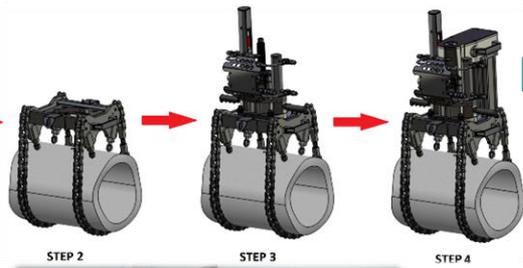


# eNtsa Engagement Presentation

Presenter: DG Hattingh

04 November 2015



## Research

Battery Systems  
Electric Drive  
Trains and  
Charging  
Infrastructure



## Internships

Friction Process  
Development, Large  
Engineering Projects,  
Materials Research and  
Controls Engineering



## Training



**eNtسا**  
innovation through engineering

**TSP**  
Technology  
Station  
Programme

**CIC**  
Composite  
Innovation  
Centre

**uYilo**  
e-mobility  
Programme

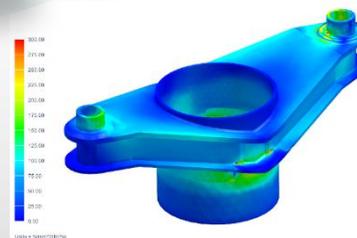
## Supplier Development

Advanced Engineering  
modeling  
Component and  
material testing



## Engineering Innovation and Technology Transfer

Teaching, Interns,  
Student projects,  
Masters and PhD



# eNtsa – Timeline 13 years of innovation



**2002 - ACTS**  
Supplier Development

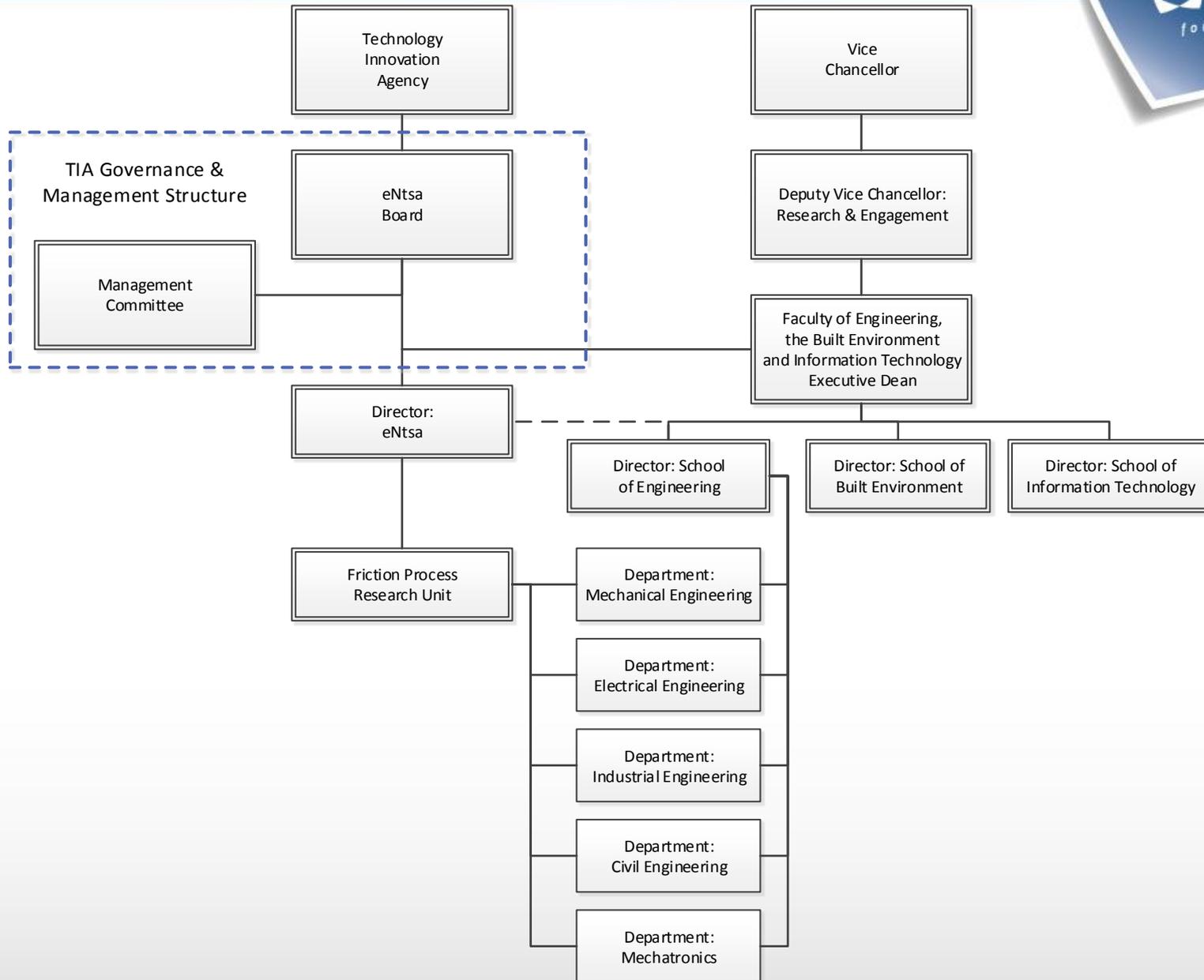
**2007 - ACTS**  
Supplier Development  
Research & Development  
Large scale engineering projects

