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# State of Transport Research in South Africa Unravelling Transport Research Findings for 2009 - Intelligent Transport Systems -

Koos van Zyl

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# Agenda

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- Introduction
- Research in South Africa
- Research in 2009
- Training
- Conclusion



# Intelligent Transport Systems – ITS

ITS aims to integrate and link the operation of vehicles, transportation infrastructure, IT and communication technology

ITS enables safer, cleaner and more efficient **mobility**

ITS combines the fields of

- Civil Engineering
- Electronic Engineering
- Information Technology



## Research in South Africa

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### ITS Research in South Africa:

- Universities
- ITS SA (ITS society of South Africa)
- CSIR
- Individual Technology Companies
  - Product/Service driven



## Research in South Africa

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Current research areas in ITS can be classified into sections where it is required:

- Electronic Engineering
  - Communication applications
  - User interface
- Civil Engineering
  - Modelling
  - Public Transport requirements
- ITS SA
  - Industry products/services shared
  - Co-operation / networking role
- CSIR
  - True ITS application research (limited resources)



Findings are based on discussions with lecturers and relevant industry players

- University of Stellenbosch (US)
  - ITS in Minibus Taxis
- University of Cape Town (UCT)
  - Improving service level of Public Transport (Volvo funded)
  - Modelling the risk of weather related warning systems
- CSIR
  - NyendaWeb
- FP7
  - STADIUM project – ITS for large events



PhD research project

## **ITS on Minibus Taxis – 3<sup>rd</sup> year of research**

- *Summary*
  - Electronic methods of gathering statistical/planning information (CPTR) through ITS
  - ITS Benefit Taxi Owner and Drivers
- *Approach*
  - Practical – Equipment installed and feedback gathered
- *Theoretical Contribution*
  - Is ITS acceptable by self-regulating taxi industry
- *Practical Application*
  - Authority control
  - Improved operations
- *Technological Innovation*
  - ITS applications from bus to minibus taxi – adapt



## PhD research project 1

### **Improving Service Level of Public Transport – 1<sup>st</sup> year of research**

- *Summary*
  - ITS systems that improve the service level of public transport
- ITS systems provide the possibility to improve:
  - safety
  - mobility (reduction of delays)
  - efficiency (throughput)
  - productivity (cost efficiency)
  - energy use
  - the environment
  - customer satisfaction (via improved level of service and information provision)
- Modelling study



PhD research project 2

## **Modelling the risk of weather related warning systems**

– 1st year of research

- *Summary*
  - Aim is for authorities to manage and mitigate the effects of adverse weather on road traffic, in particular with respect to fog, rain and snow
  - Economic justification for the provision of ITS devices to detect and warn traffic of reduced visibility on the road ahead
    - the avoidance of road crashes
    - the saving in lives and injuries
    - the saving in damage to property
- Modelling study



Research project led by Build Environment

## **NyendaWeb**

- *Summary*
  - Data collection, fusion and distribution system
  - Transport- and traffic-related sensor data
  - Improved access to transport- and traffic-related data
    - for research and development purposes
    - for transport planning, traffic operations and management
- Open platform
  - allow all owners of transport- and traffic-relevant data to voluntarily plug-in their sensors and/or databases
  - improve the quality of information to all levels of potential users, road authorities, businesses, transport operators, etc.



## FP7 project STADIUM

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**STADIUM** → **Smart Transport Applications Designed for large events with Impacts on Urban Mobility**

- Aims at improving the performance of transport services and systems made available for large events hosted by big cities
- Demonstrations of Intelligent Transport System (ITS) applications at three major events:
  - the South Africa Soccer World Cup (2010)
  - the India Commonwealth Games (2010)
  - the London Olympics (2012)
- Started in May 2009 and will last 4 years



### Aims of the STADIUM demonstration in Cape Town:

- Improve the long term performance of minibus taxi public transport services through the use of ITS
- Implement a Demand Responsive Transport (DRT) application on taxis that can be used effectively during the 2010 SWC and beyond



## Training

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- No specific post-graduate ITS course available
- Training is offered through collaboration efforts of:
  - ITS SA
  - Universities
  - CSIR
- Examples
  - ITS SA – Centre of Excellence
    - focus on education and training in the field of ITS and knowledge management
    - provide its members with access to topical information and case studies about ITS deployment projects
  - University of Stellenbosch & ITS SA
    - Post Graduate course in ITS by local and international panel of experts
  - CSIR Nyenda Mentoring and Internship Programme
    - provide training of a specialised nature to select audiences in the transport sector



## Conclusion

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- ITS is used in other research areas (e.g. GPS)
- Research in ITS is needed for industry to lean on
- Sponsorship / funding is no problem
- Need to create ITS as a study field/department at research institutions
- ITS research sits with industry
- Need to make industry part of the research arena (through programs like FP7)
  - ITS is a fast developing field due to technology
  - Industry will develop solutions before research can catch up
  - Only retrospective research if industry is not involved



**Thank You**

Koos van Zyl  
[jvanzyl@sun.ac.za](mailto:jvanzyl@sun.ac.za)