WIDEST

Water Innovation through Dissemination Exploitation of Smart Technologies

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WP4: ICT for Water Management Technologies Portfolio

4.2: Stakeholder Participation Report 1st Version

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Abstract (for dissemination)	This report focuses on quantify the level of involvement of the stakeholders in its role of feeding the ICT for Water Observatory (IWO) with information. WIDEST has sent a survey in order to collect the stakeholder's opinion about desired requirements in an objective way. This will be the base of the analysis performed in order to define the IWO requirements that better meet the stakeholder's needs.
Key words	IWO, Survey, Requirements, Stakeholders

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List of Acronyms

D1.2	Report in Smart Water Community Group monitoring
D1.3	Reports containing Literature reviews 1st release
D1.4	Reports containing Literature reviews 2nd release
D1.5	Reports containing Literature reviews 3rd release
D1.6	Reports containing Analysis of Commercial developments and technology trends 1st release
D1.7	Reports containing Analysis of Commercial developments and technology trends 2nd release
D1.8	Reports containing Analysis of Commercial developments and technology trends 3rd release
EC	European Commission
H2020	Horizon 2020 EU Framework Programme for Research and Innovation
ICT	Information and Communication Technologies.
IWA	International Water Association
IWO	ICT for Water Observatory
WFD	Water Framework Directive
WP1	ICT for Water Observatory (IWO)
WP2	Topical Roadmaps
WP3	Overall Roadmap
WP4	ICT for Water management technologies portfolio
WP5	Dissemination and communication channels
WssTP	Water Supply and Sanitation Technology Platform

Executive Summary

This report is part of WIDEST (www.widest.eu), a H2020 funded project – Coordination and Support Action (Ref. Number 642423). Deliverable "D4.2 Stakeholder Participation Report 1st Version" focuses on the reporting of the stakeholder's involvement at this stage of the project.

The goal of this deliverable is focused in quantify the level of involvement of the stakeholders in its role of feeding the ICT for Water Observatory (IWO) with information. One of the main key factors for the success of the project will be the quantity and quality of contributions from stakeholders because WIDEST's vision is that the project results are developed to satisfy the requirements of the stakeholders, so as to meet their needs. For this reason, knowing the stakeholder's desired requirements for the platform is mandatory to reach this goal. Consequently, a way to know stakeholder's requirements must be defined before the beginning of IWO's implementation.

A first approximation to IWO's requirements has been performed talking with the stakeholders present at several events where WIDEST has participated in one way or another. This first draft of desired requirements for a knowledge platform that collect information about ICT for Water technologies has been the base for a deeper analysis with stakeholders. In following chapters of this document will be exposed how WIDEST has sent a survey in order to collect the stakeholder's opinion about desired requirements in an objective way. This will be the base of the analysis performed in order to define the IWO requirements that better meet the stakeholder's needs.

To understand this document the following deliverables have to be read.

Number	Title	Description
D4.1	Methodology for Portfolio Development	The present document contains the proposed methodology to develop, execute and update the ICT for Water Management Technologies Portfolio including the contact strategy, the portfolio structure and the information interchange protocol. The portfolio will be developed as a knowledge management system using principles and methodologies inspired in collective intelligence in order to achieve the vision of a global ICT for Water Management Portfolio.

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1. Contributions to Define Desired Functionalities of IWO

This chapter focuses on describe the contributions made by the stakeholders to define the requirements of IWO. Must be highlighted that this deliverable will only report the interaction with the stakeholder within this role, so other kind of interactions with the stakeholders will be addressed by other deliverables of the project regarding other kinds of interaction like dissemination (D5.3 "*First communication and dissemination action plan report and links to the video competition entries*", D5.4 "*Final communication and dissemination action plan report and links all the videos*") or other kind of feedback (D3.2 "*Feedback on draft overall roadmap*").

In this deliverable are described the definition and the results of the survey that WIDEST sent to some stakeholders in order to know their desired requirements for an ideal knowledge platform to collect information about ICT for Water technologies.

1.1 Stakeholder's Survey Definition

As it was mentioned, implementing a knowledge platform taking into account the desired requirements of its users is essential in order to, firstly, maximize its usability and, consequently, maximize the number of users. Maximizing the number of users will increase the contributions received and the dissemination of knowledge contained in the platform.

For this reason, a survey requesting the opinion about the IWO requirements has been sent to a great number of stakeholders in order to acquire this knowledge and allow defining the platform and addressing in this way their needs. In this regard, the more information is collected better specifications can be made of the platform. Also, the amount of contributions and its representativeness will affect the quality of the platform's specifications. Therefore, the contributions must be numerous and must have enough representation of different types of stakeholders to be targeted. To summarize, ideally a lot of information from many different users should be collected. This affirmation must be put into context, because it should be noted that the major contributions to the platform will come from Water Technology Companies and Universities, in form of market solutions and publications. Therefore, the priority of WIDEST is to obtain representativeness of these two sectors. This prioritization is motivated by the need to collect relevant information as a claim for the rest of sectors.

