



An Ecosystem of Citizen Observatories for Environmental Monitoring

WeObserve D2.2 Detailed Terms of Reference and Guidelines for WeObserve Communities of Practice

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List of abbreviations and acronyms

Abbreviation	Meaning
CO	Citizen Observatory
CoP	Community of Practice
CS	Citizen Science
EC	European Commission
ECSA	European Citizen Science Association
H2020	Horizon 2020
FP7	7th Framework Programme

Executive Summary

Citizen Science (CS) is on the rise worldwide. In the EU, efforts in the area of CS have been channelled into developing the concept of Citizen Observatories (COs). COs are the means by which communities can monitor and report on their environment and access information that is easily understandable for decision making. To capitalize upon and consolidate these ongoing efforts, the WeObserve consortium aims to bring together the current set of European Horizon 2020 (H2020) COs, enabling improved coordination between these COs and promoting related activities at the regional, European and international level. WeObserve will coordinate and deliver a much needed CO knowledge framework to avoid duplication, share best practices as well as identify barriers and synergies. Ultimately, WeObserve seeks to move citizen science into the mainstream by building a sustainable ecosystem of citizen observatories and related activities.

As a key mechanism for consolidating the knowledge inside as well as beyond the WeObserve consortium, WeObserve Task T2.2 is launching and coordinating dedicated Communities of Practice (CoPs). This document outlines the Terms of Reference and the Guidelines for the ways of working for the CoPs. It specifies, inter alia, incentives to participate in the CoPs, guiding principles and tools, CoP responsibilities, and a timeline including a launch event.

WeObserve will launch an initial set of three CoPs:

- CoP1: Co-creating citizen observatories and engaging citizens (led by IHE Delft);
- CoP2: Impact and value of citizen observatories for governance (led by IHE Delft);
- CoP3: Interoperability and standards for citizen observatories (led by CREAM).

Compared to existing efforts and networks in the area of Citizen Science, the WeObserved CoPs provide a clear structure for managing CoP activities, a set of tools for leading the CoPs, and funds to enable member participation. The WeObserve CoPs will also receive assistance in dissemination and outreach activities and use a common set of rules for ensuring IP protection and reputation. This increases the chances of creating value to participants in the CoPs, and to stakeholders in and outside the WeObserve consortium.

1 Introduction

1.1 Background – the WeObserve project

The last decade has witnessed a rise in the fields of citizen science and crowdsourcing. Citizen science can be described as a collaborative undertaking between citizens and scientists to help gather data and create new scientific knowledge, while crowdsourcing is the outsourcing of tasks to the crowd that are often too voluminous or costly to be carried out using traditional means. Both ways of engaging citizens have value for environmental monitoring, where there has been a proliferation of projects and initiatives from local to global scales tackling many different environmental problems. This trend is likely to continue given the continuing diffusion of smart technologies and mobile devices to rising numbers of citizens, enabling increased digital and field-based participation.

In the USA, the Crowdsourcing and Citizen Science Act, which came into force in January 2017, gives federal agencies clear authorization to use citizen science and crowdsourcing. This recognition paves the way for the development of truly integrated environmental monitoring systems involving citizens as a key actor. In the EU, efforts have been channelled into developing the concept of Citizen Observatories (COs), which have been supported via the Seventh Framework Program (FP7) and continue to be funded in H2020. COs, which are supported by innovative technologies including Earth Observation (EO) and mobile devices, are the means by which communities can monitor and report on their environment and access information that is easily understandable for decision making.

To capitalize upon and consolidate these ongoing efforts, while leveraging the outcomes from the FP7 legacy COs, the WeObserve consortium aims to bring together the current set of European H2020 COs, enabling improved coordination between these COs and to promote related activities at the regional, European and international level. WeObserve will coordinate and deliver a crucially needed CO knowledge framework to avoid duplication, share best practices as well as identify barriers and synergies. This framework will also promote standards to ensure interoperability, maximize impact and facilitate uptake by environmental authorities to ensure the sustainability of CO initiatives. Raising awareness and sharing this knowledge framework will not only foster the development of a sustainable ecosystem of citizen observatories, but also extend the geographical coverage of citizen science to new communities. The anticipated knowledge framework will span across sectors, national boundaries and language barriers as well as the public and private sectors.

