A vision on the discoverability of Public Services in the Smart Cities of Ghent and Madrid

White paper 2.1

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This document is an official output from the OASIS team to the European Commission. The text will be disseminated as separate vision texts on the website of OASIS, on the blog of open Summer of code and on the blog of the Open Belgium 2017 conference.

Content

Executive summary

This document contains the vision of the OASIS team on public service delivery in relation to the publication of Linked Open Data.

The OASIS team argues that Europe's citizens are becoming increasingly mobile, and have a right to easily find and consume public services in any member state, provided that they satisfy the requirements of the particular service based on local legislation. As opposed to many "over-the-top" private services (such as Uber, AirBNB, etc.), public services are often hard to find, their availability differs greatly depending on the Member State, and they are often difficult to gain access to. This can change.

OASIS believes that Linked Open Data holds the key to make Europe's public services more accessible and comprehensible, and will in the end allow all European citizens to enjoy a similar access to public services, independent of their location, native language, or socio-economic position. OASIS envisions a Europe in which all levels of government publish Linked Open Data on their services, and third parties (such as SMEs) are free to develop value-added services that work across Europe, thereby increasing their discoverability, accessibility and quality.

To realise this vision of a unified "market" for public services based on Linked Open Data, the OASIS team sets out to "lead by example". During this Action, the team will develop at least two fully functional solutions that can be used in both Madrid and Ghent, based on Linked Open Data. In doing so, OASIS will have to overcome the challenges that currently limit the adoption of Linked Open Data, thereby clearing the road for others to do the same. Such challenges may be legislative, cultural or technical.

Principles

The OASIS team will build advanced solutions for public service delivery based on Linked Open Data. In many cases such data will still have to be created or published. In order to avoid that this exercise is a one shot effort, the team adheres to a set of core principles throughout the Action:

- **Demand-based**: any standards, vocabularies or taxonomies used throughout the Action will be selected based on the real need of end-user applications.

- **Maximize re-use**: the creation or adoption of all vocabularies will liaise closely with the work done within the ISA programme, and will build upon efforts of the European Commission (DG CONNECT, DG DIGIT and The Publications Office) to harmonize Open Data Portals across Europe, as well as federations or representatives of the transport industry (ITS, POLIS, …) to make sure that any existing assets are fully re-used
- **Linking**: in case any new concepts (or controlled vocabularies, taxonomies, etc.) are created, this will be maximally linked to any existing data sources.
- **Consensus**: whenever introducing new concepts, vocabularies or taxonomies, consensus will be sought about the applicability and the level on which they should be incorporated into the semantic web. Therefore, experts from the relevant working groups and institutions will be asked to participate in an (informal) advisory board.

Introduction

Governments provide public services to people. There are different kinds of services. Some services are available for everyone and are provided by default (eg. a library, a fire brigade, police services, etc.) or are even obliged to be used (eg. education). Other services are not provided by default, because there are criteria in order to benefit from the service (eg. for a subsidy for the renovation of a property, you need to be the owner of the property and the property should be older than 20 years, etc.). Currently, most public services are only rendered if people explicitly apply for them. The reason for this is that the government does not always have the right information concerning who requires a given service, and if they do have such information they are often obstructed by privacy legislation to use th. In Europe, it is not allowed to create profiles of citizens without their explicit approval.

The services public governments provide are available within their jurisdiction. This is in most cases an existing administrative unit (municipality, group of municipalities, province, region, country, group of countries,, ...).

Services can be applied for at a location which can be physical (a location of a city desk) or virtual (telephone, email, internet). Services are also provided at a location which can be physical (a location of a city desk, an address of a building) or virtual (a bank account). The communication in order to discover or apply for a service is normally given in the official language of the government body providing the service (eg. Dutch in the Flemish region).

The difficulties in consulting public services becomes more clear by imagining a number of use cases:

Alice wants to move from Ghent to Madrid

Alice lives in Ghent. She is 30 years old, is married to John and has two children Rik and Louise. Alice likes sports, she plays basketball twice a week. Alice speaks 3 languages: Dutch, French and English.

She recently applied for a job in Madrid. Last month she was informed that she is the chosen candidate and that she can start immediately. Since this is the opportunity of a lifetime, she and her family want to move as soon as possible to Madrid.

