



Εθνικό και Καποδιστριακό  
Πανεπιστήμιο Αθηνών  
National and Kapodistrian  
University of Athens

## Smart evacuation: New technologies & procedures



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# Our Profile

National Kapodistrian University of Athens (NKUA, [www.uoa.gr](http://www.uoa.gr))

- Dept. Informatics and Telecommunications (DIT, [di.uoa.gr](http://di.uoa.gr))
- Software Centric & Autonomic Networking
  - Staff: 20 **researchers, engineers and administrative personnel**
  - Participation in more than 18 **EU funded projects** (7 coordinated by Scanlab)
  - More than 20 Industrial contracts



- 5 World Patents
- More than 500 **publications**
- More than 4000 citations
- Mobile Communications, IoT, AI/ML, Data Analytics, New Generation Internet Applications, Smart Farming, Smart Cities/Ports
- Support for BSc/MSc/PhD ~ 15 per Year



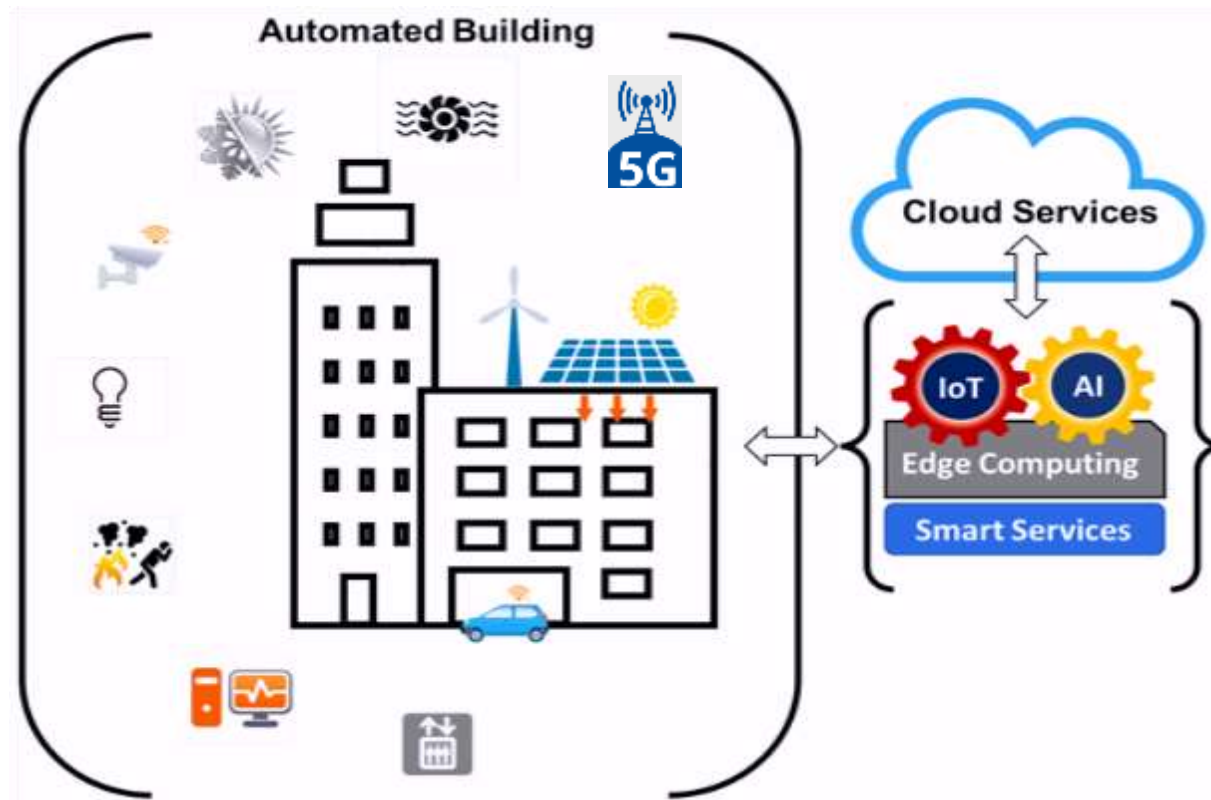
# EU funded projects



# Indoor & Outdoor 5G testbed



# 5G+IoT+AI for safety apps - System architecture



# 5G+IoT+AI for safety app

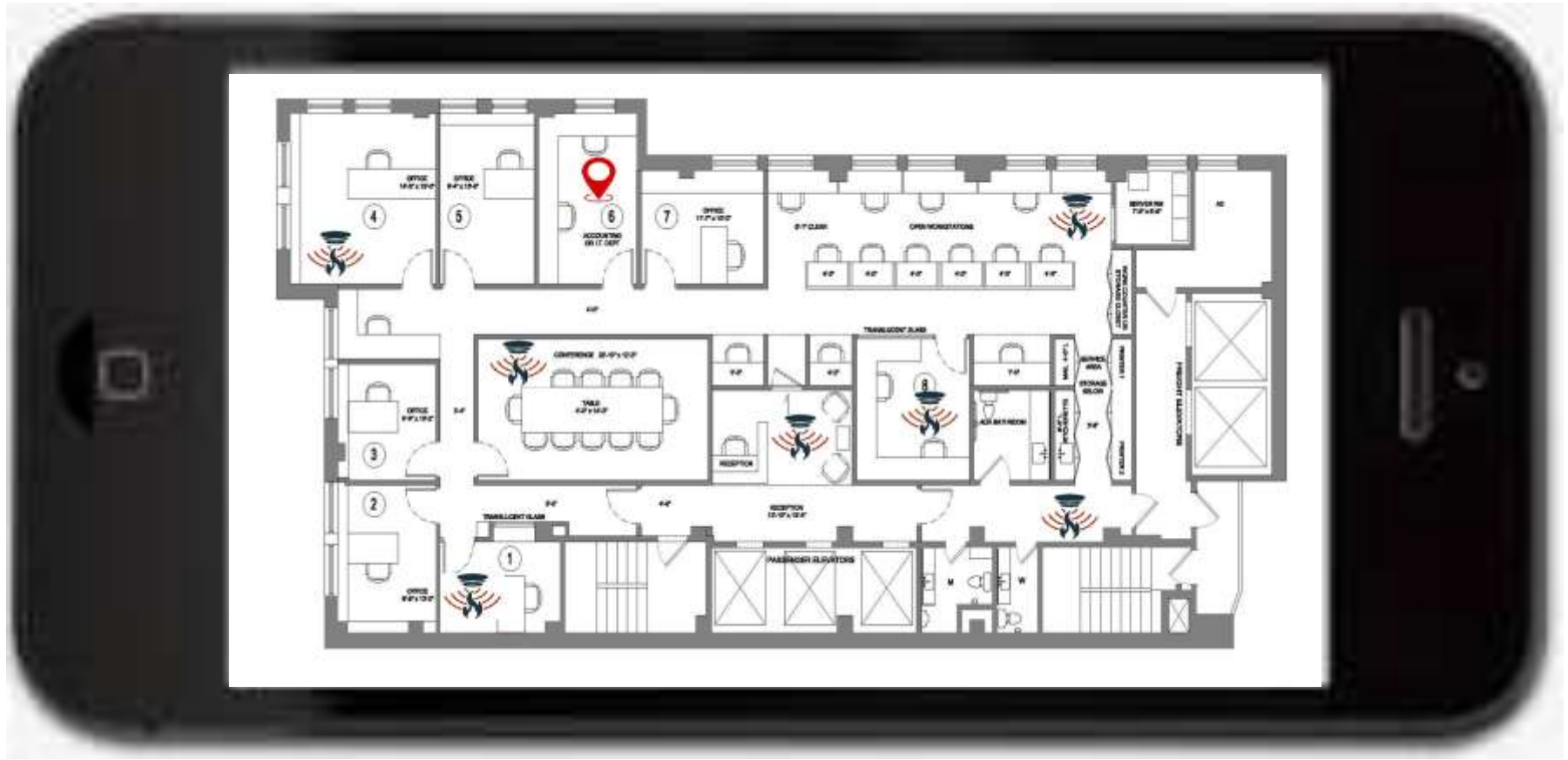
- A real-time, dynamic, intelligent and user-specific evacuation system with a mobile interface for emergency cases such as fire.
- Assessment of dynamically changing conditions (IoT data analysis)
- Calculation of a personal route for an evacuee by considering his/her individual features.
- Collects various environmental sensory data and takes evacuees' individual features into account
- AI and deep learning, cloud-based computing and autonomous decision making to support smart evacuation. Uses an artificial neural network (ANN) to calculate personal usage risk of each link in the building, and calculates an optimum escape route under existing circumstances.
- Enables decision support for organized evacuations by the public safety authorities
- The smart navigation app guides the evacuee to the exit through the calculated route with vocal and visual instructions on the smartphone.
- The position of the evacuee is detected by various technologies, like indoor positioning, 5G, metasurfaces, RFID (Radio-Frequency Identification) technology
- The ANN (Artificial Neural Network) predicts dynamically changing risk states of all links according to changing environmental conditions. Results show 86% accuracy for predicting risk levels of links for each individual evacuee in a building, is capable of evacuating a great number of people simultaneously, through the shortest and the safest route.



