

# The critical role of TTOs in commercialising research

## Webinar

### Unlocking the Value of South African Intellectual Property in Publicly Funded Research

26 September 2024

Thandiwe Maretlane



# Outline

- Introduction to Technology Transfer Offices (TTOs)
- Navigating Intellectual Property (IP)
- Context of IP in Publicly Funded Research and Development
- Ecosystem Enabling Mechanisms
- TTO human resource requirement
- Capacity Support and development
- Technology Transfer and commercialisation
- Barriers and challenges of successful commercialisation
- Strategic Organisations
- Case Studies and Practical Examples

# Introduction to Technology Transfer Offices (TTOs)

## What is a TTO?

- It is a specialised entity within a research institution, responsible for managing intellectual property (IP) and facilitating the commercialisation of innovations.

**Primary Role:** TTOs bridge the gap between **academic research** and **industry** by guiding researchers through the process of converting inventions into market-ready products or services.

## The Importance of TTOs in South Africa

- In South Africa, TTOs operate within Higher Education Institutions (HEIs) and Science councils (e.g., Mintek, CGS, CSIR, MRC and ARC). These institutions are key drivers of innovation, producing valuable scientific research that has the potential to impact various sectors like healthcare, technology, mining, and energy.

# Navigating Intellectual Property

**Intellectual Property (IP)** refers to creations of the mind, such as inventions, literary and artistic works, designs, symbols, names, and images used in **commerce**. It includes patents, trademarks, copyrights, and trade secrets.

## Benefits of IP for Economic Development in Publicly Funded Research

- **Innovation Incentive:** Encourages innovation by providing legal protection and exclusive rights to creators, fostering an environment where new ideas can flourish.
- **Commercialisation:** Facilitates the commercialisation of research outputs, transforming scientific discoveries into marketable products and services.
- **Revenue Generation:** Creates revenue streams through licensing deals, spin-offs, and startups, benefiting research institutions and the economy.
- **Job Creation:** Leads to the creation of new industries and job opportunities, driving economic growth and development.
- **Public Benefit:** Ensures that the public benefits from research investments through the availability of new technologies, medicines, and innovations.

# Navigating Intellectual Property - Forms of IP

## Statutory

- Patents (Act)
- Trademarks
- Registered Designs
- Copyright
- Plant Breeder's rights (PBRs)
- Trade secret – non SA

## Other

- Knowhow
- Data
- Domain names
- Geographical Indications
- Indigenous Knowledge

- **IPR Act**
- Patents Act 57, of 1978
- Copyright Act, 98 of 1978
- Designs Act 195, of 1993
- Trademarks Act, 194 of 1993
- Competition Act 89, of 1998
- Plant Breeder's rights Act, 15 of 1976
- Exchange control regulations of 1962 amended
- Companies Act 71, of 2008

## Intellectual Property Rights for Publicly Financed Research & Development (**IPR-PFRD**) Act

“IPR Act”

Act 51 of 2008

Published – **2008**, In effect – **Aug 2010**

### Objective:

- Intellectual Property (**IP**) emanating from **publicly funded** research & development (**R&D**) must be **identified, protected, utilised** and **commercialised** for the benefit of the people of the Republic of South Africa.

# Navigating Intellectual Property - TTO

## The Intellectual Property Rights from Publicly Funded Research and development Act, 51 of 2008

### S7. Functions of TTO

An office of technology transfer must, in respect of publicly financed research and development:

- (a) develop and implement, on behalf of the institution or region, policies for disclosure, identification, protection, development, commercialisation and benefit-sharing arrangements;
- (b) receive disclosures;
- (c) analyse **stage** and **value**;
- (d) attend to all aspects **statutory protection**;
- (e) refer relevant matters to NIPMO; and
- (f) attend to all aspects of intellectual **property transactions** and the **commercialisation** of the intellectual property.
- **Interpretation of scope includes** – Developing commercialisation pathways, business support, capacity development and facilitating industry partnerships.