Alice wants to know which services are available in order to ease the transfer. Does she has any obligations in Ghent and in Madrid? How can she find a new place to stay? Where can her children go to school? Can her husband get a job? Are there public basketball pitches? etc. Alice has a lot of questions... and is trying to get informed as quickly as possible. Googling "move to Madrid" doesn't yield a single result she finds useful, apart from some real estate websites, perhaps. What she really needs to know where to register for citizenship and which official websites to consult, and if they are available in English.

Paul is renovating his apartment

Paul is a single guy in his early forties. He lives in Ghent and is a literature fanatic. Paul owns a small apartment which has been build in the early eighties. Paul wants to renovate his apartment and has heard there are many subsidies available. He wants to know exactly what services are available for him in order to make a budget for the renovation.

Googling "*renovatie Gent*" actually yields some interesting results, but Paul has to sift through the websites of private contractors. On the City's website, he finds [this article](). Reading through it, he decides to make an appointment with his local administration, but is this really the right service for him? And are there any other services he can make use of? He'll find out when going into the office, he hopes.

Improving Public Services

Location matters

As stated in the Treaty of the European Union, there is free movement of people within the union. This means that people can move from one jurisdiction providing services to another. There are many government bodies providing services. The jurisdictions of these bodies are sometimes disjoint, partially overlapping or containing one another. Therefore, for citizens of the EU, it is almost an infeasible task to find out what services are provided at a specific location and by what government body. The discovery of these services is an issue, since many different government bodies are involved in offering a service at a specific location.

Semantics matter

Many government bodies provide a website with information concerning the services they provide. But unfortunately they mostly provide this information in the official language of the government body. In the European Union there are 24 official languages spoken by its citizens. Thus even when a service is easily found, not every citizen understands the meaning of this services. Furthermore, the availability, terminology

Rightful claimant or beneficiary?

As mentioned above, not all services are provided by default. A citizen needs to ask for the service, if he wants to benefit from it. This means that not everyone who is entitled to have to the service, eventually benefits from it. With information governments possess it is sometimes feasible the discover what citizens are entitled to benefit from a service, but due to privacy regulations governments are not allowed to use this information to inform possible beneficiaries (it is not allowed to create profiles of a person). Only if a person gives his approval for using the privacy related information in order to inform him on a specific service, a government can push this information towards that individual.

State of the Art

This section details the state of the art concerning semantic description of public services. These findings are based on informal interactions with a number of key administrations in Europe, and is therefore not complete. Rather than providing an exhaustive overview, the section aims to give a concise indication of the leading European initiatives in terms of public service descriptions, thereby setting the bar for the OASIS Action.

Describing Public Services

In what follows, we provide an overview of the most important vocabularies and ontologies that are used to describe Public Services. The goal of OASIS is to make such services discoverable through Linked Open Data, which is why this

section will focus mainly on vocabularies that have already been implemented in the semantic web (through formal languages such as [RDF](), [OWL]() or [SKOS]()).

CPSV

The [Core Public Service Vocabulary]() is a simplified, reusable and extensible data model that captures the fundamental characteristics of a service offered by public administrations. It was created by the ISA programme as a baseline vocabulary for European public administrations that manage public services. CPSV does not provide a strict standard or standard format for governments to adhere to. Instead, it can be perceived as a set of "terms" (Concepts) out of which administrations can pick and choose when describing their services.

The non-obligatory approach may seem like wishful thinking, but forcing administrations in each Member State to adhere to a strict standard for the description of (very differing) public services is practically impossible and may even be perceived as politically incorrect. Indeed, each Member State has very different cultural backgrounds that need to be taken into account when analysing their public service offering. Public services are the number one most visible way through which citizens interact with their (local) governments and therefore are subject to much political debate. The question then becomes: how can such a complex and variable domain be modelled and made comprehensible to (non-human) third parties? The OASIS team believes, again, that the semantic web provides the technology required to tackle this problem. [Quoting from Joinup](), the ISA's public portal for interoperability solutions for public administrations:

The vocabulary will emerge as the common denominator of existing national, regional and local public service models, providing a lingua franca that will enable the seamless exchange of services and information across different e-Government systems.

Even though this seems to be quite far from the day-to-day reality in the European public sector, OASIS aims to make exactly this happen by providing a number of real-world solutions based on semantic vocabularies such as CPSV.