In addition, must be noted that participation rate in this kind of surveys usually is quite low. The low rate is a consequence of the lack of time to freely contribute to an initiative that, at first view, cannot provide benefits to the stakeholder's organization, so in many cases it can be seen as a waste of time.
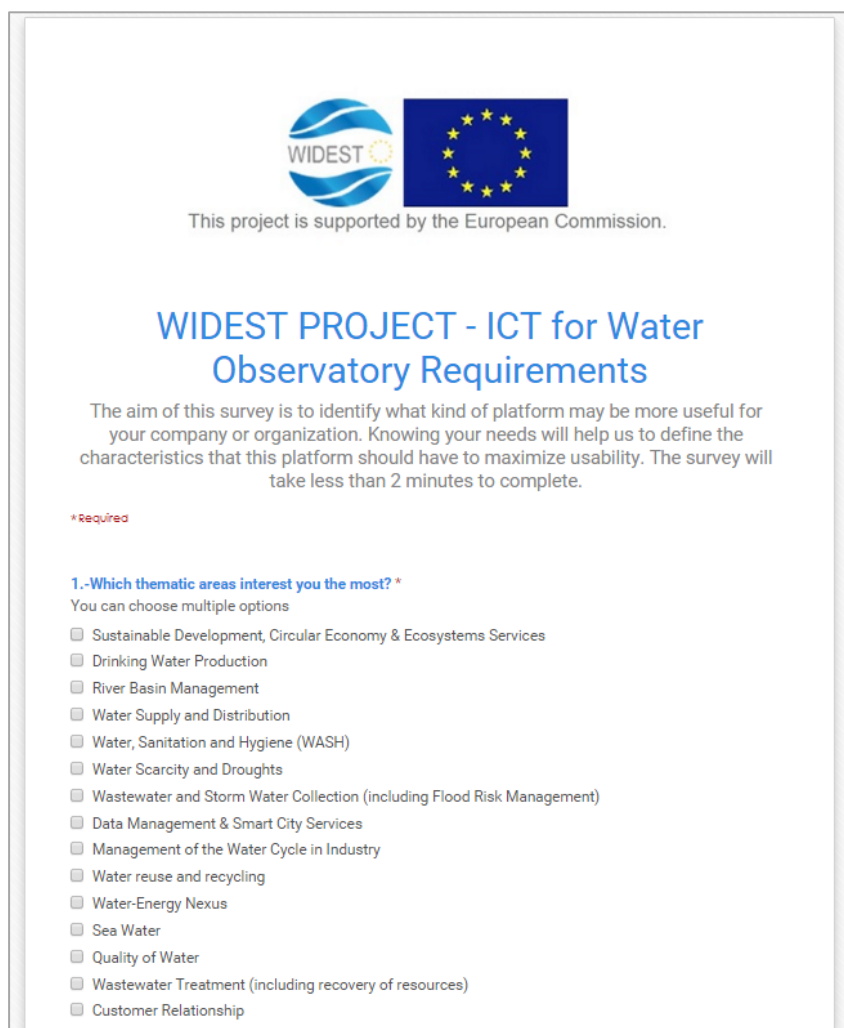
Accordingly, a compromise must be reached between the amount of information required to the stakeholder and the amount of time spent to complete the survey. To do so, a small set of questions regarding the main options of possible functionalities and thematic areas to be covered has been defined. The type of information requested can be classified into three categories:

- **IWO requirements information**: Almost the 75% of the information requested can be allocated within this category. In this group, the type of information that can be useful for the stakeholder and the main features of the platform are requested. This category is the only one which is mandatory to complete the survey.
- **Statistical information**: Some questions about the type of organization represented by the user are requested in order to verify the representativeness of each market segment.
- **Contact information**: This information is requested in order to feed the database of WIDEST's stakeholders.

In following subsections the information requested in each category is described.

1.1.1 IWO Requirements Information

This is the information that WIDEST needs to define the characteristics and requirements of the IWO. The following figure shows a screenshot of the survey published using Google Forms.

Figure 1 Screenshot of header and first question of the survey

Within this category, four questions with multiple options and another one with a comment box for free comments has been asked to the stakeholders. The asked questions are the following:

1) **"Which thematic areas interest you the most?"** The objectives of this question are twofold. On one side, WIDEST will be able to check if previously defined classification of thematic areas are covering all the interesting areas of the stakeholders. On the other side, WIDEST will be able to know which thematic areas are more interesting for different market sectors and therefore, it will be a first guide to focus the reviews of relevant academic references and will ease in this way the correct adaptation to the different target profiles of stakeholders. The following choices are allowed:

   - Wastewater and Storm Water Collection (including Flood Risk Management)
   - Water Supply and Distribution
   - Water, Sanitation and Hygiene (WASH)
   - Sustainable Development, Circular Economy & Ecosystems Services
   - Water Reuse and Recycling
   - Water Scarcity and Droughts
   - Wastewater Treatment (including recovery of resources)
   - Management of the Water Cycle in Industry
   - River Basin Management
   - Water-Energy Nexus
   - Customer Relationship
   - Data Management & Smart City Services
   - Sea Water
   - Quality of Water
   - Drinking Water Production

   A complete description of each choice can be consulted in D4.1.