# Sensor data analytics and Machine Learning

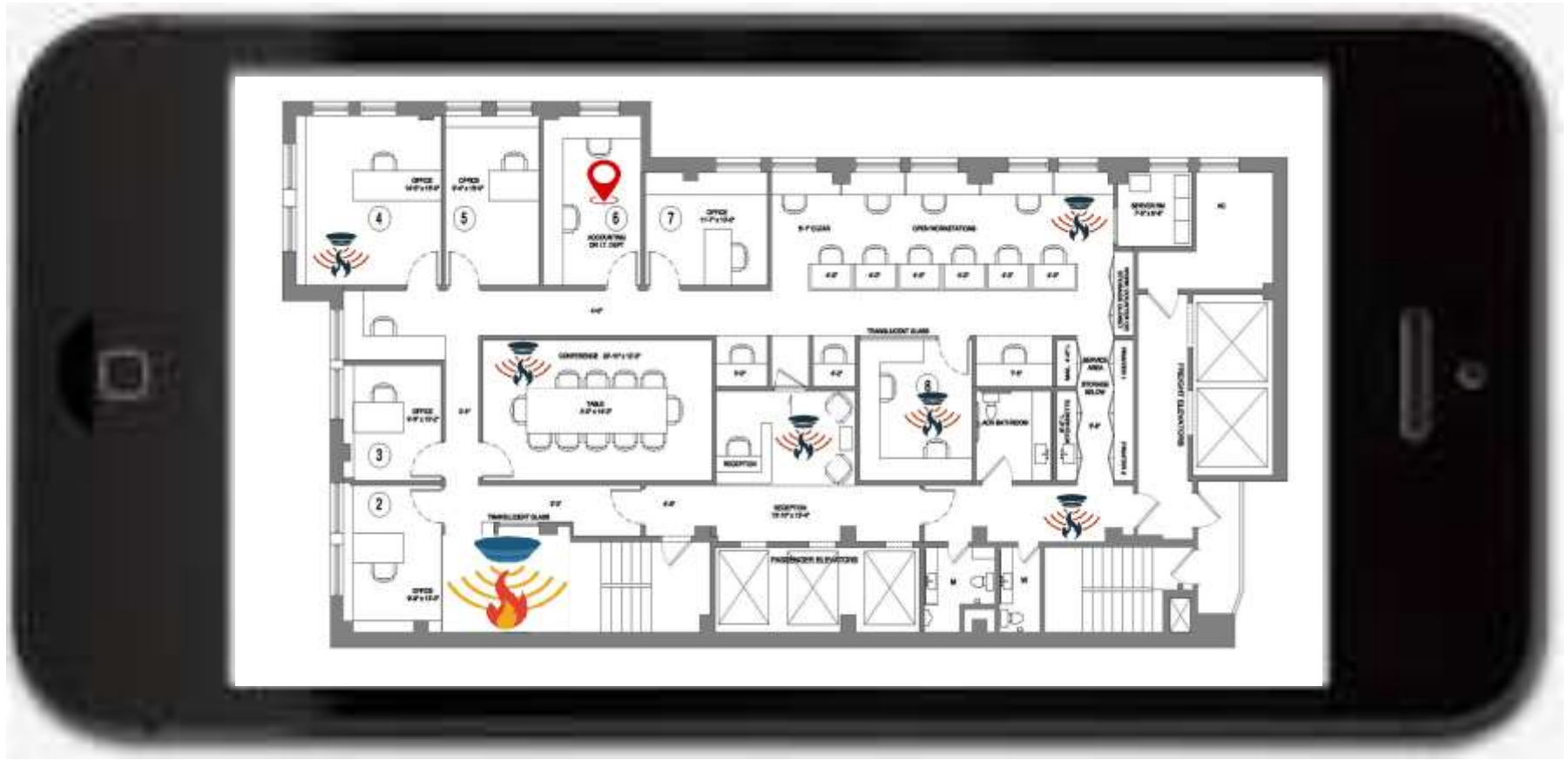


# I-On-Safety: App for Safety alarms and notifications





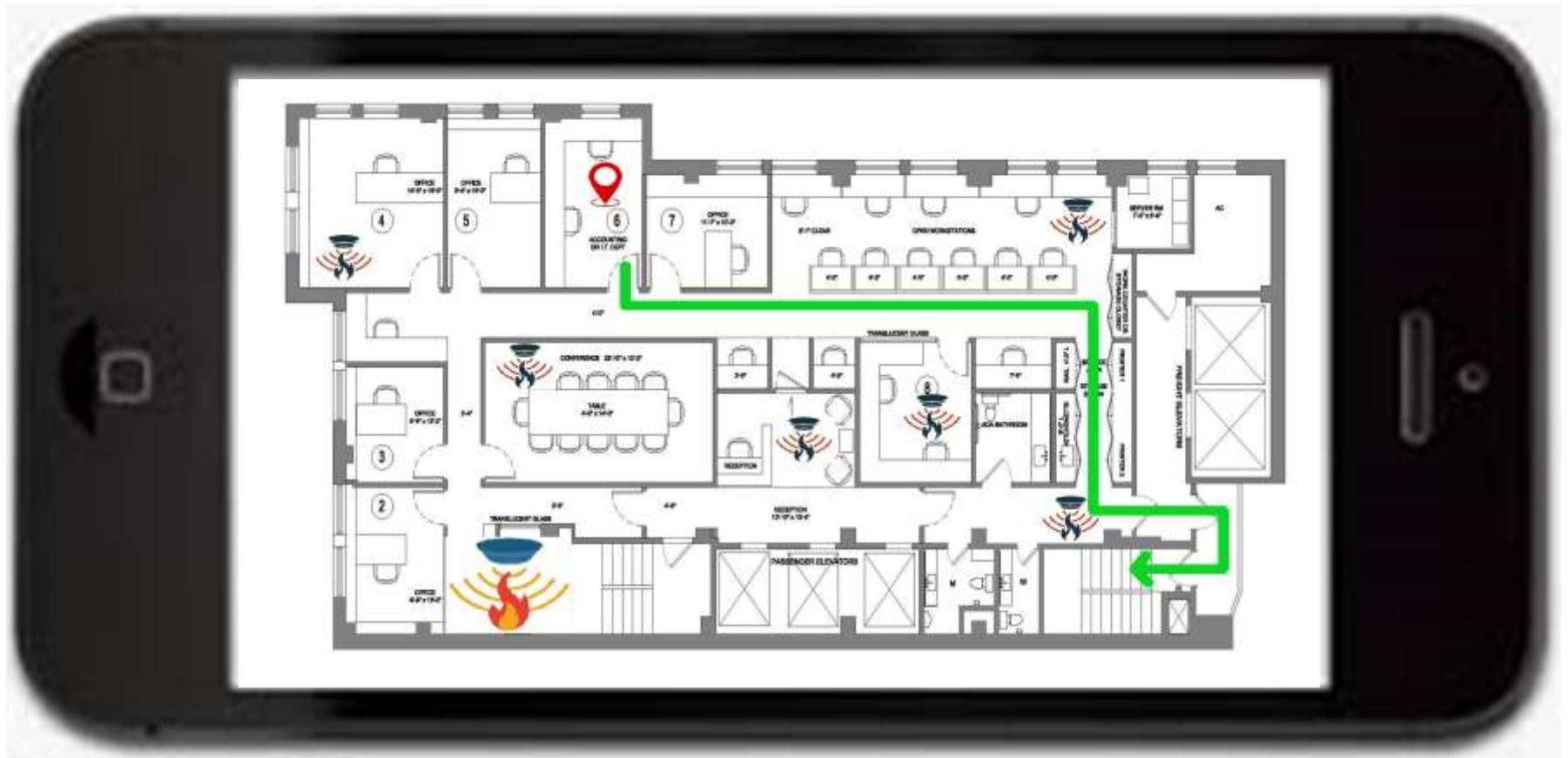
# Identification of fire incident



# Audio and Visual Alarm



# Escape route identification – smart navigation



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