CPSV-AP

As opposed to the loose set of terms which is CPSV, CPSV-AP provides an "Application Profile" or a schema in which to connect the terms together in the

scope of a specific application. The latest specification of this vocabulary mentions three concrete use cases for which it may be used:

- Finding information about public services more easily
- Building user-centric catalogues of public services at all levels from regional to a European federated catalogue
- Managing portfolios of public services

To realise these use case, CPSV-AP provides a schema which relates (most notably) the following classes: A *Public Service*, an *Event*, an *Output*, a *Rule*, a *CriterionRequirement*, and a *Channel*. A *Public Service* in CPSV-AP is defined as:

a mandatory or discretionary set of acts performed, or able to be performed, by or on behalf of a public organisation. Services may be for the benefit of an individual, a business, or other public authority, or groups of any of these. The capacity to act exists whether it is used or not, and the term 'benefit' may apply in the sense of enabling the fulfilment of an obligation. As defined in the revised version of the European Interoperability Framework , a European public service comprises any service provided by public administrations in Europe, or by other organisations on their behalf, to businesses, citizens or others public administrations.

CPSV-AP is now at its version 2.0 which includes Life Events as an important denominator or trigger for a group of potential services. The current list of life events in the specification consists out of:

- Having a child
- Becoming a (social) caretaker
- Starting education
- Looking for a new job
- Losing/quitting a job
- Looking for a place to live
- Changing relationship status
- Driving a vehicle
- Travelling abroad
- Moving to/from the country
- Going into military service
- Facing an emergency / health problem
- Facing a crime
- Retirement
- Death of a relative

The CPSV-AP Schema is available as Linked Open Data in [Turtle](#) and in many other formats through the [Joinup portal](#).

Of course, CPSV-AP remains just a *schema*, and it is of little use when no administrations are adopting it. It is therefore paramount that every new version of CPSV-AP remains simple but flexible so that even the smaller and less technologically apt administrations are be able to apply it. Examples of European public administrations that already implement CPSV-AP are:

- [The City of Ghent](#) in Belgium
- [The City of Zaragoza](#) in Spain
- [The Finnish Ministry of Economic Affairs](#)

CCCEV

[CCCEV](#) is the The Core Criterion and Core Evidence Vocabulary, as defined, again, in the ISA programme of the European Commission. This is an important vocabulary for Public Service delivery because it may be used to indicate the legal or statutory requirements an individual (citizen) needs to fulfill in order to be eligible for a service. CCCEV largely draws upon the experiences gained through the creation of The European Single Procurement Document (ESPD). This document (or *Form*) allows the simplification/streamlining of public procurement, so that suppliers should no longer provide the same information time and again to prove that they may be eligible to subscribe to a public tender. As a consequence, the semantics in this vocabulary are largely related to businesses, but they may (and should, see **principle 1**, on re-use) be used for individuals as well.

Modelling the requirements a citizen needs to fulfill (or the evidence he or she needs to provide) in order to be eligible to benefit from a public service may, in some cases, be quite complex. Consider, for instance, the requirements different European Member States may have for different social security products. However, in most cases, it suffices to be a citizen of a Member State in order to be eligible to benefit from a service. Citizenship (for instance) may also bring about a number of obligations.

Even though the requirement may be simple, services are very seldom rendered to those who are eligible by default. The main reason for this is that governments are (rightly) prohibited by European and national legislation to use an individual's information for purposes which he or she did not subscribe to,

unless specific legislation prescribes the use of that data. The General Data Protection Regulation (the GDPR) arguably states that personal data should only be used for a well defined purpose and should only be stored for the amount of time necessary to fulfill that specific purpose. Exceptions may be made in certain circumstances, with or without the explicit consent of the citizen. In general, when applied to public service delivery, governments and government agencies are not allowed to transfer personal data among one another for the delivery of an "unexpected" Public Service without the explicit consent of the data subject or without approval from the national Data Protection Authority. The ambivalence of such data transfers become especially clear when reading "Public Service" as an obligation, such as paying a fine or being prosecuted.

Nevertheless, the European Commission's vision for a Digital Single Market clearly states (under Pilar 3. Maximising the growth potential of the digital economy) that the "Once Only" principle should be adhered to. More precisely, the [e-government action plan](#) states that:

Public administrations should ensure that citizens and businesses supply the same information only once to a public administration. Public administration offices take action if permitted to internally re-use this data, in due respect of data protection rules, so that no additional burden falls on citizens and businesses.

