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# IMPROVING THE READINESS OF SMART CITIES' FOR MANAGING CRISES AND STRESSES

Panos Fitsilis

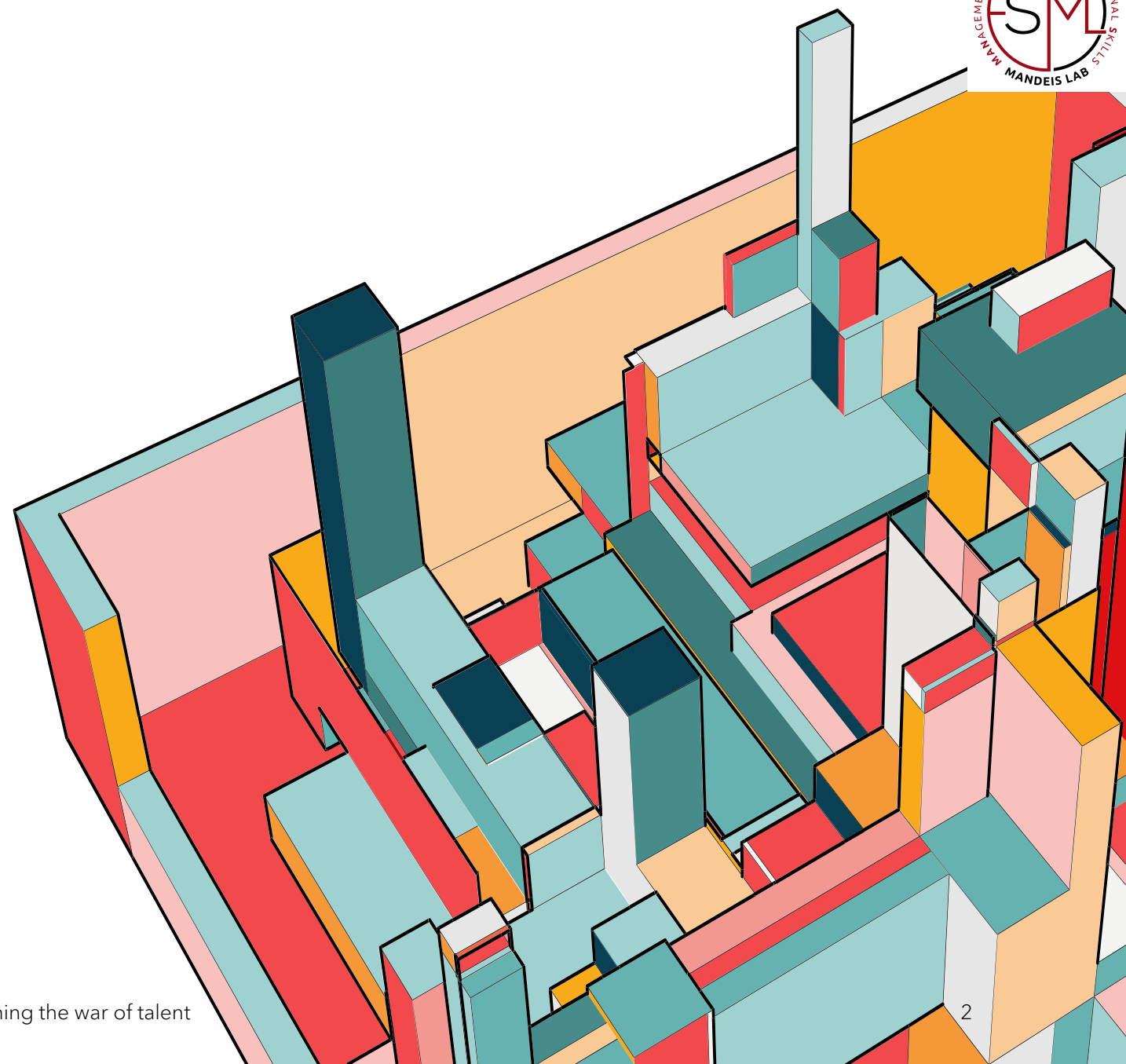


# THE PROBLEM

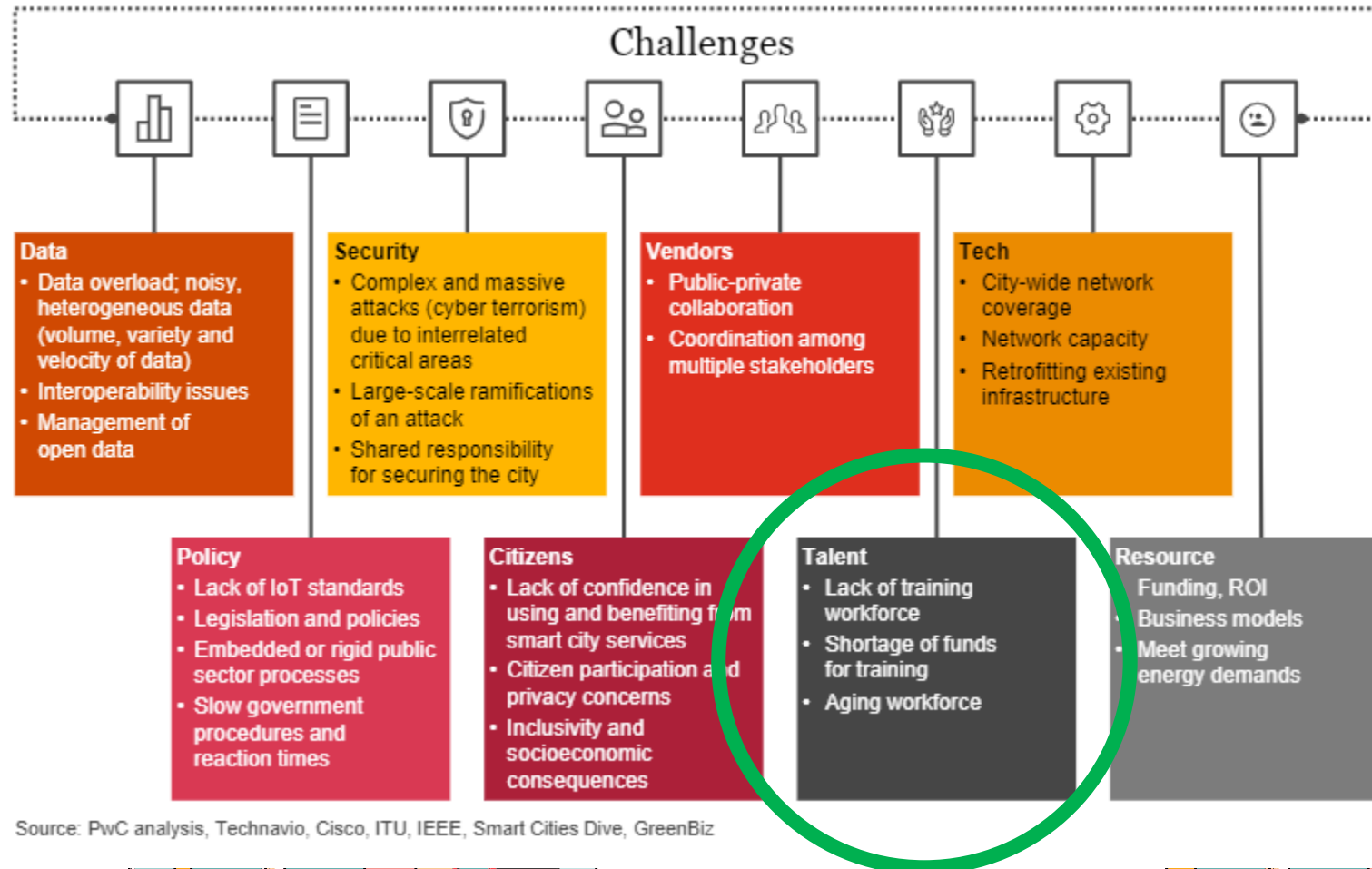
Smart Green Resilient Systems are complex technico-economical-social ecosystems with many diverse stakeholders.

The human factor has not received sufficient attention either

- at the level of citizen participation or
- at the level of stakeholder's development