**2012 - eNtsa**  
Supplier Development  
Research & Development  
Large scale engineering projects  
Contract Research  
Commercialization

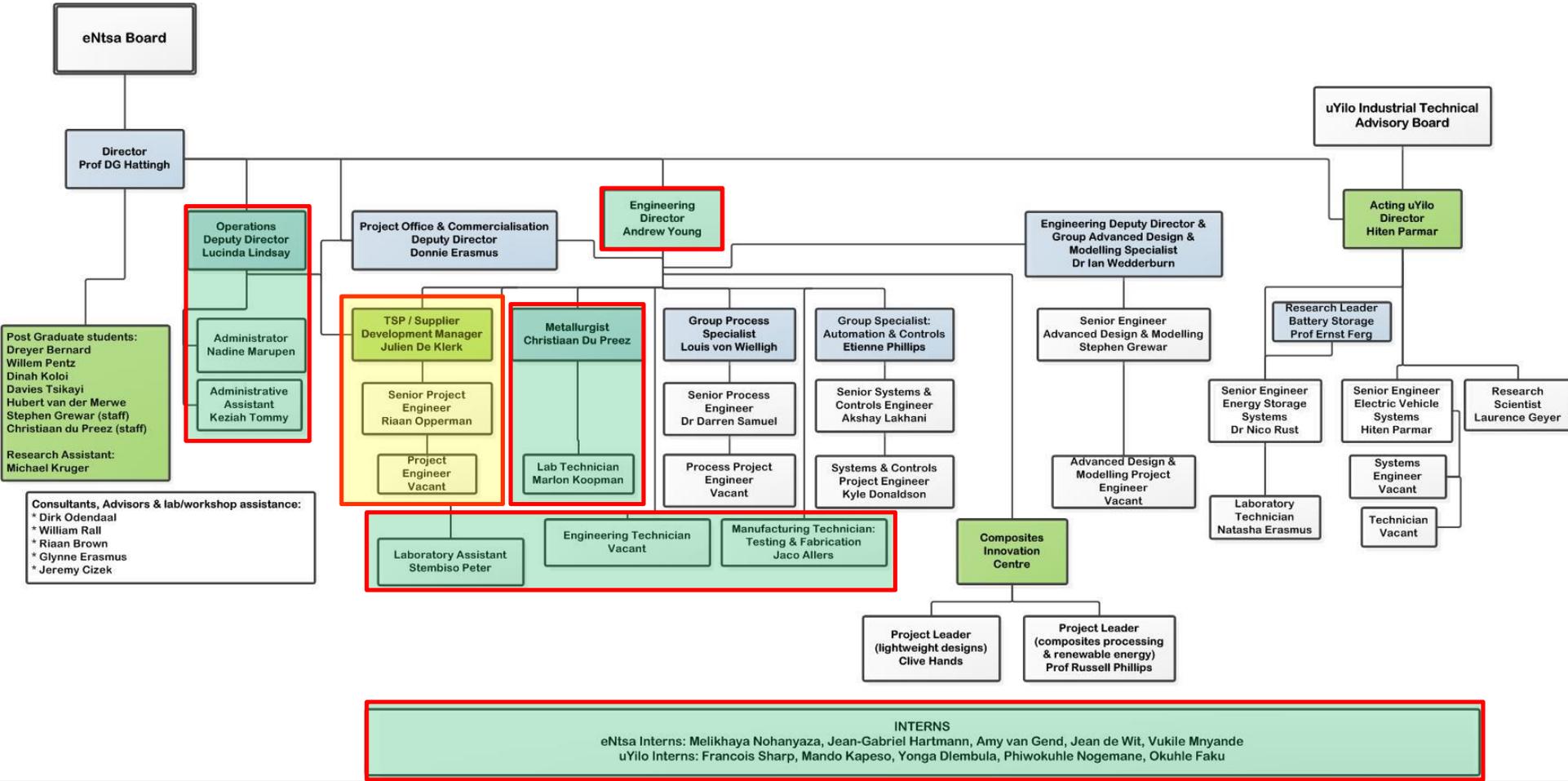
**2013 - eNtsa**  
Supplier Development  
Research & Development  
Large scale engineering projects  
Contract Research  
Commercialization  
uYilo E-mobility Programme

**2015 - eNtsa**  
Supplier Development  
Research & Development  
Large scale engineering projects  
Contract Research  
Commercialization  
uYilo E-mobility Programme  
Composite Innovation Centre

# eNtsa – Governance Structure



# eNtsa – staff structure



# eNtsa - introduction

Based in Port Elizabeth at the NMMU, eNtsa is recognised as a prominent research, engineering innovation and technology support unit for the advanced manufacturing and engineering sectors in South Africa.