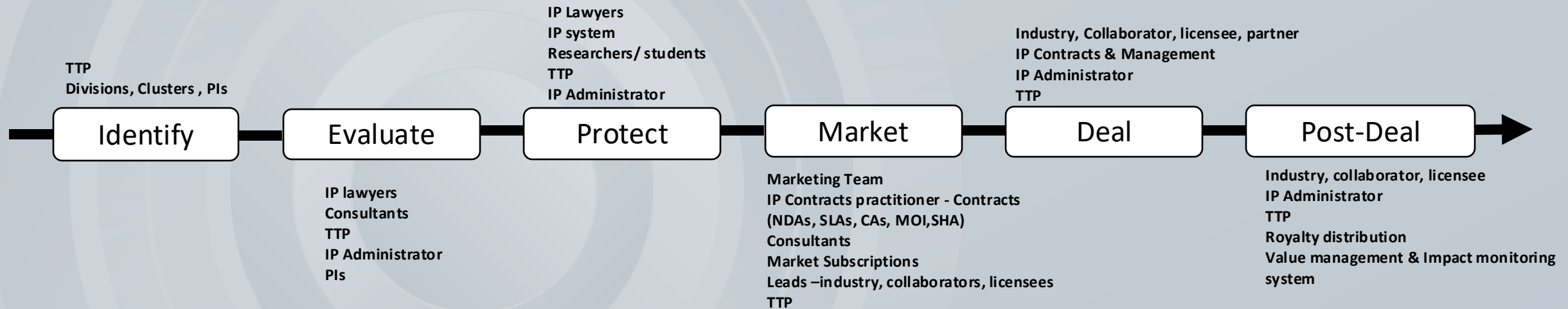


# Ecosystem Enabling Mechanisms

- Overview of Intellectual Property (IP) and its Importance
- Current State of IP Systems in HEIs and PRIs
  - Enabling policies (need focus)
  - Embracing entrepreneurial mindset and culture
- Collaborative Initiatives and Networks
- Eco-systems and the importance of maturity
- Capacity Development, education and Awareness
  - Formal and informal qualification – Other opportunities and awards
  - IP search tools, Business and market intelligence, IP management tools, other resources i.e. Knowledgeable consultants
- Professionalisation of Technology transfer. i.e. RTTP

# TTO human to financial resource requirement

## Technology Transfer Management Process and Resources



# Capacity Support and development



**Thandiwe Maretlane**

1. Commercialisation Leader, Mintek
2. Committee Member SARIMA 2023-2025
3. ASTP (Europe) Member
4. Previous member of AUTM (US)

Background:

**Qualifications:**

Undergraduate Engineering Metallurgy

BSc Hons Technology Management

PG Dip Intellectual Property Law

MPhil. Science and Technology Studies – Scientometrics.

PhD Candidate – Scientometrics (Developing indicators for Regional Innovation impact of Universities and PRIs)

**Other:**

Project Management

Professional Writing

Licensing Deal structuring and Deal Making

Advanced Financial Management for non-financial managers

Innovation and Technology Commercialization

Professional (ITCP)

Coaching and Mentorship

Patent Examination Boards – incomplete

Director Course, Sidar

**Other Opportunities and Awards**

1. SARIMA Travel Award
2. AUTM Scholarship for new professionals in developing countries
3. WIPO Summer School
4. WIPO Free courses
5. ITCP Scholarship (US – Georgia Tech)
6. TTO support for professionals in TTOs

# What is Technology transfer and Commercialisation?

## What is Commercialisation?

The process of making a product or service available for sale to the public – oxford dictionary

The process of bringing a (new) product or idea to market for financial profit – multiple sources

Process by which any intellectual property emanating from “IPR” Act is or may be adapted or used for any purpose that may provide any benefit to society or commercial use on reasonable terms... IPR act

## Technology Transfer (TT)

The act of **protecting** and **transferring intellectual property** from the lab to the marketplace or society. It is a transactional process and a majority inward facing effort operated by technical experts and legal professionals through the Technology transfer Office (TTO).

## Technology Commercialisation (TC)

An infusion of **customer inquiry** and **the scientific method** early into the research and innovation process which leads to three market-oriented outcomes: 1. high-potential licenses to industry, 2. co-development partnerships with industry, and 3. high-potential licenses to spin-offs/ startups.

Commercialisation practitioners are experienced in building commercial outcomes that address real world challenges. It is a majority external facing approach.