2) **"What type of information sources from the thematic area(s) would you like to find on the platform?"** The objective of this question is to define the type of information that it is useful for the purposes of different stakeholders. This type of information may vary from a stakeholder sector to another. In any case, the answers will be evaluated in order to know the type of information sources that address the needs of most users. The following choices are allowed:

   - General news about ICT for water
   - Specific news about thematic area
   - Publications
   - Case studies & tools

- Related video's
- Related MOOCs
- Relevant organizations

Figure 2 Screenshot of the second question of the survey

3) **"What kind of information about each source would you like to know?"** The objective of this question is to define the amount of information that it is useful for the purposes of different stakeholders. An excess of information can result in rejection by stakeholders and reduced usability motivated by the time that the user spend to find the information that is relevant from its point of view. On the other hand, a lack of relevant information may cause the platform to be useless. Once again, there is a need to reach a compromise between these two extremes. For this reason, the answers will be evaluated in order to know the amount of information that maximizes the usability of the platform. The following choices are allowed:

- Release Date
- Areas of Application
- Brief Description
- Deep Description
- Implementation References
- Owner of product/research (entity)
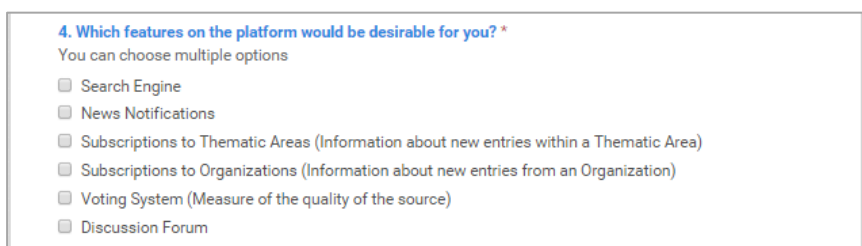- Links to similar entries
- Comment box

Figure 3 Screenshot of the third question of the survey

4) **"Which features on the platform would be desirable for you?"** While previous questions were focused on the information contained in the platform, this question

focuses in the technological advances that the platform should implement in order to ease the access to this information. The following choices are allowed:

- Search Engine
- News Notifications
- Subscriptions to Thematic Areas (Information about new entries within a Thematic Area).
- Subscriptions to Entities (Information about new entries from an Organization)
- Voting System (Measure of quality of the source)

The idea behind the subscriptions is the reception of an automatic notification when a new entry is posted.

Figure 4 Screenshot of the fourth question of the survey

5) **"Do you have any further comments or suggestions for the platform development?"** The objective of this question is being aware of possible missing concepts not covered in previous questions. Therefore, a comment box will be available in order to allow free contributions and suggestions. This question is not required to complete the survey.

Figure 5 Screenshot of the fifth question of the survey
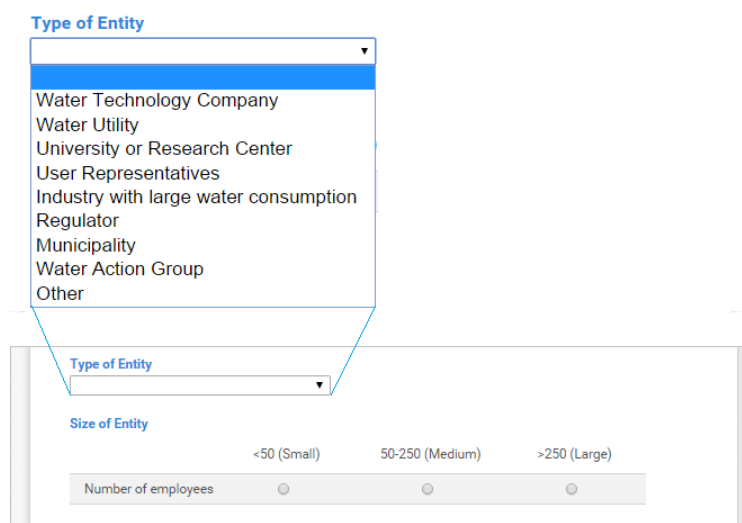
All these questions can be found in the first page of the survey. These questions will complement the analysis performed in D1.1 to define a platform that better meet the needs of the stakeholders. It has to be taken in consideration that WIDEST is not a development project, and there are no resources to develop a new knowledge base tool to support the IWO. However, as it was described in D4.6, the intention of WIDEST consortium is to develop a knowledge base tool internally from scratch, or contribute to the definition of the marketplace of WaterInnEU project, apart from feeding other existing sources. Consequently, the optimal requirements finally defined after analysis of the survey will be covered whenever there is feasibility in the framework of one of the two initiatives.

1.1.2 Statistical Information

This information is collected in order to verify the representativeness of each market segment. Also the different contributions will be analysed from the point of view of each market segment. The information requested is regarding the type and size of the organization represented by the user.

- **Type of Entity**: The different options of type organization follows the classification performed in D4.1. The following options are allowed:
    - o Water Technology Company
    - o Water Utility
    - o University or Research Centre
    - o User Representatives
    - o Industry with large water consumption
    - o Regulator
    - o Municipality
    - o Water Action Group
    - o Other
- **Size of Entity:** Depending of the type of entity, different measures of its size could be more representative of its impact over the water market than others. Nevertheless, in order to simplify the complexity for the user, in this occasion only three options are allowed:
    - o Small: Organizations with less than 50 employees.
    - o Medium: Organizations with more than 50 and less than 250 employees.
    - o Large: Organizations with more than 250 employees.

The following figure shows a screenshot of the survey requesting the statistical information with a zoom in the options available for type of entity.

