

To be(come) #1 Technical Training Provider Post School Education and Training(PSET)

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Chief Executive Officer



idea » design

design » prototype

prototype »
first production



You have an **IDEA**...
we can help you **DESIGN** it

You have a **DESIGN**... now the real engineering starts
to create **A WORKING PROTOTYPE**

A working prototype includes **functionality testing**

Optional **durability, non-destructive and
Electro-Magnetic Interference testing** is available on request



resolutioncircle
the ecosystem for technology solutions

We consult with you, do workshops and brainstorm

Manufacturability is taken into account

We can re-produce or redesign for production if necessary

3D Printing

We refine, develop and test to get to a working solution

Electronic circuit and PCB design

Through this we **STREAMLINE** your project, **SPEED UP** your time to market and can **DO RESEARCH** if needed

Ask about **OUR INCUBATOR** - it's a great place to nurture your idea with added benefits

You get **CAD MOCK-UPS** and **MODELING** to take to investors, PLUS we can **REGISTER YOUR PATENT**

Ask about our **TECH STATIONS**, we will give you a working prototype to take to investors

You have a working **PROTOTYPE**... we can **MANUFACTURE** one-offs and initial production runs

Laser, plasma and water-jet cutting
High precision machining
Injection & blow moulding
Fabrication, sheet metal and aluminum
Carpentry

Ask about our **MANUFACTURING PLANT** where limited volume or small-scale-production is readily available

a UJ initiative



UNIVERSITY
OF
JOHANNESBURG

4 IR in the Factory and application for Training

Seeing: Improvement

IT systems feed the results of analysis back into the production site

IT systems

Observing: Analysis

Primary processing of data collected using FA (edge computing)
Seamless integration with IT systems