# What is Technology transfer and Commercialisation?

## What is Commercialisation?

The process of making a product or service available for sale to the public – oxford dictionary

The process of bringing a (new) product or idea to market for financial profit – multiple sources

Process by which any intellectual property emanating from “IPR” Act is or may be adapted or used for any purpose that may provide any benefit to society or commercial use on reasonable terms... IPR act

## Technology Transfer (TT)

The act of **protecting** and **transferring intellectual property** from the lab to the marketplace or society. It is a transactional process and a majority inward facing effort operated by technical experts and legal professionals through the Technology transfer Office (TTO).

## Technology Commercialisation (TC)

An infusion of **customer inquiry** and **the scientific method** early into the research and innovation process which leads to three market-oriented outcomes: 1. high-potential licenses to industry, 2. co-development partnerships with industry, and 3. high-potential licenses to spin-offs/ startups.

Commercialisation practitioners are experienced in building commercial outcomes that address real world challenges. It is a majority external facing approach.

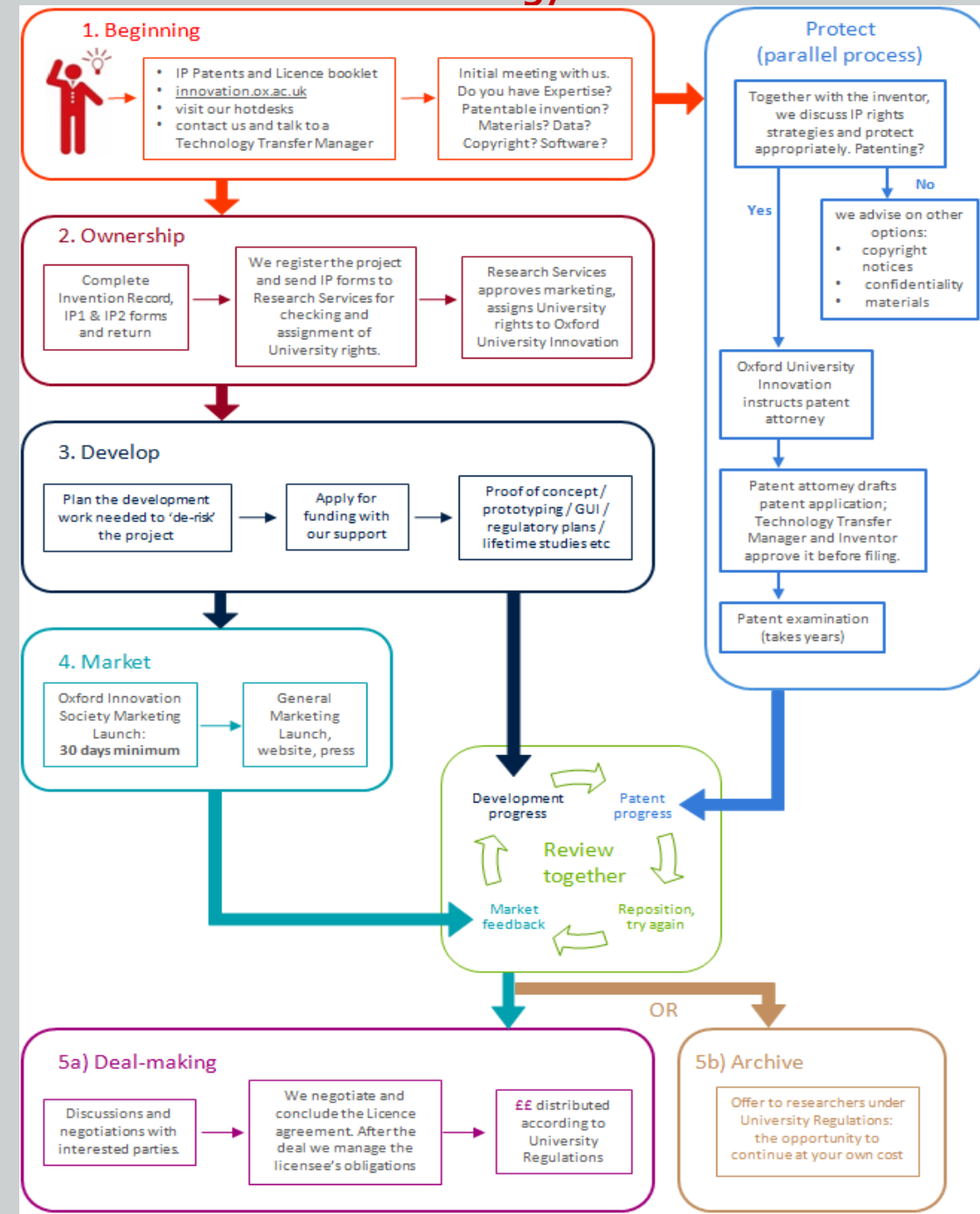
1. Identify – & disclose
2. Ownership → IP Protect
3. Develop
4. Market
5. Deal making
6. Archive – Post deal management

