

# Toolkit on digital transformation for people-oriented cities and communities

## User guide





Goal 8:  
Decent work and  
economic growth

Goal 7:  
Affordable and clean  
energy

Goal 6:  
Clean water and  
sanitation

Goal 5:  
Gender equality

Goal 4:  
Quality education

Goal 9:  
Industry, Innovation,  
and Infrastructure

Goal 10:  
Reducing  
inequalities

Goal 11:  
Sustainable cities  
and communities

Goal 3:  
Good health and  
well-being

Goal 12:  
Responsible  
consumption and  
production

Goal 2:  
Zero hunger

Goal 13:  
Climate action

Goal 14:  
Life below water

Goal 15:  
Life on land

Goal 16:  
Peace, justice and  
strong institutions

Goal 17:  
Partnership for the  
goals

Goal 1:  
No poverty

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## Acknowledgements

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# Abstract

This user guide walks readers through the structure and components of the “Toolkit on digital transformation for people-oriented cities and communities” developed by ITU in close collaboration with International Telecommunication Union (ITU); United Nations Industrial Development Organization (UNIDO); International Energy Agency (IEA); United Nations Department of Economic and Social Affairs (UNDESA); United Nations Human Settlements Programme (UN-Habitat); International Water Resources Association (IWRA), United Nations Economic Commission for Europe (UNECE); World Meteorological Organization (WMO); United Nations Development Programme (UNDP), United Nations University Operating Unit on Policy-Driven Electronic Governance (UNU-EGOV), United Nations Environment Programme and Technical University of Denmark (UNEP DTU), Copenhagen Center of Energy Efficiency (CCEE), United 4 Efficiency (U4E). Along with the UN 2030 Agenda for Sustainable Development, the Connect 2030 Agenda and other international instruments, the toolkit aligns with the New Urban Agenda, the Paris Agreement and the Glasgow Climate Pact.

The user guide explains what the toolkit is and what it is not, who the toolkit is aimed at, and outlines the best ways to use the toolkit to maximize positive results in terms of digital transformation in cities.





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## What is digital transformation in the context of people-oriented cities and communities?

Increasingly, digital transformation is becoming a focus of strategic thinking and planning of many cities and communities. It is about putting the emphasis on how digital services and applications will change and “transform” citizens’ experiences and the way they live, work and play in cities that will lead to improvement in quality of life and wellbeing, and the attainment of the United Nations Sustainable Development Goals (SDG). Smart cities and communities rely on digital technologies and information and communication technologies (ICTs) to offer innovative and integrated services and solutions to their residents.

Its need stems from the many challenges that urban areas increasingly face, including aging infrastructures, inadequate public transport models, the lack of citizen participation, inefficient services and bureaucratic processes, and climate change and migration trends, among others. These challenges require municipal stakeholders to rethink the way that cities and communities operate and deliver services, and grow smarter and provide residents and businesses with what they need to thrive over the long term – all while reducing costs, increasing security, attracting investment, and increasing viability.

Digital transformation is, therefore, the way forward for cities and communities to meet their goals and targets, and create the cities and communities of tomorrow.



### **A smart sustainable city is defined as:**

*A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental and cultural aspects.*

Source: [ITU and UNECE](#)

### **Digital transformation is defined as:**

*The process of using digital technologies to modify existing systems.*

Source: [UN-Habitat](#)

## What is the toolkit on digital transformation for people-oriented cities and communities?

The toolkit supports strategizing and planning the digital transformation of cities and communities to promote sustainable, inclusive, resilient and improved quality of life for inhabitants in cities and communities.

The resources contained in this toolkit include international standards and guidance, the latest research and projections, and cutting-edge reports on a variety of timely topics relevant to the digital transformation of cities and communities. The toolkit can be applied universally, to benefit cities and communities, as well as regions and countries regardless of their level of smart or digital development, or their geographical or economic status.

### **The Toolkit is:**

- A one-stop guide containing latest international standards and other ITU and UN resources, publications and reports.
- An endeavour to identify the challenges faced by cities, as well as potential solutions that they can leverage for maximum positive impact.
- A comprehensive, yet non-exhaustive collation of information that is meant to inspire and support progress toward the SDGs, especially SDG 11, at the local level.

### **The Toolkit is not:**

- A strategy document.
- A step-by-step guidance document.
- A call-to-action to local government entities to implement, as a matter of obligation, every recommended solution.
- An exhaustive list of all challenges or solutions in cities.
- A promotion of any specific country, city, community, company or external organization - or of any specific product or service.

## Who are the users of the toolkit on digital transformation for people-oriented cities and communities?

The toolkit on digital transformation for people-oriented cities and communities has been created for all relevant stakeholders who want to know how to implement smart digital solutions to address the most pressing urban issues. Among others, it is designed for:

- Government managers, city planners, and administrators.
- Trainers of smart sustainable city technologies, platforms and solutions in cities.
- Technology procurement officials, technology suppliers, and developers who design smart sustainable city networks, platforms, apps and solutions.
- Policy-level staff in government or non-governmental organizations who are in a position to influence policy development and resource allocation for urban projects.
- Social and community professionals or advocates working with neighbourhoods and communities in cities on revitalization and revamp projects.

