DE MONTFORT UNIVERSITY LEICESTER

Shaping the Future of the UK Space Economy
Commercial Application of Space-Related Research

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De Montfort University Leicester
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DIGITS

DIGITS – DMU's Interdisciplinary Group in Intelligent Transport Systems

Who we are:

20 Members, 3 Professors, 2 Readers

- and growing
- PhD and Master students
- Significant research funding from a variety of sources, incl. EU and ESA
- Strong International reputation
- Researching and delivering cutting edge technologies for the transport sector
- Commercial Partnerships

What we do:

- Intelligent Mobility
- Intelligent integrated traffic management and air quality control
- Mechanical behaviour of pavement and rail track materials
- Airport and harbour environment modelling and evaluation
- Geographical information systems and data mining
- Computational intelligence
- Embedded systems and ECU design
- Telematics
- GNSS

DIGITS

€€€ ££££ Enabling Funds ££££ €€€

Innovate UK
Technology Strategy Board

esa

Associate

Knowledge Transfer Partnership

Company Partner

Knowledge Base Partner

THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION

HORIZON 2020

SBRI Government challenges. Ideas from business. Innovative solutions.

Smart
Funding Innovation

European Regional Development Fund
Investing in your Future

PRIMO from NSL – GALILEO
World leading GNSS Applications Consultancy
www.nsl.com.eu

- Software Defined Radio ready to capture CDMA multi-constellation Navigation Data from
- GALILEO (Europe)
- GPS (USA)
- GLONASS (Russia)
- COMPASS (China)
- EGNOS (Europe)
- GAGAN (India)
- MSAS (Japan)
- WSAS (USA)

- Precision SatNav - For 21st C GNSS

http://www.tech.dmu.ac.uk/~eg/GALILEO/

Funded by a KTP from the East Midlands Development Agency

Gopher (TSB Bid) >> iTRAQ - Integrated Traffic Management and Air Quality Control using Computational Intelligence & Space Services

Benjamin N. Passow, David Elizondo, Eric Goodyer and Clare Edwards. De Montfort University, Leicester