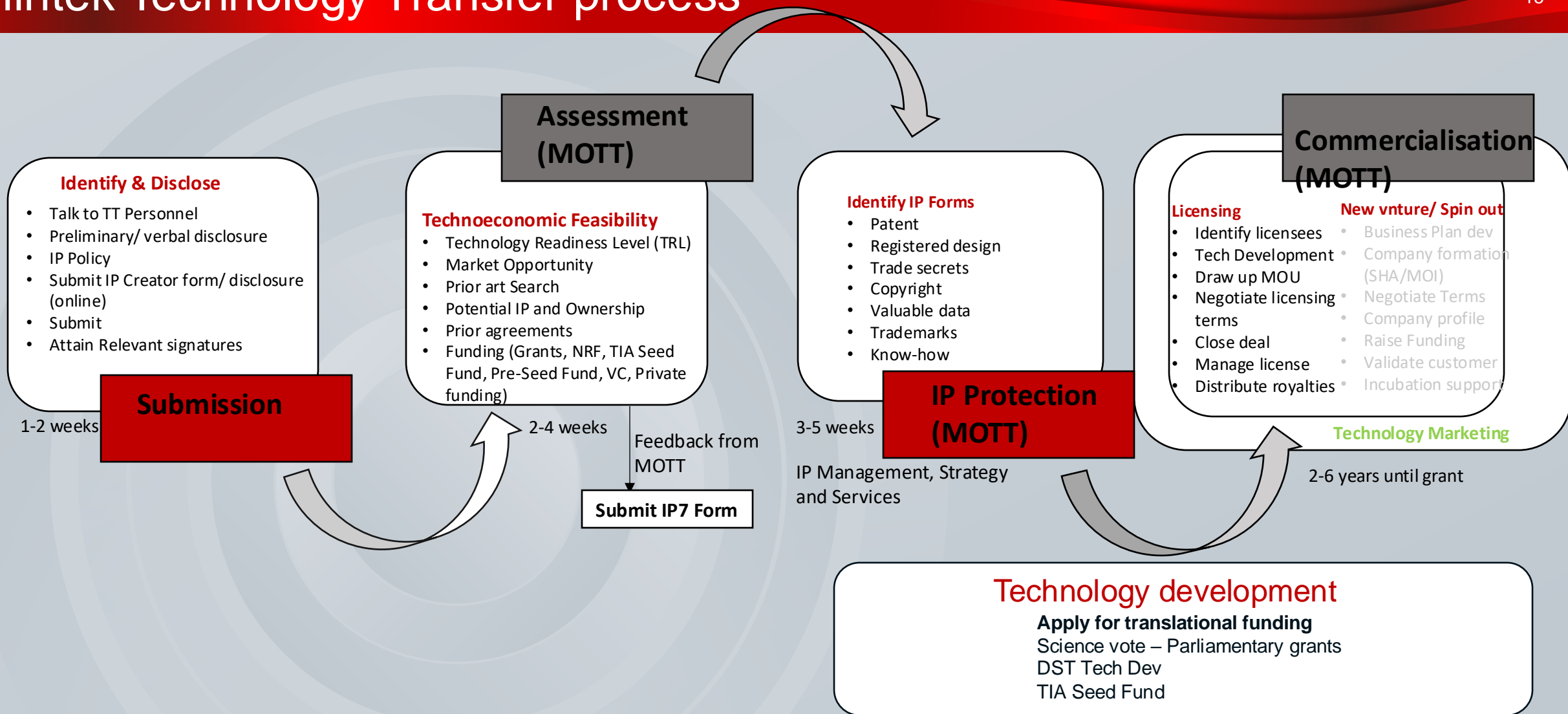
### The Role of TTOs – Practical perspective

