in general. The textual representation of what is considered a health policy is actually the details of the PHPDM models generated by the EVOTION toolchain and is exposed by the EVOTION Specification tool.

The SMPC tool supports the creation of streams for monitoring the potential impact of a health policy based on the reactions on the social network communities. The policy makers are allowed to work collaboratively with other policy makers to share social items (i.e. Twitter posts, YouTube videos etc.) that could affect their decisions while formulating a new health policy. A number of notification channels (email, instant chat, Slack) is also supported in order to make sure that they do not miss anything of importance or relevance with regard to the health policy related social messages/posts. Finally, it can be used as a collaborative platform for policy makers in order to produce reports to be used either for social media campaigns or for policy making decisions.

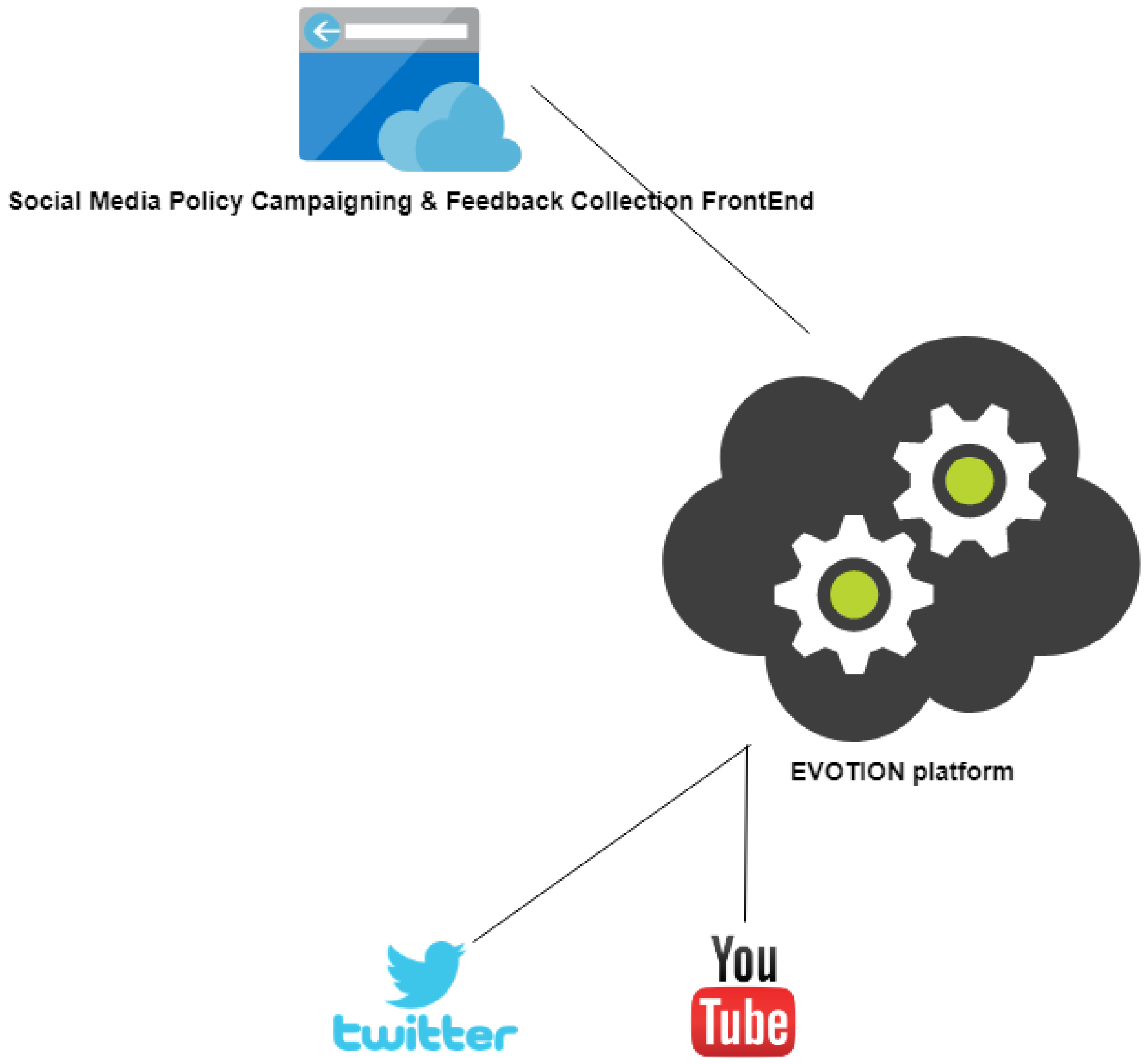

Social Media Policy Campaigning & Feedback Collection FrontEnd
EVOTION platform
twitter
You Tube

Figure 1 - Social campaign and feedback collection tool High-level Architecture

As it is depicted in the high-level architecture figure 1, the SMPC component exposes the details of a PHPDM model/policy to the Twitter social network communities. A policy maker is presented with the textual representation of a PHPDM model that it consists of a health policy description, the final decisions, the objectives of a health policy and for each objective the corresponding workflow actions. A policy maker can highlight different parts of the health policy per campaign that he/she thinks that a feedback could add some value not only in the formulation process of a new policy but also with regard to the potential impact or success before it is published.

2.3 EVOTION platform

The EVOTION Platform is an integrated platform supporting evidence based public health policy making related to the management of hearing loss (HL). The platform supports the acquisition, management and processing of patient medical, physiological, behavioural, hearing aid usage and cognitive activity data to support decision-making.

The EVOTION platform acquires data from a number of sources like the EVOTION mobile application as well as medical systems and devices, which are used in current clinical practices and support patient testing for the purposes of hearing aid fitting. The communication of a health policy to the social networks users results in an additional data source with regard to the results/feedback of the social media campaign. Specifically, the EVOTION Data Repository component stores the sentiment analysis (either positive or negative) results performed on the named entities extracted by the replies and/or comments provided by the Twitter users on a campaign post as well as the credibility of the users/communities that interacted with the campaign post. In this way the data pool of the EVOTION platform is enhanced and subsequently the users of the platform have an additional information that can affect their policy making decisions.

A social media policy campaign can refer to the textual representation of a PHPDM model details either before or after the execution of the big data analytics workflows.

3 Design

3.1 Methodology

For development purposes of the SMPC component, Agile Software Development Practices[2] was followed with frequent development cycles, rapid prototyping and close collaboration between self-organising, cross-functional teams.

Agile software development (ASD) is a group of software development methodologies based on iterative and incremental development, where requirements and solutions evolve through collaboration between self-organising, cross-functional teams, addressing the development efforts performed in the various stages of a project.

ASD goes beyond traditional software development processes (such as Waterfall) and exploits an evolutionary method that is an iterative and incremental approach to software development and integration. Thus, the requirements and design phases are iteratively met with the development phase to incrementally produce system software releases, which can be assessed over the suitability, the maturity and the immediate business value. On top of them, ASD foresees an intense testing phase, in which the unit testing is achieved from the developer's perspective and the acceptance testing is conducted from the customer's perspective.

ASD is suitable for the development strategy of an ICT solution, mainly because:

- A parallel process between the development of the planned software solution and the verification of the requirements can be followed, leading to business oriented people to actively participate in the specification of use cases and the evaluation of the system developments and provide valuable feedback in an iterative way.
- The work on individual and independent development fields is split among small groups comprising the separate development teams.
- As a ready to the market solution is envisaged rapidly, the solution can benefit from frequent releases to align the work done among the individual teams.

The producing releases can be exchanged among senior technical teams and business oriented groups to evaluate the effectiveness of the solution in real business situations.

3.2 Architecture

In figure 2, that follows, it is shown the position of the SMPC component within the overall EVOTION architecture.

[2] http://agilemethodology.org/

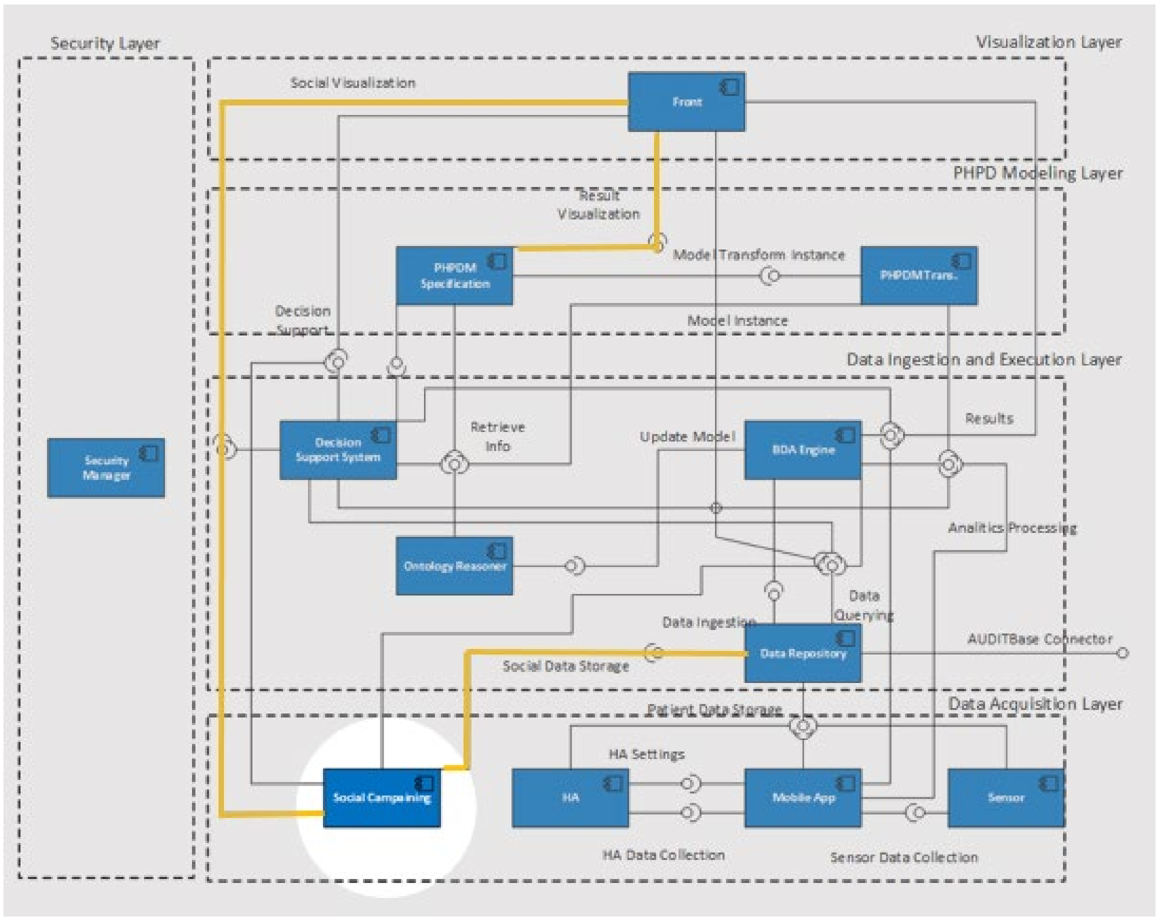


Figure 2: View of Social Campaign component within the EVOTION architecture

As it is depicted with the highlighted links in the overall architecture, the SMPC component relies on the PHPDM Specification component for getting the textual representation of a policy. It also depends on the Data Repository component for storing the results of a social media policy campaign (sentiment analysis per named entity). The results of a social media policy campaign can then be extracted by the Decision Support System component for further processing.