Figure 6 Screenshot of statistical information requested in the survey

1.1.3   Contact Information

The contact information has been requested in order to feed the database of contacts of WIDEST. The main purpose of this information is that WIDEST has its own database of contacts with proven interest in the initiative. For this reason, in addition to contact information, a confirmation of its interest in kept informed about the evolution of the platform has been requested. In the figure below a screenshot of the survey asking for the contact information is shown:
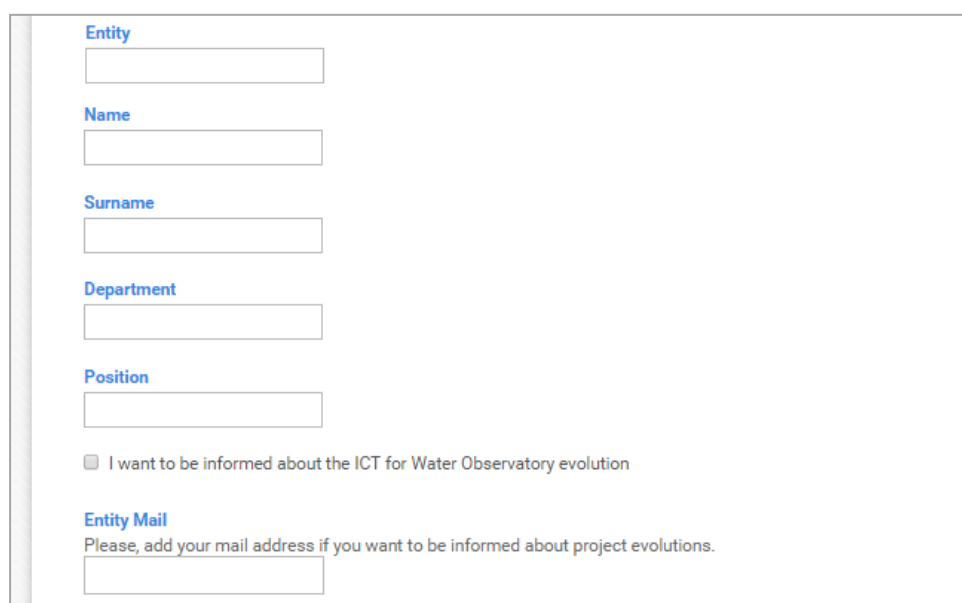
Figure 7 Screenshot of contact information requesting in the survey

1.2   Stakeholder's Survey Dissemination

As it was mentioned, the survey has been implemented using Google Forms. In order to send the link to the stakeholders the flow diagram of information described in D4.1 has been followed. The intention of WIDEST consortium members is to have a stakeholder network as big as possible; therefore the idea is to merge their own stakeholder networks to reach the maximum number of stakeholders in their communications. However, most of consortium members are private entities with private interests that can enter in conflict between each other. For this reason, it is necessary to keep confidentiality of the stakeholder network of every member of the consortium. Given that the stakeholder list of each member can't be shared to guarantee the confidentiality, another way to drive the messages without duplicating communication to the same stakeholder must be found.

Taking into account that IWA and WssTP are organisms that don't have any conflict of interest of this kind, the rest of consortium members will share their stakeholder list with them and they will be in charge of select which stakeholder is directly contacted by each member of the consortium. In such

manner WIDEST will not duplicate the communication to any stakeholder. To do so, IWA and WssTP will verify that each stakeholder of each consortium member is not in the list of stakeholders of another member.

Once the definitive list of stakeholders was collected, two ways to disseminate the survey was performed:

- **WSSTP Newsletter.**

    WssTP includes in its Members' Newsletter a section requesting the participation in the survey in November 2015. In the following figure this section is shown.

Figure 8 Section of WssTP Members' Newsletter requesting contributions to the survey

- **Direct e-mail contact by IWA.**

    IWA sent an email to all its stakeholders and the stakeholders provided by the rest of the consortium (except WssTP's stakeholders). The objective of the e-mail sent is requesting its feedback about IWO desired functionalities.

After the sending of both requests, a total of 87 contributions for stakeholders have been received (20% of total approximately). Taking into account that the participation rate of this kind of survey is usually quite low, this result can be considered as a success.

1.3 Stakeholder's Survey Results

In this section the results of the survey are exposed. It is far from the scope of this deliverable a deep analysis about the results of the survey in terms of definition of desired requirements. The analysis performed is focused on the kind of participation provided by the stakeholders.

In subsection 1.1 was described how the information requested can be classified into three categories. Following subsections describe the results obtained in each of these categories.

1.3.1 IWO Requirements Information

As it was introduced previously, within this category there are four questions with multiple options and one more of free writing. The results for each question are shown below:

1) "Which thematic areas interest you the most?"