# THE PROBLEM



Source: PwC analysis, Technavio, Cisco, ITU, IEEE, Smart Cities Dive, GreenBiz

# DATA ARE REVEALING

## Challenging area to manage

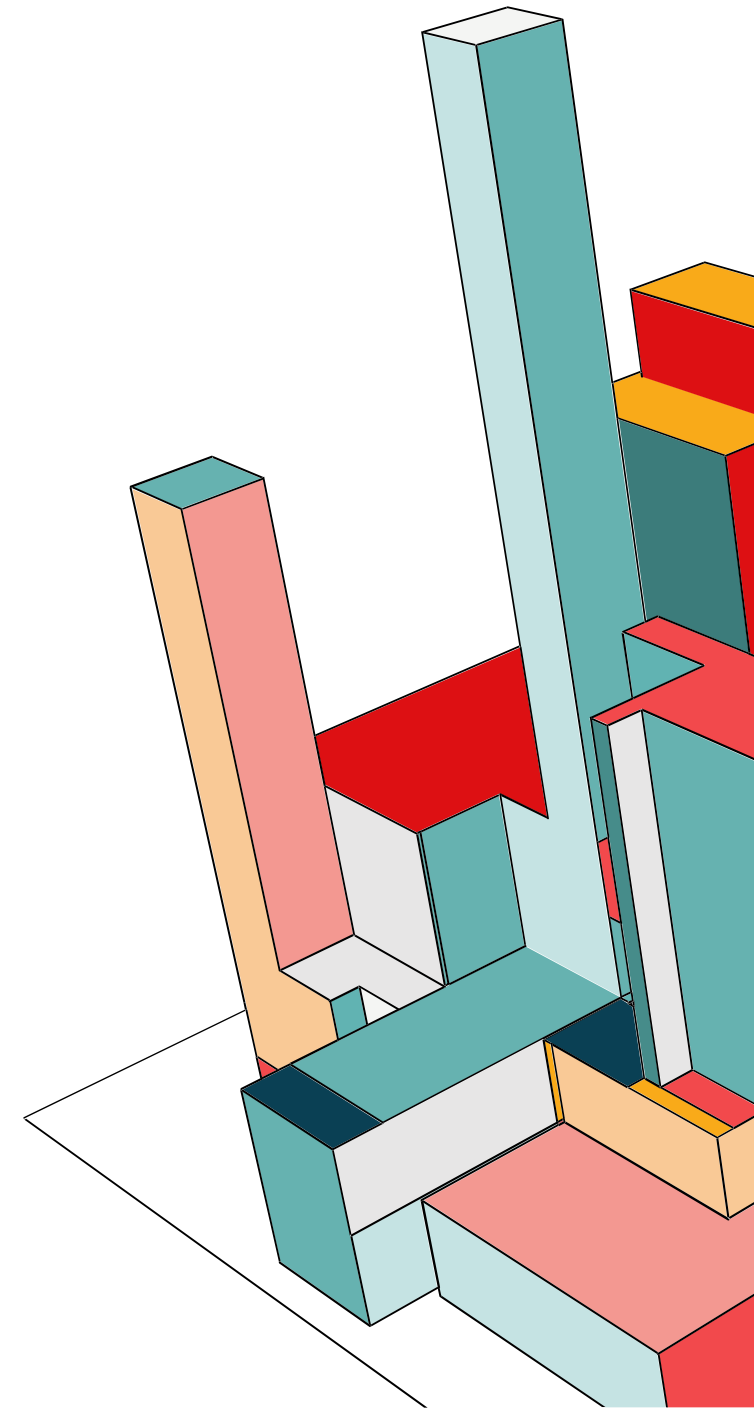
90 percent of organizations say that workforce issues are a challenging area to manage in their agency's digital transformation.

## Difficult to obtain new skills

Only 33 percent say their organization provides the right resources or opportunities to obtain the digital skills they need.