It is clear that data protection rules and the "Once Only" principle clash at times and it is not always clear which rule to consider. Whether or not this implies that Public Services could or should be rendered automatically remains subject to debate. Unsurprisingly, considering that in many cases, governments may simply lack the funds to apply a certain subsidy or social welfare product to each and every citizen who formally may be entitled to it.

CPOV

In most cases, citizens applying for a specific Public Service need to contact one out of many governments or governmental agencies which have jurisdiction in his or her place of residence. This may be nuanced even further since some services may apply for citizens of other nation states, sometimes depending on a statutory right (for instance, he or she is working in another country), or even for tourists or visitors of a Member State, city or region. It suffices to say that it may be very complex to identify the organisation a citizen needs to contact in order to apply for a service.

Therefore, the [Core Public Organisation Vocabulary](#) (CPOV) is an indispensable tool to increase the accessibility of Public Services. It allows to model the sometimes extremely complex ecosystems of (para)governmental organisations which may provide Public Services.

Schema.org

Schema.org is an initiative launched on 2 June 2011 by Bing, Google and Yahoo! (the operators of the then world's largest search engines) to "create and support a common set of schemas for structured data markup on web pages".

In effect, schema.org is the most common ontlogy (or set of ontologies) used for adding semantics to webpages, precisely because using the annotations prescribed by schema.org increase the chance that Google and other search engines will render [Rich Cards](#) and Rich Snippets. This makes it an invaluable tool for online marketing.

In relation to Public Services, schema.org defines a [*GovernmentService*](#) as a subtype of a [*Service*](#). Interestingly, the only additional property such a [*GovernmentService*](#) adds on top of a [*Service*](#) is a [*serviceOperator*](#), which allows referencing an organisation different from the governmental service or agency that operates the service, implying that this is often done by third parties. This is consistent with the definition of a Public Service within CPSV-AP, which states that such a service may be provided *"...on behalf of"* the government.

According to schema.org, a [*GovernmentService*](#) inherents a number of very relevant properties from the more general [*Service*](#), of which the most notable are described below:

- [areaServed](#): the geographic boundary within which this service is offered
- [availableChannel](#): the service may be offered through one or more available channels. Again, this is consistent with CPSV-AP.
- [hoursAvailable](#): a very relevant notion is the moments in time during which "*the service or contact is available*", clearly referring to the opening hours of the contact point for the service. Schema.org provides no way to discribe the period of time during which the service is offered by the government (for instance, during a legislative period). This property has as a domain of an [OpeningHoursSpecification](#), which is schema.org's creditable effort to standardise opening hours.

- **serviceOutput**: the actual output of the service. Schema.org chooses to type the domain of this property as the most broad concept on the semantic web, namely a [Thing](#)

OSLO²

[OSLO](#)[2] is a Flemish initiative which aims to streamline the definition of many data sources managed by the Flemish government and administrations which are active in the Flemish region. It comprises a set of data products, such as the central registry for Addresses in Flanders ([CRAB](#)), base registries and schema's or application profiles for commonly used concepts within government. OSLO[2] is the successor to the OSLO vocabulary which was developed by V-ICT-OR, the Flemish ICT Organisation, in cooperation with a large number of local governments and the regional government of Flanders. OSLO2 therefore provides an ideal starting point for OASIS to increase the accessibility of Public Services not only in the City of Ghent but in the entire Flemish region.

IPDC

The Intergovernmental Products and Services catalogue ([IPDC](#)) is a Flemish database which provides a list of common service descriptions local governments in Flanders may offer. It is an attempt to standardise public service descriptions across local governments in Flanders. The service descriptions are made available through an API, and may be contributed to by any local government. The API is used by a number of local governments to feed their public websites, but currently isn't available as Linked Open Data.

Previous efforts have included converting this data to Linked Open Data for a number of pilot cities, and to add contact information for these services. For instance, the City of Ghent has ported the data model the IPDC provides to CPSV, the result of which can be seen both on the public website of the City and through the Linked Open Data the City of Ghent provides. An overview of services provided by 5 Flemish pilot cities and whether or not their service information is covered by the IPDC may be found on V-ICT-OR's [website](#).