The following graph shows the percentage of stakeholders that consider each thematic area as highly interesting.
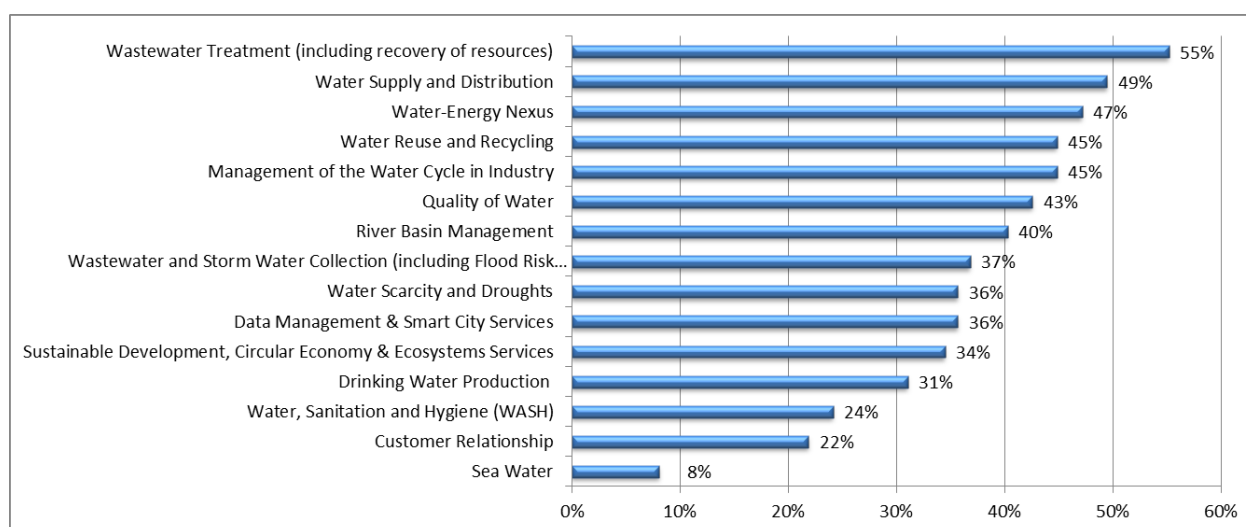
Figure 9 Survey's results about highly interesting thematic areas

The thematic areas are sorted from most to least interesting. It can be seen how traditional areas like wastewater treatment and water supply are prioritized firstly. On the other side, other areas less related to traditional operation of integrated water cycle are mostly considered as less interesting.

2) **"What type of information sources from the thematic area(s) would you like to find on the platform?"**
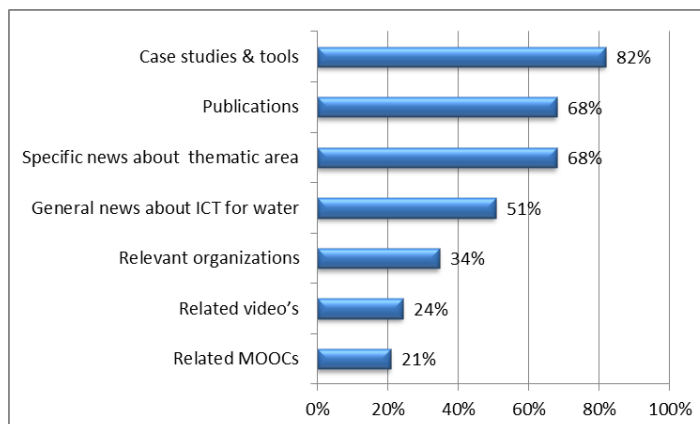
Figure 10 Survey's results about desired information sources

As can be seen in Figure 10 Case studies & tools, Publications and Categorized news are the type of information sources desired for most of stakeholders consulted.

3) **"What kind of information about each source would you like to know?"**

Regarding the information contained in the platform the preferences are the following:
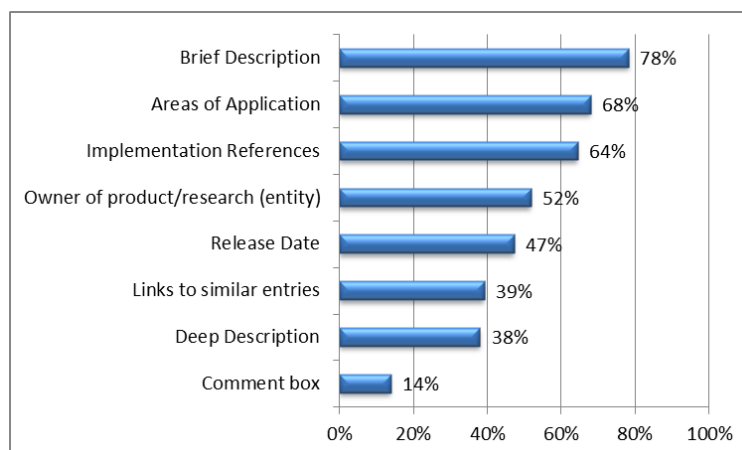
Figure 11 Survey's results about the kind of information preferred.

As can be seen, most of stakeholders desire key but brief information and examples of application.

4) **"Which features on the platform would be desirable for you?"**

This question, unlike the previous, is not related to the information contained. The desired features of the knowledge base platform have been asked with the following results:
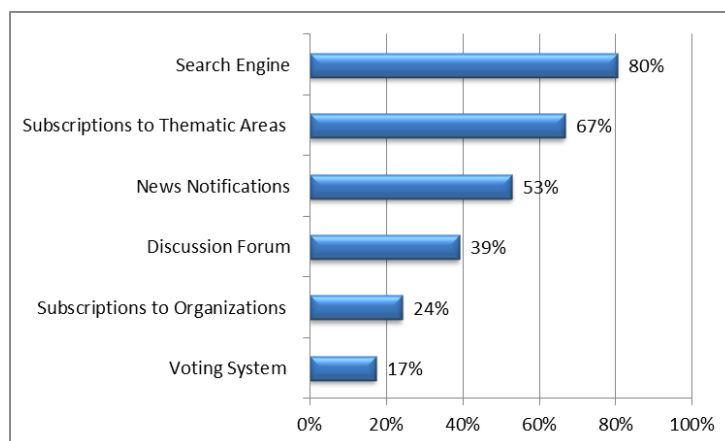
Figure 12 Survey's results about the desired features of the platform.