A high level architecture of the SMPC component that reflects the internal structure of its modules it is depicted in figure 3 that follows.

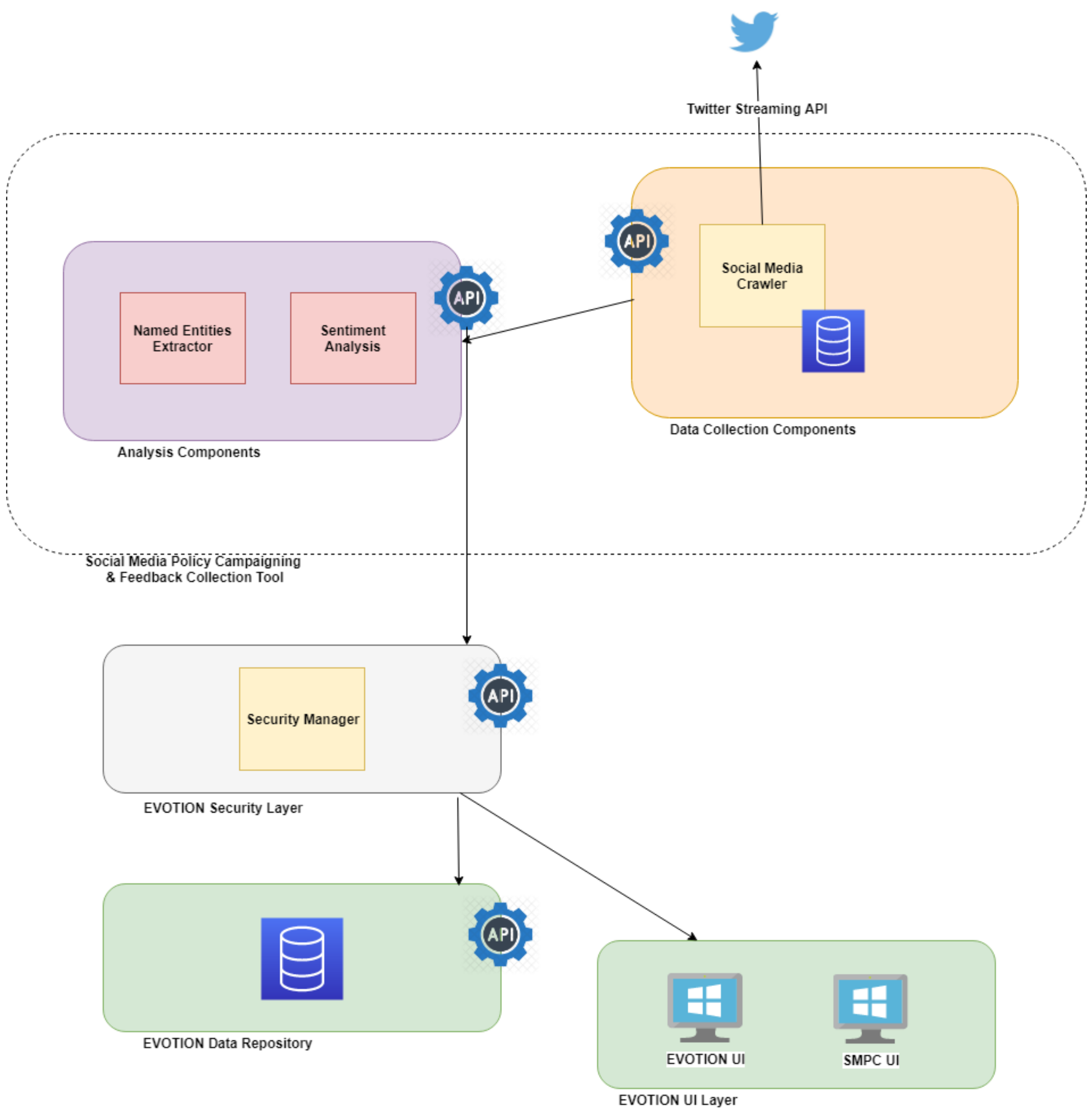


Figure 3: SMPC component internal architecture

The core modules consists of:

Social Media Crawler: It consumes the Twitter Streaming API that performs a search based on hashtags or other text that is contained inside a tweet body. To open the data stream to have Tweets delivered, the Social Media Crawler needs to send a connection request to the API. In the streaming model, this connection opens up the pipeline for data to be delivered as it happens, and will exist for an indefinite period of time. Once the connection is established, the stream sends new Tweets through the open connection as they happen, and the Social Media Crawler reads the data off the line as it is received.

Named Entities Extractor:

The named-entity extractor (NEE) module locates and classifies text (named entities) into pre-defined categories such as the names of persons, organizations, and locations. We use the Cloud Natural Language API [3]and set up an appropriate model.

Sentiment Analysis:

The sentiment analysis module Identifies if a text expresses a positive, negative or neutral sentiment. It is designed especially for sentiment analysis of short texts (tweets). A support vector machine (SVM) classifier has been trained on Twitter data that were provided by the International Workshop on Semantic Evaluation (SemEval-2014[4]). The classifier uses a feature vector of a unique set of features that are easily computable and are used widely for sentiment analysis purposes.

[3] https://cloud.google.com/natural-language/docs/

[4] http://alt.qcri.org/semeval2014/task9/

4 Implementation

4.1 Technology Stack

The technology stack is based on AngularJS (front end) and Java Spring boot (backend). For the real-time notification the socket technology implemented in Node.js is used. For the persistence layer, MongoDB as NoSQL Database, Apache S3 as object repository and Apache Solr as full text search engines are used.

AngularJS

AngularJS[5] is a platform and framework for building client applications in HTML and TypeScript. Angular is itself written in TypeScript. It implements core and optional functionality as a set of TypeScript libraries that you import into your apps. The basic building blocks of an Angular application are NgModules, which provide a compilation context for components. NgModules collect related code into functional sets; an Angular app is defined by a set of NgModules. An app always has at least a root module that enables bootstrapping, and typically has many more feature modules.

- Components define views, which are sets of screen elements that Angular can choose among and modify according to your program logic and data. Every app has at least a root component.
- Components use services, which provide specific functionality not directly related to views. Service providers can be injected into components as dependencies, making your code modular, reusable, and efficient.

The metadata for a component class associates it with a template that defines a view. A template combines ordinary HTML with Angular directives and binding mark-up that allow Angular to modify the HTML before rendering it for display. The metadata for a service class provides the information Angular needs to make it available to components through Dependency Injection (DI). An app's components typically define many views, arranged hierarchically. Angular provides the Router service to help define navigation paths among views. The router provides sophisticated in-browser navigational capabilities.

Spring Framework

Spring came into being in 2003 as a response to the complexity of the early J2EE[6] specifications. While some consider Java EE and Spring to be in competition, Spring is, in fact, complementary to Java EE. The Spring programming model does not embrace the Java EE platform specification; rather, it integrates with carefully selected individual specifications from the EE umbrella:

- Servlet API
- WebSocket API
- Concurrency Utilities

[5] https://angular.io/guide/architecture
[6] https://en.wikipedia.org/wiki/Java_Platform,_Enterprise_Edition

- JSON Binding API
- Bean Validation
- JPA
- JMS

The Spring Framework also supports the Dependency Injection and Common Annotations specifications, which application developers may choose to use instead of the Spring-specific mechanisms provided by the Spring Framework.

NodeJS[7]

Node.js is a JavaScript runtime built on Chrome's V8 JavaScript engine[8]. As an asynchronous event driven JavaScript runtime, Node is designed to build scalable network applications.

MongoDB[9]

MongoDB is a distributed database at its core, so high availability, horizontal scaling, and geographic distribution are built in and easy to use. MongoDB stores data in flexible, JSON-like documents, meaning fields can vary from document to document and data structure can be changed over time. The document model maps to the objects in your application code, making data easy to work with. Ad hoc queries, indexing, and real time aggregation provide powerful ways to access and analyze your data.