- Originally focused on automotive components sector
- Throughout eNtsa's 13 years of operation, the expertise of the group expanded, the project scope broadened
- Focused on the wider engineering and manufacturing sector

Main products & services:

- Materials, Component & Residual Stress analysis
- Advanced design, modelling and simulation
- 3D scanning, measurement
- Manufacturing & Prototyping
- Turn key automation and circuit design



Vision statement:

*'engineering innovative solutions for a sustainable future'*

## Development of a Large Scale Friction Stir Welding platform

eNtsa designed and commissioned a large friction processing platform for a local road tanker manufacturing company.

Using this platform engineers within eNtsa successfully completed the longest friction stir weld in Africa on 06 October 2011. The weld completed is eight meters (8m) long using five millimeter (5mm) aluminium plates on a platform developed by NMMU.



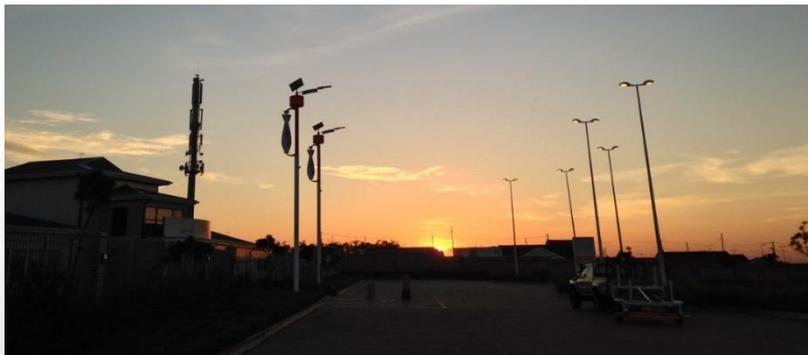
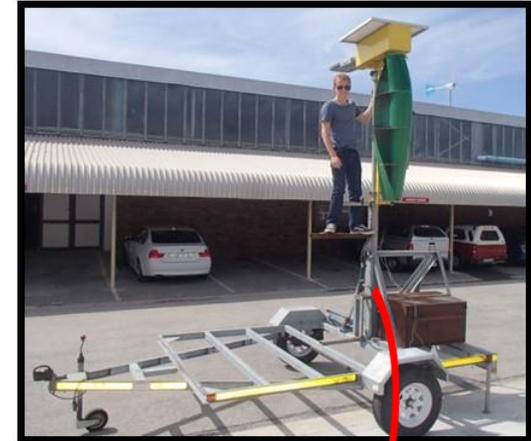
## Twery™ project

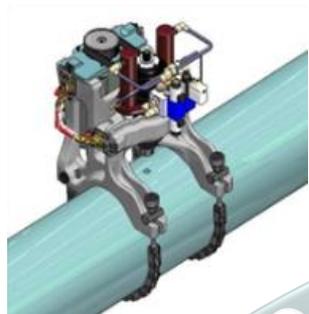
### Brief project description:

The aim of this project was to assist Prof Phillips with building a self-contained, green energy powered street or pedestrian walkway light, suitable for use in residential areas.

### Significance of project:

Using IP generated by the NMMU, a prototype has been built with a solar panel and a vertical axis Savonius wind turbine providing enough power to light up a walkway every night. This prototype is being commercialized, and the final product will be built locally using local labour and expertise.





ASME IX  
acceptance

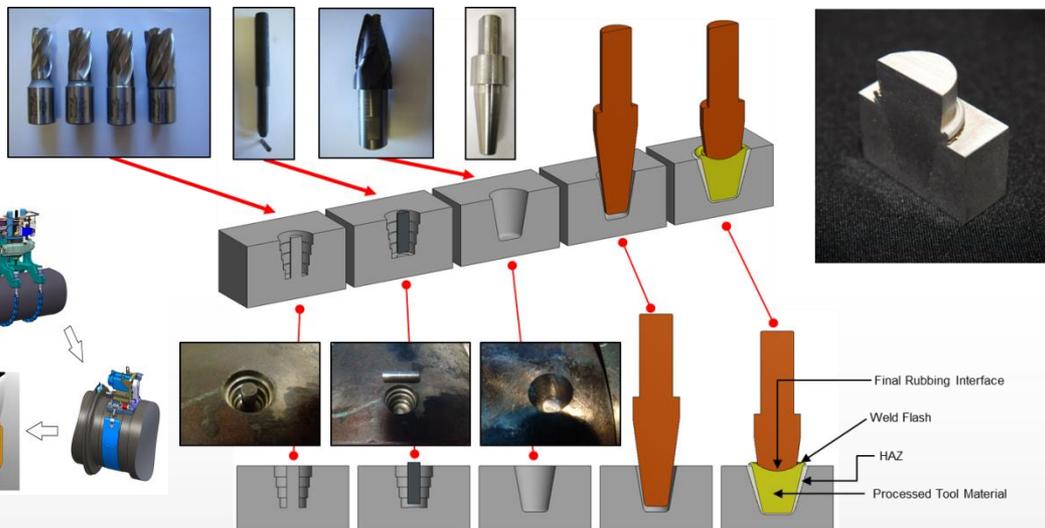
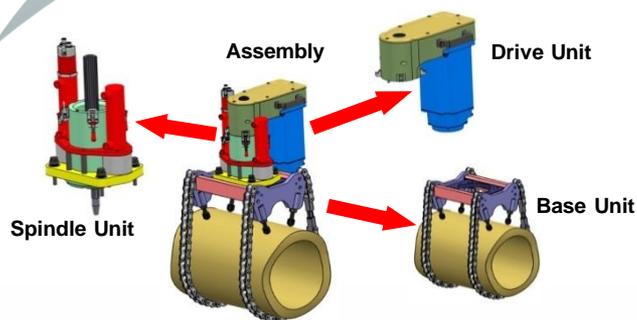
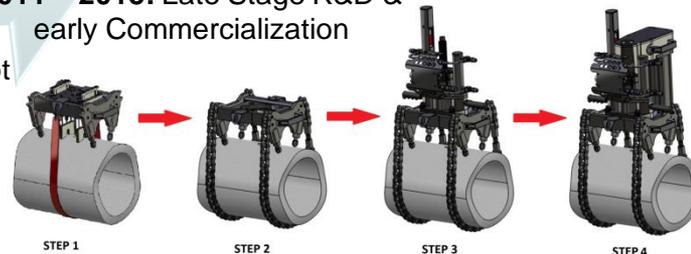
2011 – 2015: Late Stage R&D & early Commercialization