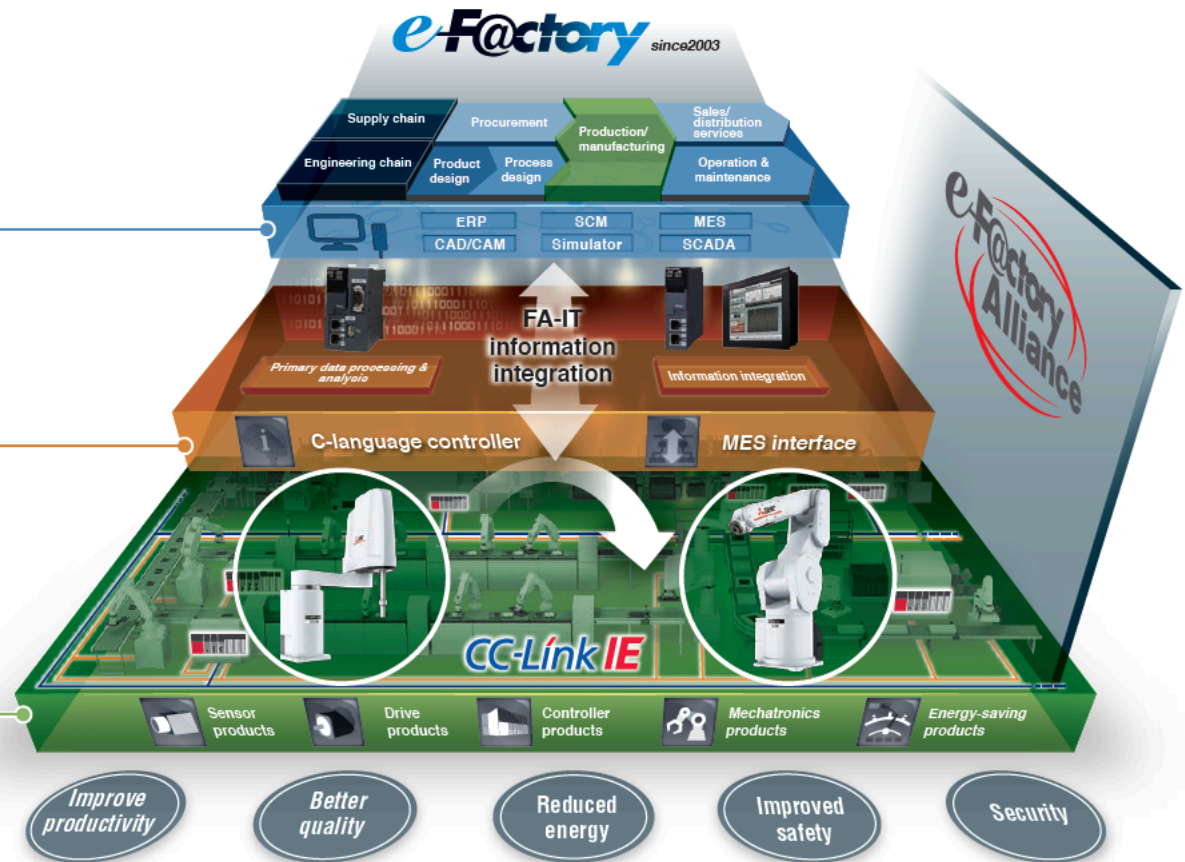
Edge computing

Watching: Visibility

Collecting production site data in real time

Production site

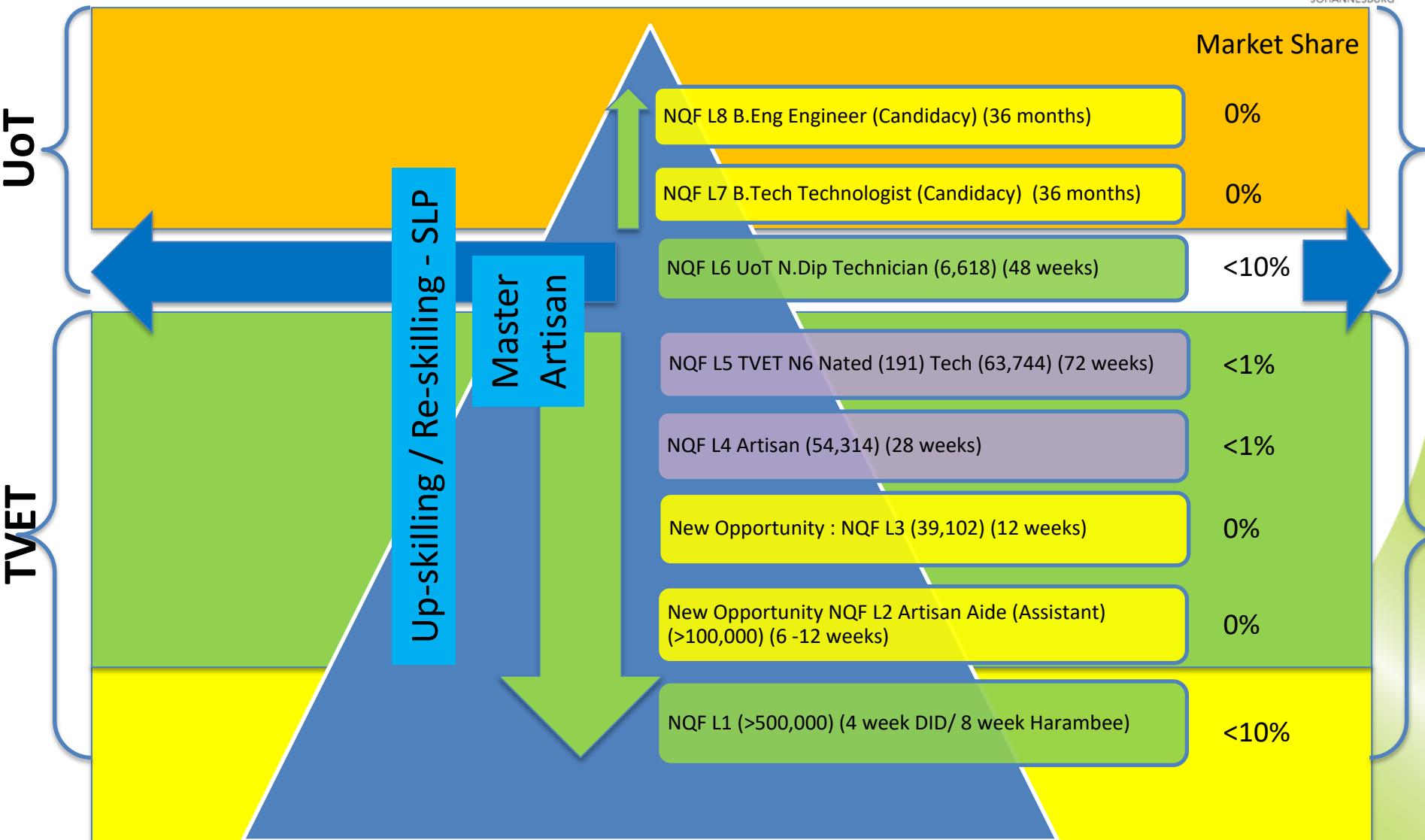
Helping to increase corporate value through “Visibility³ (cubed)”—seeing, observing, watching” and “Usability”



