SOCIETIC
SOCiety as Infrastructure for E-Science via technology, innovation and creativity

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Change log

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1	29/10/2012	Teresa Holocher-Ertl Barbara Kieslinger Claudia Magdalena Fabian	Creation
2	30/10/2012	Candida Silva Francisco Brasileiro	Review
3	30/10/2012	Fermin Serrano	Update template
4	31/10/2012	Fermin Serrano	Final

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SUMMARY

This document with the website www.societic-project.eu provides a public presentation and description of the project planned activities, consortium and objectives. This deliverable also presents the initial set of experiments that will use the Societic services. Besides this document, the consortium has provided to the European Commission the Fact Sheet and a short slides-based presentation.

The project presentation will be updated after the first year of project execution.

INTRODUCTION

Citizen science is an innovative concept to involve the general public in scientific processes. One of the best ways to help people understand science is by letting them participate in scientific research and experiments. This is what citizen science tries to achieve.

The SOCIETIC project will coordinate all agents involved in the citizen science process, setting the basis for this new open science paradigm. The project will promote the usage of science infrastructures composed of dedicated and external resources, including professional and amateur scientists. SOCIETIC will set-up a network where infrastructure providers and researchers will recruit volunteers from a general public to perform science at home.

Individual citizens will contribute to scientific studies with their own knowledge and resources participating in an active way. Citizens will be donors by connecting their own computing resources, such us smart phones, desktop computers or other devices to science infrastructure. But, citizens will also be actors when they actively participate in the scientific process, in different phases: from short and easy activities to the inception of new research lines, leading people driven developments or in the development of software components, similar to open-source communities. We propose to open e-science to the people, even considering the knowledge and the time of the citizen scientists as part of the resources that constitute the e-infrastructures, and call this enhanced citizen-based infrastructure “c-infrastructure”.

OBJECTIVES

Societic aims at creating a common forum for cooperation between e-Infrastructure providers and citizen science infrastructures providers, including any end-user with interest in contributing to the scientific process. This framework can be seen as a thematic network where all partners will contribute with knowledge and resources, expanding beyond structural borders into society at large.

The main objectives of the project:

- Foster interaction and coordination between all citizen-science actors: researchers, resources providers, system administrators, and volunteers from the society. A common interface will

be created by offering common tools and workspaces for all of them, by deploying society-pull research and presenting results in an attractive way, including artistic and innovation oriented features.

- Promotion of the capabilities of the c-infrastructures, not only in general terms but also presenting concrete results. Our aim is to convince other research infrastructure providers and users, specialized researchers and people at home that it is possible to make top-level science by opening the labs and easing interaction and contribution from amateur scientists.
- Integration of existing solutions and users communities that aim to share experiences and innovate creating common solutions. Apart from existing citizen science practices this project will also deploy a set of concrete experiments that focus on specific topics and will add new resources to the available research infrastructures.
- Compilation and sharing of best user practices oriented towards research infrastructures users and providers, as well as policy-–makers recommendations for implementing citizen science.

C-INFRASTRUCTURE EXPERIMENTS

Societic will implement a set of applications enabling volunteers to become scientists and showing the capabilities of open resources. These initial experiments to be deployed are:

Analysis of cell images

The cells images application will involve citizens in the analyses of pictures taken from real cells under treatment in the Alzheimer's drug delivery research. This participation based on image recognition will advance the study of cell death, known as apoptosis, present in diseases like Alzheimer's and Cancer.

The participation mechanism is to receive (via web or smartphone) images of a cell culture being studied from a microscope and, based on basic questions, to help determine the actual state of each cell. By compiling and adding answers to questions like "Is this cell round or elongated?" or " Is the nucleus of the cell a solid color or grain?" we will know what is happening in each cell culture, helping researchers to know in every moment how the samples of medicaments applied to each cell culture are working.

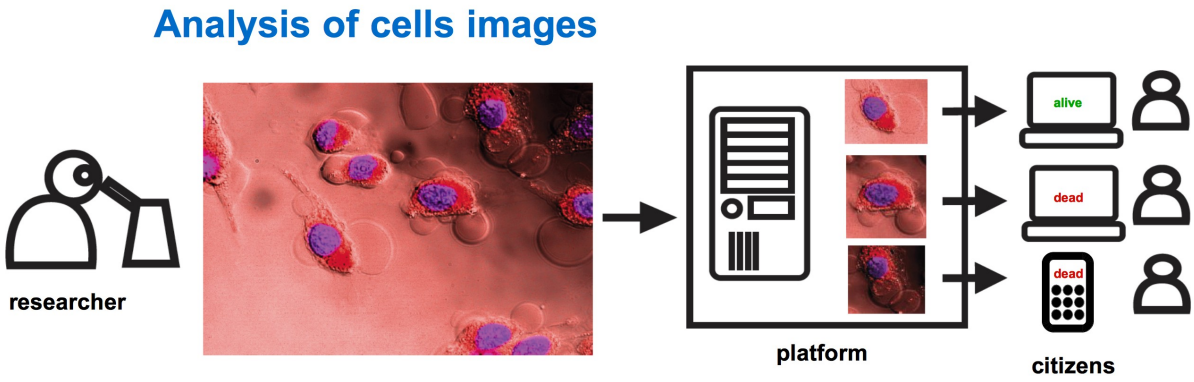

Figure 1: schema of the cell images application

Volunteers and participants will better understand the scientific method and generate data which would be more costly to obtain without the help of a large number of people involved. Instead of researchers having to review each of the videos obtained for each sample the videos will be split into images and time series of these images will be distributed to the volunteers.

Temperature maps

The temperature maps applications will create an alternative collection of thermal data based on the contributions from volunteers in different communities.

