



**2021**  
Annual **INCOSE**  
international workshop  
Virtual Event  
January 29 - 31, 2021

# Smart Cities Initiative

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[www.incose.org/IW2021](http://www.incose.org/IW2021)

## **CHAIR**

Jennifer Russell (Garver)

## **CO-CHAIR**

Marcel van de Ven (Heijmans)

## **INCOSE WEB PAGE**



<https://connect.incose.org/ProgramsProjects/SmartCitiesInitiative/SitePages/Home.aspx>

## **INCOSE CONNECT ADDRESS**



none yet... to come

10 active and growing fast! Join the movement soon

# Charter Summary



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## WG PURPOSE/MISSION

The INCOSE Smart Cities Initiative will draw upon the experience and knowledge of INCOSE members to support communities in developing their Smart Cities Concepts, Applications, Technology and Services (CATS) by leveraging systems engineering tools and principles.

Smart Cities CATS are being planned and developed across the world to apply information and communication technology (ICT) within traditional urban networks and services; making them more flexible, efficient, and sustainable. The efficiency of operations such as transportation, energy, water supply, building infrastructure management, and waste management are improved within the community for the benefit of its inhabitants, making smart cities greener, safer, faster and friendlier. Benefits include real-time resource allocation, improved resource use, reduced waste, and enhanced public safety.

Since the Smart City concept comprises Smart Infrastructure, Smart Transportation, Smart Energy, Smart Healthcare, and Smart Technology, the Systems Engineering knowledge, experience, and skillset of INCOSE members is strategically positioned to support our global communities as they embark on supporting the multi-faceted Smart Cities CATS.

## WG GOAL(S)

The goal of this initiative is to create a model of a smart city that illustrates the resources that municipalities can use to create a framework for their Smart Cities CATS enabling interconnectivity, reuse, and consistency.

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Each of the Smart City CATS being explored around the world focus on a specific set of capabilities and benefits tailored for that locality. For example, under the US Department of Transportation Smart City Challenge, approximately 110 distinct municipal pilot transportation projects are underway, ranging from coordinated traffic lights, bike sharing, urban freight logistics, to first responder response times. In each case, the pilot is yielding important data for use in a Smart City environment. As a result, there are plethora activities underway which could benefit from an effort to organize and integrate them into an overall concept of what defines a ?Smart City?. What is not readily available is an overall architectural model of what constitutes a Smart City as a system.

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## WG SCOPE

This Initiative will support municipalities and public agencies in adopting Smart Cities technologies by applying systems engineering principles and tools. This Initiative will support a holistic perspective of development of Smart Cities infrastructure and CATS through an open framework that enables integration of new Smart Cities CATS as the resources evolve.

This is not intended to provide information on funding Smart Cities CATS.

This is not intended to be the definitive answer to what is a "Smart City," but is intended to provide a logical extensible open framework for technology developers, municipalities and public agencies. It is intended that adopting a Smart Cities technologies open framework will assist these stakeholders with the integration of infrastructure and its related smart technology.

INCOSE will emphasize how Smart Cities is a specific application of System of Systems approach to using Systems Engineering. Our in-depth understanding of SoS assures that a fundamental foundational approach to establishing Smart City design, development, and operations can be clearly, completely, and concisely developed. This foundation understanding will then help future cities (large and small) benefit from a well-defined application that can be tailored to a city's specific needs.

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## OUTCOMES (PRODUCTS/SERVICES)

### Potential Products

- Stakeholder Management Plan
- Tailored Systems Engineering Management Plan (SEMP) for Smart Cities (gathers and helps drive all 30 of the processes specified in ISO/IEC 15288)
- Demonstrated interface template for Smart Cities CATS (N2 diagram)
- Smart Cities Concept of Operations Template
- Architecture template for Smart Cities, possibly MBSE model
- Supporting public communication tools:
- Definition of why it's important to use a systems approach to Smart City CATS, tailored for various audiences in the public sector (elected officials, planners, designers)
- Hand-out on considerations for future integration ? Smart Cities step one.
- Executive Sales Kit Package
- Brief Presentation(s) aimed at ? C-Suite, Mayors, Legislators, Executives to assist them in the understanding of the importance of a holistic view of all the new integrations that are likely to occur.

### Potential Actions

- INCOSE's participation in external events ? workshops, conferences, plenaries, etc.
- Emphasize INCOSE persons' presentations, panel participation, etc.
- Conduct separate paper and panel track at INCOSE symposiums
- Prepare articles and white papers that are published in external (outside of INCOSE) journals.



## IW OUTCOMES

- Smart Cities Use Case
- Smart Cities Definitions Metrics and Reference Model document
- Viewpoint integration of Smart Cities TUSS-model by INCOSE with other frameworks and models

## PLANNED ACTIVITIES AFTER IW

- Publish and circulate the above products
- Create Smart Cities pitch video
- Begin Architecture development
- **Join us at our** Monthly meetings with (external) guest speakers every 1st Thursday of the month at 14.00 UTC timezone
- Collaboration with working groups like: CIPR, Infrastructure, Social systems, Resilience, SoS, etc.

## PLANNED WORK PRODUCTS AFTER IW

- System Architecture for a Smart City (planned MBSE model ongoing)
- Stakeholder Management Plan (planned for 2021)