



RI4C2
Research & Innovation
For Cities & Citizens



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101035803

Selection of relevant R&I topics for Citizen Science

DELIVERABLE 6.4.
MONTH 18

D 6.4 – Selection of relevant R&I topics for Citizen Science

Table of contents

Table of contents.....	2
I. Premises. Concepts, Practices and Champions in Citizen Science	3
A. Premises	3
B. Concept of Citizen Science (CS)	4
C. Practices in Research and Innovation in Citizen Science	4
D. Projects and champions in Citizen Science	4
E. Measuring instruments of civic engagement.....	5
II. Research and Innovation Topics for Citizen Science	5
A. EC2U Instruments supporting the identification of the first three concrete topics for Citizen Science	5
A.1. The EC2U Virtual Institutes.....	5
A.2. The common research and innovation lines in the EC2U Virtual Institutes.....	6
A.3. EC2U Knowledge HUB	6
A.4. EC2U Think Thanks	6
B. R&I Topics for Citizen Science - Virtual Institute of Good health and well-being (GLADE).....	7
C. R&I Topics for Citizen Science – Virtual Institute for Quality Education and Multilingualism (VIQE).....	8
D. R&I Topics for Citizen Science – Virtual Institute for Sustainable Cities and Communities.....	10
III. Conclusions and further topics.....	12

I. Premises. Concepts, Practices and Champions in Citizen Science

A. Premises

The main objective of the current deliverable is to select the three relevant Research and Innovation topics for Citizen Science in relation to the three existing EC2U Virtual institutes.

The three EC2U Virtual Institutes - for Good Health and Well-being (GLADE), for Quality Education and Multilingualism (VIQE) and for Sustainable Cities (VISC) – are ideal frameworks to pilot activities and concrete topics of research and innovation with significant Citizen Science components. The first three concrete topics are identified via the Local Knowledge Ecosystems and further consultations with their involved entities and actors. We have collected and interpreted data gathered using:

- the “*Citizen Science and Knowledge Ecosystem*” survey (detailed in D6.1),
- seven *focus-groups* - organised with the Citizen Science Champions in each of the seven Local Knowledge Ecosystems (analysed in D6.2)
- two *World Caffes* – with the representatives of the EC2U / RI4C2 partner universities
- one *World Caffe with the scientific coordinators of the EC2U Virtual institutes* (professor Daniela Soitu - GLADE, professor Raul Sanchez – VIQE, professor Manuel Gameiro – VISC).

The current deliverable, D6.4 underlines research and Innovation topics for Citizen Science fields and proposes the three most relevant ones for creating three living labs.

The process follows the three previous deliverables:

D 6.1: Citizen Science Champions (M12, August, 2022)

D 6.2: Vivid EC2U local Knowledge Ecosystem (M18, February 2023)

D 6.3: Measuring civic engagement of R&I activities (M18, February 2023)

and it prepares the steps for the Living labs associated to the already existing three Virtual Institutes at the EC2U Alliance level:

D 6.5: Pilot Living labs for Citizen Science (M24 – August 2023)

D 6.6. First Citizen Science projects (M36, August 2024).

B. Concept of Citizen Science (CS)

The concept of CS has been presented, analysed and reflected in the deliverables D6.1: CS Champions, D6.2: Vivid EC2U local Knowledge Ecosystem and D6.3: Measuring civic engagement of R&I activities.

From the multiple literature sources the project team has choose a general definition of CS as being the scientific contribution undertaken by citizens in the Knowledge Ecosystem through collaborations between actors, at the local and regional level.

C. Practices in Research and Innovation in Citizen Science

Practices of R&I entities from the seven Local Knowledge Ecosystems have been collected using quantitative and qualitative methods and instruments.

From a quantitative perspective, secondary data has been analysed using national and European sources (details in D 6.3: Measuring civic engagement of R&I activities), survey-based research - using a quantitative instrument (detailed in D 6.1. for Citizen Science Champions and in D 6.2: for the data focused on the Vivid EC2U local Knowledge Ecosystem).

For a comprehensive perspective, qualitative methods as focus groups, debates and group interviews with the identified Champions at the local and regional levels have been realised by the partner universities (detailed in D 6.2: Vivid EC2U local Knowledge Ecosystem – as particularities of R&I involvement, practices of cooperation, fields on research, topics, lessons learned and policy implications - and in D 6.3: Measuring civic engagement of R&I activities – as practices developed to encourage civic engagement in R&I projects).