Enabling environment – network, access to resources  
 Entrepreneurship ecosystem programs i.e. culture, training, mindset  
 Have a risk appetite  
 Facilitate skills transfer across the different stages  
 Platforms to share best Practices and Success Stories  
 Targeted programs i.e. Workshops, training

### People aspects of Technology Transfer (TT) Technology Management as a Social Science

## Oxford Technology Transfer Process





# Barriers and challenges of successful commercialisation

- Insufficient IP awareness and education in organisations
- Inadequate skills to assess, validate and translate opportunities
- Immature innovation ecosystems
- Reputational risk of universities & (PRIs) – what researchers do.
- Resource constraints
- Limited access to data and Lack of measurements for impact
- Unavailability of data for comparative analysis
- Fragmented and non-uniform data sources
- Technology transfer Tools – lack of access (market insights)
- No Platforms to share best Practices and knowledge cross pollination



# Strategic organisations

- Southern African Research and Innovation Management Association (SARIMA)
- Technology Innovation agency (TIA) – Grant funds i.e. Seed, TD fund
- University Technology Fund (UTF) – (VC & Private equity) – Pre-Seed, Seed and Series fund  
<https://utfund.co.za/investment-portfolio/>
- Department of Science and Technology - DST- Policy
- National Intellectual Property Management Organisation (NIPMO)
- Industrial Development Corporation (IDC)
- Department of Trade, Industry and Competition (DTIC)
- Technology and Human Resources for Industry Programme (THRIP) – industry and R&D to facilitate development.

# Case Studies and Practical Examples

## Research Facilities and Groups

University of Cape Town's Bioprocessing Platform (BPP)

University of Pretoria's Plant Biotechnology Research Group

## Spin-Out companies

1. Cape Bio pharms
2. Cubespace
3. Global Health Biotech
4. Hyrax Biosciences

## Spin-out Timelines

1. UCT Spin off companies
2. SU Group of companies

# Case Studies and Practical Examples

## University of Cape Town's Bioprocessing Platform (BPP)

- The BPP at the University of Cape Town (UCT) is a state-of-the-art facility focused on bioprocessing and bioseparation technologies. The platform has facilitated collaborative research projects between academia and industry partners in the agro-processing sector, leading to the development of novel extraction techniques and value-added products from agricultural resources.

## University of Pretoria's Plant Biotechnology Research Group

- The Plant Biotechnology Research Group at the University of Pretoria has been at the forefront of research and innovation in the agro-processing sector. The group's work on crop improvement and bioprocessing technologies has led to the development of drought-resistant crops, bio fortified foods, and sustainable agricultural practices. Commercialised with local farmers and agricultural partnerships.

# Case Studies and Practical Examples



**Cape Bio Pharms** is a spin-out company from the University of Cape Town (UCT) in South Africa. The company specializes in the development and commercialisation of biopharmaceutical products derived from natural sources, particularly medicinal plants found in the region. The company has raised funds through various channels, including government grants supporting local biotechnology initiatives, venture capital investments from firms interested in biopharmaceutical innovations, and collaborations with research institutions for joint funding opportunities. Additionally, they have engaged in crowdfunding to raise awareness and capital

**Cube Space** is a spin-out company from Stellenbosch University, specializing in nanosatellite technology. It focuses on developing small and affordable satellite platforms for various applications such as Earth observation, telecommunications, and scientific research. Cube Space's innovative approach has democratized access to space, enabling emerging economies and research institutions to participate in space exploration and utilize satellite technology for societal benefits. The company's impact lies in fostering innovation and expanding opportunities for space-based applications in Africa and beyond.





# Case Studies and Practical Examples

**Global Health Biotech** is a spin-off Tshwane University of Technology. LA Africa Soother is a product aimed at preventative care, meaning it is applied ahead before and after physical activity to prevent anticipated muscle aches. The company also acquired a license for a technology that aids healing of muscle contusion, from one of the universities to diversify their product offering. Founded by Professor Keolebogile Shirley Motaung.

**Hyrax Biosciences** is a spin-out company of University of Western Cape. It is a cloud-based software platform, Hyrax focuses on revolutionizing the cost, accuracy, and scalability of genetic diagnostics. First to detect the Omicron variant during covid 19. Raised Series A investment from UTF and foreign investments.