2009: Proof of Concept

2007: Process Development

2006: Prototype Welding Platform

2004: Prove Feasibility of FTTHPP



## Value proposition of the technology

- Risk Reduction through Additional Information
- Mobile Sampling & Friction Processing
- Repair of High Value Components (where conventional welding is not suitable)

# eNtsa - 3D Scanning & measurement

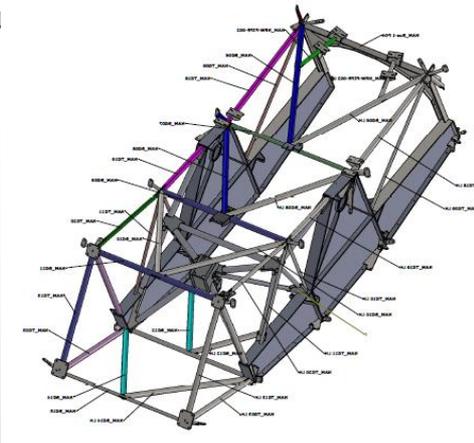
Introduction of new technology acts as a catalyst for new development

- Fast, portable measurement
- 3D scanning
- Optical CMM
- Quality control
- Aiding localization
- Supply contract facilitation
- Exploring new applications (Scan-to-print)
  
- Interest from industry is increasing
- Completed over 20 SME interventions in FY2015-2016
- Assisted multiple OEMs



## Intervention Successes:

- Hitech Automotive: Custom sports car manufacturer  
Benefit: Possible new export contract with China
- Duys manufacturing: Automotive components  
Benefit: maintain supply contract with OEM
- Whisper Aircraft: Local aircraft manufacturer  
Benefit: Evaluate and improve aerodynamics
- Eastern Cape 4x4: Local 4x4 accessories  
Benefit: Able to manufacture custom parts locally
- Namaqua Engineering: Engineering fabricators  
Benefit: Increase quality & secure major SKA supply contract
- Post Grad research in Fine Arts  
Benefit: Investigate use of technology in art

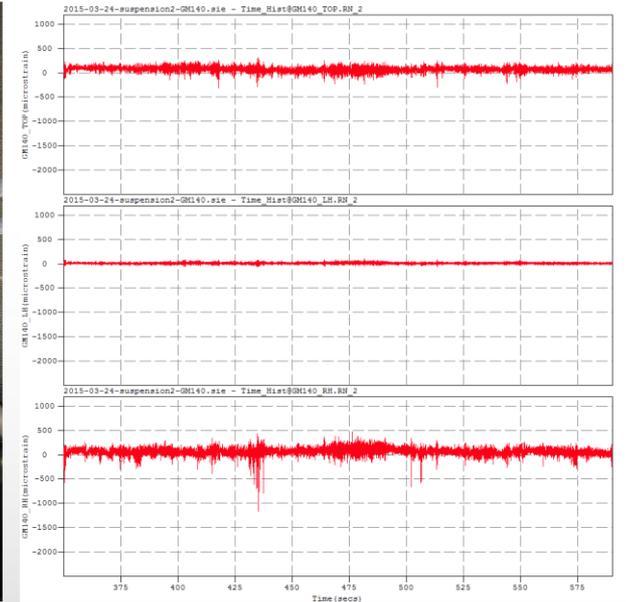


# eNtsa – OEM assistance

**Project Description:** Vehicle body panels and suspension investigation by strain measurement

**Resources utilized:** eDAQ data acquisition system

**Benefit:** Assist locally based OEM to effectively investigate component performance in order to maintain a high quality level and thus ensure quality of product, export readiness and maintain local employment.

