

# Developing a Toolbox for Managing International Collaborative PhD Programmes

**Session 7: The use of the Toolbox (towards achieving the goals of collaborative PhD programmes – graduating excellent PhD researchers through informed and excellent supervision)**

Session facilitator – Peter Meissner (UCT)

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Developing the internationalization  
of PhD studies in South Africa



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# **An Academic's View of the Advantages/Disadvantages of Collaborative PhD programmes**

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- F'SATI at TUT runs a Joint-Doctorate programme in collaboration with two French Universities.
- The French South African Institute of Technology (F'SATI) is a Graduate School that was jointly developed by France and South Africa.

## Introduction







## Evolution of the Institute

- F'SATI at TUT has evolved over 20 years.
- Shift in focus from Undergraduate programmes to Postgraduate programmes.
- Greater emphasis on Collaborative programmes.





## Main Stimulants

- Commitment from various stakeholders (CCI, French Ministries, NRF, DST, SA and French Universities)
- Collaborative Academic partners in France (UPEC, UVSQ, ESIEE)
- Presence of full-time / semi-full-time French Professors in South Africa.





## Collaborative Programmes

- French MSc accredited by the CGE in France (since 2008);
- Joint Doctorate in collaboration with academic partners in France (since 2010).



# The F'SATI Model

## University of Technologies



Tshwane University  
of Technology  
*We empower people*



Cape Peninsula  
University of Technology



**F'SATI**  
French South African Institute of Technology

MEng/MSc

DEng/PhD

## French Partners

**ESIEE**

UNIVERSITÉ  
— PARIS-EST

université  
PARIS-SACLAY



CCI PARIS ILE-DE-FRANCE



science  
& technology  
Department:  
Science and Technology  
REPUBLIC OF SOUTH AFRICA



Tshwane University  
of Technology  
*We empower people*



Cape Peninsula  
University of Technology

UNIVERSITÉ  
— PARIS-EST

**ESIEE**

**UPEC**  
UNIVERSITÉ PARIS-EST CRETEIL

**int**  
CRETEIL-VAL DE MAISON



Tshwane University  
of Technology  
*We empower people*

# Evolution of Partners

- Formalisation of Relationships



- Evolution of existing partners







## Some Points to Consider...

- Internationalisation strategies should be a tool in increasing the quality in doctoral education and in developing institutional research capacity<sup>1</sup>.
- International doctoral students offer a “cost-effective” way for institutions to build international links<sup>2</sup>.





## Some Points to Consider...

- As a result of the expansion of communication methods and the ease of international travel, academics and researchers are finding it easier to collaborate with foreign counterparts.
- The ability to scrutinize, debate and share experiences is essential for academic and scientific accomplishment.
- Such partnerships have contributed to academic and scientific progress<sup>3</sup>.





## Capacity Development

- Since inception, a total of 17 Co-tutelle Doctorates completed.
- Total of 8 TUT staff members completed Co-tutelle Doctorates.
- 2 TUT staff members currently registered on Co-Tutelle.
- 2 graduated Co-tutelle Doctorates are academic staff members in Africa.
- 7 based in Industry (SA, France, China, Nigeria)





## Development of Next Generation Researchers

- Out of the completed Co-tutelle Doctorates, a number of Next Generation Researchers have been developed.
- Next Generation Researchers involved in supervision of their first Doctorates.
- Research being conducted with Laboratories where links were established during Co-tutelle Doctorate.





## Development of Joint Research Teams

- The Co-tutelle Doctorates at TUT emanated from Collaborations between TUT and the following Laboratories:
  - LISV at UVSQ
  - LISSI at UPEC







