

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 3:
Good health and
well-being

Goal 11:
Sustainable cities
and communities

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

Toolkit on digital transformation for people-oriented cities and communities

User guide



Acknowledgements

The toolkit on digital transformation for people-oriented cities and communities was jointly developed by Victoria Papp, Mythili Menon, John Smiciklas, Sahifa Imran and Cristina Bueti (ITU). We would like to thank the following people for their contributions: Katarina Barunica, Mark Draek, Nicolas Dehod, Bernardo Calzadilla-Sarmiento, Marco Kamiya, Bastien Chesnoy, Malak Khan (UNIDO), Xiao Wang (UNEP DTU), Tamara Slowik (UN Water), Monica Garcia Quesada (IWRA), Melanie Steinkemper and Gulnara Roll (UNECE), Alexander Baklanov (WMO), Renata Rubian, Minerva Novero, Elba Fuster Figuerola (UNDP), Judy Backhouse, Soumaya Ben Dhaou (UNU-EGOV), Livia Schaeffer Nonose, Steven Bland, Bernhard Barth, Katja Schaefer, Pontus Westerberg (UN-Habitat), Florence Taylor, Ludy Prapancha Suryantoro, Riina Jussila, Deniz Susar (UNDESA). The authors of the Toolkit would like to thank the ITU-T Study Group 20 experts and in particular Nasser Saleh Al Marzouqi (United Arab Emirates), Marco Carugi (Huawei), Ramy Ahmed Fathy (Egypt), Tania Marcos (Spain), Shane He (Nokia), Gyu Myoung Lee (KAIST, Korea), and Bako Wakil (Nigeria) for their contributions to the Toolkit.

The technical coordination of this toolkit was conducted by Cristina Bueti (ITU).

If you would like to provide any additional information, please contact Cristina Bueti (ITU) at u4ssc@itu.int.

ISBN:

978-92-61-36041-2 (Electronic version)



Please consider the environment before printing this report.

© ITU 2023

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

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 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 and communities.





Table of contents

Acknowledgements	ii
Abstract.....	iii
What is digital transformation in the context of people-oriented cities and communities?	1
What is the toolkit on digital transformation for people-oriented cities and communities?	2
Who are the users of the toolkit on digital transformation for people-oriented cities and communities?	3
How should the toolkit be used?	3
What does the toolkit contain?.....	4
How often will the toolkit be updated? Does it have any limitations?.....	7
How can I obtain additional information on the toolkit?	8



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 (SDGs). Smart cities and communities rely on digital technologies and information and communication technologies (ICTs) to offer innovative and integrated services and solutions to their inhabitants.

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 inhabitants 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.










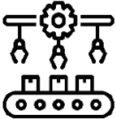

Furthermore, the modules have been designed to contain audio recordings that a user can follow, as well as a PDF copy to which the user can refer.

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.

The Toolkit includes the following modules:

 <p>Digital Transformation of Cities and Communities</p>	 <p>Developing a Digital Transformation Strategy</p>	 <p>Data Processing and Management</p>	 <p>Connectivity, Digital Divide and Digital Inclusion</p>
 <p>Accessibility and Digital Inclusion</p>	 <p>Reduce the Environmental Impact of Cities</p>	 <p>Smart Energy Management</p>	 <p>Smart Water Management</p>
 <p>Emergency Management</p>	 <p>4IR and Smart Manufacturing</p>	 <p>Smart Sustainable City Governance</p>	

A description of each module is provided below:



Digital transformation of cities and communities

Digital transformation of cities and communities helps 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 for cities

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



Data processing and management

Data processing and management 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

Connectivity, digital divide and digital inclusion 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

Accessibility and Digital inclusion focuses on accessibility aspects in smart sustainable cities and communities highlighting IoT and smart systems implementation to ensure inhabitant's inclusion and accessibility to services.



Reduce the environmental impact of cities

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



Smart energy management

Smart energy practices help 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

Smart water management illustrates how to use smart water technology to collect, share and analyze 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

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



4IR and smart manufacturing

4IR and Smart manufacturing 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.



Smart sustainable city governance

Smart sustainable city governance is about the future of public services, it's about greater efficiency, community leadership, mobile working and continuous improvement through digital innovation. It 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.



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.

How can I obtain additional information on the toolkit?

If you have any questions or would like to provide feedback, please contact us at any time at u4ssc@itu.int.





International Telecommunication Union
Place des Nations
CH-1211 Geneva 20
Switzerland

ISBN: 978-92-61-36041-2



Published in Switzerland
Geneva, 2023

Photo credits: Shutterstock