We want to collect the exact temperature across a city in order to create temperature maps. Volunteer citizens will be asked to measure the temperature inside and outside their houses and work places at specific points in time. Using common thermometers, volunteers will collect the data and send it back to the scientists who will analyze, aggregate and model the collected data. Volunteers will benefit from the project as they will have a report about the best way to heat their house.

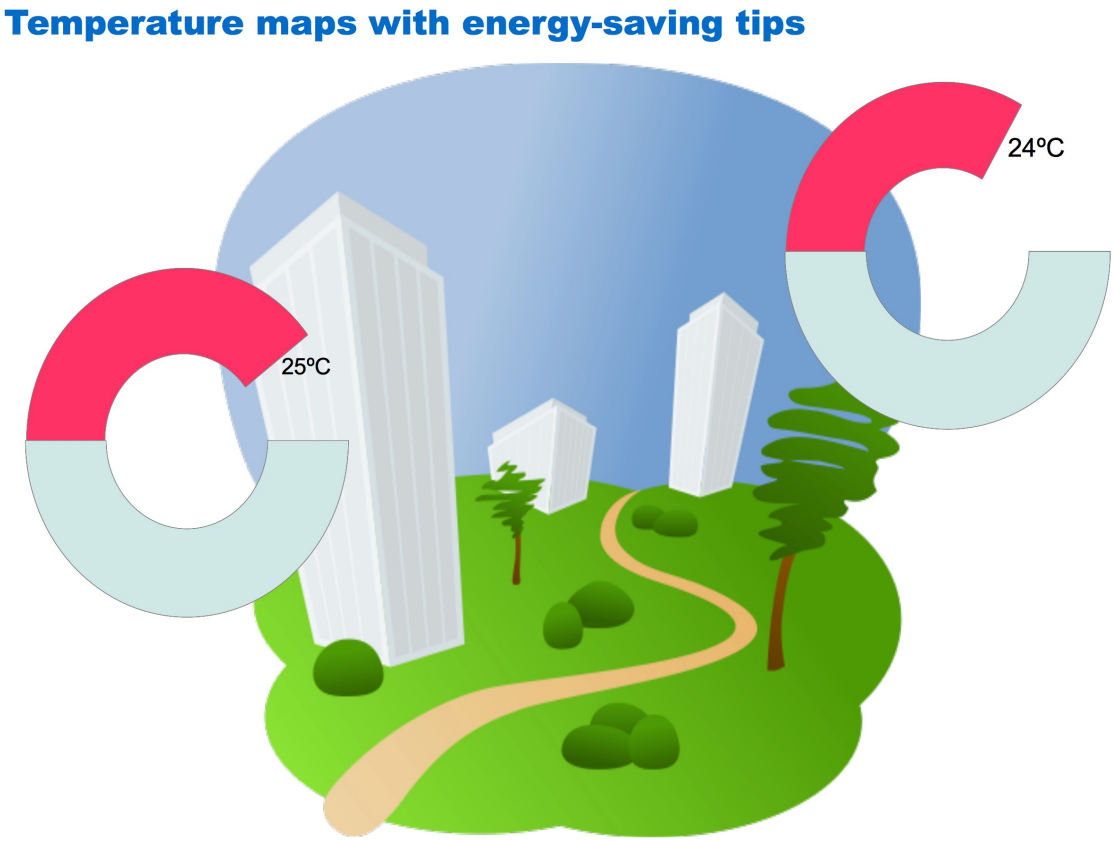

Figure 2: schema of the temperature application

Several interactive real-time maps showing the collected data, the volunteers network and its evolution will be created and made accessible to a broad public. Furthermore, we'll address people creativity and artistic capabilities by allowing volunteers to upload their own pictures taken at home from meteorologic phenomena in an interactive portal.

Words Distances

What is the perceived relation between words? This is still a complex issue for semantic specialists. Via a video-game we will create a semantic map where people define the distances between words.

Semantic analysis is a major challenge for science and innovation as it is a very complex task requiring advanced models and experts validations.

A common technique is to determine which words are very similar or have a related meaning. Related words can be considered neighbors in a graph. What we will create is a citizen science application based on a gaming approach, which will trace the distance of thousands of words. We

will ask people to select which words lead from one fixed starting word to the goal word creating a visual map of distance between words. Results of this research will be important for the scientific as well as the business world with lots of applications being based on semantic analysis.

Figure 3: schema of the words distances application

Additional Experiments

Additional citizen science applications with high scientific and social impact will be defined and provided along the project. At least, two external experiments will be subcontracted.

NETWORKING AND COOPERATION

Societic will focus on participation in open workshops as well as in interactive online frameworks, where the partnership will set the basis for the interaction with all the stakeholders.

The target groups are defined very widely:

- Researchers from public entities, universities and research institutes, across all disciplines, specially those that already use or provide e-Infrastructures and those that require participatory experiments.

- Teachers and students from universities and secondary schools.
- Private companies with interests in technology or socio-economic innovations.
- Citizens in general, but specially those who collaborate in volunteer computing, crowdsourcing projects and open source communities
- Artistic centres and art schools, as well as artists
- Risk of exclusion groups such us unemployed people, lowly educated housewives, elderly people, and rural communities
- Journalists for general and specialized media
- Organizations and institutions of scientific dissemination such as science museums or public Foundations

PARTNERSHIP

- Universidad de Zaragoza, Spain
- Museu da Ciência da Universidade de Coimbra, Portugal
- Universidade de Coimbra, Portugal
- Universidade Federal Campina Grande, Brazil
- TECNARA, Spain
- Centre for Social Innovation – ZSI, Austria

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