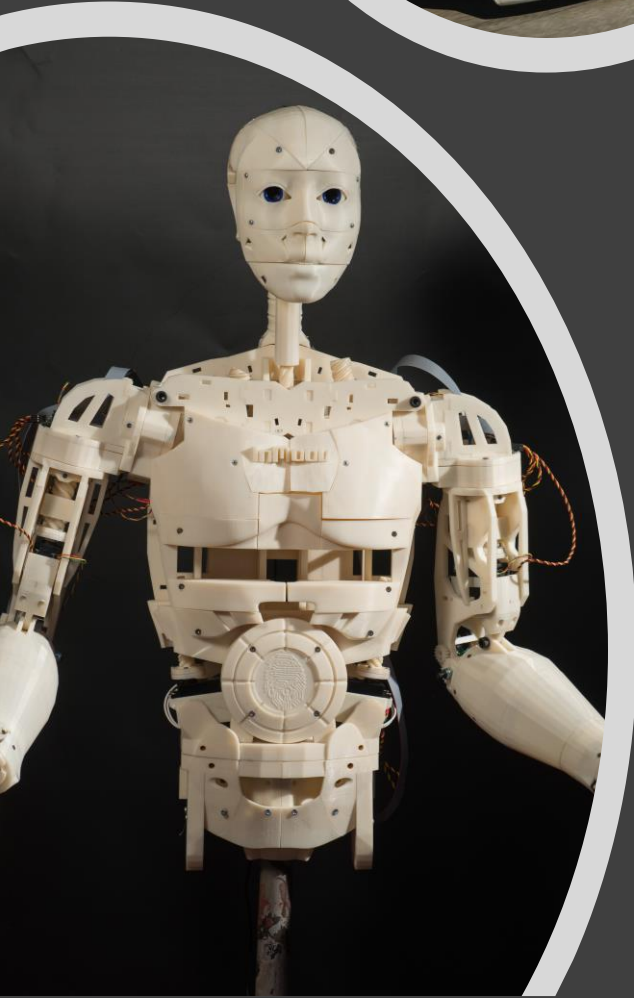












Maturing of Research  
Niche Areas



# Maturing of Research Niche Areas

## TELECOMMUNICATIONS AND SIGNAL PROCESSING

The Telecommunications niche area is involved in research and development activities in various aspects of communications engineering and signal processing in telecommunication and data networks. The niche area considers theoretical aspects of wireless communications systems mainly related to optimisation problems in modern wireless and mobile communication

systems. The niche area also focuses on technological aspects through the development of prototypes for next generation mobile and wireless communication systems. Since 2017, the CoE at F'SATI TUT has started to focus on the development of an Energy Efficient Multi-vector Internet of Things (IoT) Gateway.

## CONTROL, IMAGE PROCESSING & MACHINE INTELLIGENCE

This niche area covers several domains related to modelling and control. In these domains, many tools are necessary to deal with the management of systems. These systems may be electrical, mechanical and all sorts of physical systems. The projects that are developed within this niche area include the SARCHI Chair

that focusses on the development of the enabled environment and assistance to the handicapped, a CSIR project focused on water treatment and distribution networks, and a project focused on the development of Powered Wheel Mobility research.

## ENERGY AND INDUSTRIAL POWER SYSTEMS

The availability of a sustainable source of inexpensive, environmentally friendly energy, the availability of robust and reliable electric power supply systems, and the competitiveness and effective productivity of the industries continue to be the drivers of the economic well-being of a nation. The focus of this niche area considers the domains of power electronics, power

systems (including distributed generation and microgrids), renewable energies, energy efficiency, and demand side management.

## SPACE SCIENCE AND TECHNOLOGY (CPUT)

F'SATI hosts the CPUT Focus Area in Space Science and Technology that provides an overarching framework for wide intra-institutional collaboration. F'SATI has been recognised as an Institute within CPUT in 2018. It hosts the African Space Innovation Centre (ASIC), an innovation hub for the development of nanosatellite technologies. Within this focus area, the CPUT nanosatellite programme involves a visionary approach to space exploration and the associated development of technology used for this. This National nanosatellite programme is supported by the Department of Science and Technology, the National Research Foundation and the South African National Space Agency. CPUT developed Africa's first nanosatellite that was launched into space in 2013. Its second satellite was launched in 2018.







- During 2018 two prototype designs were finalised.
- A Robotic Rollator was presented as an innovative approach for gait rehabilitation practices at the Gauteng Acceleration Program (GAP) hosted by the Innovation Hub.
- The innovation won second price in the GAP Medical Division.





Challenges...

