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University-Based Technology Transfer Offices: The Missing Link in Botswana's Research and Innovation Space

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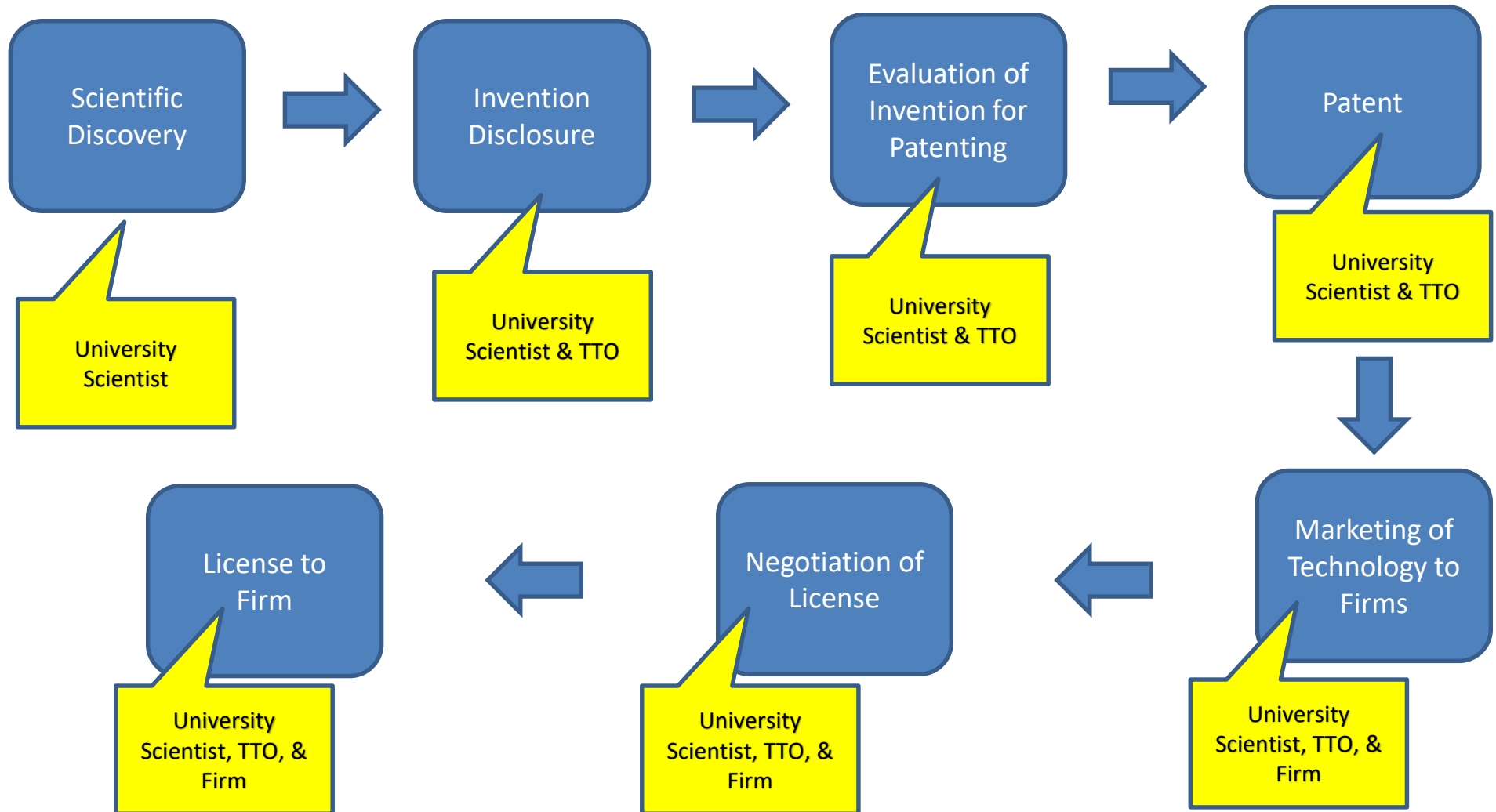
OUTLINE