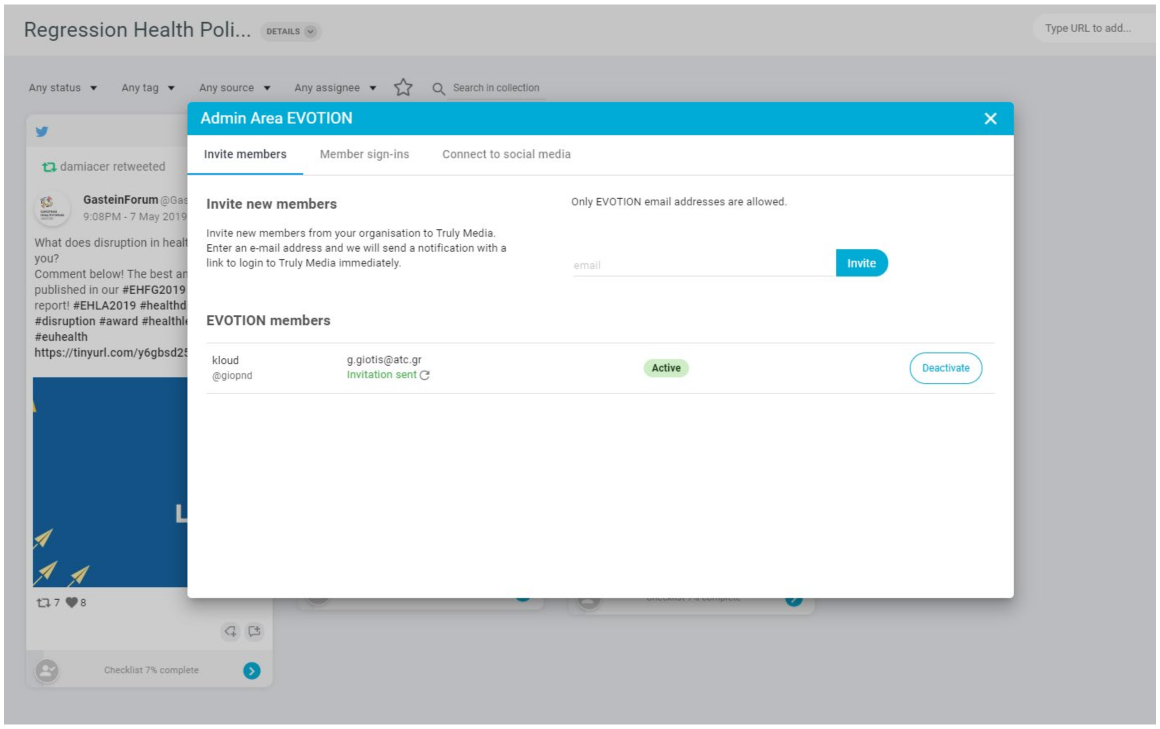
AWS S3 repository[10]

Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. This means customers of all sizes and industries can use it to store and protect any amount of data for a range of use cases, such as websites, mobile applications, backup and restore, archive, enterprise applications, IoT devices, and big data analytics. Amazon S3 provides easy-to-use management features so you can organize your data and configure finely-tuned access controls to meet your specific business, organizational, and compliance requirements. Amazon S3 is designed for 99.99% of durability, and stores data for millions of applications for companies all around the world.

4.2 Organizations & Invitation mechanism

An organization is a group of users that can share the content of a campaign. An organization refers to a policy maker’s organization. An admin organization is responsible to setup and configure new organizations and it is owned by the EVOTION administrator. An organization’s owner can invite new members to the SMPC tool. He/she has to enter the member’s email addresses and a notification with a link to login to the SMPC tool will be sent immediately.

[7] https://nodejs.org/en/
[8] https://v8.dev/
[9] https://www.mongodb.com/what-is-mongodb
[10] https://aws.amazon.com/s3/



Invite new members

Invite new members from your organisation to Truly Media. Enter an e-mail address and we will send a notification with a link to login to Truly Media immediately.

Only EVOTION email addresses are allowed.

EVOTION members

kloud
@giopnd
g.giotis@atc.gr
Invitation sent

Figure 4: Invitation of EVOTION users in SMPC tool

It is a prerequisite for an EVOTION user to have a Twitter account in order to access and use the SMPC tool. The Twitter account is used for publishing the posts of a new social media policy campaign. For that reason, each EVOTION user has to be linked to a Twitter account. The API for getting the textual representation of a PHPDM model (exposed by the EVOTION PHPDM Specification tool) is a personalised service API. Thus, a policy maker can only get all the health policies that he/she has been created.

4.3 Integration with EVOTION platform

The SMPC component communicates with the PHPDM Specification component in order to get a textual representation of a PHPDM model/policy. The SMPC component then extracts the information about a policy that is of interest, more specifically:

- The policy name
- The goal of a policy
- The rationale behind a policy
- A description for each objective of a policy
- The rationale behind a policy's objective
- The proposed action for each workflow of a policy's objective

All those fields are shown to the policy maker to help him/her decide what should be made part of the social media policy campaign. A sample textual representation response of a PHPDM model/policy follows:

```
[ {
    "policyID":8,
"userID":210,
"created":1553706539638,
"modified":1553706539638,
"statusID":1,
"policyName":"regression_demo",
"goal":"goal",
"rationale":"rationate",
"eTypeID":1,
"start":null,
"duration":0,
"durationPeriodID":0,
"repeat":0,
"repeatPeriodID":0,
"pObjectives":[
  {
    "pObjID":13,
    "policyID":8,
    "description":"my_obj",
    "rationale":"my_ration",
    "pObjWorkflow":[
      {
        "pObjWoflID":35,
        "pObjID":13,
        "policyAction":"my_action",
        "workflowID":19,
        "statusID":0            } ] } ] } ]
```

PHPDM Specification Endpoint Get a textual representation of a PHPDM model (goals, rationales, objectives)	
Method	GET

Path	/users/user_id/{user_id}/policies/	
Parameters	user_id	The user ID of the policy maker

The results of the SMPC component are stored in the EVOTION Data Repository component with the following API:

Data Repository Endpoint Store sentiment analysis results per named entity		
Method	POST	
Path	/campaigns/{campaign_id}	
Parameters	campaign_id	The Campaign ID.

Sample Body payload	{
	  "campaignId": 11,
	  "results": [
	    {
	      "namedEntity": "EU",
	      "sentiment": 0
	    },
	    {
	      "namedEntity": "EUHealthPolicy",
	      "sentiment": 1
	    }
	  ]
	}	

4.3.1 Privacy

It is important to be noted that all REST API calls from the SMPC component to either the PHPDM Specification or the Data Repository components complies with the authentication/authorization mechanism of the EVOTION platform. Thus, all API calls are authenticated and pass through the EVOTION Security Manager component.

A sample response that contains the token generated from the Security Manager layer (https://evotion.city.ac.uk/security/login/) follows:

```
{

  "token":
"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJhdXRoIjoxNTU3NDkyNjAxMjkzLCJhZ2VudCI6ImF0YzA
xIiwiZXhwIjoxNTU3NTE0MjAxLCJpYXQiOjE1NTc0OTI2MDF9.VgUFtKFK5RxRGj3T_hAkx3Y7qRcqlP
o_Q9-5RCnG4Hg",

  "user": "atc01",

  "ou": "undefined",

  "role": "configurator"
```

}

The token contains fields related to the user identification, access rights and account expiration. These fields are used by the Security Manager to manage the individual accounts.

4.4 Security and privacy

The technology stack of SMPC tool consists of an AngularJS front-end web application, a Java Spring boot backend and a MongoDB database. The technology stack and the complex business logic can be a target for hacker attacks. This is the reason why we consider it important to protect it from any malicious action. A penetration test has been performed which aims to:

- Identify and gain a thorough understanding of any security vulnerabilities that may be exploitable from the internet.
- Assess the possibility of gaining unauthorized access via the external network.
- Identify the appropriate technical or other measures that are required in order to eliminate or mitigate possible vulnerabilities, weaknesses or technical flaws.

In order to assess the protection from both external and internal threats, the penetration testing was implemented with two (2) basic scenarios; the hacker scenario and the malicious insider scenario. The tests conducted for each scenario simulated real attacking cases, aiming to evaluate threats that we may be facing on a daily basis.

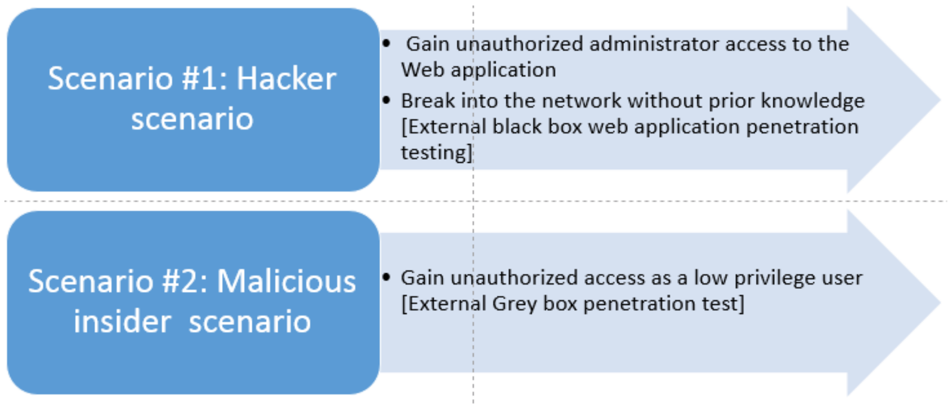

Scenario #1: Hacker scenario
• Gain unauthorized administrator access to the Web application
• Break into the network without prior knowledge [External black box web application penetration testing]
Scenario #2: Malicious insider scenario
• Gain unauthorized access as a low privilege user [External Grey box penetration test]

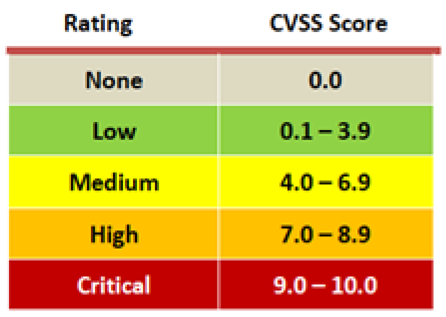
Figure 5: Penetration testing scenarios

4.4.1 Key Findings

The goals of external black box and grey box web application penetration test were met. A targeted external attack against the Web Application cannot result in a complete compromise of the application and organization's assets. The web application is overall at a good security level. No critical findings identified but few high, medium and low vulnerabilities were identified that could potentially be exploited to conduct an attack against the web application.

The security assessment is a process aiming to identify technical, design or human security weaknesses and to quantify the threat level of the performed attacks, thus aiding to enhance the overall security posture. In particular, security assessments are used to evaluate the security of a service, solution or infrastructure, based on the vulnerabilities that could be exploited by external or internal users.