## Lack of skills

Only 34 percent say their organization has sufficient skills to execute its digital strategy.



# SOLUTION

## Reskill municipalities personnel

Develop reskilling training programs  
Tap free online resources

## Set up smart cities' academies

Collect educational resources and create database of best practices

## Define new modern occupational profiles

New technology based occupational profiles will attract young talents

## Develop collaboration networks

Networks between stakeholders, community of practices

# SC OCCUPATIONAL PROFILES PORTFOLIO AT UTH

Smart DevOps project



Crisis project

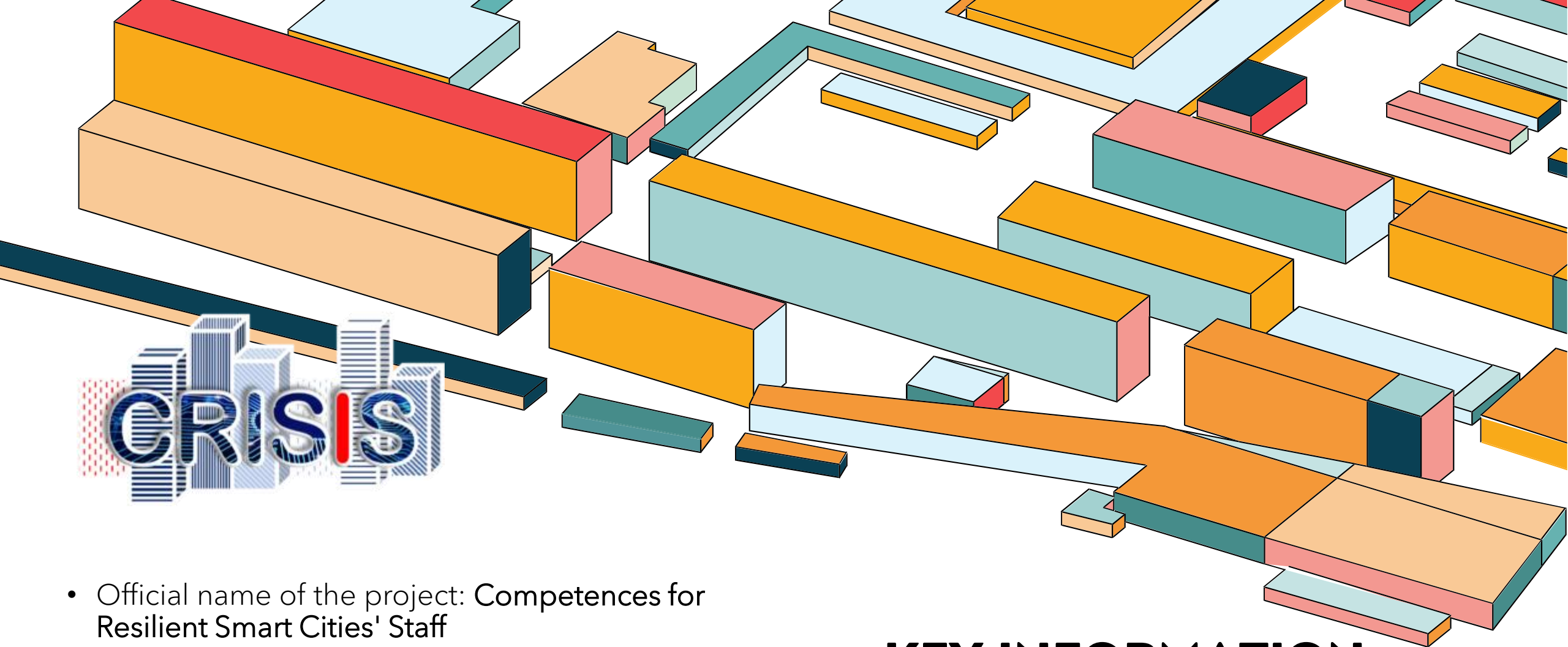


Smart City Open Data



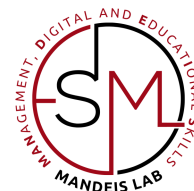
Portfolio of  
occupational  
profiles





- Official name of the project: Competences for Resilient Smart Cities' Staff
- Acronym: CRISIS
- Funding Programme: Erasmus+ (European Commission)
- Project website: [crisisproject.eu](http://crisisproject.eu)

## KEY INFORMATION



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# RESILIENT SMART CITIES DEFINITION

Resilient cities are cities that have the ability to **absorb, recover and prepare for future shocks** (economic, environmental, social & institutional).

Resilient cities promote sustainable development, well-being and inclusive growth.

Smart implies that the role of ICT is the driving force.

OECD definition: <https://www.oecd.org/cfe/resilient-cities.htm>



# CRISIS PROJECT OBJECTIVES

Provide in a structured and systematic way a framework for educating smart cities staff on resilience,

2

Develop an innovative curriculum for SCROs and close the skills gap for municipalities officials

Promote the European Collaboration on smart cities' education and increase the awareness of various stakeholders