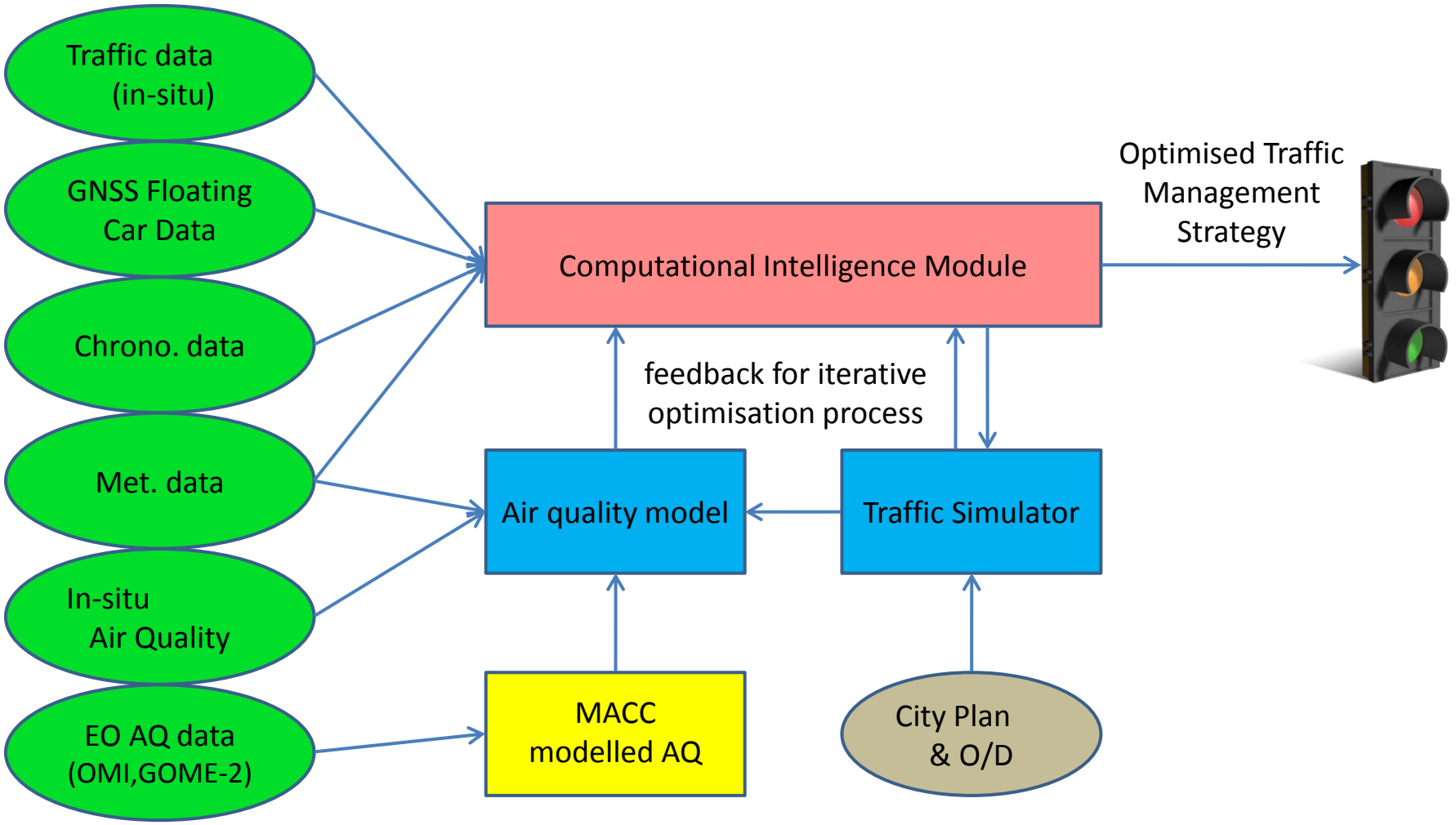
&

- Automatically optimise traffic
- Automatically optimise air quality

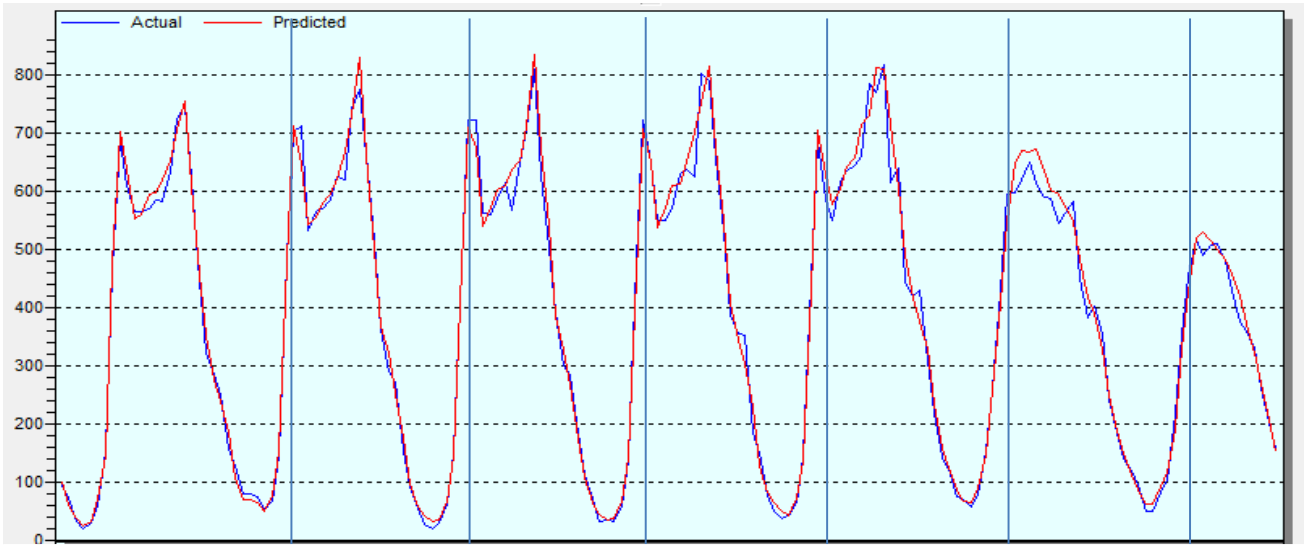
} Conflicting objectives

- Inform operators, users, public, ...
  - –Accurate forecasts of local traffic flow and delay
  - –Accurate forecasts of local pollution levels
  - –Enhanced traffic flow ,delay, and air quality through using proposed strategies