Security assessments also provide a way to monitor compliance and evaluate the effectiveness of the existing security controls.
The objective of the present assessment was to assist in identifying the level of risks associated with the currently implemented security scheme and provide guidance and technical staff towards undertaking appropriate technical or other measures to mitigate the identified weaknesses.
To achieve the above, the tests performed simulated real attacking cases and scenarios, aiming to evaluate threats that the application may be facing on a daily basis.
Discovered vulnerabilities are assigned a specific score, in order to assess their risk level. The rating is based on the Common Vulnerability Scoring System (CVSS) (v3). The Common Vulnerability Scoring System (CVSS) is an open framework for communicating the characteristics and severity of software vulnerabilities. CVSS consists of three metric groups: Base, Temporal, and Environmental. The Base group represents the intrinsic qualities of vulnerability, the Temporal group reflects the characteristics of a vulnerability that change over time, and the Environmental group represents the characteristics of a vulnerability that are unique to a user's environment.
The Base metrics produce a score ranging from 0.0 to 10.0, which can then be modified by scoring the Temporal and Environmental metrics. For the purposes of the present report, only the Base Group metric group is used. Calculated scores can be mapped to the five (5) categories of ratings defined below:



Rating	CVSS Score
None	0.0
Low	0.1 – 3.9
Medium	4.0 – 6.9
High	7.0 – 8.9
Critical	9.0 – 10.0

Figure 6: Factor and corresponding rates

In addition, for a more qualitative approach, identified vulnerabilities are analysed based on four (4) critical factors that affect risk. Each factor of the qualitative approach is estimated based on a rating from (1) to (4). The factors and their corresponding ratings are described in Figure 6 below.

4.4.2 Methodology

The Security Assessment Team has adopted a penetration testing methodology based on well-known international standards and best practices:

- PTES – Penetration Testing Execution Standard (http://www.pentest-standard.org/)
- OWASP – Open Web Application Security Project (https://www.owasp.org)
- OSSTMM - Open Source Security Testing Methodology Manual, ISECOM (Institute for Security & Open Methodologies) (http://www.ideahamster.org)

In general, penetration testing assessments are divided in five phases depicted in Figure 7 and are completed with the penetration testing report.

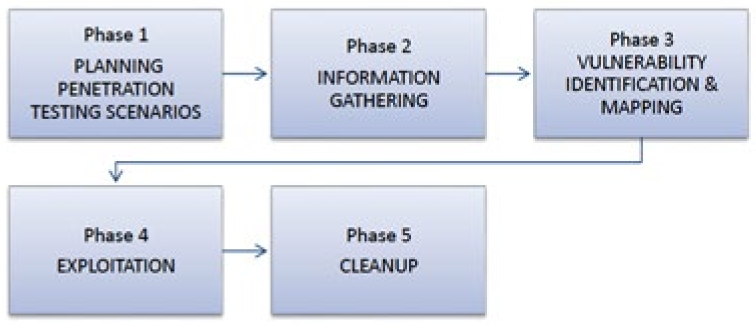

Phase 1
PLANNING PENETRATION TESTING SCENARIOS
Phase 2
INFORMATION GATHERING
Phase 3
VULNERABILITY IDENTIFICATION & MAPPING
Phase 4
EXPLOITATION
Phase 5
CLEANUP

Figure 7: Penetration testing phases

The results are shown in the following figures.

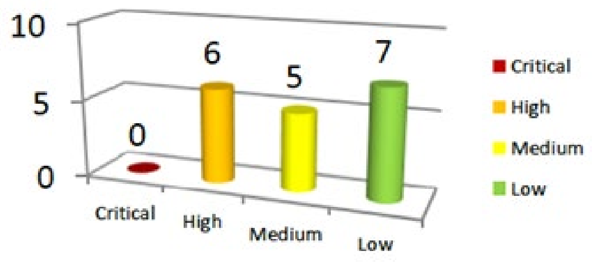


Figure 8: Summary of findings

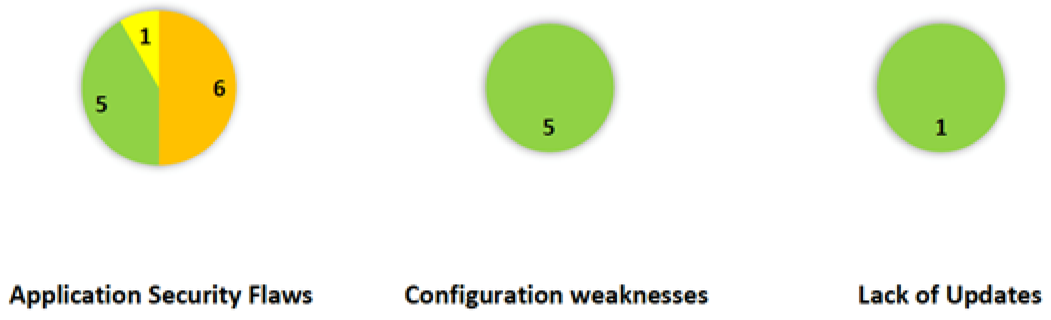


Figure 9: Top Risks/ Weaknesses

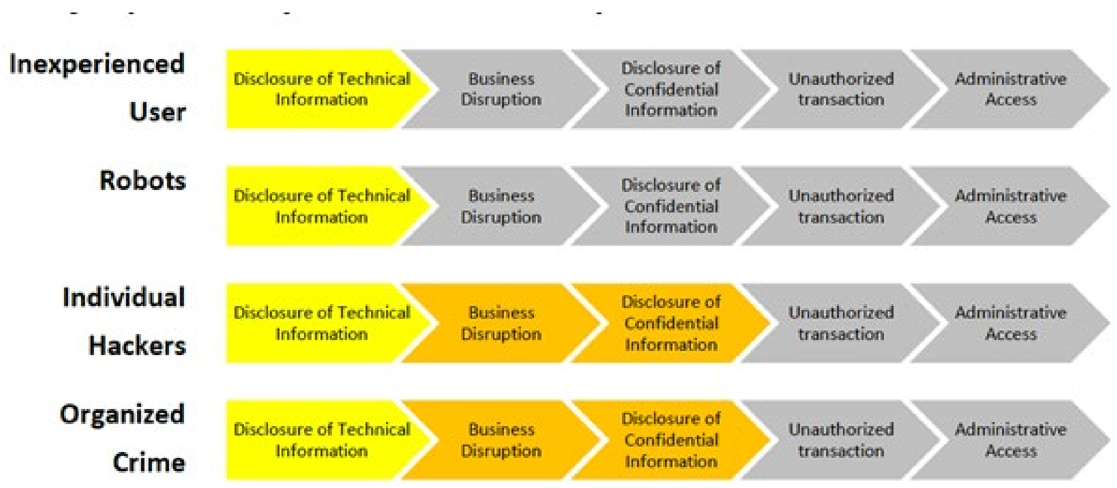
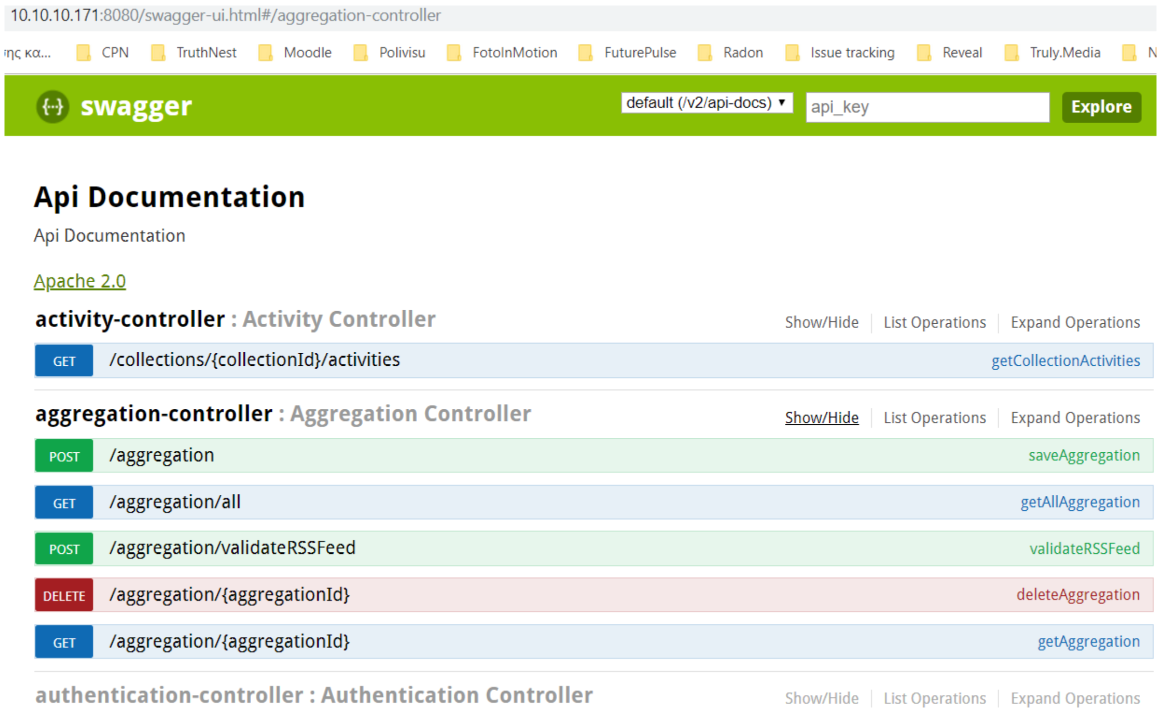


Figure 10: Level of Exploitability based on user's expertise

The SMPC component does not store any user related data (with the exception of the registration email), as for example the user's location, preferences, usage or other data. The information retrieved from Twitter is not stored within the platform. Any time the user logins to the SMPC, Twitter related information is generated dynamically by calling the Twitter API. This limits the usage of the SMPC to the Twitter REST API limitations, but on the other hand ensures users privacy and the consistency of the data. Twitter does not save the user's queries.

4.5 API Description

The tool's API specification has been described using the Swagger (former OpenAPI) open source software. Through Swagger connections are allowed directly to live APIs through an interactive, HTML-based user interface. Requests can be made directly from the UI and the options explored by the user of the interface. The API description url is not publicly available (for security reasons as indicated by the penetration tests). A screenshot is shown below.



10.10.10.171:8080/swagger-ui.html#/aggregation-controller

swagger

Api Documentation

Api Documentation

Apache 2.0

activity-controller : Activity Controller

GET /collections/{collectionId}/activities getCollectionActivities

aggregation-controller : Aggregation Controller

POST /aggregation saveAggregation

GET /aggregation/all getAllAggregation

POST /aggregation/validateRSSFeed validateRSSFeed

DELETE /aggregation/{aggregationId} deleteAggregation

GET /aggregation/{aggregationId} getAggregation

authentication-controller : Authentication Controller

Figure 11: Swagger interactive API documentation

A complete list of the documented API methods can be found in the Annex.