The aim of WeObserve is to create the conditions for a sustainable ecosystem of COs that can tackle the identified challenges of awareness, acceptability and sustainability. A coordinated and coherent approach is therefore needed among existing COs and relevant communities, with inclusion of past, present and future projects at national, regional, European and potentially international scales. This approach underpins the action-oriented mission of WeObserve, which is to: *Move citizen science into the mainstream by building a sustainable ecosystem of citizen observatories and related activities.*



1.2 Purpose and structure of this document

In order to consolidate practice-based knowledge on COs that is dispersed among various stakeholders, WeObserve Task T2.2 is launching and coordinating dedicated Communities of Practice (CoPs) as a key mechanism for consolidating the knowledge inside as well as beyond the WeObserve consortium. The purpose of this document is to present the Terms of References for these CoPs (e.g. the CoP themes, considerations regarding the composition of the CoPs, budget, timeframes and responsibilities) in Section 2 as well as guidelines for the ways of working for the CoPs, based on proven elements for successful CoPs (in Section 3). Section 4 concludes with details of the timing of next steps for the launch and implementation of the CoPs.

2 Terms of Reference for the WeObserve Communities of Practice

2.1 What are Communities of Practice and why do we need WeObserve CoPs?

Communities of Practice are a key and practical approach in knowledge management. Communities of Practice can be defined as *'groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis.'* (Wenger et al., 2002, p. 4). The key aspect of CoPs that is binding its members together is that they find value in the joint learning derived from their interactions. These interactions can consist of information sharing, problem solving, tool or standards creation or developing tacit understanding on the focal topic.

The structural elements of a CoP are domain, community and practice (Wenger et al., 2002):

- The knowledge **domain** is the specific set of issues or topic. It is the raison d'être that brings the community members together and drives their joint learning.
- **Community** refers to the people who care about the domain
- **Practice** refers to the specific knowledge the community develops, shares and maintains; the shared practice of the community members that they are developing in order to be effective in their domain (e.g. frameworks, ideas, tools, styles, stories).

These definitions highlight that a CoP is more than codified knowledge (e.g. a website, database or best practices), namely *'a group of people who interact, learn together, build relationships, and in the process develop a sense of belonging and mutual commitment'* (Wenger et al., 2002, p.34).

Practice-based knowledge on diverse aspects of citizen observatories [...] is dispersed among various stakeholders. Initiating WeObserve CoPs will serve as the vehicle for sharing information and knowledge on selected key thematic topics related to COs, strengthening the knowledge base about COs in order to move citizen science into the mainstream of environmental management and decision making. *The WeObserve Communities of Practice (CoPs) are therefore the (virtual) place where diverse stakeholders who share a joint (practice-oriented) interest in citizen science can work together towards concrete solutions by collating their experiences and lessons learned.*

2.2 What topics (domains) will the WeObserve Communities of Practice focus on?

Three initial topics were identified based on outcomes from the EC Citizen Observatories Cluster Workshop, held in Brussels (November 2016), which included representatives from the FP7 legacy COs as well as the current H2020 observatories. In addition, these topics are in line with the activities being undertaken as part of the Community Action on COs in the current GEO Work Programme (2017-2019), to which WeObserve will actively contribute. Also, the three topics touch on the various challenges of awareness, acceptability and sustainability.