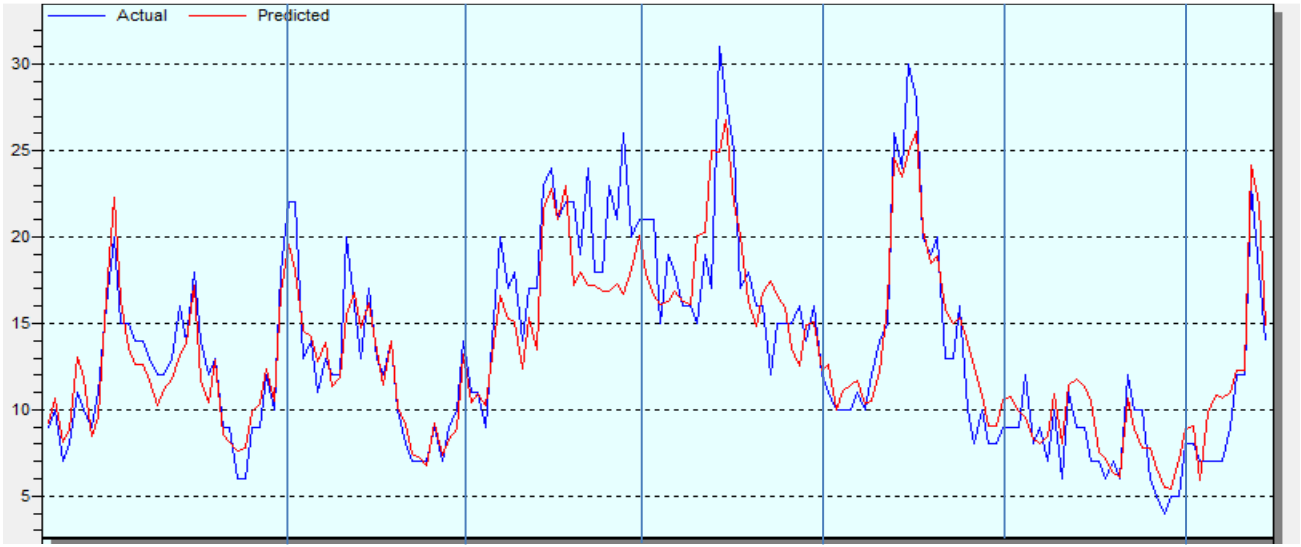
- Adapt to and deal with to ever-changing traffic and air pollution conditions


Traffic data (in-situ)
GNSS Floating Car Data
Chrono. data
Met. data
In-situ Air Quality
EO AQ data (OMI,GOME-2)
Computational Intelligence Module
Optimised Traffic Management Strategy
feedback for iterative optimisation process
Air quality model
Traffic Simulator
MACC modelled AQ
City Plan & O/D

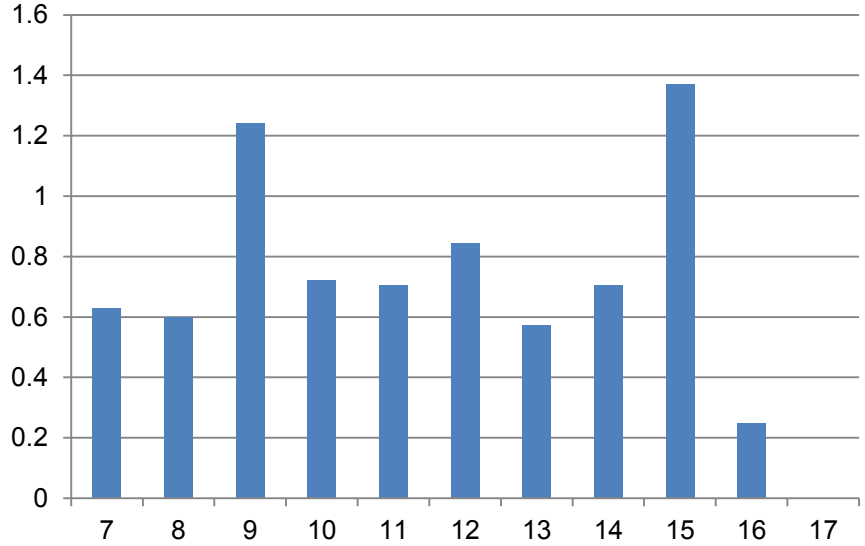
Traffic Flow (veh/hr)