5 Demonstrator

The dashboard frontend of the SMPC tool is available at:

http://squall-4.atc.gr

In order to gain access, the user has to be invited from the SMPC administrator. He will receive an invitation email that will contain a link to the SMPC login page. Once the user is directed into the login page, he should register by using a Twitter account. The system stores the user's data. In this way, the Twitter account is used for login purposes and for enabling Twitter REST API's functionalities (e.g. perform Twitter search).

A short video presentation is accessible through the following URL:

http://h2020evotion.eu/?ddownload=1148

6 Conclusion

The EVOTION SMPC is an important part of the EVOTION solution. It is the EVOTION link between the health policy making process and the social media as it has been described.

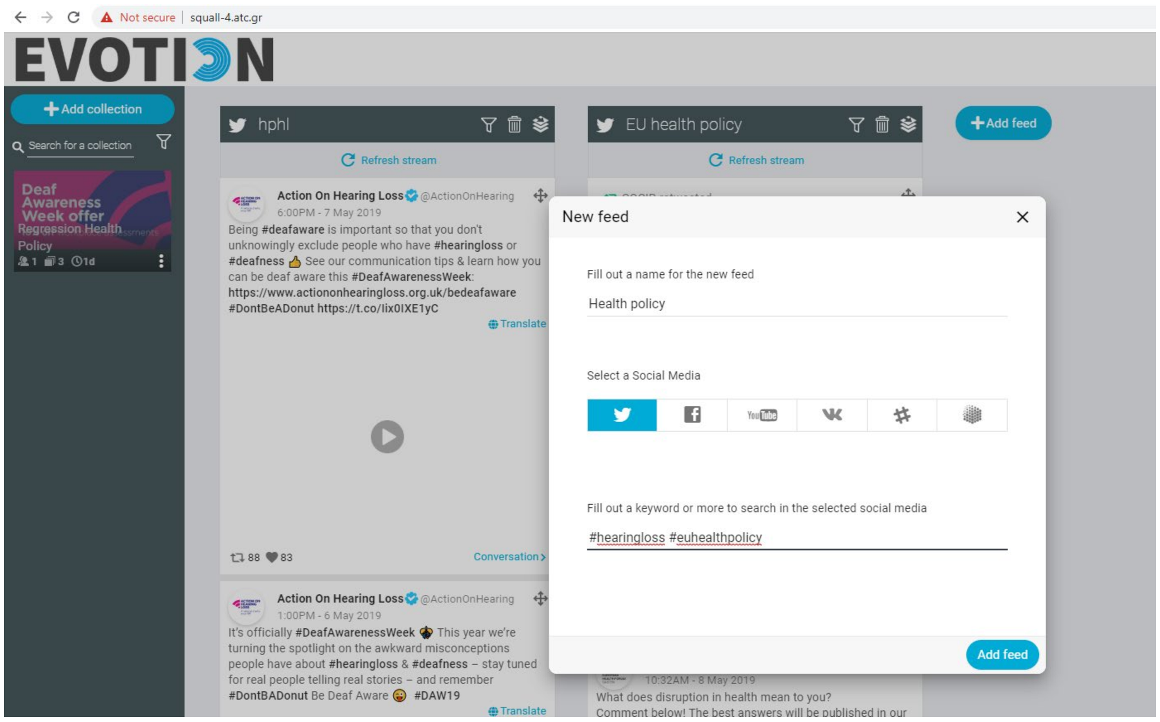
Furthermore, this document is accompanying demonstrator D5.8 and describes the design and the implementation of the EVOTION SMPC tool. The tool collects and stores all the related metadata that are required by the EVOTION platform in order to process and extract useful insights coming from Twitter posts, created as responses to the policy textual representations. In this way, the tool facilitates the policy making process in the EVOTION context.

This document is complemented by a video demonstrating the functionality of the SMPC, and an access link to the EVOTION SMPC component. These artefacts and this document constitutes deliverable D5.8.

7 Annex

7.1 Policy Maker User Manual

Step 1: Policy maker creates a new social media feed using specific keywords to filter Twitter/facebook/youtube in order to collect media items.



Action On Hearing Loss @ActionOnHearing
6:00PM - 7 May 2019
Being #deafaware is important so that you don't unknowingly exclude people who have #hearingloss or #deafness 👍 See our communication tips & learn how you can be deaf aware this #DeafAwarenessWeek: https://www.actiononhearingloss.org.uk/bedeafaware #DontBeADonut https://t.co/lix0IXE1yC

Action On Hearing Loss @ActionOnHearing
1:00PM - 6 May 2019
It's officially #DeafAwarenessWeek 🐝 This year we're turning the spotlight on the awkward misconceptions people have about #hearingloss & #deafness – stay tuned for real people telling real stories – and remember #DontBADonut Be Deaf Aware 😀 #DAW19

10:32AM - 8 May 2019
What does disruption in health mean to you? Comment below! The best answers will be published in our

New feed

Fill out a name for the new feed: Health policy

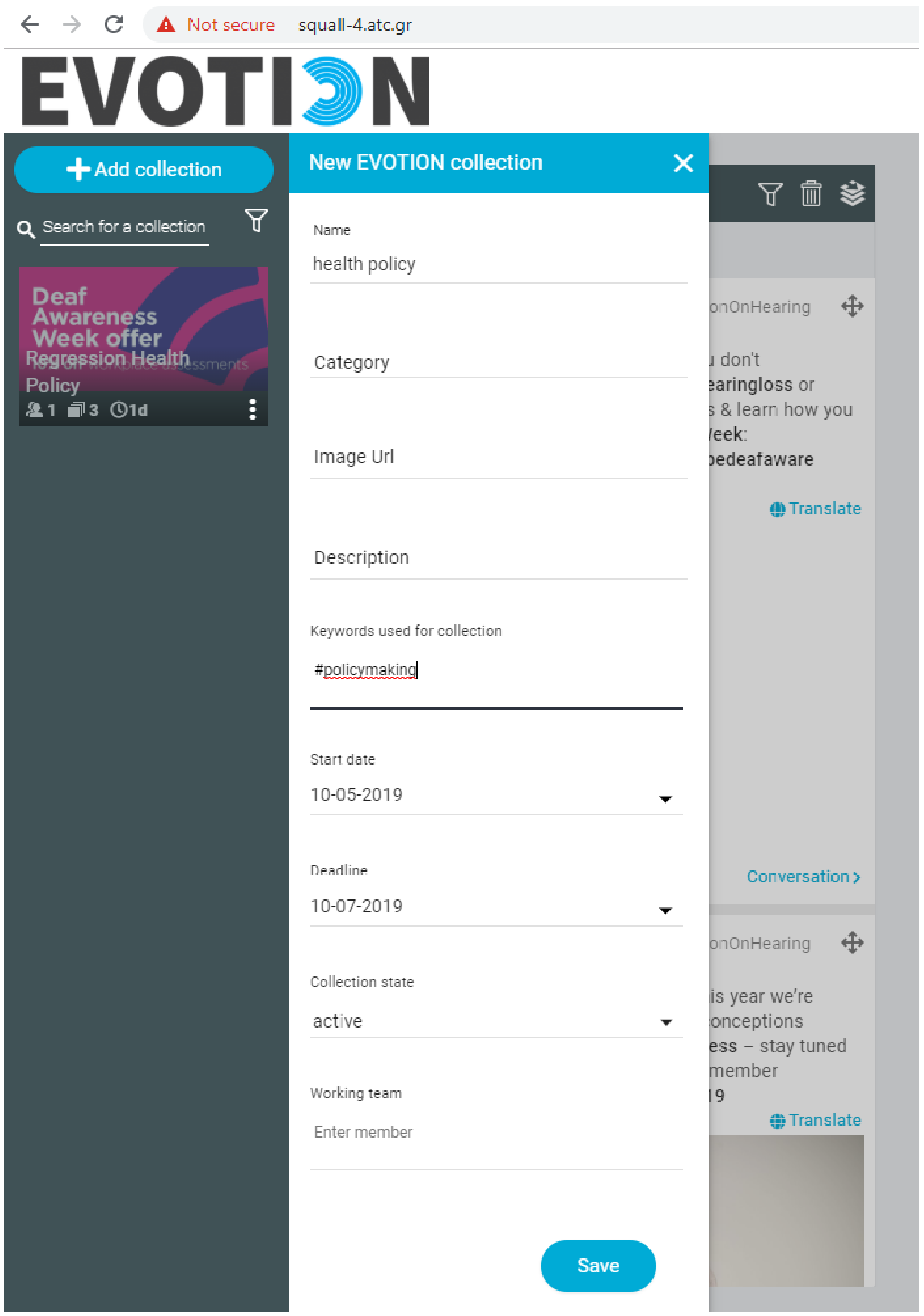
Select a Social Media

Fill out a keyword or more to search in the selected social media: #hearingloss #euhealthpolicy

Add feed

Figure 12: Add new feed

Step 2: Policy maker creates a new collection/campaign (an abstract placeholder for the selected thematic related social media items).



