Partner search

Date (16-09-20)

- **(*) Indicate numbers of relevant topics for Green Deal call:**

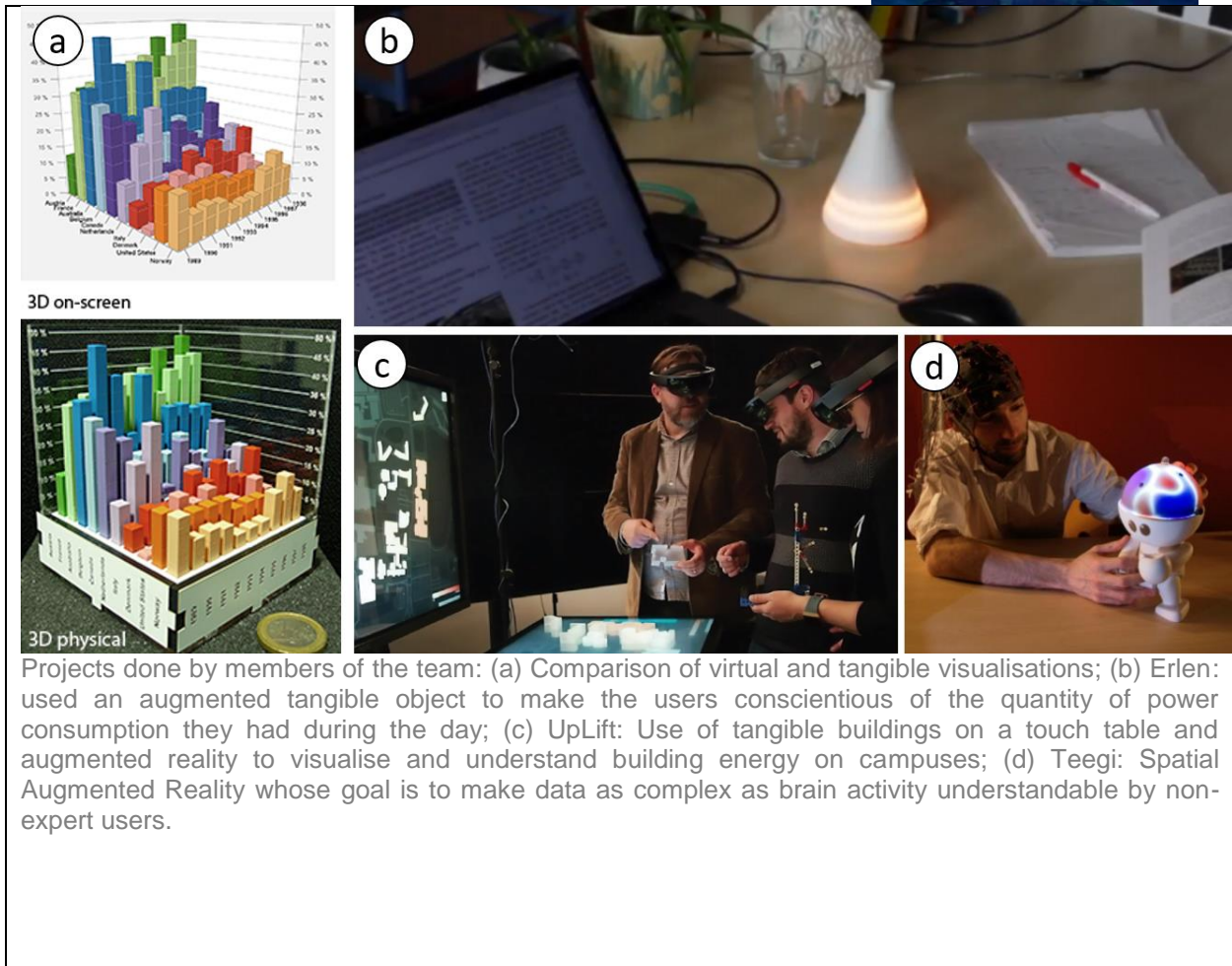| |
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| **LC-GD-9-2** |

- **Quick description of the project**

(describe the objectives, activities, partners requested and their skills)

We propose to provide citizens and stakeholders with situated interactive visualization tools allowing them to directly perceive the impact of their choices or habits on the climate. To do so, we will design and deploy systems that seamlessly combine real physical environments (which correspond to the world in which we are currently living) with virtual elements (which will represent the world in which we could live in). We will do so through the use of a variety of media from mobile devices to mixed reality and situated visualization technology (e.g., head-mounted displays, video projection, embedded displays and objects). Such systems will allow citizens, stakeholders and decision-makers to observe the possible impact of their choices and society's choices on climate change, and of climate change on their own environment. The outcomes of simulations will be conveyed to users visually and in a situated manner, either directly within their physical environment (e.g., the sea level rising, natural disasters like fires or hurricanes), or on fac-similes of the physical environment, such as an augmented plan-relief of a specific region displayed in a museum. Some systems will allow users to interactively select different choices and immediately see their consequences. For example, they may choose to observe what would happen to the future environment if everyone chose to turn off their cars' engine in traffic jams, or voted for a presidential candidate with a specific environment-friendly program.

