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Building and evaluating sensor-based Citizens' Observatories for improving quality of life in cities

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Urban air quality, the environmental quality of public spaces and indoor areas such as schools, are areas of great concern to citizens and policymakers. However, access to information addressing these areas is not always available in a user-friendly manner. In particular, the quality and quantity of this information is not consistent across these areas, and does not reflect differences in needs among users.

The EU-funded CITI-SENSE project will build on the concept of the Citizens' Observatories to empower citizens to contribute to and participate in environmental governance, and enable them to support and influence decision making by policymakers. To achieve this goal, CITI-SENSE will develop, test, demonstrate and validate a community-based environmental monitoring and information system using low-cost sensors and Earth Observation applications. Key to achieving this goal is the chain "sensors-platforms-products-users" linking providers of technology to users: (i) technologies for distributed monitoring (sensors); (ii) information and communication technologies (platform); (iii) information products and services (products); (iv) and citizen involvement in both monitoring and societal decisions (users).

The CITI-SENSE observatories cover three empowerment initiatives: urban air quality; public spaces; and school indoor quality. The empowerment initiatives are being performed at nine locations across Europe. Each location has adapted the generic case study to their local circumstances and has contacted the urban stakeholders needed to run the study. The empowerment initiatives are divided into two phases: a first phase (Pilot Study), and a second phase (Full Implementation). The main goal of the Pilot Study is to test and evaluate the chain "sensors-platform-products-users". To assess the results of the empowerment initiatives, key performance indicators (KPIs) are being developed; these include questionnaires for users. The KPIs will be used to design the full implementation phase of the project. First results from the Pilot Study will be presented for three participating cities: Ljubljana (Slovenia), Vienna (Austria) and Oslo (Norway), which differ in size, environmental conditions and social perception on local air quality.

Ljubljana and Oslo empowerment initiatives include urban air quality, and school indoor air quality, while Vienna only includes urban air quality. For the area of urban air quality, the three cities will deploy a wireless network of five static sensor nodes and distribute five personal sensors among people to be carried while performing daily activities in the pilot study. The data will be accessible to users through mobile phones, web services and other devices. For the full implementation phase the sensor network will comprise a total of 20 to 40 static nodes, depending on the size of the city, and 20 personal nodes. For the school indoor air quality three sensors will be allocated inside the school and one outside. The data will be visible provided in school classrooms giving the students a unique and innovative approach to learn about air quality by being involved.

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