New EVOTION collection

Name
health policy

Category

Image Url

Description

Keywords used for collection
#policymaking

Start date
10-05-2019

Deadline
10-07-2019

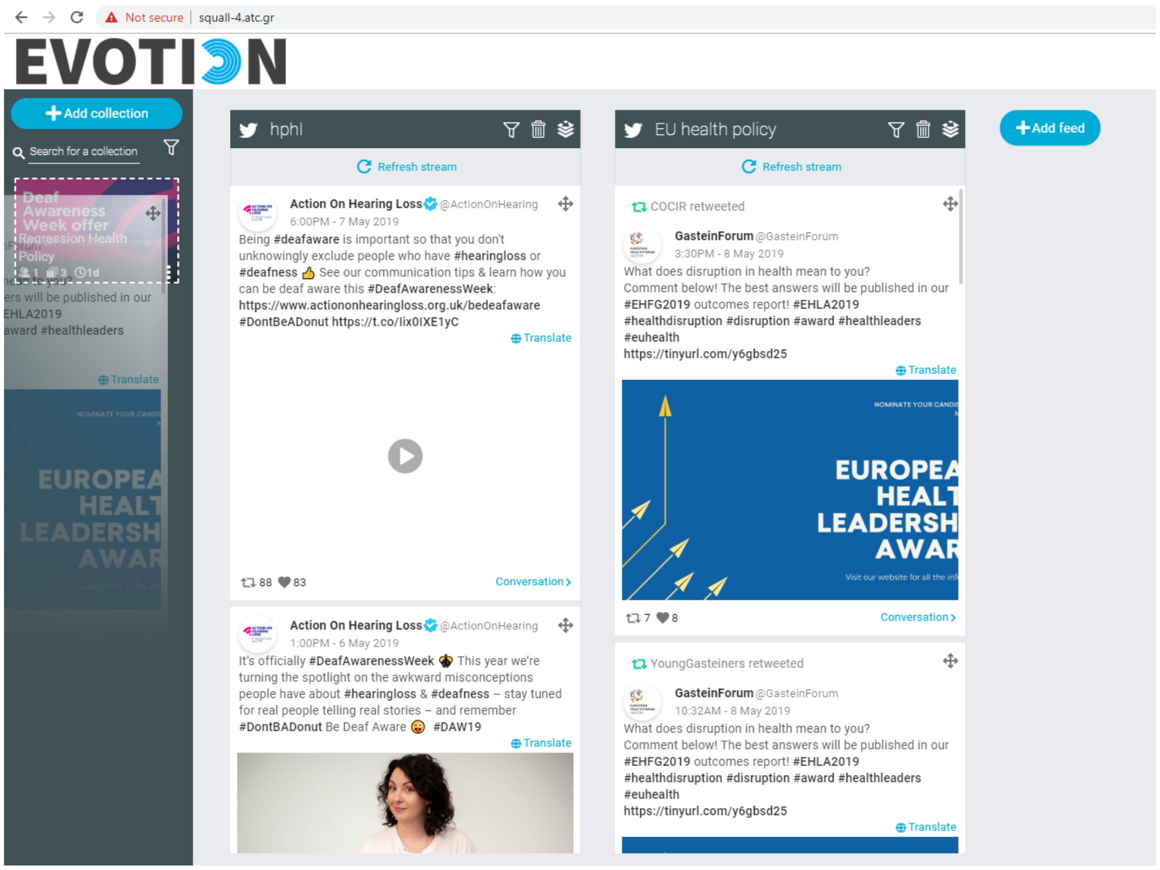
Collection state
active

Working team
Enter member

Save

Figure 13: Create new collection

Step 3: Policy maker inserts social media items from the social media feeds and custom URLs to a collection/campaign.



Action On Hearing Loss @ActionOnHearing
6:00PM - 7 May 2019
Being #deafaware is important so that you don't unknowingly exclude people who have #hearingloss or #deafness 👍 See our communication tips & learn how you can be deaf aware this #DeafAwarenessWeek: https://www.actiononhearingloss.org.uk/bedeafaware #DontBeADonut https://t.co/lix0IXE1yC
Translate
88 83 Conversation

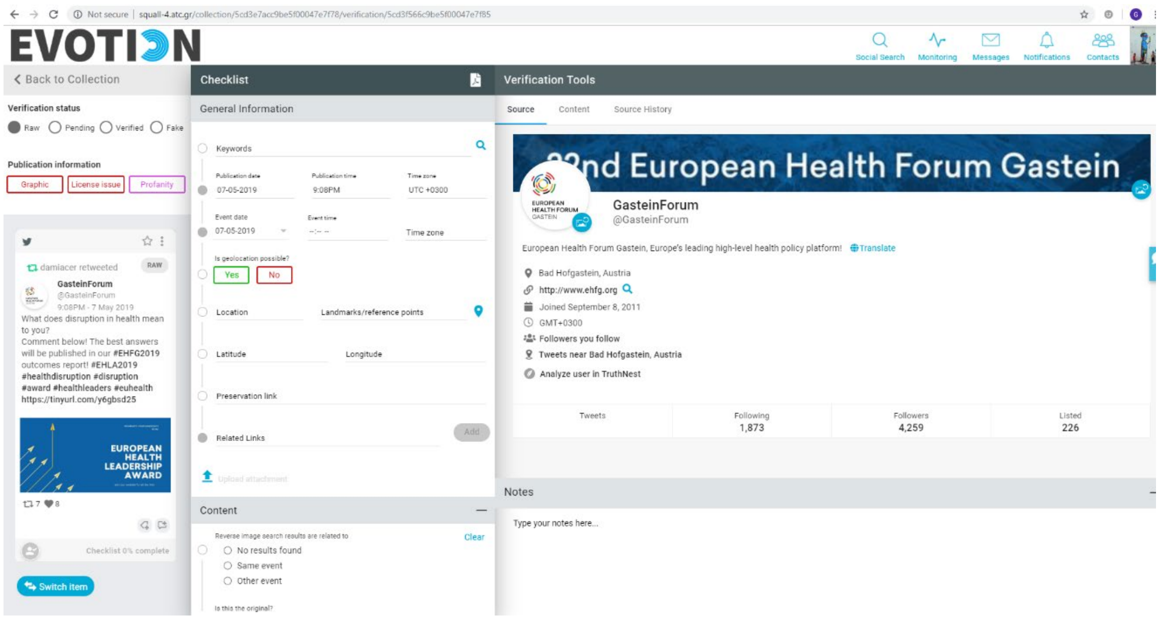
Action On Hearing Loss @ActionOnHearing
1:00PM - 6 May 2019
It's officially #DeafAwarenessWeek This year we're turning the spotlight on the awkward misconceptions people have about #hearingloss & #deafness – stay tuned for real people telling real stories – and remember #DontBADonut Be Deaf Aware 😀 #DAW19
Translate

COCIR retweeted
GasteinForum @GasteinForum
3:30PM - 8 May 2019
What does disruption in health mean to you? Comment below! The best answers will be published in our #EHFG2019 outcomes report! #EHLA2019 #healthdisruption #disruption #award #healthleaders #euhealth https://tinyurl.com/y6gbsd25
Translate
7 8 Conversation

YoungGasteiners retweeted
GasteinForum @GasteinForum
10:32AM - 8 May 2019
What does disruption in health mean to you? Comment below! The best answers will be published in our #EHFG2019 outcomes report! #EHLA2019 #healthdisruption #disruption #award #healthleaders #euhealth https://tinyurl.com/y6gbsd25
Translate

Figure 14: Drop items in a collection

Step4: Policy maker verifies the collected media items of the created collection/campaign.



Verification status

● Raw ○ Pending ○ Verified ○ Fake

Publication information

Graphic | License issue | Profanity

damiacer retweeted RAW

GasteinForum
@GasteinForum
9:08PM - 7 May 2019
What does disruption in health mean to you?
Comment below! The best answers will be published in our #EHFG2019 outcomes report! #EHLA2019 #healthdisruption #disruption #award #healthleaders #euhealth https://tinyurl.com/y6gbsd25

EUROPEAN HEALTH LEADERSHIP AWARD

7 8

Checklist 0% complete

General Information

Keywords

Publication date	Publication time	Time zone
07-05-2019	9:08PM	UTC +0300

Event date	Event time	
07-05-2019	--:-- --	Time zone

Is geolocation possible?
Yes No

Location | Landmarks/reference points

Latitude | Longitude

Preservation link

Related Links Add

Upload attachment

Content

Reverse image search results are related to Clear
○ No results found
○ Same event
○ Other event

Is this the original?

Source | Content | Source History

22nd European Health Forum Gastein

GasteinForum
@GasteinForum

European Health Forum Gastein, Europe's leading high-level health policy platform! Translate

- Bad Hofgastein, Austria
- http://www.ehfg.org
- Joined September 8, 2011
- GMT+0300
- Followers you follow
- Tweets near Bad Hofgastein, Austria
- Analyze user in TruthNest

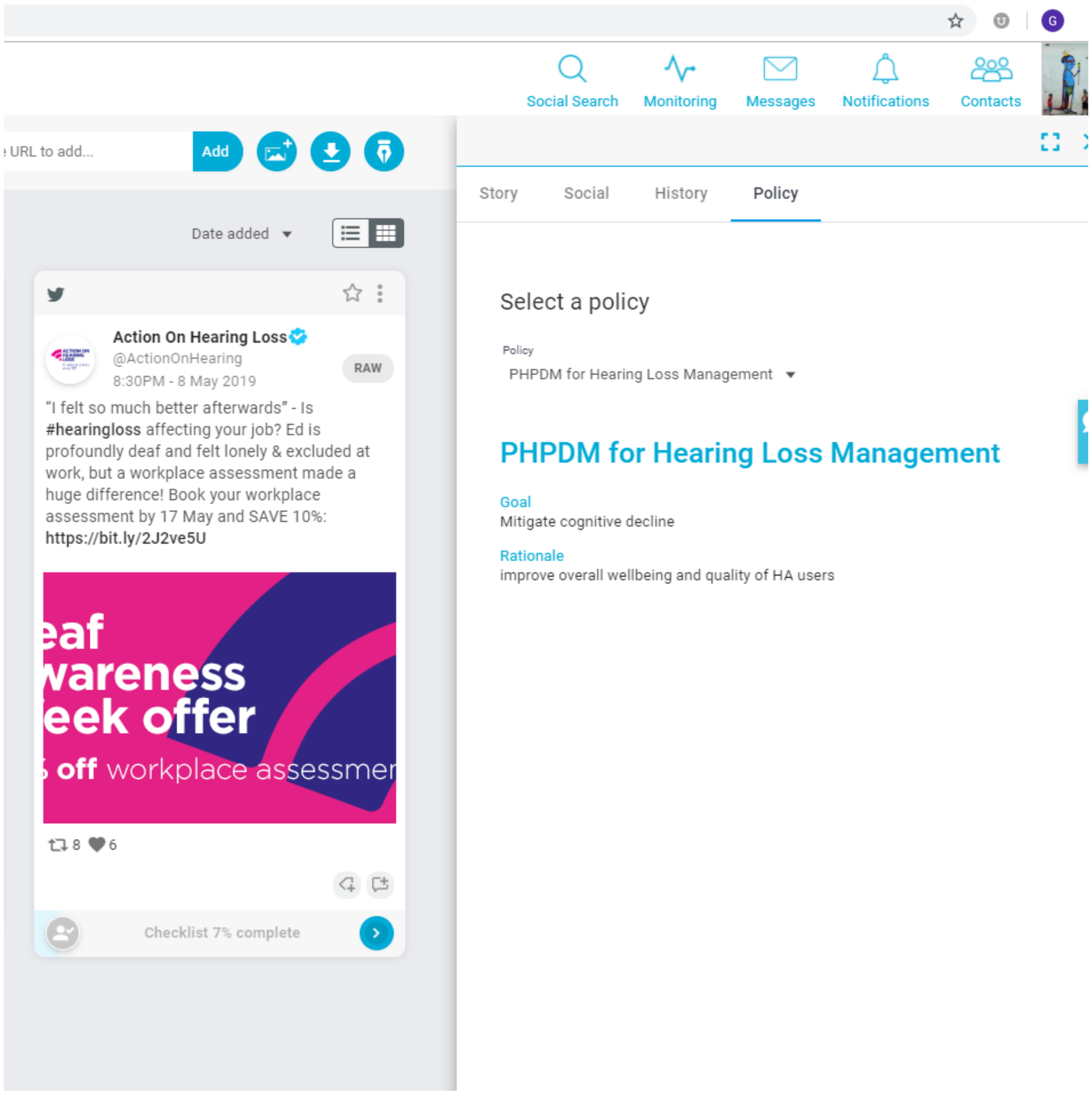
Tweets	Following	Followers	Listed
	1,873	4,259	226

