CIrClE 2019

Challenges for the Islands in the era of the Circular Economy

Research Collaboration with the Public Works Department and the KIOS Research Centre of Innovation and Excellence

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KIOS Research Centre of Innovation and Excellence, University of Cyprus

Under the auspices of

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SMile 2019

6th Sustainable Mobility & Intelligent Transport conference

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Agenda

- <u>Introduction & Background</u>
  - KIOS CoE
  - Innovation Hub
  - Department of Public Works & KIOS Collaboration

- <u>GNOSIS: System for monitoring, control and management of the road network</u>
  - Open Environment
  - Other Data Sources
  - Examples of Use Cases

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Name Origin

Greek mythology: "Kios" from the Greek *Κοῖος* (Kee-os),

was the Titan of inquisitive mind and the questioning intelligence

Vision and Mission

- To conduct multidisciplinary research and innovation in the area of Information and Communication Technologies (ICT) with emphasis on the Monitoring, Control, Security and Management of Critical Infrastructures

- To provide an inspiring environment for conducting excellent, cutting-edge research at a global scale, producing new knowledge that can be applied to solve timely and real-life problems in the considered Critical Infrastructure Systems (CIS)

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KIOS CoE
Research Centre of Innovation and Excellence

- Center of Excellence conducting cutting-edge multidisciplinary research and innovation in the area of Information and Communication Technologies (ICT)

- Strategic Partnership between University of Cyprus and Imperial College London

Specialization

- Intelligent monitoring, control, management and security of complex, large-scale, dynamical systems

Application Areas

- Critical Infrastructure Systems

**Intelligent
transportation systems**

**Telecommunication
systems & networks**

**Energy &
power systems**

**Emergency
management response**

**Water systems &
environmental monitoring**

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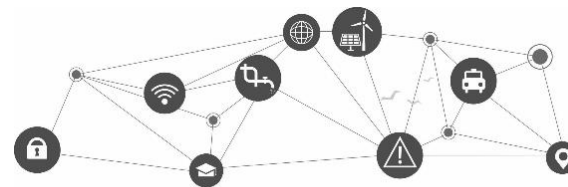
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KIOS CoE
Core Assets & Capabilities

- Knowledge:

  - Best paper awards, publications in top journals, international recognition in fields of research, organization of high profile research conferences
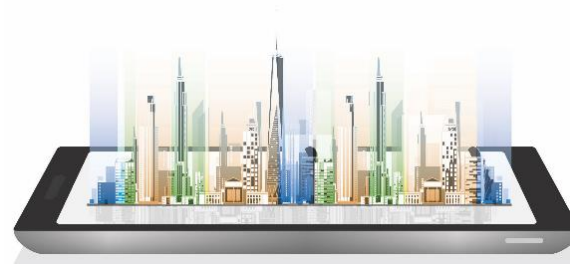
- People
  - Currently 113 people employed by KIOS CoE

  - To expand to 200 by 2022

- Infrastructure

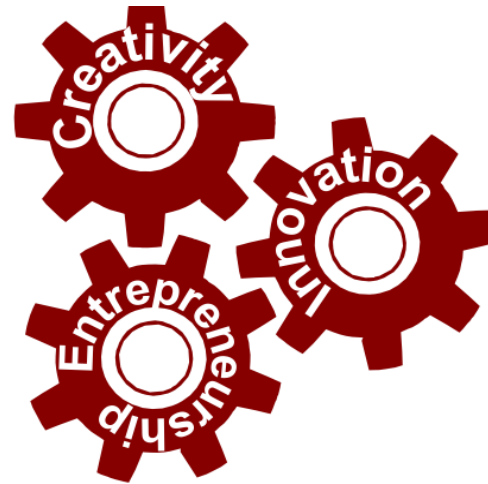 - State of the Art facilities

  - Testbeds

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KIOS CoE
Knowledge
People
Infrastructure

Industry
Infrastructure
Data

Society
Authorities
Regulators
Government

**Entrepreneurial
Network**
Accelerators
Investors

Supports and Enables

Technology Transfer to Industry | Collaboration with Industry | Commercial exploitation of R&D&I |
Economic development in Cyprus

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University of Cyprus & Ministry of Transport MoU

MINISTRY OF TRANSPORT,
COMMUNICATIONS AND WORKS

Research and Innovation collaboration

University of Cyprus

Collaboration Objectives:

- Promote joint programs, studies and surveys to understand and / or address transport and infrastructure problems by using new information and communication technologies
- Joint participation in research programs funded by the European Research Promotion Foundation, and by other research funding bodies.
- Exchange of information on European Union issues and cooperation with other relevant scientific forums on transport, projects and electronic communications.
- Providing education from the University of Cyprus to members of the Ministry of Transport, Communications and Works.

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Public Works Department & KIOS CoE Collaboration

**PUBLIC WORKS
DEPARTMENT**

Sustainable Mobility Unit

3 Year Research Collaboration

KOÎOS
INNOVATION HUB
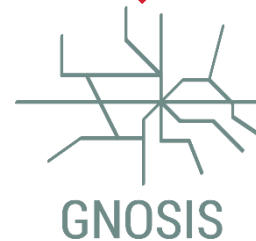
GNOSIS

- Utilization of data from multiple sources
- Data fusion and use of monitoring, control and fault diagnosis techniques and algorithms
- Improving Management of the Road Network Infrastructure of Cyprus