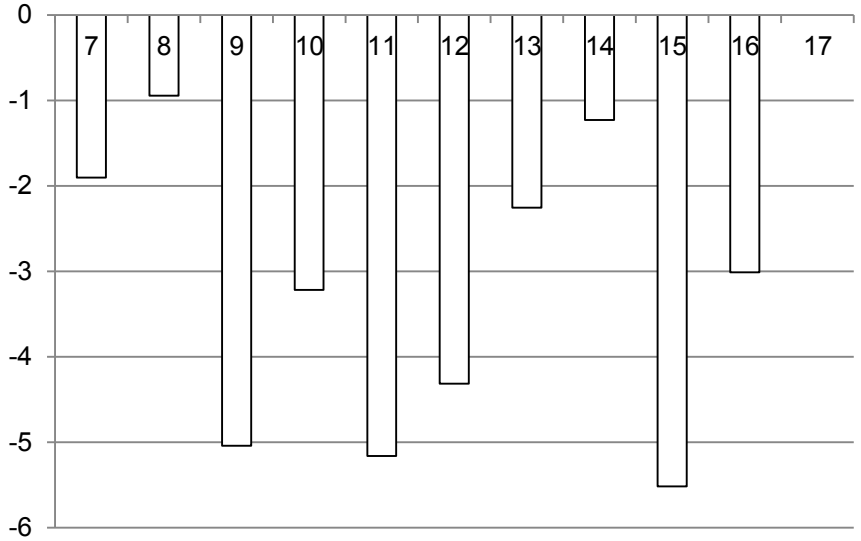
Air Quality NO2 (ugm-3)



Flow %

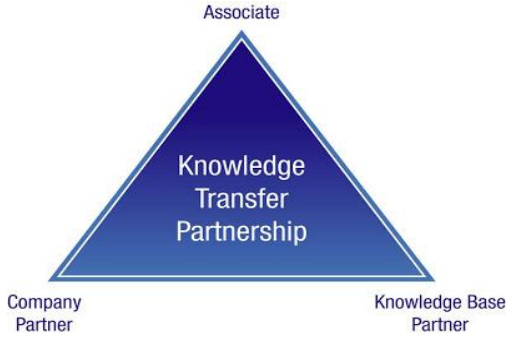


Delay %



- Substantial decrease in delay
- While simultaneously managing air quality

RingUK



Ringtrack Telematics Platform

M2M Features

- Small and Lightweight (Board size 53mm x 36mm x 15mm)
- Low Power Usage
- GPRS and GSM communication – Information sent back to secure Ring server
- Battery operated – Optional connection to an external DC power supply with a rechargeable standby battery
- Internal and External Power Monitoring
- Vehicle Sensing
- Operates on a sleep/wake cycle – Optional sleep time
- Scheduled Reporting – Reports back at defined intervals, the location and status on a map and graph on the RingTrack website.
- Operates both outdoors and indoors – Uses GSM location reporting when GPS is unavailable.
- RF Location Beacons – Provides a precise location even if hidden inside a truck or container.
- On board Microprocessor and Memory to provide Local Processing and Data Storage
- Advanced 3 Axis Movement Detection
- Tamper Alarm
- Serial RS485 Communication – Interfacing to supported Controllers
- 1-Wire Communication – Temperature Monitoring
- 4 Inputs and Outputs
- Global Coverage