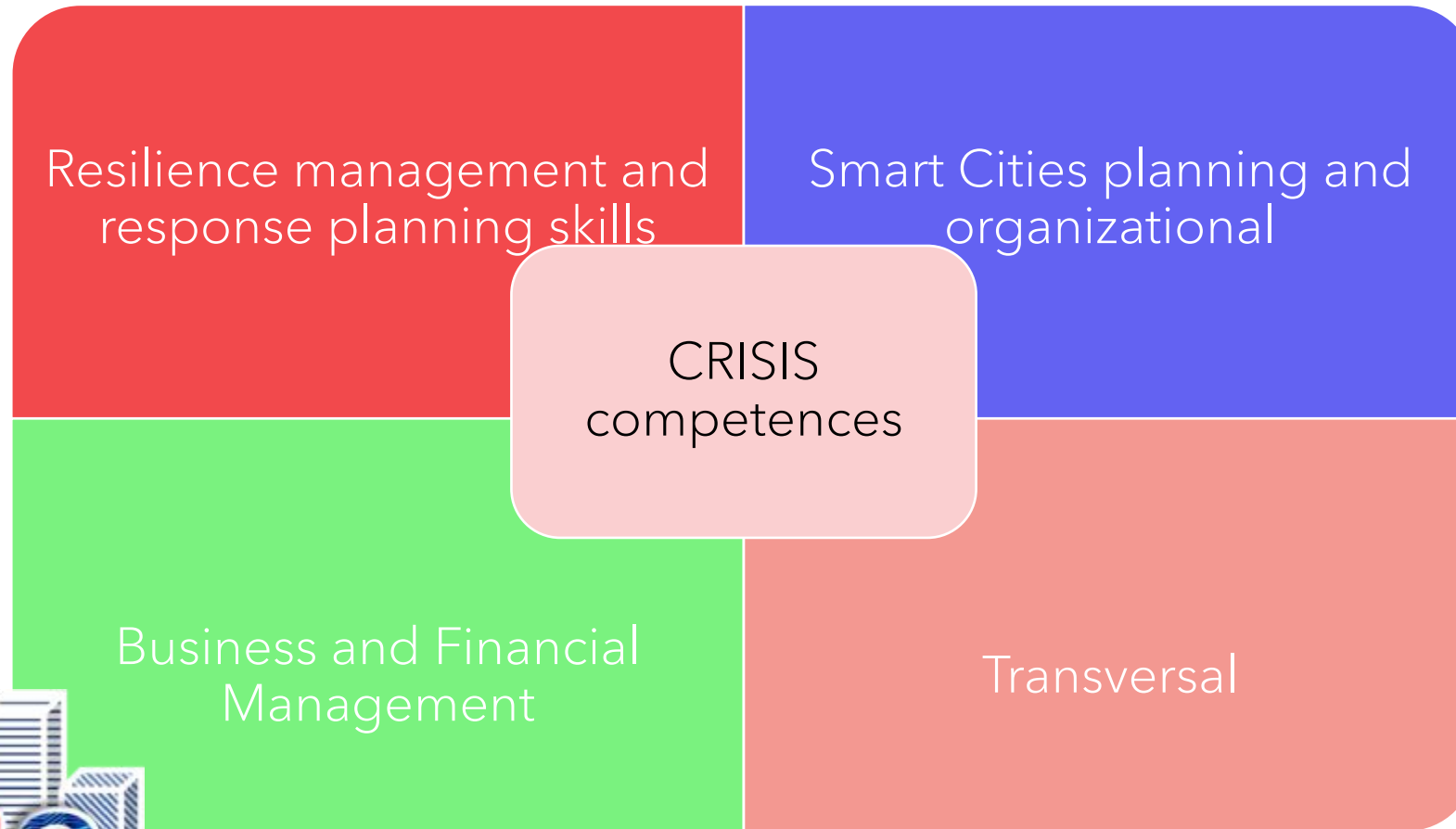
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# COMPETENCES AND SKILLS OF SCRO (100 RESILIENT CITIES )



1. **Leadership**
  - CRO must be able to inspire, influence, and enlist colleagues and city residents to activate the city's resilience strategy.
2. **Ability to engage locally**
  - CRO must understand their community and local setting and be able to establish and maintain strong engagement from municipal leader, city residents, and key stakeholders.
3. **Ability to engage globally**
  - CRO must be able to represent the city in global forums in order to share information, ideas, best practices, and more effectively develop innovative solutions.
4. **Ability to function across disciplines**
  - CRO must be able to communicate with and be effective within multiple sectors and disciplines such as transportation, energy, healthcare, housing, education, and community engagement.
5. **Enterprising spirit**
  - CRO must be resourceful and willing to experiment, pursue new ideas and take risks.
6. **Effective communicator**
  - Storytelling and other forms of communication will be critical for driving the resilience conversation in the city and engaging stakeholder support.
7. **Project management**
  - CRO must be able to manage multiple streams of work and multiple relationships in an effective and efficient manner.

# OUR RESEARCH ON COMPETENCES



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# RESILIENCE MANAGEMENT AND RESPONSE PLANNING SKILLS

- Coordination and interoperability of critical systems and services.
  - Coordination and interoperability requires that elements share common awareness of the situation and are able to coordinate to their potential partner as well as sharing information with other stakeholders. In this context, it will have presented how to implement new standards to support SC systems for minimizing crucial problems, especially during the critical period of responding to hazards and disasters.
- Evaluating smart cities assets, services and resources.
  - Skills on how to identify, engage and operate city's critical assets, services and resources. It will be presented existing frameworks of currently available smart city indicators to monitor and assess the performance and sustainability of smart cities resources.
- Risk assessment and quantification.
  - Quantitative Risk Management represents the discipline which deals with the ability of an organization to quantify and manage its risk. This scientific approach to smart cities is becoming increasingly critical in today's world as they need to satisfy stakeholders who demand it.
- Risk management tools.
  - An e-CF Competence that is a very important in identifying, prioritizing and developing responses to various risks. Technology is critical to helping smart cities become more efficient, while technology adoption presents novel opportunities, there are challenges and inherent risks that must be understood and managed for all smart city projects.
- Smart city response planning.
  - The necessary skills and competences to plan and implement the strategy on recovery after a crisis.