Surprisingly, the quality system proposed has been prioritized only by the 17% of the stakeholders consulted. The most interesting feature is the search engine that should be good enough to find the information that the stakeholder may search.

5) "Do you have any further comments or suggestions for the platform development?"

Despite this field is optional there are some relevant comments that must to be taken into account. The typology of the comments is basically twofold:

- **Comments regarding missing thematic areas**: Despite the classification of thematic areas cover all the areas related to water, some stakeholders would like to include a specific category addressing Irrigation or Climate change issues.

- **Suggestions about desired features:** Most of comments pay attention in the accessibility of the platform that should be as easy as possible. Other suggestions have been the inclusion of links to other similar platforms, or the possibility of customizing the way how the user receives its notifications (e-mail, twitter, LinkedIn…)**.**

1.3.2 Statistical Information

The main goal that wants to be reached requesting this kind of information is to be aware of the representativeness of the answers received. There are two factors that measure the accurateness of the data:

- The margin of error: This factor tries to measure the deviation between the opinions the stakeholders contributing in the survey and the entire population.

- Confidence level: This factor indicates the percentage of responses that really fit with the real opinion of the respondents. This not necessary mean that the respondent lies in the survey but

several factors, like misunderstanding the questions or the lack of time, may cause an error in the responses.

Some standards in the literature describe methods to guarantee the accuracy of the surveys (Caltrans (2015), Supan & Elsner (2004)), but for the purposes of the project, having an idea of the representativeness is enough to weight the impact of the survey's results in the platform requirements definition. In Figure 13 can be seen the distribution of type of organizations contributing the survey.
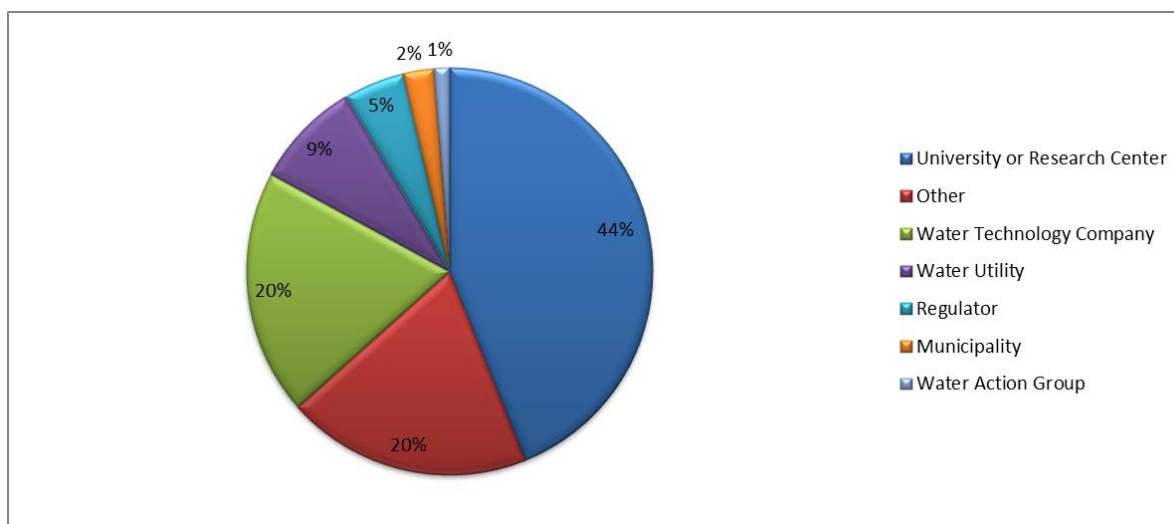

Figure 13 Type of entities contributing to the survey

It can be seen how most of contributions come from "*Universities or Research Centres*" followed by "*Water technology companies*". A great percentage of respondents have classified their organization as "*Other*". After a brief analysis of these respondents can be seen how many of them are companies that do not have the water sector as core of its business but provide solutions related to water. According to "*Water Technology Companies*" definition in D4.1, this kind of organizations should be associated within this group. Maybe a better explanation of each category would have improved this selection.

As Figure 13 shows, there are some sectors with low number of responses and even other sectors like "*User Representatives*" and "*Industries with large water consumption*" have not perform any contribution. Nevertheless, as it was introduced before, the key sectors whose contribution is more expected are "*Water technology companies*" and "*Universities or Research Centres*", so the results obtained meet WIDEST's priorities.

Regarding the size of the organizations, Figure 14 shows the distribution of the participation between organizations of different sizes. It was appointed how, in order to reduce the time spent to complete the survey, the classification of size of entity was defined independently from the type of organization. This means that instead of asking for a variable which in each case show the size of the organization, the question is related to the number of employees. This can be misleading because for example, in the case of "*Universities or Research Centres*", the important data to reflect the impact of a research group is the number of researchers on the subject area in particular and not the number of employees