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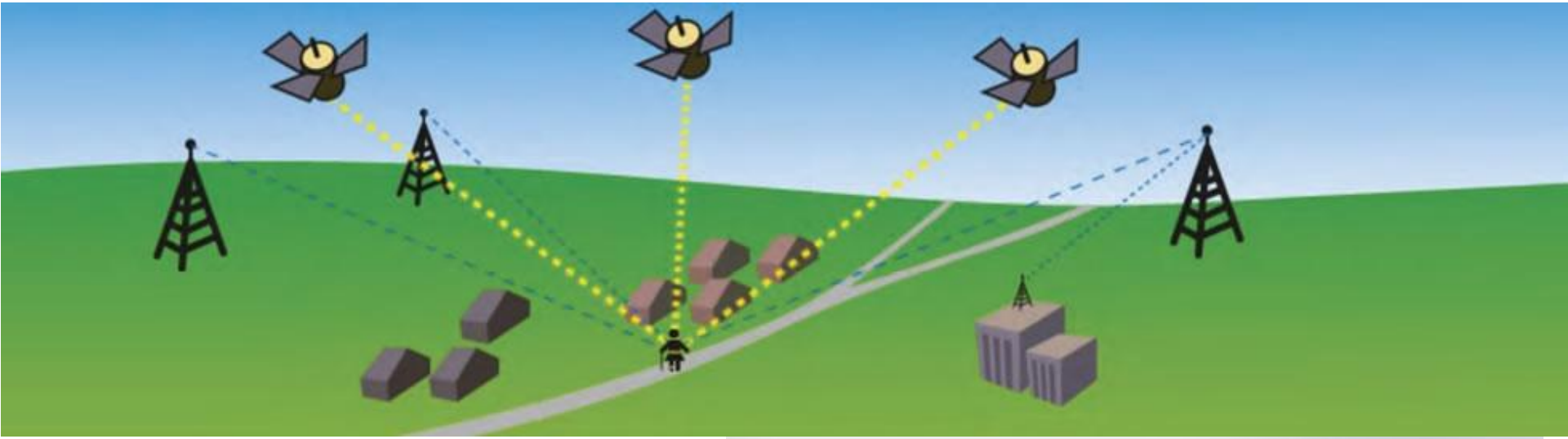
Fax:+44(0) 1638 666679
E-mail: Sales@RingUK.com

SBRI Government challenges. Ideas from business. Innovative solutions.

Motech

Electronic Personal Monitoring System

Consultancy
Introduced to Invest Northern Ireland



Allerayde

Advancement in allergy protection.

Smart

Funding Innovation

THE ISSUE

Traffic Health Environment

Intelligent Solutions for Sustaining Urban Economies

SEVENTH FRAMEWORK PROGRAMME
Project funded under the Regions of Knowledge

European Commission

The Triple-Helix Experience
Importance of Exchanging Knowledge, Best Practice and Mutual Learning
Within and Between European Regions