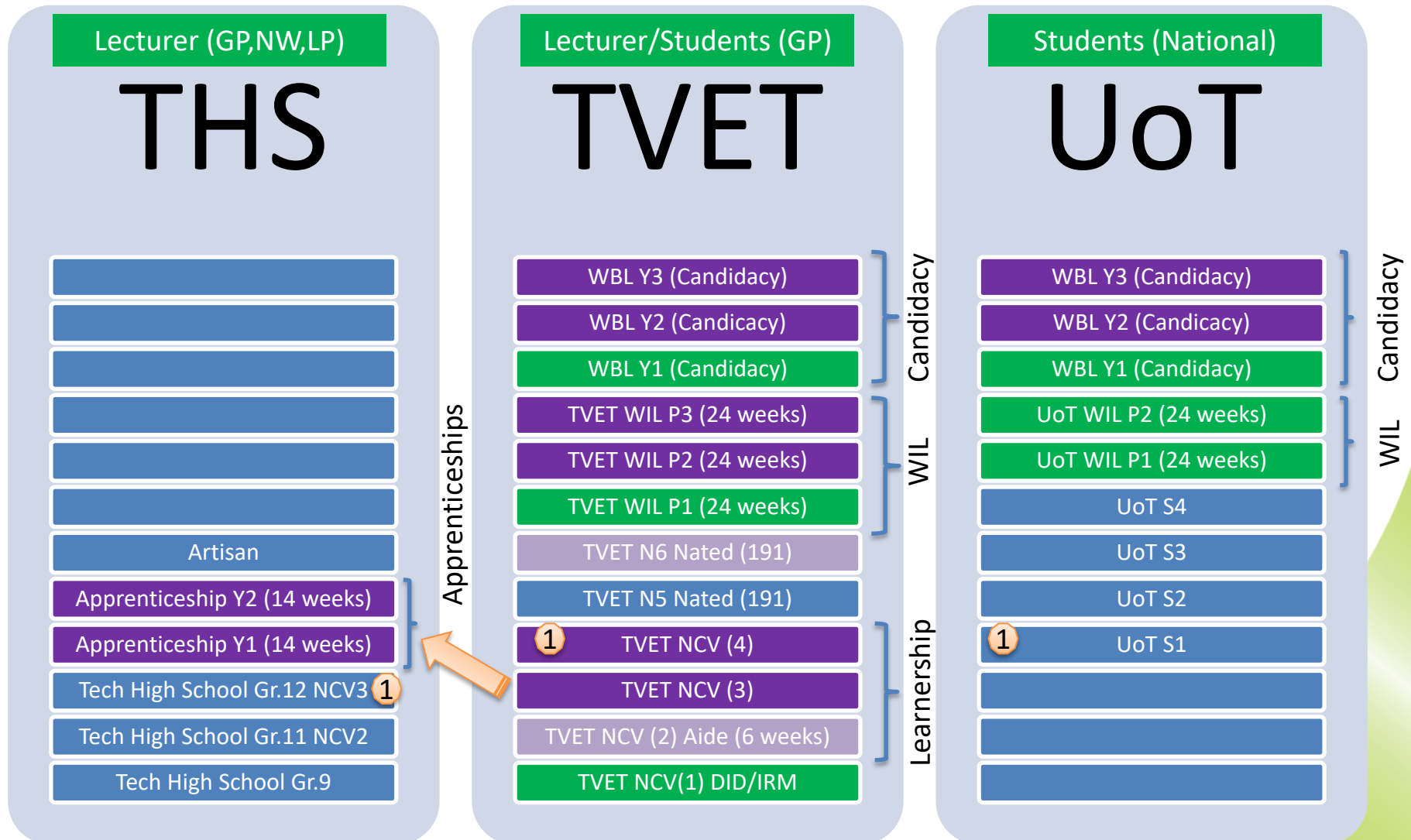
Future Skills at next World skills event