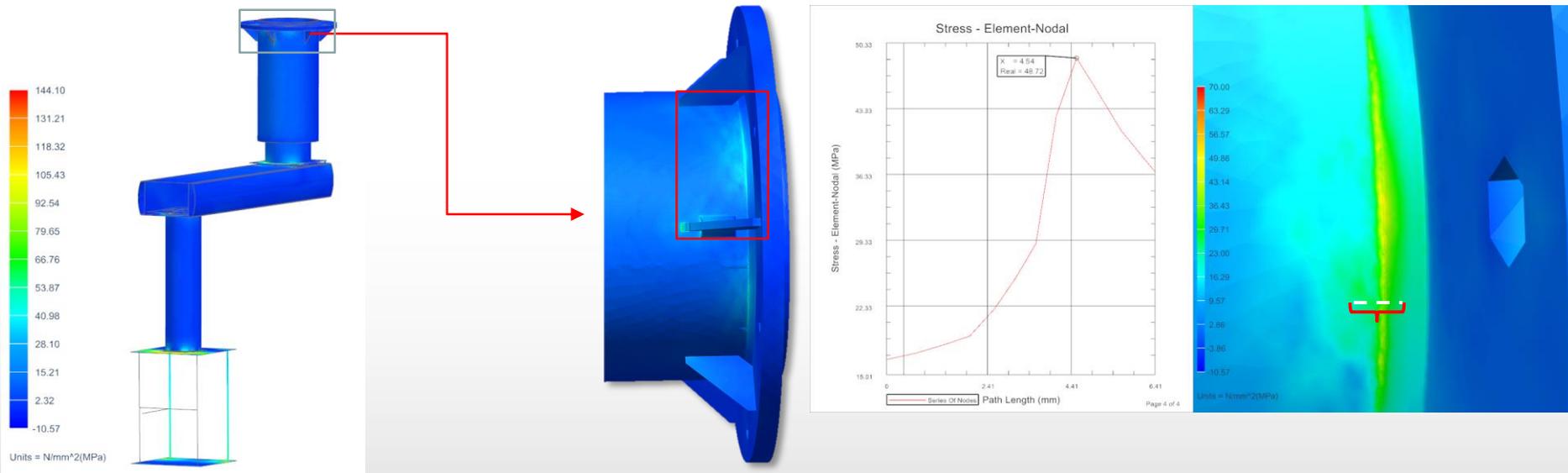


# eNtsa – Supplier Development

**Project Description:** FEA Analysis of locally manufactured medical pendant arms

**Resources utilized:** Strain gauges, eDAQ, Siemens NX (software)

**Benefit:** Local company able to produce custom pendant arms to meet advanced/specialized medical requirements. This would otherwise be purchased from foreign suppliers.

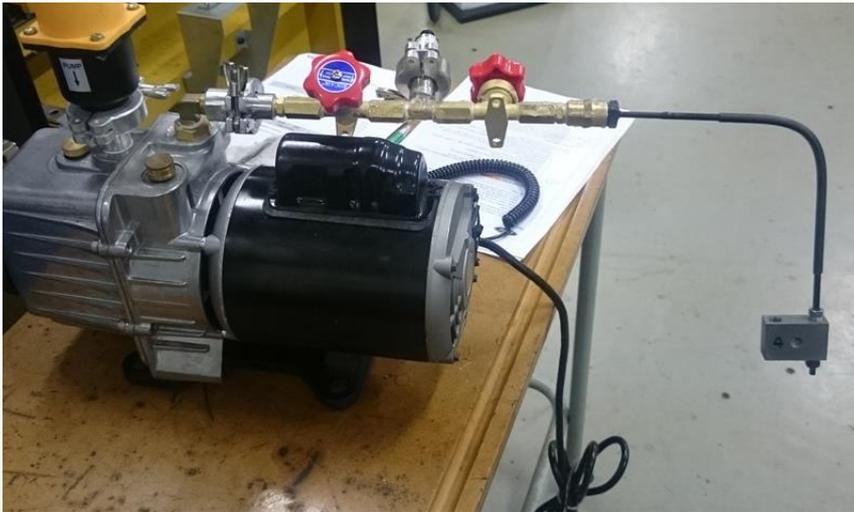


# eNtsa – Supplier Development

**Project Description:** Product joint sealing test

**Resources utilized:** PDS, Vacuum pump, vacuum gauge

**Benefit:** Successful testing results in local company able to supply OEM with localized components which comply to quality standards. These localized components replace imported CKD components.



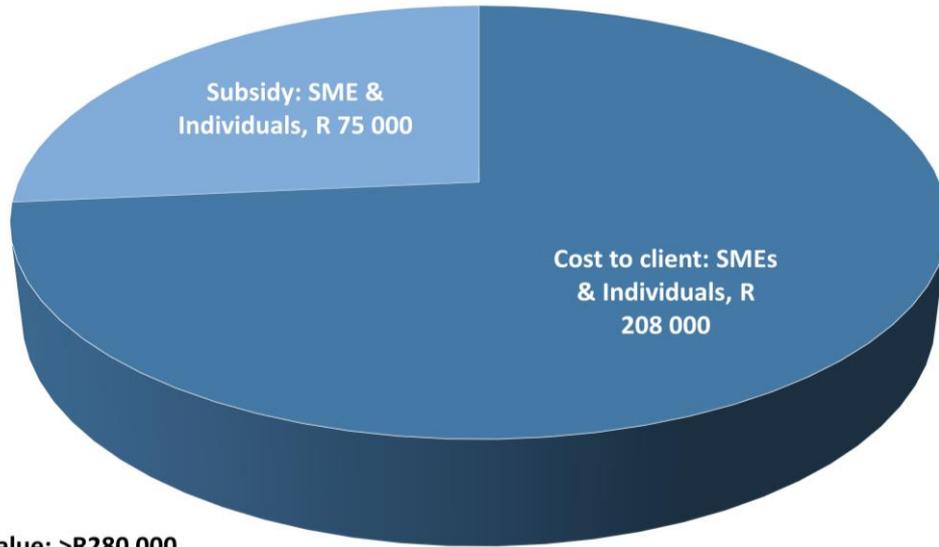
**Project Description:** Development of an  
Autonomously Guided Vehicle (AGV)

