SYnergy of integrated Sensors and Technologies for urban sEcured environMent

Informe

Información del proyecto

SYSTEM

Identificador del acuerdo de subvención:
787128

Sitio web del proyecto

DOI
10.3030/787128

Proyecto cerrado

Fecha de la firma de la CE
7 Noviembre 2018

Fecha de inicio
1 Septiembre 2018

Fecha de finalización
28 Febrero 2022

Financiado con arreglo a
Secure societies - Protecting freedom and security of Europe and its citizens

Coste total
€ 9 087 796,60

Aportación de la UE
€ 7 926 171,45

Coordinado por
FORMIT - FONDAZIONE PER LA RICERCA SULLA MIGRAZIONE E SULLA INTEGRAZIONE DELLE TECNOLOGIE
Italy

Periodic Reporting for period 2 - SYSTEM (SYnergy of integrated Sensors and Technologies for urban sEcured environMent)

Período documentado: 2020-07-01 hasta 2022-02-28

Resumen del contexto y de los objetivos generales del proyecto

Illegal activities associated with the production of illicit drugs or explosives endanger citizens in different ways, from negative effects on public health to an increase in crime rate for those communities living in the urban and sub-urban areas where production is made. Here criminals manufacture drugs and homemade explosives by making use of dangerous toxic and explosive chemical substances. Current investigation approaches adopted by Law Enforcement Agencies (LEAs) can be supported by advanced technologies enabling faster, real-time and cost-effective detection and monitoring of traces left by the “small kitchen laboratories”.
Capitalising on the expertise enhanced during the forerunning H2020 Innovation Actions NOSY and Micromole, the SYSTEM project enables knowledge sharing and transfer amongst sensor providers, LEAs and network utility operators with the final aim of providing concrete technological solutions to detect drugs and explosive production in an urban area. The H2020 SYSTEM project exploits analytical chemistry for providing innovative tools for fighting against crime.
The main objective of SYSTEM is to create a network of sensing devices, fuse data collected from them and make available relevant information to LEAs. Sensing devices have been deployed across different urban areas in six cities and the results of their detection are gathered in remote mode in a monitoring centre. The decision support contribution based on real-time data provided by SYSTEM complements tools currently adopted by LEAs to identify clandestine laboratories for the production of illicit drugs or explosives.

Trabajo realizado desde el comienzo del proyecto hasta el final del período abarcado por el informe y los principales resultados hasta la fecha

Progress and main results of SYSTEM foresee the consolidation in the first part of the project of the baseline in terms of technology knowledge/availability, requirements of the stakeholders and possible application scenarios (WP1); integration, manufacturing, technical improvement and validation of the sensing components of SYSTEM have been carried out during the whole duration of the project (WP2); definition of the data fusion concept based on measurements from the three utility environments, taking into account the methods elaborated in WP4, WP5 and WP6 to localise clandestine production sites (WP3); definition in the main cities of the sewer network models and of the neighbouring area of the selected test bed site for demonstration purposes (WP4); simulations about detection opportunities at different concentration of dissolved substances in wastewater (WP4); definition of methods for sensor placement and of requirements for deployment in sewer network (WP4); test of passive sampling and of analytical methods for the various target analytes and NPS in raw wastewater (WP4); adaptation of detection capabilities of technologies to work on specific phases of the household waste collection process and related tests in solid waste (WP5); assessment of performance of sensing technologies for air in a controlled environment and of their preparation for test in non-controlled environment (WP6); specification, design, implementation and test (and partial validation) of connection points that allow the different sensing devices to send data and store them into a prototype of the Monitoring Centre (WP7); realisation of the first visits for coordination in the main cities selected for demonstration for coordination purposes (WP8); definition of the deployment

calendar and definition of key elements for deployment visits in all the cities involved according to the Contingency Plan (WP8); definition of the dissemination strategy and drafting of the common exploitation strategy of SYSTEM (WP9); creation of the first dissemination material and realisation of a number of dissemination activities (WP9); networking and regular interaction with specific categories of stakeholders to find dissemination and exploitation synergies (including other FP7 and H2020) (WP9); assessment of the legal, ethical and social acceptance aspects of activities foreseen in SYSTEM with the creation of a legal and ethics support package (WP10); satisfaction of the 'ethics requirements' set out for SYSTEM (WP11); definition of the data management aspects and procedures (WP12); activation of the governance structure of SYSTEM (WP12); monitoring and reporting of administrative and financial aspects (WP12); definition of a strategy for standardisation (leading to a plan for a CWA)(WP12).