D. Projects and champions in Citizen Science

The CS Champions are acting in a Vivid Knowledge Ecosystem. Their designation is based on the current and following involvement as active participants in research and innovation at the local and regional level. The project team has analysed the experience, the investments, the level of interests in involving citizens in research and innovation. A detailed list of proposed Citizen Science Champions and a brief description of their interests and successful projects is included in the D6.1. for Citizen Science Champions.

E. Measuring instruments of civic engagement

As is presented in deliverable D 6.3, the conceptual bases, the existing quantitative and qualitative methodologies are essential when measuring the civic engagement of R&I activities. The selection of the existing ones and a new motivational-based approach elaborated by the project team in consultation with the Citizen Science Champions - INOVATEK - have been included in the Toolkit of the four instruments proposed to measure civic engagement in R&I activities.

II. Research and Innovation Topics for Citizen Science

A. EC2U Instruments supporting the identification of the first three concrete topics for Citizen Science

A.1. The EC2U Virtual Institutes

The Virtual Institutes, framed in the first months of the EC2U University Alliance (beginning of the 2021), are complex entities focused on research, education, innovation and Services to Society.

A complex analysis of the previous partnerships of the seven involved universities in the European Campus of City-Universities (EC2U) revealed common research, publications, and projects.

The richest cooperation has been in the fields as:

- Health and well-being: prevention, ageing, imaging, cancer;
- Quality education: multilingualism, interculturalism, educational innovation;
- Sustainable cities and communities: air quality, water quality, energy, public policy.

These topics are closely related to three of the United Nations Sustainable Development Goals:

- Ensuring Good Health and Well-being for All of All Ages (UNSDG no 3); this led to the creation of the Virtual Institute for Good Health and Well-being (GLADE)
- Quality Education (UNSDG no 4); this led to the creation of the Virtual Institute for Quality Education and Multilingualism (VIQE)
- Sustainable Cities and Communities (UNSDG no 11) this led to the creation of the Virtual Institute for Sustainable Cities and Communities (VISCC).

A.2. The common research and innovation lines in the EC2U Virtual Institutes

In the three EC2U Virtual Institutes, research and associated activities are innovative, inter- and multidisciplinary.

The seven academic and research communities have been participating in the first years of the EC2U project to a renewed tacking stock procedure based on the individual, group, and institutional research and innovation interests into extended cooperation in the consortium.

The resulting lists of the topics linked to the three UNSDGs have been passed through a new reframing process.

The synthetic topics and fields, as new common lines for cooperation considering the Knowledge Square are listed in the following points (B,C,D).

A.3. EC2U Knowledge HUB

Through the EC2U Knowledge HUB, data gathering and integration are decoupled from app development and other data consuming activities by introducing a central knowledge graph facility, implemented on top of WC3 Semantic web standards and open-source components, acting as a cooperative clearing house for local decentralized data assets.

A.4. EC2U Think Thanks

Two EC2U Think Thanks: Values for Value (D7.9) and Circular Economy- Key for Sustainability and Change (D7.10) are providing inputs for the active Knowledge Square. For instance, the suggestions reflecting Services to Society are envisaging the following proposals:

- “University + City: “A hand-in-hand-approach”
- Encouraging cooperation between institutions and companies
- Develop local networks (nodes) to make “pressure” to implement a common framework legislation to treat and process waste
- Develop a reward system addressed to virtuous stakeholders and nudging policies for virtuous consumers BRAINSTORMING EC2U
- Contest-type events to encourage recycling for humanitarian causes (event at EC2U level)
- “Let’s do it“ campaigns for citizens (common for all EC2U partners)
- Involvement of mass media for increased advocacy in all the cities part of EC2U
- Newsletters with best practices from partners, for awareness and nudge to act.

Sources:

EC2U Think Thanks: Values for Value (D 7.9) available at: <https://ec2u.eu/wp-content/uploads/sites/709/2022/07/D7.9-EC2U-ThinkTank1-Value4YourValues.pdf> and

Circular Economy- Key for Sustainability and Change (D 7.10) available at: <https://ec2u.eu/wp-content/uploads/sites/709/2022/07/D7.10-EC2U-ThinkTanks.pdf>

B. R&I Topics for Citizen Science - Virtual Institute of Good health and well-being (GLADE)

In the Virtual Institute for Good Health and Well-being, the research interests (table no1) of the academic communities are the starting points for mobilities, work team, writing articles and preparing conferences.