throughout the university. In addition, the explanations of each category of type of organization were removed. For these reasons the confidence of the responses received must be analysed with some uncertainty.
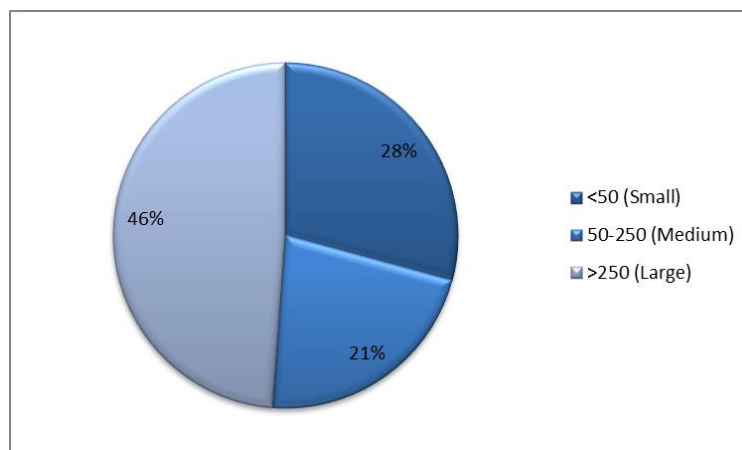
Figure 14 Size of entities contributing to the survey

The Figure 15 shows the percentage of "*Small*", "*Medium*" and "*Large*" organizations in each type of entity. It can be seen how all the "*Municipalities*" that have made a contribution to the survey are considered by themselves as "*Small*" organization and all the "*Regulators*" as "*Large*". As it was mentioned the confidence of information about size of organization is not high. A proof of this are the results obtained from universities where most of them are considered as "Large" but actually there are few research groups with more than 250 researchers studying about the same thematic area in the same university.
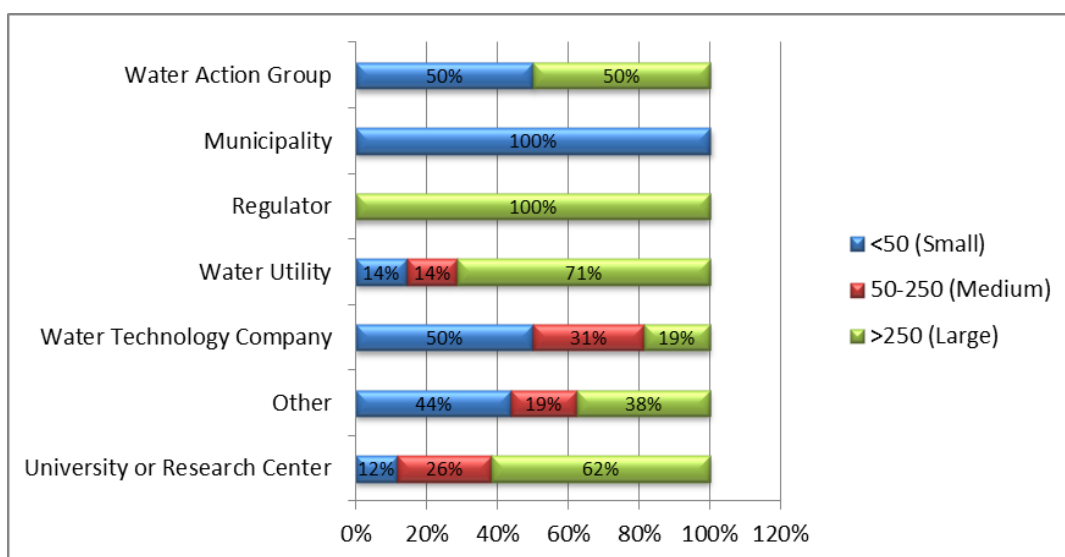
Figure 15 Distribution of sizes of each type of entities contributing to the survey

1.3.3   Contact information

The contact information has been requested in order to feed the database of contacts of WIDEST. The main purpose of this information is that WIDEST has its own database of contacts with proven interest in the initiative. In order to maximize the number of responses this information is not mandatory to complete the survey. Nevertheless the percentage of contributors that have filled these fields is higher than expected from WIDEST partners. The Figure 16 shows the percentage of users that have provided their contact information broken down into each field requested.
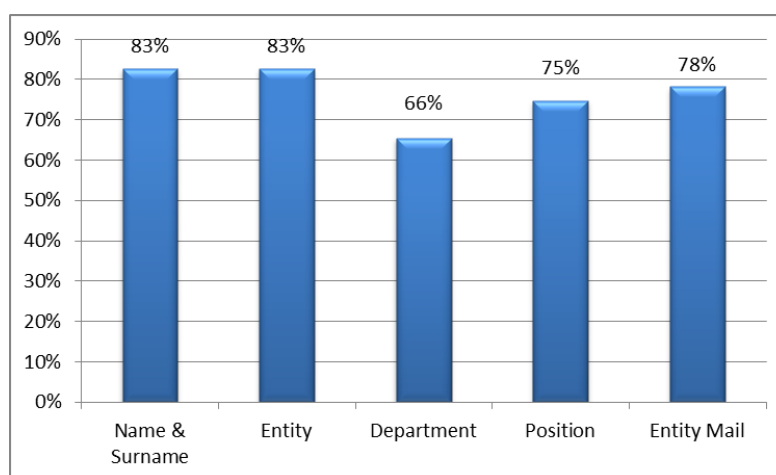

Figure 16 Percentage of contact information provided by stakeholders

83% of users have no concern in share their name and surname. At the same time, 83% of users have shared the name of their entity. Despite the percentage is the same, it must be noted that some users have decided sharing their name but not their entity's name and vice versa. Probably the most important information to WIDEST is the email of the stakeholders. In this regard, can be seen how 78% of users have provided their email address. Surprisingly, some users decided to share their email but did not check the box demanding to keep informed about the platform evolution. Therefore, only 71% of the stakeholders consulted, directly requested further information during project life.