LGSL

LGSL stand for "Local Government Service List". It is a standard primarily used in the UK and is recognised as a standard by Communities and Local Government and the Cabinet Office. The LGSL may be seen as the counterpart of the Flemish "IPDC" in the sense that it provides a common denominator for (local) services

but no local council is obliged to provide all of these services, and it may occurr that services are provided which aren't part of the LGSL. The list is available as common [CSV](#) but also as Linked Data in the form of [RDF+XML](#) or [Turtle](#)

In the LGSL, a "service" is defined as:

A set of actions or activities undertaken by a council (or other public sector body) to deliver a product or conclusion. Services are usually provided at the request of a customer either as a one-off request (for example planning applications, parking permits) or as a result of the circumstances of the customer (for example local resident, local business, disabled). Services are provided by a public sector body either as a power (a legal right), a duty (a legal obligation) or at its discretion.

It is interesting to note the nuances with the definition given within CPSV-AP. Specifically, CPSV-AP provides for a public service to be rendered "on behalf of" a government, while such a distinction is absent here.

ICCS-CIEC Civil Status Forms

One of the most prominent and clearly the most important services for citizens are those services which may be labelled as "civil affairs". Indeed, the possibility to claim citizenship, change civil status, etc. are the cornerstone of many other services rendered by the (local) government. It is therefore paramount that OASIS takes into account how such services should be modelled, and how the civil status information may be transferred across borders. This International Commission on Civil Status ([ICCS](#)) has a long track record in standardising Civil Status forms across Member States.

Spefically, one of the conventions drawn up by the ICCS, Convention 16, concerns the issue of multilingual extracts from Civil Status Records. Convention 16 was ratified by 10 countries: Belgium, Spain, France, Italy, Luxemburg, The Netherlands, Portugal, Switzerland, Turkey and Austria.

Finding Public Services

In order to gain access to Public Services through Linked Open Data, not only the services itself should be described semantically, they should also be made discoverable by advertising the right metadata.

Metadata are data that describe other data. Simplified, metadata describe the available information about a dataset(s). In the public services domain, the metadata files could contain general information like the name of the distribution file or the council web page who data belongs to. They could also contain more specific information about public services, like which are the sector(s) (e.g. Culture, Transport, Security) are related with the dataset.

One of the most important aspects when open data is published is its discoverability. Take into account the associated metadata will improve and enrich this task. For example, metadata could allow developers to discover data for their public services applications or to councils, to know what are the main vocabularies used to describe services. OASIS team think that is important to start to improve the metadata generation in public services domain using vocabularies like DCAT or DCAT-AP.

DCAT-AP

In January 2014, a W3C recommendation for metadata generation was published: DCAT. DCAT is an RDF vocabulary designed to facilitate interoperability between data catalogs published on the Web. In the DCAT page, their developers comment:

By using DCAT to describe datasets in data catalogs, publishers increase discoverability and enable applications easily to consume metadata from multiple catalogs. It further enables decentralized publishing of catalogs and facilitates federated dataset search across sites. Aggregated DCAT metadata can serve as a manifest file to facilitate digital preservation.

DCAT-AP is quickly becoming the de-facto standard for the exchange of metadata about (non-geographical) open datasets. In Spain, for example, this recommendation is the base for the Interoperability Technical Norm, followed by almost all council portals, like Madrid, Cáceres or Zaragoza. In Belgium, 8 local open data portals are harvested by the Flemish open data portal, which in turn is harvested by the Belgian federal open data portal, which is in turn harvested by the pan-European data portal. It is important to note that in such a long chain, special care must be taken to include all relevant metadata fields, and that regional or local extensions are often disregarded.

GeoDCAT-AP

Both on a regional level in Flanders as well as on a European level, efforts are underway to harmonise metadata standards for non-geographical and geographical (see further, under INSPIRE) open data. One example of these efforts is the GeoDCAT library.

INSPIRE

When public governments (or government related bodies) are creating Geospatial data, they have to take into account the specifications defined within the INSPIRE directive. For more information about the INSPIRE directive and its application, please refer to Output O1.1 of this Action and to the [INSPIRE directive](#)

In relation to Services, it is obvious that the theme of Administrative units (describing the location of a jurisdiction) is an important one. Also Geographical names (The city hall) and Addresses (Botermarkt 1, 9000 Gent, Belgium) are commonly involved.