The **three initial CoP** topics (domains) are as follows:

1. *Co-creating citizen observatories and engaging citizens – addressing incentives and barriers for participation, engagement strategies and citizen-science ethics (led by IHE Delft);*
2. *Impact and value of citizen observatories for governance – defining socio-economic and environmental impacts of community-based environmental monitoring for public authorities and decision makers including risk evaluation (led by IHE Delft);*
3. *Interoperability and standards for citizen observatories – adopting data quality, curation and preservation of citizen-science data, and addressing privacy and licensing for CO sustainability (led by CREAM).*

To accommodate new opportunities, these three CoPs will be complemented with **two additional CoPs during the project** through recommendations from the CO and citizen science communities themselves.

2.3 Who can participate in the WeObserve Communities of Practice?

The WeObserve CoPs are intended as a key mechanism to consolidate knowledge on COs inside as well as beyond the WeObserve consortium. As such, the members of the WeObserve CoPs are relevant representatives of the WeObserve partners as well as targeted and/or interested stakeholders beyond the consortium from the larger community of CO practitioners, such as:

- public authorities (local, regional, national, EU)
- Civil Society Organisations
- research & academia
- citizens
- citizen science working groups, for example those of the Citizen Science COST Action CA151212 (to promote creativity, scientific literacy, and innovation throughout Europe), and the European Citizen Science Association (ECSA) listed in Table 1.

Table 1 Examples of current Citizen Science Working Groups

COST Action Working Groups	ECSA Working Groups
Ensure scientific quality of Citizen Science	Sharing Best Practices and Building Capacity
Develop synergies with education	Projects, Data, Tools and Technology
Improve society-science-policy interface	Policy, Strategy, Governance and Partnerships
Enhance the role of CS for civil society	Citizen Science and Open Science
Improve data standardization and interoperability	Learning and Education in Citizen Science
Cross-Working Group - Synthesis and overarching measures	Global Mosquito Alert

2.4 What will the WeObserve Communities of Practice do?

WeObserve Communities of Practice can undertake one or more of the following activities:

- *Thematic knowledge co-creation*: The members of the CoP will strive to create new knowledge related to its focal theme, with the aim of generating lessons learned for other CO initiatives.
- *Generating new solutions or agreeing on how to use existing ones* such as conducting interoperability experiments and generating technical recommendations. Examples are: how to combine information of similar projects and to offer access to CS through GEOSS; how to share tools for implementing standards of common interest; a single sign on mechanism to collaborate with several projects of CS, etc.
- *Knowledge sharing activities (meetings, events, conferences etc)*: As part of the focus of the CoP, wide dissemination, communication and diffusion of information should be at the centre of all activities; this shall be enabled also by parts of the WeObserve platform, where suitable mechanisms will facilitate exchange of opinions, ideas, material.

2.5 Why should stakeholders participate in a WeObserve Community of Practice?

By participating in a WeObserve CoP, stakeholders can:

- Share ideas, knowledge or experiences and work with others (networking)
- Leverage their ideas or knowledge
- Work towards concrete and implementable solutions in citizen science and optimise relevant resources
- Help broaden their own and their organisation's knowledge and horizons (capacity development)
- Link up with relevant initiatives at a global, national, regional or local level
- (early) access to the outcomes, tools and solutions created within H2020 COs

with the overall goal of mainstreaming citizen science into policy and environmental management.

2.6 What is different about the WeObserve CoPs?

Many stakeholders are involved in Working Groups, Communities of Practice, Action Groups etc., most of which involve volunteer activities on top of existing professional obligations and commitments. Not surprisingly, many are experiencing a certain fatigue to be involved in 'yet another' CoP. A recent survey¹ captured the experiences of diverse stakeholders with their

¹ The online survey generated 98 responses, with 44 from Africa, 33 from Europe, 3 respondents from elsewhere, plus 18 non-disclosed. The responses came from diverse stakeholder organisations, with the vast majority having previous experience with Working Groups and most of them male (60 vs 20 female & 18 non-disclosed).

participation in Working Groups (Wehn, et al., 2016) and identified the following factors inhibiting participation:

Perceived negative outcomes of participation in Working Groups:

- Expenses (travel, accommodation)
- Time
- Impact for own strategic position (ideas stolen, no IP protection)
- Undesirable outcomes (poor/'not practical' outcomes, waste of resources, discontinued collaboration after a while)

Perceived organisational pressure NOT to participate in Working Groups from:

- Superiors/management
- Colleagues/peers

Perceived Barriers & obstacles for participation

For strategic position

- Conflicts of interest
- Other priorities/workload

Resources

- Lack of control over resources (time, cost, human resources, means of communication)
- Lack of technical and interpersonal skills
- Lack of language skills (e.g. English)

Structure and functioning of the Working Group

- Ineffective/inappropriate/inefficient composition and functioning of the WG (e.g. passive members, duplication of efforts, lengthy discussions, ideas taken lightly, complex organization, poor agenda management, uneven support of members, no feedback system, no documentation of activities)
- Lack of inclusiveness re. local/African stakeholders

The WeObserve CoPs will overcome these and other known weaknesses and obstacles for “working groups/Communities of Practice” by providing the following:

- ✓ Structure for managing the CoP activities
 - by specifying clear deadlines and required outputs (incl. reporting templates)
 - by ensuring the complementarity of roles, expertise and type of input accepted by each participant so as not to duplicate efforts
- ✓ Support for leading the CoP by making a set of tools available
 - to ensure that meetings and actions happen in a timely manner
 - to accelerate knowledge consolidation by enabling the demonstration of ideas and adapted solutions
- ✓ Funds for CoPs
 - to facilitate the F2F meetings of the CoPs
- ✓ Dissemination and outreach
 - by assisting with the sharing of experiences and knowledge across CoPs

- by providing a hosting platform and visibility for CoPs at one of the many WeObserve events
- ✓ IP protection and reputation
 - by requiring adherence to a common set of rules that protect the IPR of the members and the privacy of their discussions
 - by introducing a consensus process for internally deciding what content will be made public and when.

2.7 Budget for the WeObserve Communities of Practice

Each CoP will have a small budget of €8.000,- to facilitate its forums. Currently, there are four planned forums throughout the duration of the project. These events will often be held in conjunction with other citizen science events to maximize awareness, collaboration and networking, while minimizing travel costs.

What the budget can cover

The budget of €8.000,-per CoP can cover the following:

- Costs incurred to organise or facilitate a forum (i.e. room bookings, dissemination material, etc.)
- 1 social event to promote community building and increase engagement
- Meals of participants during forums

What the budget cannot cover

The budget cannot cover the following things:

- Employee salaries;
- Company overheads;
- All other costs not related to one of the four CoP forums.
- Any other costs incurred by the WeObserve participants such as travel and accommodation.

How the budget will be administered

The budget for the CoP forums will be administered directly by IIASA, the WeObserve coordinator. IIASA will either directly cover expenses or provide reimbursements based on appropriate receipts, invoices and documentation. WeObserve partners are expected to cover their own expenses during CoP forum using their respective travel budgets.

2.8 Timeframe and criteria for the Communities of Practice

The first three WeObserve CoPs will be set up and launched during the workshops of the ECSA conference 2018, taking place on 6 June 2018 in Geneva (immediately following the main ECSA conference). The second set of (two) CoPs will be set up following a call for proposals, due to be launched in 2019.

The CoPs will continue to exist only as long as they deliver value for their members in terms of achieving jointly set objectives. *Each individual CoP will need to adhere to its own defined timeline.* After the end of the project, the CoP management could be transferred to GEOSS in the form of GEO activities or to ECSA in the form of a sub-working group.