**Resources utilized:** Design, Software and Manufacturing

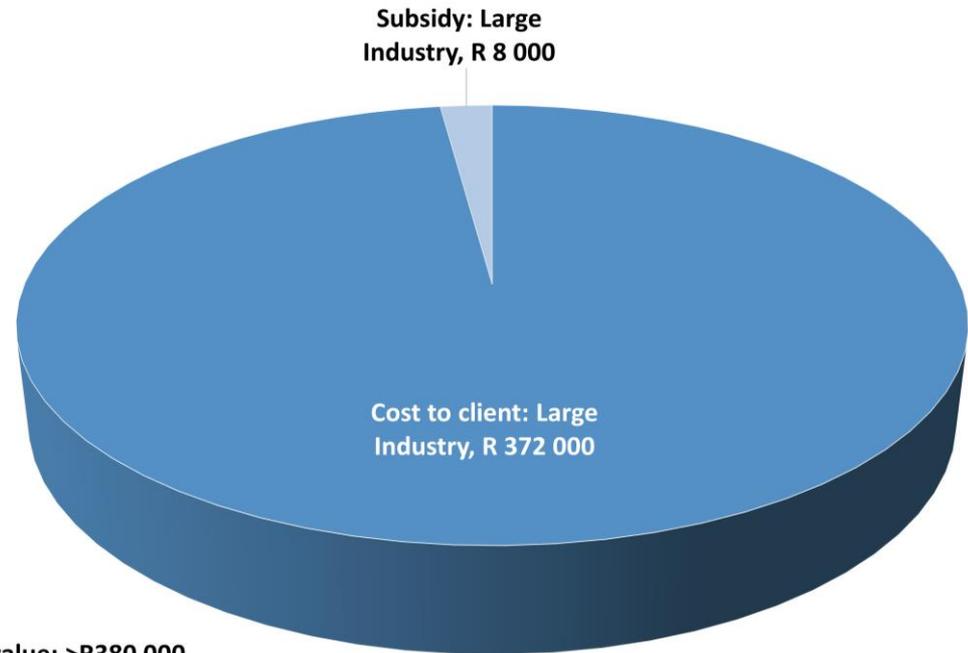
**Benefit:** This TIA funded project includes the hardware design (Mechanical), software and system design (Electrical-Mechatronic) and is based on developing a localized Autonomously Guided vehicle for the South African market. The AGV is ideally suited to work in a warehousing environment with a reconfigurable floor layout.