# SMART CITY PLANNING AND ORGANIZATIONAL SKILLS

- Blue-green infrastructures in cities. A topic that covers both the blue (water elements) and the green (trees, parks, etc.) infrastructure management that will introduce trainees to models and strategies that enhance blue-green infrastructure & social performance in urban environments to strengthen blue-green infrastructure in their cities contents
- Digital Innovation Management.
  - Digital Innovation Management aims to provide trainees with the opportunity to combine knowledge of digital innovation with management insights and strategies related to smart city, enabling them to stay ahead of one of the fastest evolving trends in the world.
- GIS and Digital Twinning of Smart Cities.
  - Technologies of these two scientific areas, i.e. geographic information system (GIS) and Digital Twinning, will be introduced to trainees and how these are utilized with monitoring systems by pairing the virtual and the physical world to prevent problems.
- Smart cities: context, policy and operation.
  - The core knowledge on what is a smart city, how it is working and what is the strategic vision of it.
- Smart city enabling technologies.
  - It covers the wider area of cutting-edge technologies that are used by smart cities to enhance city's' infrastructures and provide smart services to citizens.
- Smart City stakeholder management and citizen engagement.
  - The major sectors of stakeholders of Smart Cities will be presented and explain the different perspective that different stakeholders have about services and resources of a smart city. It will be also described the procedure by which the relationship with the smart city stakeholders is organized, planned and controlled, in order for them to be fully motivated to engage.
- Smart city standards for resilience.
  - Identification and implementation of the recognized standards to build resilience in smart cities.
- Smart city urban planning and infrastructures.
  - It will be presented the key knowledge domains and competences required for effectively managing smart cities characterized by rapid urbanization triggering the need to cope with increased complexity.

# BUSINESS AND FINANCIAL MANAGEMENT SKILLS

- Data analytics and statistics.
  - Data analytics, which is a e-CF competence, has a crucial role to play in helping cities improve urban mobility, and better manage their infrastructure in a secure, resilient, sustainable and cost-effective manner.
- Information security strategy development and management.
  - One more of the e-CF Competences that it's about identification and management of controls that need to be implemented in order to secure assets from various threats.
- Planning financial recovery programs.
  - A necessary area of expertise in order to minimize the lag between the effect of a disaster and the beginning of the recovery procedure. A financial recovery plan help stakeholders determine strategic ways to set financial goals, organize, monitor, evaluate and reevaluate their progress.

# TRANSVERSAL SKILLS

- Crisis management.
  - The procedure that ensures that the city will face unexpected events and threats the best possible way.
- Decision Making and Problem Solving.
  - It will introduce the Decision Making process and Problem Solving approaches to trainees that will be able to first realize the general characteristics and scope of Decision Making problems, as well as the fundamentals, methods and techniques of Decision Theory. Furthermore, it focuses on the uncertainty nature of Decision Making problems in the context of smart city, for which special consideration in the problem solving approach need to be given.
- Information and knowledge management.
  - An important e-CF Competence about the management of the procedure that includes gathering the right information from various sources and distribute them to those who need it.
- Management skills.
  - The set of skills in order a leader like the SCRO be able to organize, plan, and deliver the desired recovery strategy of a Smart City.
- Information security strategy development and management.
  - One more of the e-CF Competences that will introduce trainees to the tools for identification and management of controls that need to be implemented in order to secure assets from various threats. It will describe how to build a security strategic plan, an entire IT security policy, and lead in the execution of the plan.





- Official name of the project: DevOps competences for Smart Cities
- Acronym: DevOps
- Funding Programme: Erasmus+ (European Commission)
- Project website: [smartdevops.eu](http://smartdevops.eu)
- Community of practice: @SmartDevOpsEU (facebook)

## KEY INFORMATION



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# SMARTDEVOPS PROJECT ENVISAGED KEY PROFILES

## Smart City Planner

A Smart City Planner can be defined as a high-level official that can bridge the needs that arise from: a) Cities traditional development and operational needs b) Smart and sustainable cities frameworks, best practices, standards, and technologies c) Strategic priorities of the city's political leadership.

## Smart City IT manager

A Smart City IT manager can be defined as an ICT consultant with responsibilities that include: a) Setting objectives and strategies for the IT department b) Deciding on and implementing suitable technology to organize all internal operations c) Designing and customizing the IT systems, frameworks, and platforms to improve citizen experience e) Plan the implementation of new systems

## Smart City IT Expert

A Smart City IT officer is an IT technical expert that should be able to: a) Analyze cities' organizational data b) Determine information system requirements and defining project objectives c) Use software development process, development environments, tools, and techniques