Apart from specific responsibilities that will be outlined in the next chapter, there are several general criteria that all CoPs and their members should adhere to:

- Each CoP should be composed of **relevant stakeholders**, e.g. CO initiators, solution providers, customers and technical professionals who have enough resources (in terms of time and money) to participate;
- CoPs should strive for **gender balance** in the composition/interactions of the group;
- CoPs should comply with the WeObserve **ethics and gender aspects**. These documents will be given to the CoPs before the start of any activities;
- CoPs should operate in a transparent manner, whilst remaining open to new participants;

2.9 Responsibilities of the WeObserve Communities of Practice

2.9.1 Setting up SMART objectives for the Communities of Practice

Before starting its activities, each CoP needs to define its objectives in a way that they are specific, measurable, achievable, relevant and timely (SMART), whilst taking into consideration best practices from relevant past and/or ongoing initiatives. Also, the objectives should be defined following a **participatory process** in which all CoP members can take part.

These objectives will be captured in an inception report that will have the following structure:

- Scope or Problem statement: Description of the scope of the CoP or the issues the CoP will address
- Business case: What is the need for the group and what are the benefits of the work done in the group
- Target audience: Who benefits from the work done
- Foundation members: List of initial members of the CoP
- Activities planned: List of activities, deliverables and timelines
- Communication agenda
- Ways of working: Periodic activities, media and time of the meetings initially foreseen.
- Policies and procedures: How to opt-in, how to vote for publicly releasing results, how to include or deprecate activities.

The document will be approved by the foundation members of the CoP and made public as reference for other people who may express interest in the future. Future members should adhere with the document to join.

2.9.2 Ways of working

Each CoP will meet regularly by teleconference (Skype, GoToMeeting or similar) and will take advantage of existing opportunities (e.g. OGC TC meetings, GEO symposia and ECSA assemblies) to meet in person for longer discussions. These meetings will be driven and facilitated by WeObserve but will be composed by a much broader audience in an open and transparent manner.

Each CoP will have an email list and subscribing to the email list will be mandatory to be part of the group. In addition, progress of the discussions and minutes of meetings will be recorded and organized in a wiki or similar platform that will be provided and managed by WeObserve ensuring harmonization and preservation. Following CoP-internal discussions, a task force of each CoP will draft a solution proposal in the form of best practice, a profile or a standard. The resulting documents will be presented to a broader audience, comments will be incorporated and the final solutions will be agreed; for CoP3, these will eventually be ratified by a standards body.

Furthermore, the different WeObserve CoPs will also be encouraged to interact. For example, CoP3 may benefit from CoP1 in the form of requirements for the COs of the future. Secondly, COP3 may need to get inputs from CoP2 on the experiences and lessons learned in previous COs about the governance impacts of COs. These inputs will need to be processed by CoP3; connectivity and/or harmonization or other interoperability problems will need to be identified. Once an interoperability problem has been identified, technical solutions will then be compared and a solution that brings consensus will need to be generated. The desired collaboration across the WeObserve CoPs may need to be accompanied by appropriate IPR agreements, if applicable.

2.9.3 Reporting

The CoPs will report to WeObserve in the following form.

- An Inception Report needs to be created and circulated one month after the start of the CoP (i.e. July 2018 for the first 3 CoPs). This report shall detail the objectives, tasks and potential impacts of the CoP, and the methodology it plans to use to achieve these objectives, tasks and impacts. The inception report needs to also detail the communication strategy and the means that the CoP will use to ensure that the outcome of its activities are shared with other CoPs and other interested stakeholders. The inception report will also present the work plan that the CoP intends to follow (incl. a Gantt chart).
- The Inception Report may be reviewed and updated by the group at any time and a new version released.
- A Mid-term report (D2.3) will be delivered by May2019 (for the first 3 CoPs).
- A Concluding Report (D2.7) will be delivered before the end of the activities of the CoP or before the end of the WeObserve project (November, 2020) (in case the CoP continues after the end of WeObserve), whichever comes first. This final report will include details on how the objectives have been accomplished, the impacts that have been achieved and the communication activities that were undertaken during the lifetime of the CoP and the reason why the group needs to be terminated if that is the case.