Notes

Type your notes here...

Figure 15: Tweet verification

Step 5: From the collection/campaign, policy maker selects among the available health policies loaded from the EVOTION platform and publish a custom social message (tweet) based on a policy. Suitable hashtags should be selected to tag the policy campaign posts. The hashtags will define the target communities of interest for the campaign to be communicated to (i.e. @epc_eu EuropeanPolicyCentre).



Action On Hearing Loss
@ActionOnHearing
8:30PM - 8 May 2019

"I felt so much better afterwards" - Is #hearingloss affecting your job? Ed is profoundly deaf and felt lonely & excluded at work, but a workplace assessment made a huge difference! Book your workplace assessment by 17 May and SAVE 10%: https://bit.ly/2J2ve5U

8 6

Select a policy

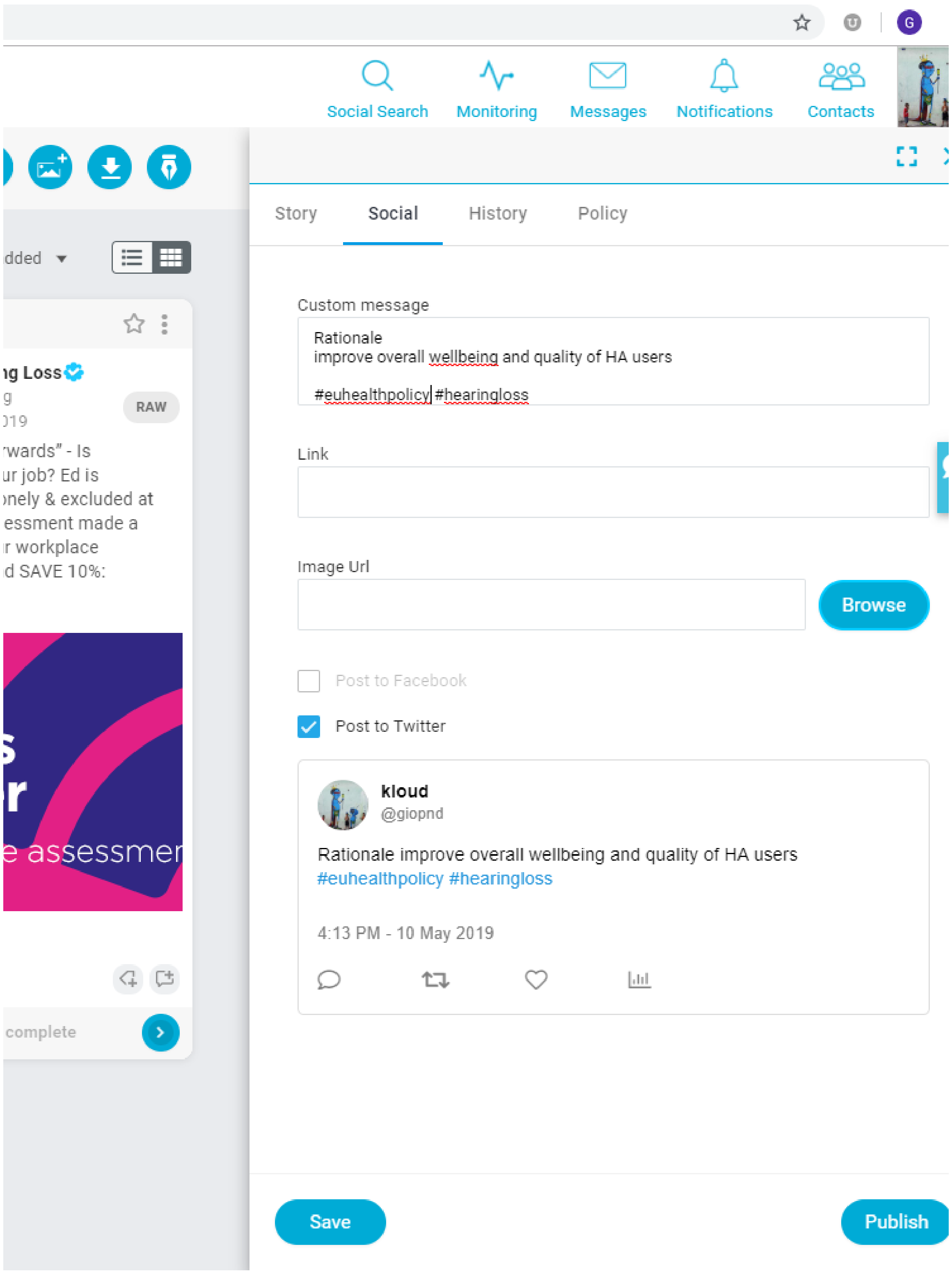
Policy
PHPDM for Hearing Loss Management

PHPDM for Hearing Loss Management

Goal
Mitigate cognitive decline

Rationale
improve overall wellbeing and quality of HA users

Figure 16: Load EVOTION health policies



Custom message

Rationale
improve overall wellbeing and quality of HA users

#euhealthpolicy #hearingloss

Link

Image Url

Post to Facebook

[✓ Post to Twitter]

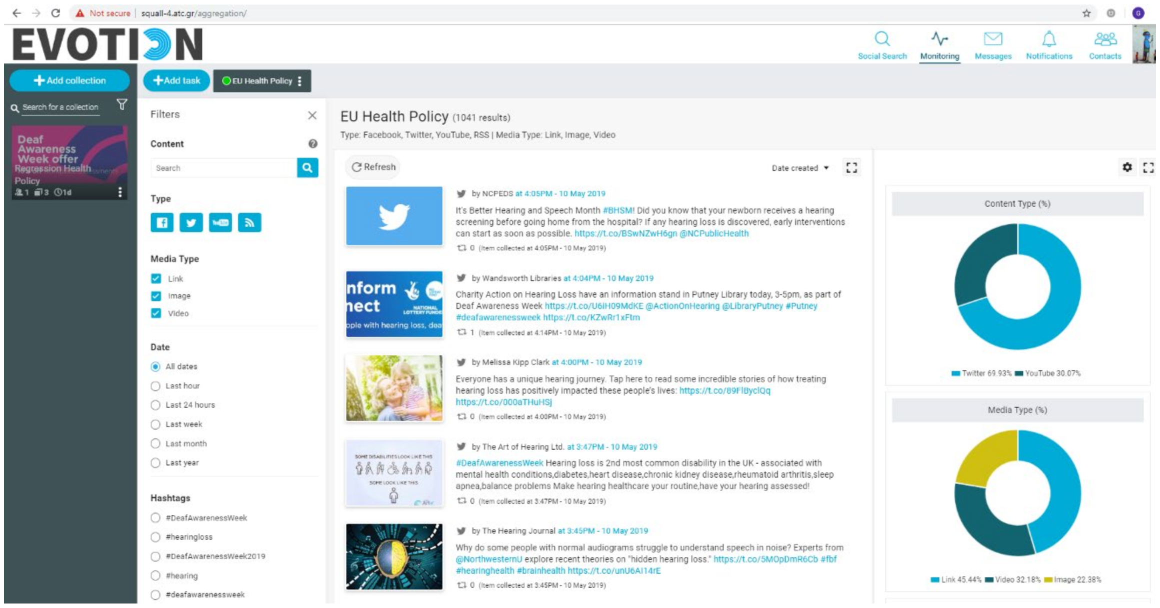
kloud
@giopnd

Rationale improve overall wellbeing and quality of HA users #euhealthpolicy #hearingloss

4:13 PM - 10 May 2019

Figure 17: Publish a new campaign

Step 6: An aggregation stream starts based on the policy's hashtags. The policy maker monitors the social media aggregation stream in order to detect reactions and see what is discussed with regard to a policy.



Media Type: [✓ Link] [✓ Image] [✓ Video]

Date: [✓ All dates] Last hour, Last 24 hours, Last week, Last month, Last year

Hashtags: #DeafAwarenessWeek, #hearingloss, #DeafAwarenessWeek2019, #hearing, #deafawarenessweek

EU Health Policy (1041 results)

Type: Facebook, Twitter, YouTube, RSS | Media Type: Link, Image, Video

by NCPEDS at 4:05PM - 10 May 2019

It's Better Hearing and Speech Month #BHSM! Did you know that your newborn receives a hearing screening before going home from the hospital? If any hearing loss is discovered, early interventions can start as soon as possible. https://t.co/BSwNZwH6gn @NCPublicHealth

0 (Item collected at 4:05PM - 10 May 2019)

by Wandsworth Libraries at 4:04PM - 10 May 2019

Charity Action on Hearing Loss have an information stand in Putney Library today, 3-5pm, as part of Deaf Awareness Week https://t.co/U6iH09MdKE @ActionOnHearing @LibraryPutney #Putney #deafawarenessweek https://t.co/KZwRr1xFtm

1 (Item collected at 4:14PM - 10 May 2019)

by Melissa Kipp Clark at 4:00PM - 10 May 2019

Everyone has a unique hearing journey. Tap here to read some incredible stories of how treating hearing loss has positively impacted these people's lives: https://t.co/89FlByclQq https://t.co/000aTHuHSj

0 (Item collected at 4:00PM - 10 May 2019)

by The Art of Hearing Ltd. at 3:47PM - 10 May 2019

#DeafAwarenessWeek Hearing loss is 2nd most common disability in the UK - associated with mental health conditions,diabetes,heart disease,chronic kidney disease,rheumatoid arthritis,sleep apnea,balance problems Make hearing healthcare your routine,have your hearing assessed!