# UCT spin-off companies



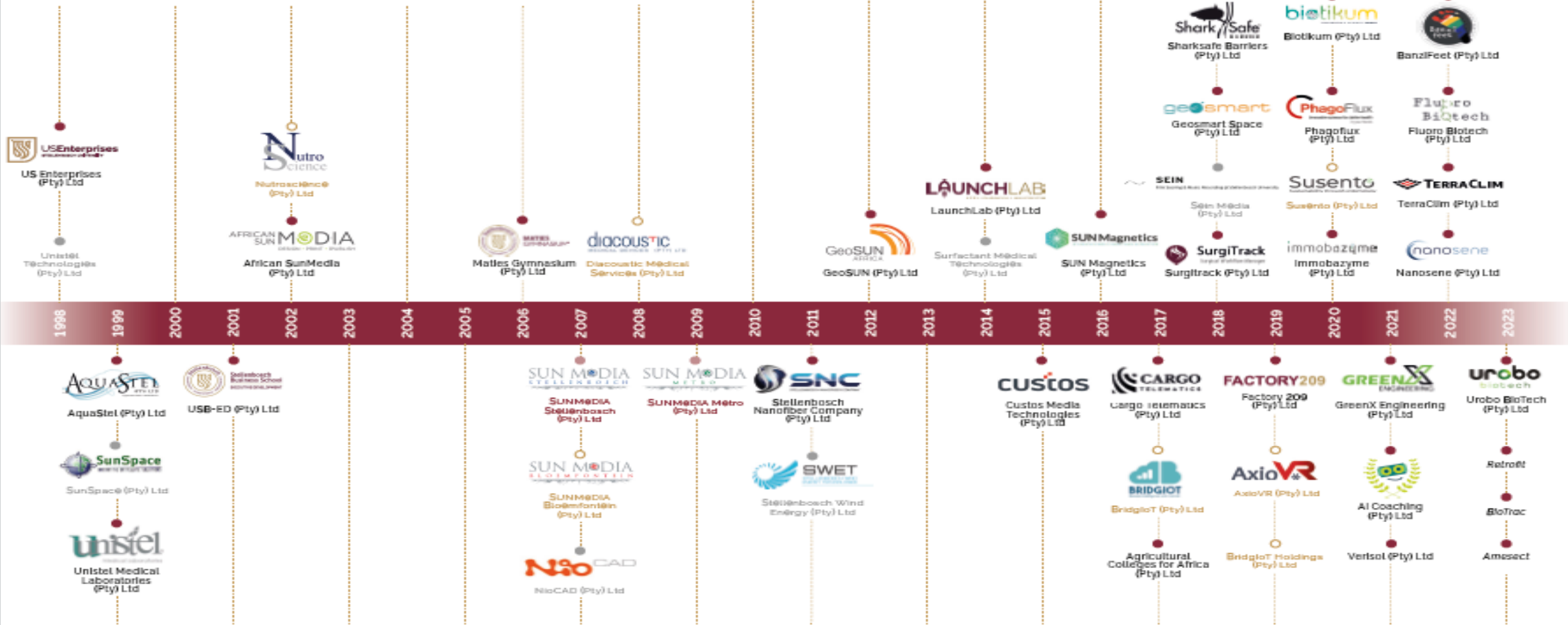
# Stellenbosch University group of companies

## SU Group of Companies



### Timeline 1998 – 2023

- Active
- Exited
- Merger
- Deregistration



# Thank You

Contact: Thandiwe Maretlane

E-mail: [thandiwem@mintek.co.za](mailto:thandiwem@mintek.co.za) or [addila176@gmail.com](mailto:addila176@gmail.com)



**Mintek@90 Conference**  
*Gearing the Industry for a Sustainable Mineral Future*  
11–12 November 2024 | Sandton Convention Centre

**MINTEK**  
**@90**  
A global leader in mineral and metallurgical innovation • Since 1924

DEPARTMENT OF MINERAL RESOURCES & ENERGY  
SOUTH AFRICAN GEOLOGICAL SURVEY  
SAIMM

**CALL FOR PAPERS/ PRESENTATIONS**