Intelligent Transport Systems and Smart Cities

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The **ERAdiate** Project

Enhancing Research and innovAtion dimension of the University of Zilina in intelligent transport systems

Project Highlights

- 11 ERA Chairs granted
out of 111 applications

- Project volume > 2.5 million € (5 years)

- Contribution to

  - ➢ Excellent research

  - ➢ Enhanced competitiveness

  - ➢ Growth and jobs in line with
regional innovation strategies

Tasks of ERA Chair

- Scientific work & publications
- Development of international contacts and cooperation
- Workshop & conference organization
- Outreach to global & regional partners
- Support in ITS deployment
- Cooperation projects with Industry
- Advice to decision makers / Consultancy
- Transfer of best practices
(e.g. Electronic Tolling, Smart Cities, …)

Research Focus

- Cooperative and complex systems
- SMART solutions
  - Smart & Liveable Cities
  - Access
  - Pricing
- Decarbonisation of mobility (eMobility)
- Business models for ITS and ICT
- Inclusive mobility
- Societal effects of ITS deployment

Applied Research

- Decision support (political / commercial)
- Key Performance Indicators & SLAs
- Big Data / Open Data
- Interoperability
- System Architecture
- Roles & responsibilities
- Usability / HMI / distraction
- Data protection and privacy
- Liability issues

Smart Cities – Principal Aspects

- Networks
  - ➢ Managing information & communication
  - ➢ Supplying electrical energy
  - ➢ Supplying heat
  - ➢ Supplying cooling
  - ➢ Removing waste water
- ❖ Price for infrastructure services increases faster than economic growth
- ❖ Effective management of the infrastructure
- ❖ Behavioral changes of the informed users

Smart Cities – Principal Aspects

- Energy
  - ➢ Sustainability & energy saving
  - ➢ Decarbonisation
  - ➢ Avoiding of air pollution
  - ➢ Smart meters and awareness
  - ➢ Cost saving

❖ Electrical networks become bidirectional due to distributed renewable power sources

❖ Pollution & climate change are becoming visible

❖ Electrical vehicles contribute to better air quality in cities and have their CO_2-emissions elsewhere (if any)
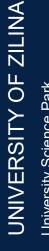
Smart Cities – Principal Aspects

- Mobility
  - ➤ EU: Compromises on the quality of mobility are not an option
  - ➤ Inclusive mobility for the informed citizen
  - ➤ Optimized logistics including last mile transport and removal of waste
- ❖ Sustainable Urban Mobility Plans (SUMPs) consider the functional urban area based on a wider urban and territorial strategy
- ❖ Cleaner and more sustainable transport modes, such as walking, cycling, public transport
- ❖ New patterns for car use and ownership

Smart Cities – Principal Aspects

- ■ ICT and applications
  - ➢ Creating the connected world
  - ➢ Applications available for any purpose
  - ➢ Internet of Things
  - ➢ Big Data / Open Data
- ❖ Usability has to be improved
- ❖ Value of information is accepted only when aggregated, processed, refined, and validated
- ❖ PROVIDING INFORMATION IS A SOCIETAL TASK OF HIGH IMPACT! It contributes to an inclusive and livable world

Smart Cities – Principal Aspects

- Smart citizens
  - ➤ The education of citizens how to use their city may be more effective with gamification replacing teaching in schools
  - ➤ Improvements in quality of life and convenience are more important than technology for the sake of itself.
  - ➤ Solutions requiring activity from citizens have to care for usability
  - ➤ Awareness for environmental effects and cost-saving will be important drivers for applications in smart cities.

❖ Each City is unique and shall be livable

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University Science Park

Thank you for your attention!

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