0 (Item collected at 3:47PM - 10 May 2019)

by The Hearing Journal at 3:45PM - 10 May 2019

Why do some people with normal audiograms struggle to understand speech in noise? Experts from @NorthwesternU explore recent theories on "hidden hearing loss." https://t.co/5MOpDmR6Cb #fbf #hearinghealth #brainhealth https://t.co/unU6AI14rE

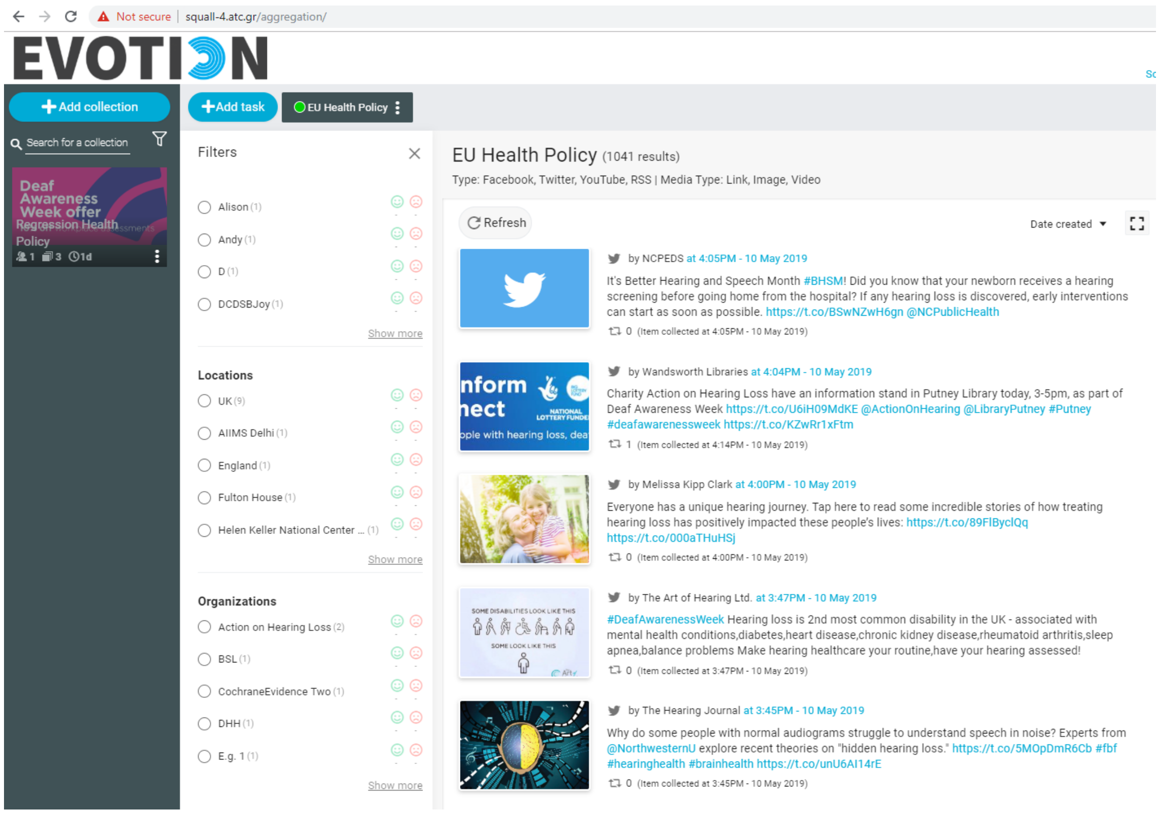
0 (Item collected at 3:45PM - 10 May 2019)

Content Type (%): Twitter 69.93% YouTube 30.07%

Media Type (%): Link 45.44% Video 32.18% Image 22.38%

Figure 18: An aggregation stream of results

Step 7: Policy maker is provided with aggregated statistics (e.g. sentiment analysis, named entity extraction) on monitored policy campaigns to get insights.



Alison (1)
Andy (1)
D (1)
DCDSBJoy (1)

Locations
UK (9)
AIIMS Delhi (1)
England (1)
Fulton House (1)
Helen Keller National Center ... (1)

Organizations
Action on Hearing Loss (2)
BSL (1)
CochraneEvidence Two (1)
DHH (1)
E.g. 1 (1)

EU Health Policy (1041 results)
Type: Facebook, Twitter, YouTube, RSS | Media Type: Link, Image, Video

by NCPEDS at 4:05PM - 10 May 2019
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0 (Item collected at 3:45PM - 10 May 2019)

Figure 19: Sentiment analysis results on named entities

7.2 API list

A complete list of the available API endpoints is presented in the following table. To better understand the role and functionality of each API endpoint, they have been grouped by their respective Spring Controller. According to the Spring MVC (Model View Controller) model, a Controller intercepts incoming requests, converts the payload of the request to the internal structure of the data, sends the data to Model for further processing and gets processed data from the Model and advances that data to the View for rendering.

RESTful applications are designed to be service-oriented and return raw data (JSON/XML typically). Since these applications do not do any view rendering, there are no View Resolvers – the Controller is generally expected to send data directly via the HTTP response.

Controller	**HTTP**	**API**	**Description**
activity-controller	GET	/collections/{collectionId}/activities	getCollectionActivities
aggregation-controller	POST	/aggregation	saveAggregation

aggregation-controller	GET	/aggregation/all	getAllAggregation
aggregation-controller	POST	/aggregation/validateRSSFeed	validateRSSFeed
aggregation-controller	DELETE	/aggregation/aggregationId	deleteAggregation
aggregation-controller	GET	/aggregation/aggregationId	getAggregation
authentication-controller	POST	/authentication/totp	login
authentication-controller	DELETE	/authentication/twitter	logout
authentication-controller	POST	/authentication/twitter	login
authentication-controller	GET	/logins	logins
collection-items-controller	GET	/collections/all/items	getAllAccessibleVerifiedItems
collection-items-controller	POST	/collections/{collectionId}/items	addCollectionItem
collection-items-controller	DELETE	/collections/{collectionId}/items/{itemId}	removeItemFromCollection
collection-items-controller	GET	/collections/{collectionId}/items/{itemId}	getItemByUUID

collection-items-controller	POST	/collections/{collectionId}/items/{itemId}/checklist-fields	updateItemChecklistField
collection-items-controller	POST	/collections/{collectionId}/items/{itemId}/video-preview	updateVideoItemPreview
collections-controller	GET	/collections	getVisibleCollections
collections-controller	POST	/collections	saveCollection
collections-controller	GET	/collections/all	getAllVisibleCollections
collections-controller	POST	/collections/search	searchCollections
collections-controller	DELETE	/collections/{collectionId}	deleteCollection
collections-controller	GET	/collections/{collectionId}	getCollection
evotion-controller	GET	/evotion/policies/{evotionUserId}	getPolicies
invitations-controller	GET	/invitations	invitedUser
invitations-controller	POST	/invitations	inviteUser
invitations-controller	DELETE	/invitations/{invitationId}	deleteInvitedUser

notification-controller	DELETE	/users/me/activity-notifications	collectionMarkAsRead
notification-controller	GET	/users/me/activity-notifications	collectionUnreadCollectionIds
organisation-controller	GET	/organisation/{organisationId}	getOrganisation
organisation-controller	PUT	/organisation/{organisationId}	updateOrganisation
stats-controller	GET	/stats/item-added	itemsAddedGraph
stats-controller	POST	/stats/item-added	itemAdded
stats-controller	GET	/stats/organisations/collections/month	collectionsPerMonthPerOrganisation
stats-controller	GET	/stats/organisations/inbox/month	inboxMessagesSentPerMonthPerOrganisation
stats-controller	GET	/stats/organisations/sharedCollections/month	sharedCollectionsPerMonthPerOrganisation
stats-controller	GET	/stats/organisations/users	usersPerOrganisation
stats-controller	GET	/stats/users/activity	numberOfActivityPerUser
stats-controller	GET	/stats/users/activity/month	numberOfActivityPerUserPerMonth
stats-controller	GET	/stats/users/chat	numberOfChatMessagesPerUser
stats-controller	GET	/stats/users/inbox	numberOfInboxMessagesPerUser
stats-controller	GET	/stats/users/logins/month	numberOfLoginsPerUserPerMonth

streams-controller	GET	/users/me/streams	Get streams
streams-controller	POST	/users/me/streams	Save steams
twitter-controller	GET	/twitter/conversation	Get stream
twitter-controller	GET	/twitter/home	getHome
twitter-controller	GET	/twitter/lists	getLists
twitter-controller	POST	/twitter/post	post
twitter-controller	POST	/twitter/postTweet	registerUser
twitter-controller	GET	/twitter/rate-limit	getUserPostsTrendline
twitter-controller	GET	/twitter/startStream	startStreamingAPI
twitter-controller	GET	/twitter/stopStream	stopStreamingAPI
twitter-controller	GET	/twitter/stream	getStream
twitter-controller	GET	/twitter/user-posts-trendline	getUserPostsTrendline
twitter-controller	GET	/twitter/userDetails	getUser

twitter-controller	GET	/twitter/userPlaces	getUserPlaces
user-controller	GET	/users	getUsers
user-controller	GET	/users/me	getAuthenticatedUser
user-controller	POST	/users/me/registrationInfo	registerUser
user-controller	GET	/users/minimal	getMinimalUsers
user-controller	POST	/users/{userId}/status	setUserActivationStatus
webhook-controller	POST	/webhook	addCollectionItem