Professor Eric Goodyer
Scientific Advisor to THE ISSUE Project

Leicester City Council

University of Leicester

De Montfort University Leicester

The University of Nottingham

ASTRIUM

INTERGRAPH

IGiK

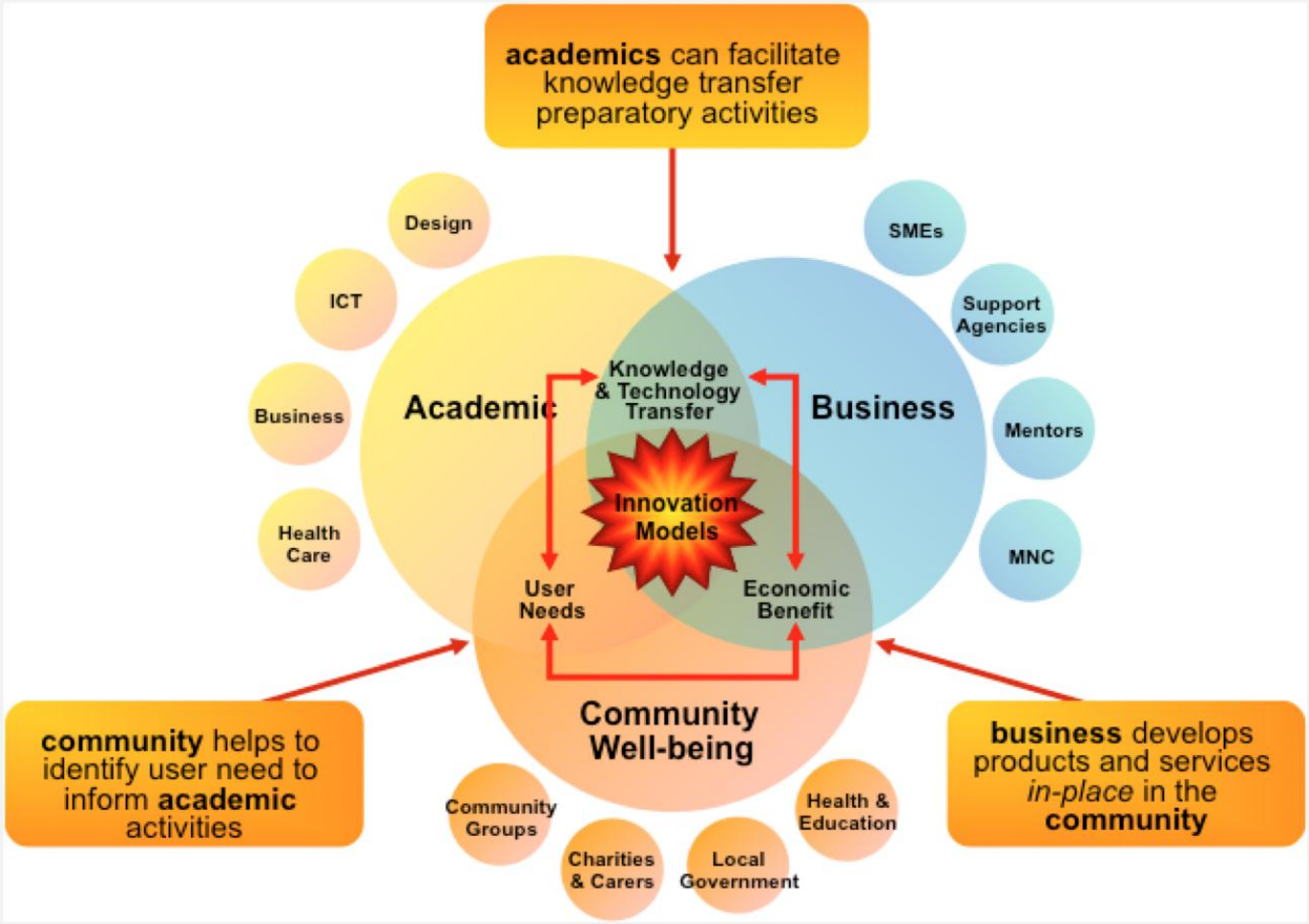
Mazovia. heart of Poland

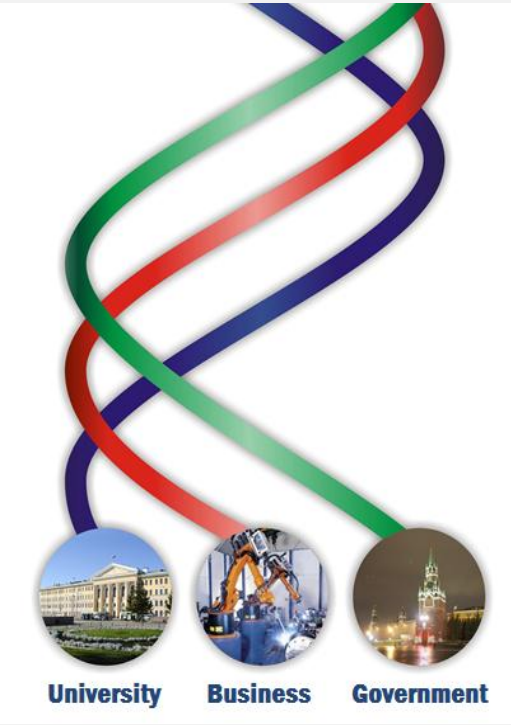
Università degli Studi del Molise

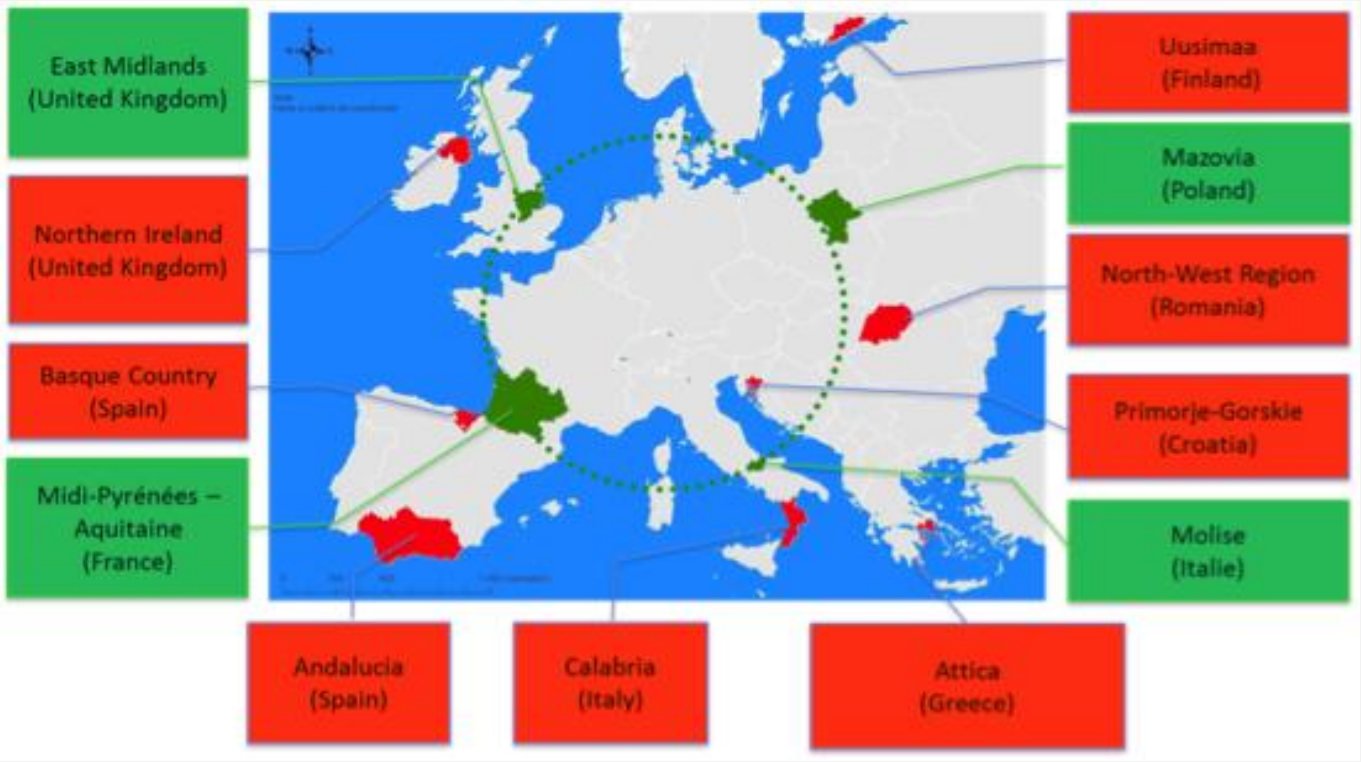
SviluppoItalia Molise

e-geos

aerospace valley


academics can facilitate knowledge transfer preparatory activities
Design
ICT
Business
Health Care
SMEs
Support Agencies
Mentors
MNC
Academic
Knowledge & Technology Transfer
Business
Innovation Models
User Needs
Economic Benefit
Community Well-being
community helps to identify user need to inform academic activities
business develops products and services in-place in the community
Community Groups
Charities & Carers
Local Government
Health & Education





- Research informed by Societal Challenges
- Policy makers informed of emerging technology

- Industry well placed to commercialise new technology
- University aware of commercial needs

- Business enabled to support policy delivery
- Government needs and market opportunities visible