# DEVOPS CURRICULUM - COMPETENCES GROUPS

Transversal competences

General IT Knowledge  
competences

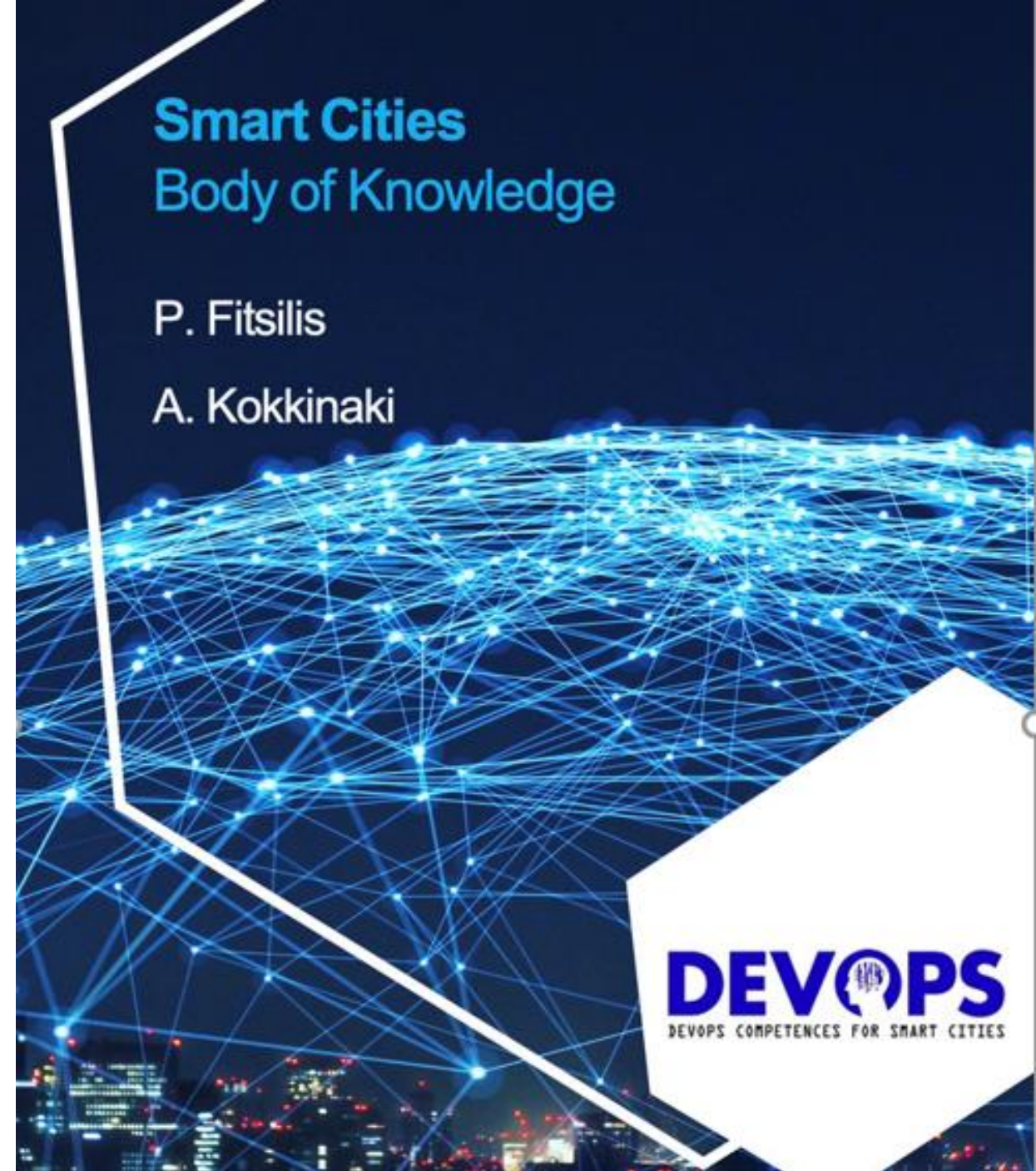
DevOps related  
competences

Smart city related  
competences

For the full list of modules please visit the project web site  
<https://smartdevops.eu/dev/oers/>

# SMART CITY BODY OF KNOWLEDGE

The book can be downloaded from  
<http://smartdevops.eu/scbok>



# OPEN MODULES NATIONAL DIGITAL ACADEMY /1

## Τεχνολογίες αιχμής

Ενεργά φίλτρα:

Θεματικές ενότητες: Έξυπνες πόλεις X

Βρέθηκαν **15** μαθήματα

### Θεματικές ενότητες

- ☐ Μεγάλα Δεδομένα
- ☐ Υπολογιστικό Νέφος
- ☐ Τεχνητή Νοημοσύνη
- ☐ Μηχανική Μάθηση
- ☐ Ανάλυση Δεδομένων
- ☐ Ψηφιακή γεωργία
- ☒ Έξυπνες πόλεις

### Κατηγορία δεξιότητας

- ☐ Γενική
- ☐ Εξειδικευμένη

### Γλώσσα

- ☐ Ελληνικά
- ☐ Αγγλικά

### Πάροχος

- ☐ Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης



Πάροχος: DevOps Competencies for Smart Cities

### Επιχειρηματικά μοντέλα έξυπνων πόλεων

Οι πόλεις αντιμετωπίζουν πρόκληση με αυξανόμενο πληθυσμό και πρέπει να εφαρμόσουν έξυπνες λύσεις για να γίνουν πιο ανθεκτικές στις οικονομικές, περιβαλλοντικές και κοινωνικές προκλήσεις. Αυτό το μάθημα εξετάζει τα καινοτόμα επιχειρηματικά μοντέλα στο πλαίσιο των έξυπνων πόλεων, αναλύει τα πιο σημαντικά υπάρχοντα επιχειρηματικά μοντέλα, καθώς και τα αναδυόμενα επιχειρηματικά μοντέλα για έξυπνες πόλεις.

● ● Εξειδικευμένη δεξιότητα | Ελληνικά | ⌚ > 3 ώρες

Προβολή μαθήματος →



Πάροχος: DevOps Competencies for Smart Cities

### Πλατφόρμες έξυπνων πόλεων

Αυτό το μάθημα διερευνά τον ρόλο της τεχνολογίας και των δεδομένων στις πόλεις και εξηγεί πώς μπορείτε να συμμετάσχετε στη δημιουργία έξυπνων πόλεων.

● ● Εξειδικευμένη δεξιότητα | Ελληνικά | ⌚ > 3 ώρες


Προβολή μαθήματος →

<https://nationaldigitalacademy.gov.gr/>



# OPEN MODULES NATIONAL DIGITAL ACADEMY /2





## Ψηφιακή Ακαδημία Πολιτών

Αναπτύξτε τις ψηφιακές σας δεξιότητες διαδικτυακά!

govgr BETA

Αναζητήστε εδώ...

Αρχική > Τεχνολογίες αιχμής > Επιχειρηματικά μοντέλα έξυπνων πόλεων

### Επιχειρηματικά μοντέλα έξυπνων πόλεων

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Κατηγορία

Τεχνολογίες αιχμής

Θεματική ενότητα

Έξυπνες πόλεις

Κατηγορία δεξιότητας

Εξειδικευμένη

Γλώσσα

Ελληνικά

Διάρκεια

> 3 ώρες

Πρόσβαση

Με εγγραφή

DEVOPS

DEVELOPS COMPETENCES FOR SMART CITIES

Μετάβαση στη σελίδα του μαθήματος →

### Σχετικά με το μάθημα

Αυτό το μάθημα αποτελεί ένα από τα 15 διασυνδεδεμένα μαθήματα που αφορούν τις έξυπνες πόλεις και με το πέρας της παρακολούθησής του, δίνεται η δυνατότητα στον εκπαιδευόμενο να λάβει πιστοποιητικό επιτυχούς ολοκλήρωσης. Συγκεκριμένα, στο μάθημα θα μάθετε:

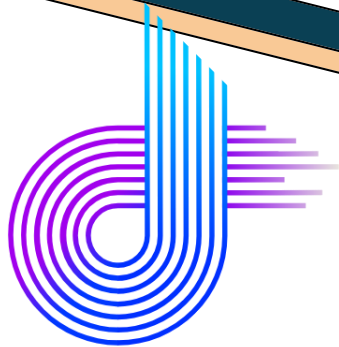
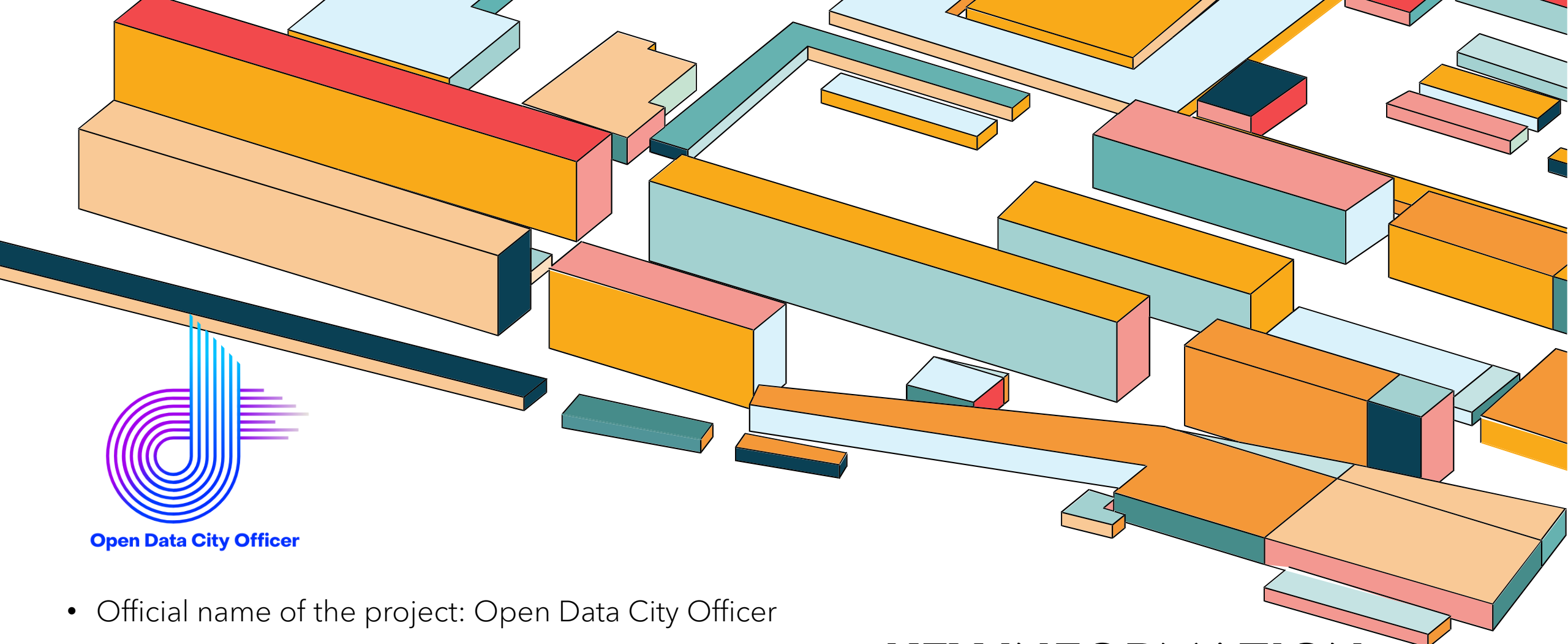
- να καθορίζετε την έννοια των καινοτόμων επιχειρηματικών μοντέλων
- να προσδιορίζετε τύπους καινοτόμων επιχειρηματικών μοντέλων
- να περιγράφετε την έννοια του επιχειρηματικού μοντέλου

# AWARD OF FIRST CERTIFICATES FOR SMART CITIES PROFESSIONALS

- March 2022 - 94 Certificates at European level
  - MOOC programme had duration of 24 weeks with total training duration 251 hours.
  - Work Based Learning duration was 10 weeks with total training duration 205 hours.
  - Corresponds to 30 ECVET.



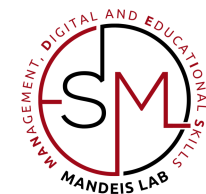




**Open Data City Officer**

- Official name of the project: Open Data City Officer
- Acronym: OpenDCO
- Funding Programme: Erasmus+ (European Commission)
- StartDate: Dec 2022

## KEY INFORMATION



Co-funded by the  
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# OPEN DATA CITY OFFICER (ODCO)

Developing City's  
Open Data

Cases for Cities  
Open Data

Exploiting city's  
open data

Introductory competences for smart cities

# DEVELOPING CITY'S OPEN DATA COMPETENCIES

Open Data  
Essentials

Managing  
Open Data  
Quality

Smart City  
Data  
Classification

Applying AI  
techniques  
to open data

Smart City  
Open Data  
Platforms

# EXPLOITING CITY'S OPEN DATA

Smart City Open  
Innovation

Smart City  
Service co-  
design

Smart City Open  
Data Analytics  
and Visualization

Strategic Open  
Data Skills

Open Data  
Standards

# CASES FOR CITIES OPEN DATA

Health Open  
data at the city  
and the regional  
level

Open Data for  
improving city's  
public services

Open Data for  
city's education

Open Data for  
city's mobility

Open Data for  
city's  
environmental  
issues

Open Data for  
city's regulation  
and policy  
creation

Smart City Open  
data ethics

# INTRODUCTORY COMPETENCES FOR SMART CITIES

Smart city  
stakeholder  
management, and  
citizen  
engagement.