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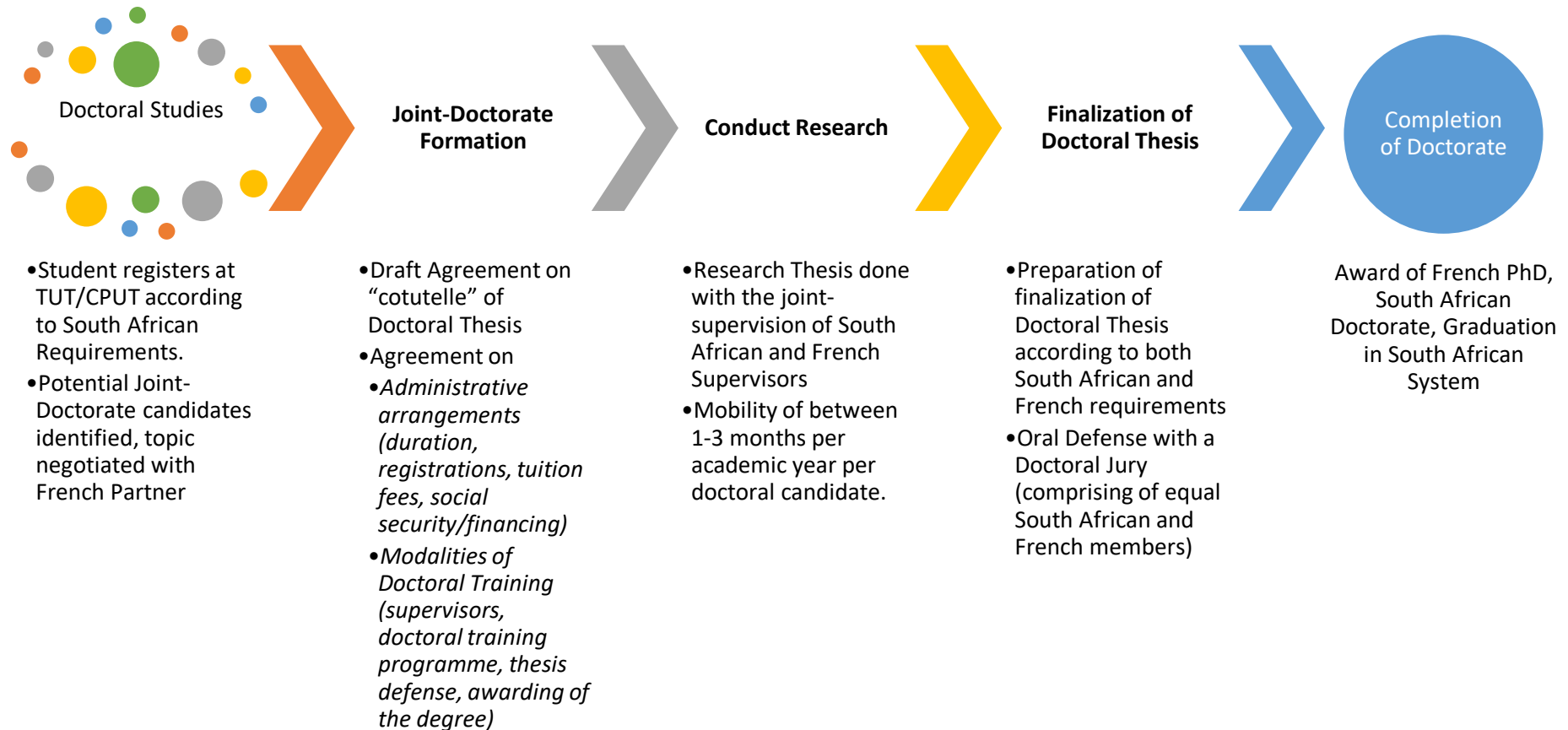


## Challenges...

- Selection of students, level of students, language...
- Funding (funding for stay in France (for non-SA), mobility, Defenses...)
- Duration to stay in France, PT vs FT students...
- Agreeing on completion requirements (FEBE requires 2 accredited journal publications), format of Defense (Oral Defense + Jury in French System...)



# Process Followed at F'SATI







# Students in France...

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[1] Salzburg II Recommendations, EUA, 2010

[2] The Global PhD, available online:

<https://www.insidehighered.com/news/2014/07/03/conference-considers-internationalization-phd-programs>

[3] International partnerships between universities are beneficial to all, from the staff and students to the world as a whole, available online: <https://www.qs.com/why-are-international-collaborations-so-important-for-universities/>



# Thank You!!