Table no1. Research topics in Virtual Institute for Good Health and Well-being

<ul style="list-style-type: none"> • Aging (biological, socioeconomic and psychological) 	<ul style="list-style-type: none"> • Well-being (psychological, social, environmental, physical)
<ul style="list-style-type: none"> • Gender well-being and autonomy 	<ul style="list-style-type: none"> • Lifelong well-being
<ul style="list-style-type: none"> • Social and environmental determinants in health 	<ul style="list-style-type: none"> • Health and organizations (health in campus)
<ul style="list-style-type: none"> • Health system management and policy, healthy cities 	<ul style="list-style-type: none"> • Dependency, autonomy and smart aging
<ul style="list-style-type: none"> • Silver economy 	<ul style="list-style-type: none"> • Mental health and cognitive issues
<ul style="list-style-type: none"> • Inflammatory and chronic pathologies (prevention, diagnosis, treatment and through different lenses) 	<ul style="list-style-type: none"> • Viral pathologies (Covid19, economic and societal consequences, health responses to Covid)
<ul style="list-style-type: none"> • Brain aging and mental health 	<ul style="list-style-type: none"> • Non-communicable diseases
<ul style="list-style-type: none"> • Cancer (prevention, prognosis, treatment, social determinants) 	<ul style="list-style-type: none"> • Cellular and molecular basis of Angiogenesis
<ul style="list-style-type: none"> • Lifestyle (nutrition, exercise, nutrition, wearables) 	<ul style="list-style-type: none"> • Promotion of Health (psychological, social, environmental, physical)
<ul style="list-style-type: none"> • Online peer counselling for students of all ages 	<ul style="list-style-type: none"> • Other Topics

Source: GLADE Itinerant Conferences of Specialists in the areas of Health and Well-being D4.18) Available at: www.ec2u.eu

The relevant R&I TOPICS for Citizen Science related to VI GLADE were defined by the Knowledge Ecosystem actors (see I.A) as followed:

Table no 2. The relevant R&I TOPICS for Citizen Science in - Virtual institute of Good health and well-being (GLADE)

No.	The relevant R&I TOPICS for Citizen Science in VI GLADE
1	Healthy (Home) Office Habits
2	Development of health days within schools and neighbourhood associations or report their activities through a blog or application
3	Preventive approaches in the community: healthy food, vaccinations, use of antibiotics, exercises, skin cancer prevention, stop smoking or drinking
4	Soft mobilities (walking, cycling) and their impact on health
5	Well-being and physical activity in the cities and campus
6	The lifestyle, well-being and healthy Citizens
7	Monitoring app of health and self-management

During the next six months, the Citizen Science Champions and other interested active actors in the Local Knowledge Ecosystems will continue to promote pilot activities with significant CS component. These activities will give substance to the new Living Lab focused on Good Health and Well-being.

C. R&I Topics for Citizen Science – Virtual Institute for Quality Education and Multilingualism (VIQE)

In the Virtual Institute for Quality Education seed research projects have been selected and are on the run through mobilities, workshops and conferences.

Table no 3. Research topics in Virtual Institute for Quality Education and Multilingualism (VIQE)

<ul style="list-style-type: none"> Multilingualism and intercultural studies for education, management and health 	<ul style="list-style-type: none"> Translation and interpreting
<ul style="list-style-type: none"> Gender Studies (linguistics, literature, culture) 	<ul style="list-style-type: none"> Comparative cultural studies

• Comparative literature	• Materiality of Languages, Literatures and Cultures
• Contrastive Linguistics	• Intercultural communication and management
• Language policy	• Discourse studies
• Language and Cultural Minorities (linguistics, literature, culture)	• Heritage in contact
• Language and globalization	• Language, mobility and migration
• Language as a Cultural, Political and Social Tool for International Mediation	• Digital Humanities
• Text analysis with language processing tools for the study of linguistic, cultural and social diversity	• Digital linguistics
• Digital interculturality	•

Source: EC2U Virtual Institute's research seed mobility programme on language and cultural diversity (calls for projects and evaluation panels, D5.7). Available at: www.ec2u.eu

The relevant R&I TOPICS for Citizen Science related to VI VIQE were defined by the Knowledge Ecosystem actors (see I.A) as followed (Table no 4):

Table no 4. The relevant R&I TOPICS for Citizen Science in the Virtual Institute Quality Education and Multilingualism (VIQE)

NO	The relevant R&I TOPICS for Citizen Science in VI VIQE
1	Teaching for the Languages in Communities
2	Approaching Cultural Biases from multiple perspectives
3	Encourage gatherings of people from different cultures to share (dances, meals-exchange healthy recipes)
4	Readings in different languages: make videos or report through pictures, blogs
5	The impact of Third-Party Places on lifelong learning

¹ See: <https://ec2u.eu/wp-content/uploads/sites/709/2022/07/D5.7-EC2U-Virtual-Institutes-research-seed-mobility-programme-on-language-and-cultural-diversity.pdf>

6	New ways of recognising formal and informal learning from school to the working world.
7	Using of digital tools in learning ecosystems

During the next six months, the Citizen Science Champions and other interested active actors in the Local Knowledge Ecosystems will continue to promote pilot activities with significant CS component. These activities will give substance to the new Living Lab focused on Education and Multilingualism.