## How should the toolkit be used?

Using the toolkit is easy and user friendly.

The toolkit is made up of numerous on-demand modules that are made freely available to the public. A brief summary of each module is provided, along with a description of its purpose from a digital transformation perspective.

Furthermore, the modules have been designed to contain audio recordings that a user can follow, as well as text notes to which the user can refer.

## What does the toolkit contain?

The toolkit contains a wide range of resources related to digital transformation and smart solutions. It is divided into several Modules on various topic areas.

The toolkit is a living document that will be updated with the most relevant information as it relates to the digital transformation of cities and communities.

Release 1 includes the following modules:



A description of each module is provided below:



**Digital transformation of cities and communities**, which will help set the framework and provide an overview of what digital transformation is, and what it means for cities and communities.



**Developing a digital transformation strategy**, which helps to set cities and communities on the path towards assessing their smartness capability; to develop a digital transformation strategy; to plan resources; and to establish a partnership model to bring key stakeholders and groups into the city's digital transformation planning and decision-making framework.



**Data processing and management**, which provides cities and communities with guidance in setting up, optimizing and maintaining the management of the data generated by city applications and services.



**Connectivity, digital divide and digital inclusion**, which ensures digital service delivery with a focus on ensuring universal connectivity, bridging the digital divide, removing digital inclusion and accessibility barriers, and enhancing inclusive end-user experience.



**Accessibility and digital inclusion**, which focuses on accessibility aspects in smart sustainable cities and communities highlighting IoT and smart systems implementation to ensure inhabitants' inclusion and accessibility to services.



**Digital transformation to reduce the environmental impact of cities**, which helps urban stakeholders identify, promote and enact approaches and solutions that use technology and data to address major challenges that cities and communities face to improve sustainability, climate and environmental outcomes for inhabitants.



**Smart energy**, which helps introduce and incentivize digital and technology-enabled solutions to deliver automated building performance management, reduce overall energy usage and improve energy efficiency, facilitate smart home optimization, and promote sustainable connected streetlighting.



**Smart water management**, which illustrates how to use smart water technology to collect, share and analyse data from water equipment and water networks in order to find leaks within distribution, lower energy use, predict equipment failure and ensure regulatory compliance.



**Emergency management**, which helps optimize digital and technological preparedness and operations to handle all local emergencies and disasters effectively.



**4IR and smart manufacturing**, which helps deploy Industry 4.0 technologies and next-generation manufacturing capabilities that revolutionize how products and components are designed, manufactured, distributed and repaired across a spectrum of industries and climate conditions in the urban space.



## What does the toolkit contain?

Release 2 will include the following modules:



A description of each module is provided below:



**Smart sustainable city governance**, which focuses on evaluating all facets of the city's e-governance, and on aligning public domain activities and services to the digital age as part of the city's digital transformation process.



**Cities and digital rights**, which enables cities and communities to prevent and address various challenges in terms of privacy and security, including cybersecurity threats, network and infrastructure risks, and data safety concerns.



**Digital health**, which helps combine predictive technologies such as AI and other smart technologies such as wearable devices with health and health care.



**Smart villages**, which present resources that highlight innovative and transformative digital solutions for communities in rural areas to improve their economic, social and environmental conditions by helping them become more agile, make better use of their resources, and improve the attractiveness of their rural areas and the quality of life of their inhabitants.



**Smart education**, which helps cities and communities implement digital transformation practices as it relates to smart education. It places a special focus on digital accessibility to students.



**Smart procurement**, which will provide cities and communities with guidance on how to transition away from traditional approaches, to strategically improve their supply chain performance and illustrate the potential of sustainable procurement in bringing positive impact.



**City adaptation**, which will guide cities and communities on the topics of climate change monitoring, adaptation and mitigation. It places a special focus on how digital transformation facilitates these climate actions.



**Digital agriculture**, which helps cities and communities usher in the 4.0 green revolution in the field of agriculture by combining agriculture methodologies with digital technologies and ICTs to achieve the desired efficiencies of production with managed cost, and to improve the agricultural environmental footprint and food security.





## How often will the toolkit be updated? Does it have any limitations?

This toolkit was developed with the support and input of a wide range of experts. It is not a complete or exhaustive body of tools, but rather a compilation guide of the best practice tools that are currently available in participating UN entities. The toolkit will be updated with new relevant resources as they become available.

The toolkit and the resources highlighted within are available to all users free of charge. The initial language of delivery is English, with a number of other languages to be made available with time.

## How can I obtain additional information on the toolkit?

If you have any questions or would like to provide feedback, please contact us at [u4ssc@itu.int](mailto:u4ssc@itu.int).





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