- Status updates need to take place between the CoP leaders and the WeObserve WP2 leader (IHE DELFT) to ensure that the CoP is following its aims, objectives and activities and to assist with any issues the CoP may be facing.

2.9.4 Communication and knowledge sharing strategy

One of the most vital aspects of a CoP is its communication, both within the group and with external stakeholders, i.e. communication beyond the group's members. Each CoP needs to detail its communication activities, how it plans to communicate among the CoP members and also how it plans to reach its target audience as well as other CoPs.

2.9.5 Obligatory communication for the external communication of CoP activities

Any communication from the CoP should use the WeObserve template for presentations. The CoP should include the following statement to show that it is part of the WeObserve project which has received funding from the European Commission:



This Community of Practice is part of the WeObserve project, which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 776740.

www.WeObserve.eu

- The CoP should also include the following reference to the WeObserve website:

The <NAME OF THE COP> WeObserve CoP, forms part of the larger WeObserve project: *An Ecosystem of Citizen Observatories for Environmental Monitoring*, where further CoPs have been formed.

Find out more here:



www.WeObserve.eu



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2.10 Responsibilities of the WeObserve partners within the CoPs

- WeObserve partners will participate in the CoP with the same rights as other participants/organisations.
- At least one WeObserve partner will be co-chair of a CoP.
- WeObserve will provide support to the CoPs by providing and ensuring the continuity of a wiki or similar platform and an email list for the CoP.



- WeObserve will support the associated costs of meeting venues of the CoPs.
- WeObserve will propose the termination of inactive CoPs.
- WeObserve will contribute to the communication of the CoPs. In particular, WeObserve will provide a section on its website for a public image/reporting of the CoPs that will include links to their publicly released outputs.

3 Guidelines for the WeObserve Communities of Practice

3.1 Introduction

This section contains guidelines for launching and implementing the WeObserve Communities of Practice. It provides insights and guidance for the ways of working for the CoPs, based on proven elements for successful CoPs from the literature as well as first-hand experience of selected WeObserve partners. In this respect, Box 1 provides lessons learned to be taken on board by WeObserve.

Box 1 - Lessons learned from Communities of Practice and knowledge networks

- development of CoPs should be the result of a **highly participatory and interactive** process involving all stakeholders.
- a CoP needs to be **inclusive** from its inception: all relevant stakeholders and potential members from the science, research and policy making domains need to be invited to participate in the kick-off and to help define and formulate the fundament of the CoP in terms of its knowledge domain, its activities, its members and the operational rules.
- from the start, try to create a common ground for collaboration by sharing interests, experiences and available knowledge among participants from the research community and government agencies.
- sufficient focus on both, the **process** of network development as well as the development of content and tangible **outputs** (e.g. relevant research, improved capacity and knowledge sharing).
- program needs to focus on a select number of **high priority topics**, i.e. the knowledge generation process should focus on specific topics.
- central themes have to be translated to more **specific levels of investigation** (specialisations within a theme) in order to be manageable and to deliver concrete results.
- collaborative teams need to be formed on the basis of interest and competence and will develop and implement research plans with well-defined short-term outputs.
- identify partners to take on **specific responsibilities and roles** in planning for research and capacity-building activities.
- **ICTs** can play a great facilitating role by providing knowledge management platforms that support the knowledge brokering more effectively and efficiently (e.g. web-based tools, knowledge mapping, e-learning systems, modelling, decision support, and role play)
- recognise that CoPs are made up of people and behave as organisms: time required to develop through several stages of evolution of the CoP.

Source: Wehn and Luijendijk (2012)

Table 2 suggests specific principles for cultivating Communities of Practice.