D. R&I Topics for Citizen Science – Virtual Institute for Sustainable Cities and Communities

In the Virtual Institute for Sustainable Cities and Communities, seed research projects have been selected and grouped in two major directions performed by two interuniversity teams.

Table no 5. Research topics in Virtual Institute for Sustainable Cities and Communities

<ul style="list-style-type: none"> Indoor environmental quality, Sustainable built environment, Energy markets and policies 	<ul style="list-style-type: none"> Law and political science. Sustainability, urban planning, urban security and public governance
<ul style="list-style-type: none"> Urban Planning, Spatial Analysis, Sustainable Tourism, Water Quality 	<ul style="list-style-type: none"> Architecture Technology. Sustainable reuse of historical buildings, within a multidisciplinary approach
<ul style="list-style-type: none"> Spatial Analysis, Geomorphology, Geography, Regional Innovation, Human Geography, Physical Geography 	<ul style="list-style-type: none"> Science & Tech of the built environment. Transient heat transfer simulations of buildings (Comfie Pleiades software)
<ul style="list-style-type: none"> Science & Tech of the built environment. Transient heat transfer simulations of buildings 	<ul style="list-style-type: none"> Indoor environmental quality. Energy efficiency of buildings and Univ. Campus
<ul style="list-style-type: none"> Geography, Global Information Systems 	<ul style="list-style-type: none">

Source: Research Seeds projects launched by VI SCC D6.2 (www.ec2u.eu)²

² See: <https://ec2u.eu/wp-content/uploads/sites/709/2022/07/D6.2-Research-Seed-Projects-launched-by-SCC-VI.pdf>

The relevant R&I TOPICS for Sustainable Cities and Communities were defined by the Knowledge Ecosystem actors (see I.A) as followed (table no 6):

Table no 6. The relevant R&I TOPICS for Citizen Science in Virtual Institute for Sustainable Cities and Communities

NO	The relevant R&I TOPICS for Citizen Science in VI SCC
1	Perceptions of building environment. Indoor environment and quality of air
2	Landscape Linguistics
3	Promotion of events in schools and neighbourhood associations: bike day, plant a tree
4	Observation of natural ecosystems: trees in European cities, birds in European cities
5	The systemic use and reuse of industrial buildings
6	Sustainable transport - Monitoring Energy consumption in the (public) transport
7	The Quality of sounds in the cities – monitoring noise in the cities

During the next six months, the Citizen Science Champions and other interested active actors in the Local Knowledge Ecosystems will continue to promote pilot activities with significant CS component. These activities will give substance to the new Living Lab focused on Sustainable Cities and Communities.

III. Conclusions and further topics

The relevant R&I topics for Citizen Science are interdisciplinary, challenging and supported by most of the participants of the Citizen Science and Knowledge Ecosystem Survey, on the seven focus groups and three World Cafés.

From the seven proposals related to each of the three EC2U Virtual Institutes, the most preferred by the involved Citizen Science Champions and by the Knowledge Ecosystem local actors are the following:

No.	The relevant R&I TOPIC for Citizen Science in VI GLADE
1	Healthy (Home) Office Habits

NO	The relevant R&I TOPIC for Citizen Science in VI VIQE
1	Teaching for the Languages in Communities and Approaching Cultural Biases from multiple perspectives

NO	The relevant R&I TOPIC for Citizen Science in VI SCC
1	Perceptions of building environment. Indoor environment and quality of air

The working teams, the Citizen Science Champions and other interested entities in the Local Knowledge Ecosystems will focus on these topics – one per each Virtual institute – in their actions of creating the three corresponding Living Labs.

They will prepare an action plan for Citizen Science which will be applied concretely in the pilot living labs for Citizen Science under the three Virtual Institutes: GLADE, VIQE and SCC until August 2024 (month 24 of the RI4C2).

The European University Alliance EC2U and the resident and involved communities have the opportunity to create, innovate, and learn together in a new vivid partnership of the Knowledge Ecosystem and Science with and for Citizens in RI4C2.



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