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"Openness" of GNOSIS

- Using only open source software contributing at the same time to the community

- Supporting actions and initiatives to disseminate results to the public

- Reuse of open available data

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Project Data

Projects undertaken by Sustainable Mobility Unit

DATEX II

INSPIRE · Infrastructure for Spatial Information in Europe

SUMP4Cyprus

step2smart

ΔΙΑΥΛΟΣ
Πρόγραμμα Διασυνοριακής Συνεργασίας
Ελλάδα - Κύπρος 2007-2013
ΕΠΕΝΔΥΟΥΜΕ ΣΤΟ ΚΟΙΝΟ ΜΑΣ ΜΕΛΛΟΝ

crocodile

MINISTRY OF TRANSPORT,
COMMUNICATIONS AND WORKS

PUBLIC WORKS DEPARTMENT

- Bus Telematic
- Bus Stops data collection
- Single Point of Access
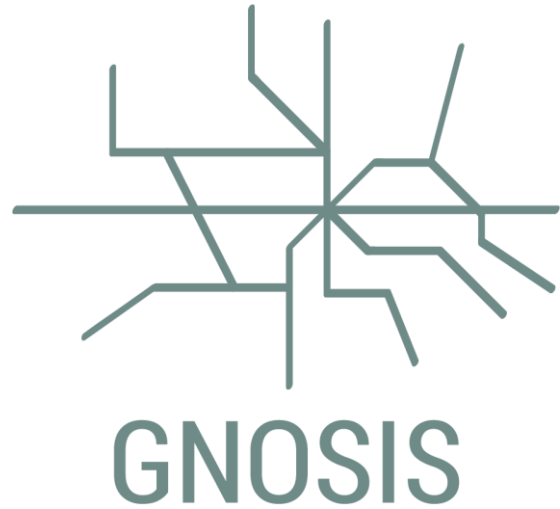
Utilization of PWD Databases

- PWD road network
- Public Transport
- Sensors
- Data from previous projects
- Traffic models
- Road designs

- Proposed developments
  - Assets
    - Traffic lights
    - Road signs
    - etc.

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Additional Data

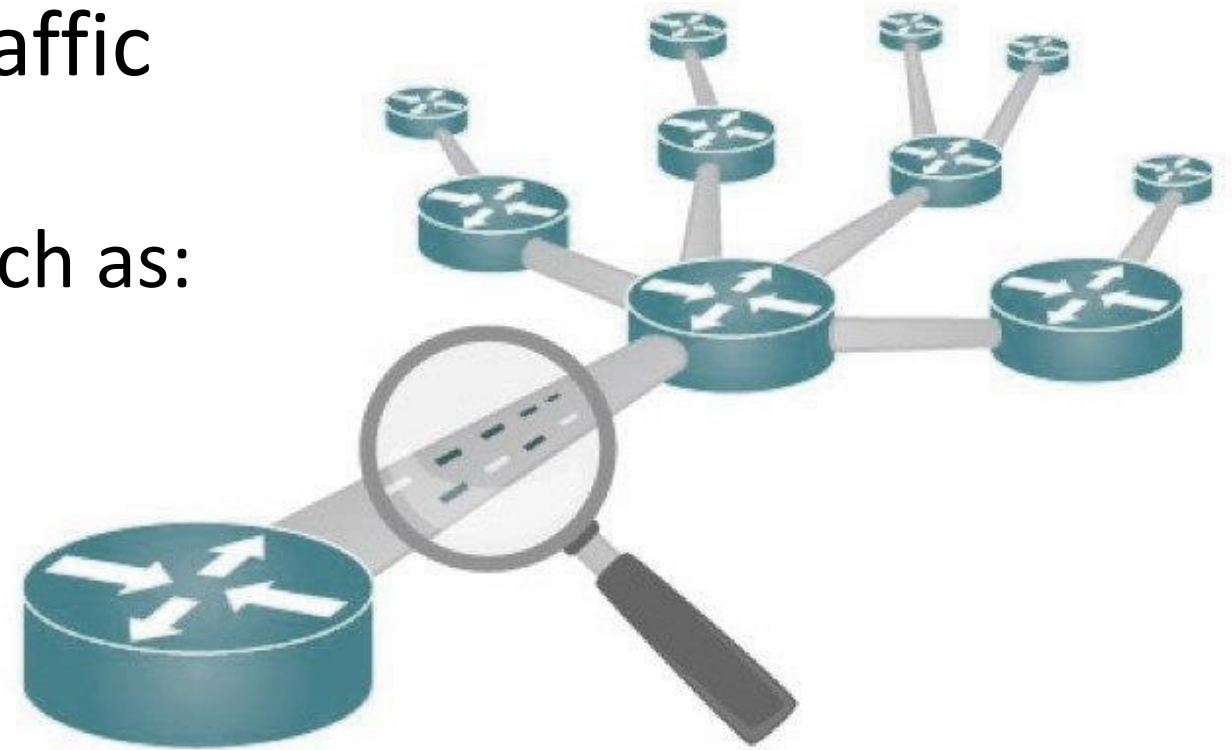**Other Databases**

- Department of Lands and Surveys

- Open Data Cyprus
  - Environment
  - Health
  - etc.
- Cyprus Statistical Service
  - Economy
  - Car registrations
  - Population etc.
- Utilities Databases

GNOSIS

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GNOSIS: Example of Use Cases

- Traffic state estimation and traffic control
  - Using multiple data sources such as:
    - loop detectors,
    - Bluetooth detectors,
    - cameras etc.

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GNOSIS: Example of Use Cases

- Improve quality of sensor data
  - Improving the collected data using techniques like fault diagnosis

Thank you for your attention

K õ ιος

Research and Innovation Center of Excellence

For further Info contact:

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KIOS Innovation Hub Manager

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