- Agri Biotech
- Blockchain based solutions
- Building Info Modelling(BIM)
- Composite Technologies
- Digital Factory
- Digital Farming
- Digital Fashion Designer
- Drone operating
- Enterprise Info Systems Security
- Industrial Design Technology
- Industry 4.0
- Internet of Things(IoT)
- Laser Technology
- Life Cycle Management
- Machine Learning
- Mechanical Reverse Engineering
- Mineral Synthesis and Processing
- Mobile Application development
- Neural Interface design
- Quantum Technology
- Rapid Prototyping
- Robot Systems integration
- Robotic welding
- Space Systems engineering
- Virtual- and Augmented reality

Qualifications Hierarchy : Opportunities



Artisan/ Technician Pathways



NQF 8	<div>University B.Eng</div> <div>UoT B.Eng. Tech (Hons)</div> <div>Analogue an RF Micro Electronics</div> <div>Advanced Semi-conductor Manufacturing</div> <div>Digital and Memory Design</div> <div>Power Electronics</div>											
NQF 7	<div>UoT Adv Dip</div> <div>UoT B.Tech</div> <div>UoT B.Eng. Tech</div>											
NQF 6	<div>F/O Advanced</div>	<div>PLC Advanced</div>		<div>Clean Energy Advanced</div>	<div>IoT Advanced</div>		<div>UoT N.Dip</div>	<div>3DP Advanced</div>	<div>Smartmeters Advanced</div>	<div>Mechatronics Advanced</div>	<div>Robotics Advanced</div>	
NQF 5	<div>F/O Intermediate</div>	<div>PLC Intermediate</div>	<div>TVET N.Dip Elec</div>	<div>Clean Energy Intermediate</div>	<div>IoT Intermediate</div>	<div>TVET N.Dip Mech</div>	<div>P2</div>	<div>3DP Intermediate</div>	<div>Smartmeters Intermediate</div>	<div>Mechatronics Intermediate</div>	<div>Robotics Intermediate</div>	
NQF 4	<div>F/O Intro</div>	<div>PLC Intro</div>	<div>P1 / 2 Elec</div>	<div>Clean Energy Intro</div>	<div>IoT Intro</div>		<div>P1 / 2 Mech</div>	<div>3DP Intro</div>	<div>Smartmeters Intro</div>	<div>Mechatronics Intro</div>	<div>Robotics Intro</div>	<div>Production Technology 4</div>
NQF 3	<div>Automation</div>	<div>Electrical</div>	<div>Electronics</div>	<div>Boilermaking</div>	<div>Carpentry</div>	<div>Fitting & Turning</div>	<div>Plumbing 3</div>					<div>Production Technology 3</div>
NQF 2				<div>Welding 2</div>			<div>Machining 2</div>	<div>Plumbing 2</div>				<div>Production Technology 2</div>
NQF 1				<div>Welding 1</div>			<div>Draughting</div>					<div>Engineering and related services 1</div>

Challenge for Engineering Fraternity

- We need to understand the demands of 4IR in terms of our curricula pre-qualification and continuous professional development post qualification
- Traditional instructor led class room training is not necessarily covering the needs of upcoming artisans, technicians, technologist and engineers

Future of Work – Industry 4.0

- Factory- & Process Automation (Internet of Things)
 - Arduino/ Raspberry Pi / PLC / Communication protocols
 - Programmable Logic Controller or PLC
- Coding(Programming C#, Java, Python) – Linked to IoT
- Design for Additive Manufacturing(DfAM) – Digital Twin
 - CAD/CAE/CAM/CNC Programming/3DP (Mech)
- Robotics (future link to Artificial Intelligence or AI)
 - UJ Technolabs (own Robots)
 - Festo Didactic (linked to factory automation/ mechatronics)
 - Industrial Robots (ABB, Fanuc, Kuka, Yaskawa)

The end