Table 2 Principles for cultivating Communities of Practice

Design for evolution	<ul style="list-style-type: none"> - build on pre-existing personal networks - new members bring new interests, pull focus of Cop in new directions - design: not to impose structure but help the community develop - combine design elements to catalyse community development
Open a dialogue between inside and outside perspectives	<ul style="list-style-type: none"> - deep understanding of community issues (challenges, latent potential in emerging ideas and techniques) - obtain outside perspectives to see possibilities to develop and steward knowledge - dialogue: information from outside the community with community ambition
Invite different levels of participation	<ul style="list-style-type: none"> - <i>coordinator and core group</i> (take on community projects, identify topics for the CoP to address, move CoP along its learning agenda) - <i>active participants</i> (attends meetings regularly, participate occasionally in community forums, 15-20% of the CoP) - <i>peripheral participants</i> (large proportion; rarely participate, - <i>outsiders</i> (not members but interest in the CoP, incl. customers, suppliers, and ‘intellectual neighbours’)
Develop both public and private community spaces	<ul style="list-style-type: none"> - <i>public</i> places of the community (meetings, website, informal networking) - <i>private space</i> (F2F, online; coordinator fills the space between meetings; informal, back-channel discussion, one-on-one networking)
Focus on value	<ul style="list-style-type: none"> - source of value changes over CoP life time - early: focus on current problems, needs of community members - later: developing systematic body of knowledge - encourage community members to be explicit about the value
Combine familiarity and excitement	<ul style="list-style-type: none"> - familiar events, website use, ongoing activities - conferences, fairs, workshops: bring community together in special ways, spontaneous contact
Create a rhythm for the community	<ul style="list-style-type: none"> - timing/frequency of regular events - combination of whole community and small-group gatherings - mix of idea-sharing forums and tool-building projects

Source: Based on Wenger et al. (2002)

3.2 Setting up the CoPs

Setting up a CoP requires the parallel development of all three structural elements of a CoP (domain, community, and practice; see Section 2.1 above) since they present different aspects of participation, all of which motivate people to join a community (Wenger et al., 2002). Guiding questions related to each element and tailored to the WeObserve context can serve to guide the CoP development, as elaborated in Table 3 below.

Table 3 Structural elements and guiding questions for the WeObserve CoPs

Structural CoP element	Guiding questions
Domain	<p>Developing shared understanding of the specific CO domain, finding legitimacy in the field, and engaging the passion of the members:</p> <p><i>What topics and issues do we really care about?</i></p> <p><i>What is in it for us?</i></p> <p><i>What are the open questions and the leading edge of our domain?</i></p> <p><i>What kind of influence do we want to have in our domain?</i></p>
Community	<p>Finding ways to operate, to build relationships and to continue:</p> <p><i>What roles are people going to play?</i></p> <p><i>How often will the community meet?</i></p> <p><i>How will the members connect on an ongoing basis?</i></p> <p><i>What kind of activities will generate energy and trust?</i></p> <p><i>How can the community balance the needs of various segments of members?</i></p> <p><i>How will members deal with conflict?</i></p> <p><i>How will newcomers be introduced into the community?</i></p>
Practice	<p>Intentionally becoming an effective CO knowledge resource to the CoP members and to other constituencies that may benefit from the CO expertise:</p> <p><i>What knowledge to share, develop, document?</i></p> <p><i>What kinds of learning activities to organise?</i></p> <p><i>How should the knowledge repository be organised to reflect the practice of the CoP members and be easily accessible?</i></p> <p><i>What should processes be standardised and when are differences appropriate?</i></p> <p><i>What development project should the community undertake?</i></p> <p><i>Where are sources of knowledge and benchmarks outside the community?</i></p>

Source: Based on Wenger et al. (2002)

3.3 Running the CoPs

In principle, each CoP consists of one or more Chair(s) (a WeObserve partner), support staff (from the WeObserve project), active participants (participating in F2F meeting and telcos, contributing to CoP outputs) and observers (taking note of CoP progress via email list, occasional comments, etc.).

The initial CoPs will be chaired by WeObserve partners, as follows:

- CoP1: Co-creating citizen observatories and engaging citizens (led by IHE Delft);
- CoP2: Impact and value of citizen observatories for governance (led by IHE Delft);
- CoP3: Interoperability and standards for citizen observatories (led by CREAM).