# eNtsa - SME vs large company projects completed



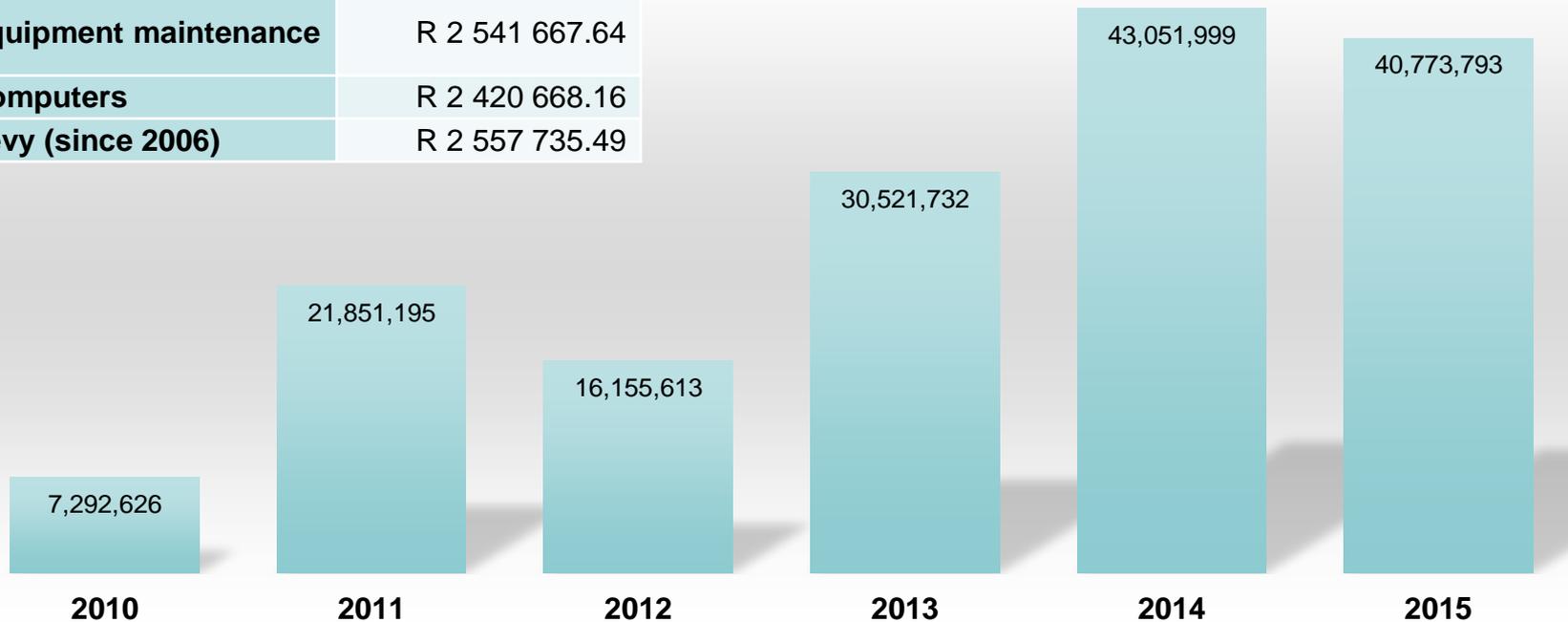
Total Project value: >R280 000



Total Project value: >R380 000

# eNtsa - turnover

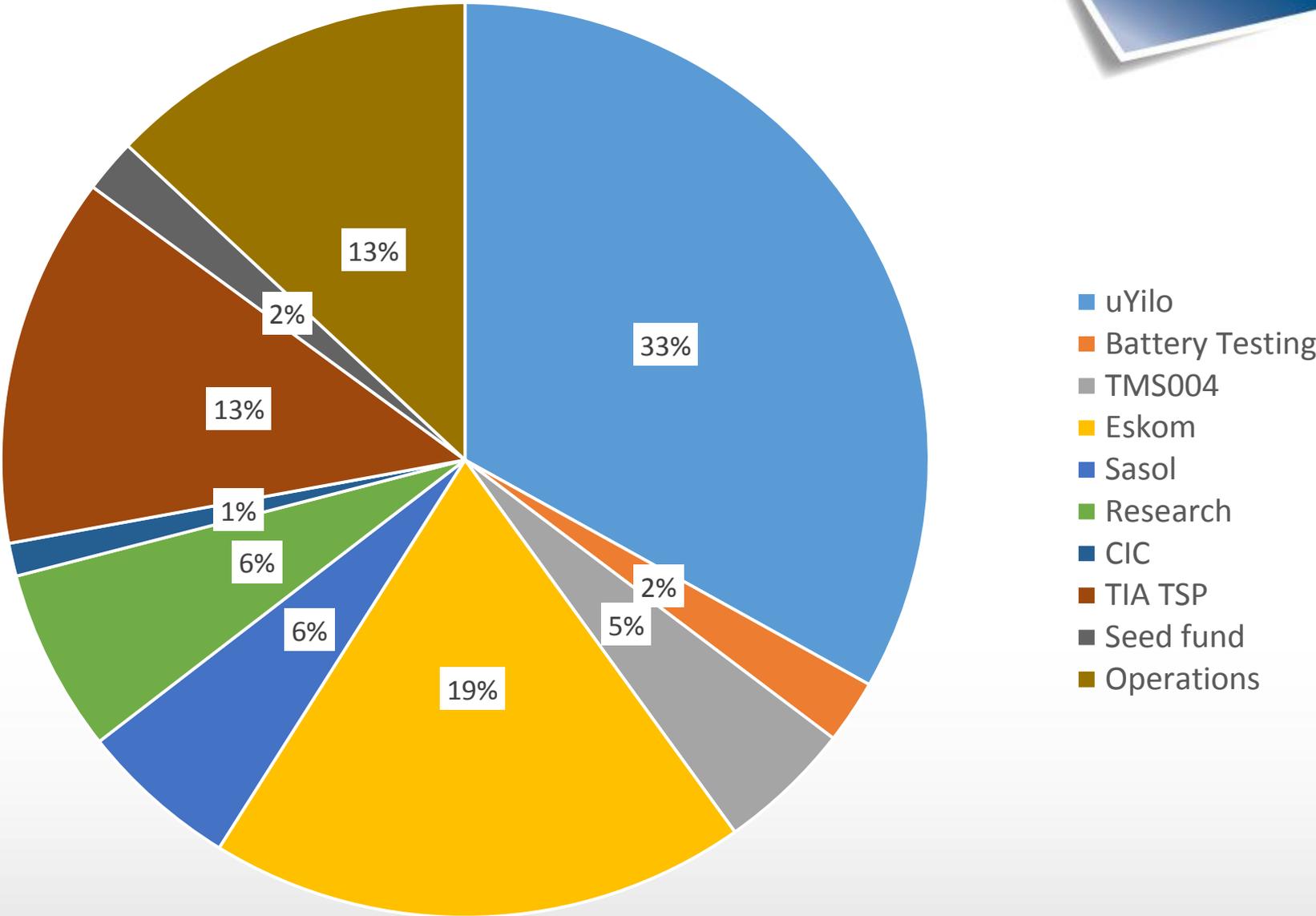
| Expenses since 2002   | Amount          |
|-----------------------|-----------------|
| Infrastructure        | R 35 422 907.85 |
| Equipment maintenance | R 2 541 667.64  |
| Computers             | R 2 420 668.16  |
| Levy (since 2006)     | R 2 557 735.49  |