We are expecting that anchoring visualizations in the real world in such a manner will make climate projections less abstract to users. We further expect that providing users with highly interactive environments and tangible interactions will promote engagement and their sense of responsibility. We envision that such tools will eventually raise public awareness more effectively than traditional scientific communication styles (e.g., charts of climate projections) which are often too complex or abstract to be understood by the general public.

Concretely, we propose our skills and background in the domains of human-computer interaction, information visualization, mixed reality, co-design methodologies, and empirical user studies to design, prototype and evaluate novel interactive systems for better conveying links between actions and the environment, with the goal of helping citizens and stakeholders take on more sustainable habits and make more informed choices.

We envision this project as a collaboration with experts in climate models and meteorologists, experts in human sciences (e.g., sociologists, behavioral economists, cultural geographers), outreach entities and diffusion vectors (e.g., museums and startups), possibly designers and artists as well as industrial partners interested in bringing our results closer to market.

Projects done by members of the team: (a) Comparison of virtual and tangible visualisations; (b) Erlen: used an augmented tangible object to make the users conscientious of the quantity of power consumption they had during the day; (c) UpLift: Use of tangible buildings on a touch table and augmented reality to visualise and understand building energy on campuses; (d) Teegi: Spatial Augmented Reality whose goal is to make data as complex as brain activity understandable by non-expert users.

● **(*) Do you intend to apply as ? :**
Coordinator: No
Participant: Yes

(*) Either Description of the <u>expertise requested</u> (up to 1000 characters) - *specify which points of the "expected impact" of the call you are targeting*

Xxxxxxxxx **+ key words :**

Or Description of the <u>expertise proposed</u> (up to 1000 characters) - *specify which points of the "expected impact" of the call you are targeting*

Our expertise is in the design, development, and evaluation of novel interactive tools that allow users to better understand complex or heterogeneous data. We are especially interested in *"beyond the mouse"* technologies that can allow more engaging user interfaces than standard desktop computers and mobile devices. This includes notably AR, VR and Tangible Interaction/Visualization. Nonetheless we also consider mobile devices as entry points to reach large audiences. Our work will be conducted at the Inria Potioc Lab in Bordeaux, which is known worldwide for designing novel interactive, immersive and multisensory user interfaces meant for a wide

audience. Potioc is currently led by Martin Hachet, an Inria research director, and three new researchers who will be directly involved in this project and will join the team in the coming months: Arnaud Prouzeau, Yvonne Jansen, and Pierre Dragicevic. Together, they have a solid background and expertise for designing, prototyping and evaluating the kind of interactive systems described in the objectives of this call.

With the tools we propose to build, we target the following impacts:
- *Enable citizens, stakeholders and decision-makers to factor climate change and climate action into the decisions that will affect our lives for decades to come.*
- *Bring a step change in the use of knowledge and information and allow users to become active players in climate action.*
- *Make high-level information on climate change more accessible to people's lives and to provide data in a format that makes it useful for its users*

+**key words :** virtual reality, augmented reality, tangible interaction, data physicalization, 3D user interfaces, shared screens, collaborative interaction, design, prototyping, evaluation

Organisation information

Organisation and country:
Inria, France
Type of organisation:
☐ Enterprise ☐ SME ☐ Academic **X**Research institute ☐ Public Body ☐ Other: Association
Former participation in FP European projects?
X Yes ☐ No
Web address:
www.inria.fr
Description of the organisation:
Inria is the French national research institute for digital science and technology. World-class research, technological innovation and entrepreneurial risk are its DNA. In 200 project teams, most of which are shared with major research universities, more than 3,500 researchers and engineers explore new paths, often in an interdisciplinary manner and in collaboration with industrial partners to meet ambitious challenges. As a technological institute, Inria supports the diversity of innovation pathways: from open source software publishing to the creation of technological startups (Deeptech).

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(*) –Mandatory