The CoP chairs are supported by staff from their respective organisations who take notes and help with drafting minutes, the inception report, etc. All active CoP participants will comment on and contribute to minutes, reports etc.

If decisions are to be made, e.g. prioritising topics for the CoPs to work on, voting (incl. online) will be used, for which a 2/3 quorum will be sufficient to pass a given decision.

Following initially agreed scope and objectives of each CoP, suitable activities will be identified and undertaken. This will be closely linked to the production of the WeObserve Cookbook: Guidelines for creating successful and sustainable Citizens Observatories (D2.8). Therefore, the CoPs will seek to continuously extract best practices and lessons learned that can feed into the Cookbook. Moreover, these best practices and lessons learned will also feed dynamically into WP3 and WP4 activities, translating these for different target audiences, as needed.

3.4 Driving communication of the CoP activities

It is vital that the CoP not only communicates effectively amongst its members but also outside of the group. Therefore, the communication strategy of the CoP will be based on the communication strategy of the WeObserve project, to ensure that the communication from the CoP is in harmony with the overall communication of the WeObserve project. The types of communication that the CoP is expected to undertake are presented below.

Internal communication. This is the communication between the CoP members, including setting up meetings, sharing documents, driving interactions and communicating activity advances. Each CoP Leader needs to choose the best internal communication tool for their purpose/according to their preferences. The WeObserve platform will constitute such a tool for enabling a smooth communication, ensure access rights to different types of stakeholders (participants of the CoP and general audience) and facilitate knowledge and information sharing.

Communication with the WeObserve consortium: Activities of the CoP need to be communicated to the WeObserve consortium for two main reasons: (1) The WeObserve consortium needs to be aware of the activities of each CoP. (2) The WeObserve consortium can assist in getting the message of the activities of the CoPs out to a wider audience.

External communication: Communication to the specific target groups and stakeholders external to the WeObserve project will need to be undertaken by the CoP. The communication strategy for the CoP will need to be included in the Inception Report (a template for developing the communication strategy is included).

3.5 Setting up new WeObserve CoPs

WeObserve is prepared to launch 2 additional CoPs, the topics of which can be community driven. The following recommendations apply for setting up a new WeObserve CoP:

- The new CoP needs to focus on a select number of **high priority topics**, i.e. the knowledge generation process should focus on specific topics.
- Ensure there is no overlap with existing CoPs
- Link with the activities foreseen in the DoA of WeObserve (and its amendments).

4 Timing of next steps

- The **first call for WeObserve CoP participants** will be launched before the end of May 2018
- The initial three WeObserve CoPs will be **announced** at the ECSA conference (3-5 June 2018) in Geneva
- The **first CoP forum** will take place at the workshop day immediately following the ECSA conference (6 June 2018), Geneva
- The **open invitation for proposals on additional CoP topics** will be launched before the end of September 2018
- The **second CoP forum** will take place at the COWM conference (Citizen Observatories for Water Management) in Venice (27-30 November 2018)
- The **Second call for WeObserve CoP participants** will be launched before the end of May 2019

5 References

1. Smith, D., Medina, B. and Wehn, U. (2016) Action Group Terms of References, AfriAlliance deliverable D1.1, July.
2. Wehn, U., Smith, D., Gharesifard, M., and Remmers, M. (2016) Results of the AfriAlliance survey on drivers for participating in Working Groups, AfriAlliance, 20 July.
3. Wehn de Montalvo, U. and Luijendijk, J. (2012) "Knowledge networking between science and practice to bridge the gap at the Science-Policy interface", 6th World Water Forum – joint session CS3-1/EU10 "Science and Water Policy Interface: When Science and Innovation Meet Water Policy".
4. Wenger, E., MsDermott, R. and W. Snyder (2002) Cultivating Communities of Practice. A guide to managing knowledge, Harvard Business School Press: Boston, M.A.



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