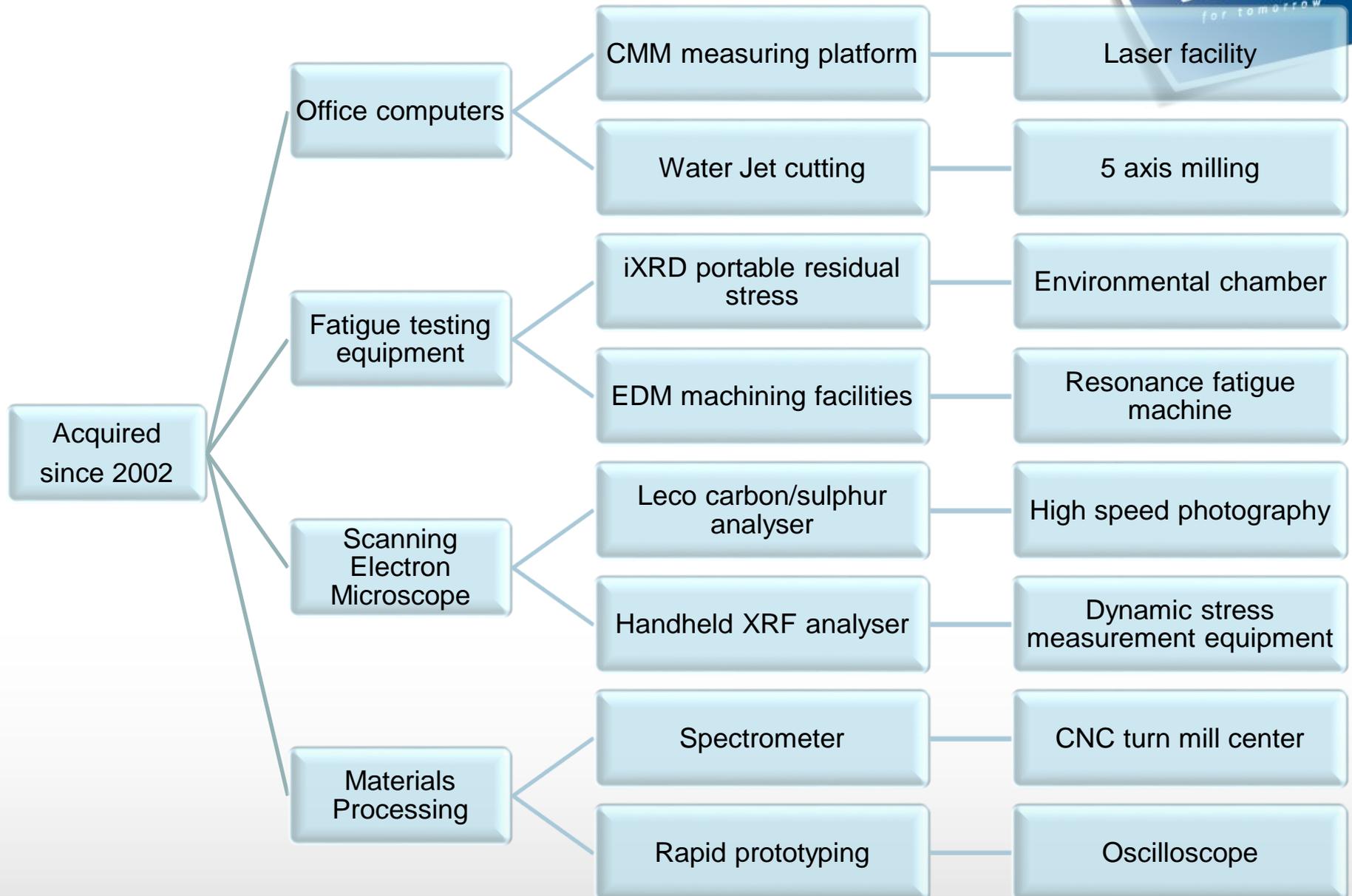
## **Equipment funding:**

- 2011 = R8 900 000
- 2014 = R14 935 531

# eNtsa – 2015 income sources



# eNtisa – equipment



## **Status of the industry/sector:**

The local advanced manufacturing and engineering sector faces many challenges

- localization of parts
- Securing export contracts
- Increasing quality standards
- Ensuring competitiveness

## **Opportunities for engagement and innovation:**

- Export of single components
- Development of OEM approved local suppliers
- Localization of CKD parts
- Coega IDZ

## **Supplier development:**

- addressing the skills shortage
- exposure to the latest best engineering practice and technologies
- development and testing of locally developed components (certification)

# eNtsa strategic partners



# Thank you!