The description of this deliverable in the project proposal was focused in providing the list of stakeholders that have contributed to WIDEST portfolio at this stage of the project. It must be taken into account that, at the moment, there is not a platform where the stakeholders can contribute and, for this reason, all the contributions currently received have consist in the completion of the survey. Once a platform to host the information is available a broader dissemination will be performed and more contributions are expected, both in number and type of contributions.

The table below shows the department of the organizations that are contributed completing the survey.

Entity	Department
ADASA Sistemas	EU Innovation Programmes Area
ADASA Sistemas	Product & Solutions
ADEvice solutions sl	
AGBAR	Innovation Department
Agencia de Medio Ambiente y Agua de Andalucia	Research and Innovation Management
Aguas de Alicante	IT
Air Products	R&D
Aquagri	Irrigation and Drainage Design
AQUALIA	Innovation and Technology Department
AQUATEC proyectos para el sector del agua	energy efficiency
ASTURAGUA SICA, S.A.U.	
Baur Technology	
Beijing University of Technology	Municipal Engineering
BM-Change	
Cardiff University	School of Engineering
Centre for Action Research-Barind (CARB)	Centre for Action Research-Barind
Cetaqua	Digital Technologies
Consorci Costa Brava	Technical
Consulting Engineer	International Water & Wastewater
DTES	RDI
Eco-TIRAS	n/a
Emilia-Romagna Region	Water Protection Unit
engineer	PUBLIC HEALTH
envirab	engineering
Evides Industriewater BV	Process & Technology
FAMIFE Consulting Ltd.	
Federal University of Parana	Hydraulics and Sanitation
Fundació CTM Centre Tecnològic	Environmental Technology

GOST srl	
HYDS	
ICRA	Technologies and Evaluation
IDSIA	
INCLAM S.A.	ICT
Institute for nuclear and energy research -IPEN-SP	Center for Environmental Chemistry
Inter-Ministerial Water Council	
IPSE, SA DE C V	
IREC	Lighting
JOAT	
LABAQUA	R&D+i
LEQUIA-Universitat de Girona	LEQUIA
LGRain	Management
METEOSIM	RD
NMBU	IMT
NTUA	Hydrology and Water resources Management
Organisation	
OSIsoft	Industry
Politécnica University of Madrid	Ecology
Pontificia Universidad Católica de Chile	Water Law and Management Center
Redknee	Utility
Research Institute	Ecological Systems
Royal HaskoningDHV	Water
Sapienza University	Earth Sciences Department
SMS	
SOMAGEP	DIRECTION
Southern Illinois University	Environmental Resources & Policy
Staffordshire University	Faculty of Arts and Creative technologies

Technological Laboratory of Uruguay	Environmental Projects, R&D&I
TZW	Distribution
Umwelt- und Fluid-Technik Dr. H. Brombach GmbH	R&D
UNICEF	WASH
Universidad EAN	Environmental Engineering
University of Bologna	Department of Agricultural Sciences
UNIVERSITY OF CANTABRIA	
University of Cyprus	
University of Sheffield	Civil Engineering
University of the West Indies, CERMES	CERMES
University of Trento	
University of Udine	Chemistry, Phisics and Environment
Welthungerhilfe	WASH

Table 1 Organizations contributing to the survey

2. Conclusions

The goal of this deliverable is focused in quantify the level of involvement of the stakeholders in its role of feeding the IWO with information. In this regard, it is important to put into context the current stage of the project. Broadly speaking without going into detail in the project's planning, this project has two main stages. The first stage, in which WIDEST currently is, is focused in the designing of the methodologies to be followed in order to reach the objectives of the project and in the performance of the first contacts with the stakeholders in order to know their needs. At this stage it is essential to be cautious and patient in order to define the strategy that can provide optimal results with as much information as possible. Disseminate the benefits of WIDEST and offer the opportunity to contribute on a platform that is not mature, can cause that early interactions of stakeholders are unsatisfactory and therefore the chances of return to interact with WIDEST will be reduced. At the second stage, coming soon, a broadest dissemination will be performed in order to maximize the stakeholders' participation and their level of involvement.

With this context in mind, this deliverable shows the first interactions with the stakeholders requesting their direct contribution. Namely, in this deliverable other kind of interactions with stakeholders not related with information request (like participation in events, video competition and so on) is not covered.

In previous sections of the deliverable has been introduced how WIDEST requested key information to some stakeholders in order to know their main needs, concerns and desired requirements of an ideal knowledge platform. In this way, WIDEST has an important input to conceptually design the kind of platform that maximizes the stakeholders' involvement. Although the population of the survey was intentionally limited, and its results cannot be extrapolated without some uncertainty to the whole target population of WIDEST, the results received will be very useful. It was appointed how most of contributions came from the two sectors identified as priority sectors because their contribution is the key to populate the IWO.

In conclusion, it can be said that the involvement of stakeholders is like it was expected at this stage of the project, so it can be considered as a success. However, there is a need to emphasize the dissemination and encourage participation in the remainder months of the project for successfully achieving the objectives.

3. References

Google (2015)

Caltrans (2015) Survey's Manual - Classification of accuracy and standards, California Department of Transportations

Supan & Elsner (2004) How to make interet surveys representative. McKinsey & Company