Smart Cities Business  
Models

Smart Cities  
Platforms

Smart Cities Key  
Technologies

Smart Cities Security  
and Privacy

# FUTURE STEPS

## Occupational profiles

- Enhance the portfolio of (occupational) profiles (e.g. SC cybersecurity, political personnel)
- Create certifications for new professions
- Promote need for new profiles

## Smart cities skills development

- Develop digital skills at municipalities
- Develop training programs for developed occupational profiles
  - Formal (International MsC)
  - VET

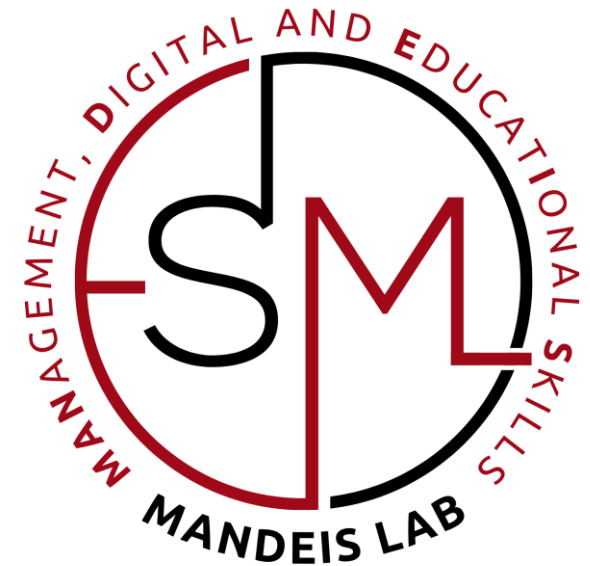
## Citizen participation and engagement

- Study the citizen engagement concepts
- Build on gamification of the process
- Network citizens

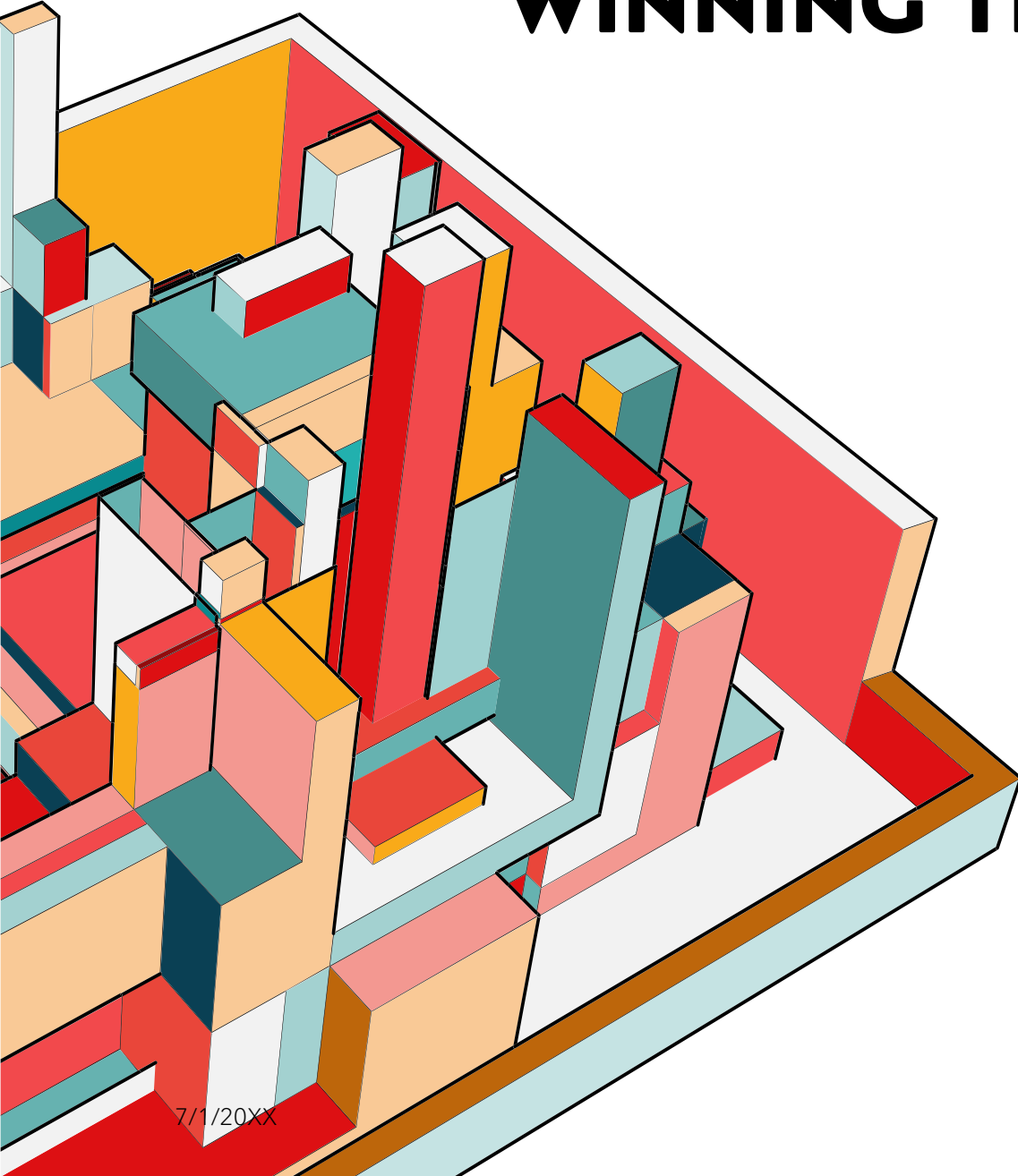


# RESEARCH LABORATORY OF MANAGEMENT, DIGITAL AND EDUCATIONAL SKILLS

- MANDEIS Laboratory covers the educational and research needs of the Department of Business Administration of University of Thessaly in the field of developing the competencies and skills of employees required in modern businesses and organizations.
- The MANDEIS Laboratory focuses on competences required by businesses and organizations, whether they are management, digital, research or educational related.



# WINNING THE WAR OF TALENT - SUMMARY



Develop new  
occupational  
profiles

Collaborate  
with  
Universities, VET

Promote cities  
as Innovative  
employer

Partner and  
network

Improve  
inefficient hiring  
process

Create fast track  
career  
progression

# THANK YOU

Panos Fitsilis  
fitsilis@uth.gr

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