Thus, when location and governmental data is involved, INSPIRE needs to be taken into account. On the one hand data managers need clear definitions of what to manage and how it is defined, on the other hand there is a need to look how the different standards available can be linked to another.

The Publications Office's Metadata Registry (MDR)

The EU's Publication Office is assisting the move towards Linked Open Data in Europe through is "[Metadata Registry](#)" (MDR). The MDR provides a set of "Named Authority Lists" (NAL's) which are in fact just lists of concepts that may be used throughout Europe. The MDR provides translations for each of these concepts into the official languages of each of the Member States, as well as a URI which allows anyone to link to them in a sustainable way. Many of these NAL's have been referenced already from the ISA's initiatives such as the Core Vocabularies and DCAT (see further).

These NAL's are provided in different formats, most notably as a [Simple Knowledge Organisation System](#) (SKOS), which makes it easy for any semantic web application to consume them. Notable NAL's for the OASIS Action include:

- [Administrative territorial unit](#) which allows, for instance, to describe the territorial unit in which a given Public Service is available
- [Corporate body](#) makes it possible to reference one or more of the EU's corporate bodies, for instance for services that are rendered on a pan-European scale.
- [Data theme](#), a NAL which is recommended within the DCAT-AP specification and which allows the classification of datasets.

The Next Steps

This section outlines how the OASIS team will operate in the coming two years to deliver its vision for accessible public services based on linked open data.

Support the description of Public Services

The OASIS team will actively support the region of Madrid and the City of Ghent in moving towards a sustainable publication of semantic descriptions of public services. It will foster the knowledge of CPSV-AP within these public administrations and make sure that the results of these efforts are made visible.

OASIS will liaise with other public services, in the first place in the entire region of Flanders through interaction with the Flemish government and through V-ICT-OR to stimulate the uptake of the best practices demonstrated in Madrid and Ghent.

Finally it will connect on a European scale with other large cities and agencies, starting with those that already have a Linked Open Data policy in place, such as Helsinki, Zaragoza, etc.

Metadata Harmonisation

We defined DCAT, DCAT-AP, GeoDCAT-AP, etc. in the previous sections, that are needed to make data more visible. The first steps to our metadata assessment will consist on involving some council organizations to identify: what is the metadata vocabulary used now, the process of the generation of that metadata and what is the current visibility level of their data. After that, an analysis will be done, where we will try to collect all the common problems with the generation of the metadata files in the public services domain.

After our analysis is made, we will develop a good practices guideline about the generation of the metadata. This document will have two clear objectives: the projection of the public services data to european levels and showing to council organizations the importance of the metadata when an open data portal is developed. So, the activities are:

1. Describe the current metadata problems based in the previous analysis and the relevance of taking them into account in the public services domain.

2. Make a version/extension of DCAT-AP focused on public services.

3. Promote the change from DCAT, which is the current solution, to our DCAT-AP version.

Deliver Proof-of-Concepts

As already stated in Output 1.1 of this Action, the OASIS team will employ an open software development activity during which novel and open source applications are made, based on the demands of the City of Ghent and the Region of Madrid, and which consume Linked Open Data. The aim is to prove the usefulness of semantic web technologies and create some of the first real-life and very visible applications of the technology. These applications will be disseminated not only by and within the pilot areas of the project but far beyond. The ambition is to trigger other European administrations to implement these solutions locally, which in turn will incentivise them to support the publication of Linked Open Data.

These development activities will be conducted in a co-creative manner with the governments of Ghent and Madrid, through the "open Summer of Code" methodology developed by Open Knowledge Belgium. The summer of code will have 2 iterations, namely summer 2017 and summer 2018.

The applications which the OASIS team aims to develop in terms of accessibility of Public Services are:

- The Accessible Public Service map: this tool will allow citizens to find public services based on their personal preferences in their city. Apart from guiding them (physically) to the right location, the application will take into account the availability of these services, both in time and in

space, for instance, for people with a limited mobility. The development of this application will be inspired by [Helsinki's Service Map](), and will seek collaboration in terms of re-use of software and data. The application will seek to use novel features such as Location Based Services to increase its usability and visibility among citizens and policy makers.

- The personal advisor: This tool will have a more specific thematic focus (e.g. the refurbishment of a home, but this needs to be decided in collaboration with the local partners) and will guide a citizen through a specific process. To this end the tool will manage a personal profile and keep track of specific steps within (for instance) an application process.