Avances que van más allá del estado de la técnica e impacto potencial esperado (incluida la repercusión socioeconómica y las implicaciones sociales más amplias del proyecto hasta la fecha)

SYSTEM aims at going beyond the state of the art by improving the readiness of the sensing devices included in the previous H2020 projects, complementing them with commercial sensing devices, and integrating such technologies to work in unison in order to provide effective information to be fused by a customisable data monitoring centre. The expected results (mainly to be achieved in the second part of the project's implementation) are:

• An innovative approach for the monitoring of amphetamine-type-stimulants (ATS) and homemade explosives (HME) production in urban and suburban areas.

• Chemical analysis methods to detect traces of synthetic drug synthesis and of the making of homemade explosives in the sewage waste.

• Improved sensor principles for chemical measuring under extraordinary conditions.

• Robust technologies, including sensing devices for detection in sewage or in solid waste as well as for autarkic air monitoring.

• Innovative sensor fusion models to help locate the source of the tracked compounds and improve its identification.

• New solutions for LEAs investigations include a unified data management and control centre with algorithms which consider real-time data.

SYSTEM has achieved results having an impact on detection capacities and making evidence available, assessing the effectiveness of "production location" by deploying sensing technologies, as well as proving a reliable information base to fight against crime. The impact of the SYSTEM project refers to a type of device integration that presents innovation and an improvement under the aspect of effectiveness, as well as new best practices associated with the data fusion. Impacts of SYSTEM results are mainly identified in the following areas:

• Proving detection capacities and making evidence available for authorities involved in the fight against crime.

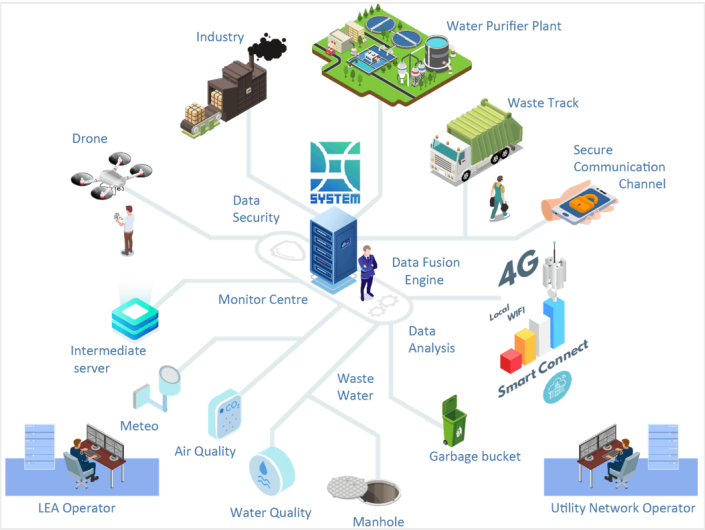
• Assessing effectiveness of "production location" by deploying sensing technologies thanks to a more effective detection and localization of clandestine sites producing synthetic drugs and explosives.

• Proving a reliable information base to fight against crime through a wide range of data that can be

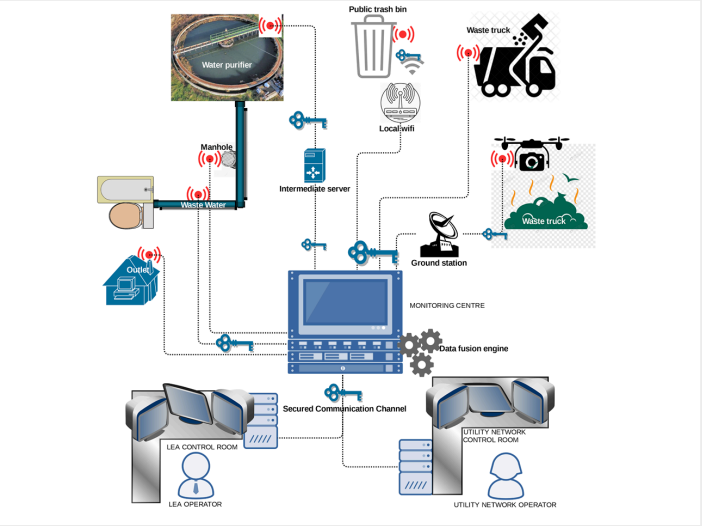
offered to Law Enforcement Agencies, Security and Intelligence Agencies, Government Laboratories, etc.

• Potential Impact not foreseen is identified in the application of SYSTEM and its capacities for data aggregation for environmental purposes - monitoring/detection of pollution, or in general anomalous presence of substances.

• Societal Implications of the Project are recognised by the need of safeguarding core societal values, fundamental rights and civil liberties also when security has an essential role.



SYSTEM - DATA FUSION Logical Architecture



SYSTEM project - overview

Última actualización: 27 Marzo 2024

Permalink: https://cordis.europa.eu/project/id/787128/reporting/es