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Key concern for policymakers has been to ensure how:

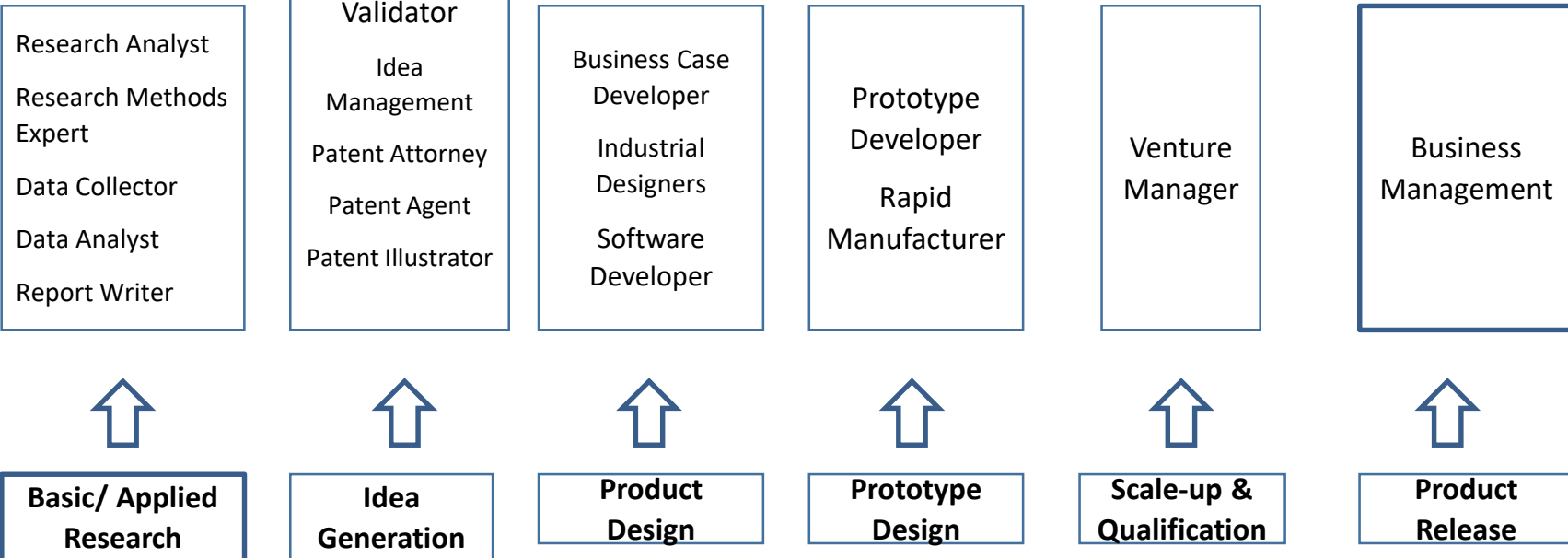
- Wealth of knowledge generated within universities can be transferred to industry
- Society and local businesses can benefit from university scientific and technological expertise
- Realisation of bottlenecks in the commercialisation of university research results

The Concept of TTO



SECTOR VALUE CHAIN ANALYSIS Vs COMPLEMENTARY PRIORITY SKILLS MODEL

REQUIRED SKILLS SETS FOR EACH PHASE OF THE RESEARCH & INNOVATION PROCESS



PHASES OF THE RESEARCH & INNOVATION VALUE CHAIN

Factors Hindering Technology Transfer (Papaderos-TUM, 2015)

- Gap between University supply and industry demand for technologies;
- Bureaucratic and complex transfer mechanisms both at TTOs and industry;
- Lack of mutual understanding of both industry and academic environments;

Factors Hindering Technology Transfer (Papaderos-TUM, 2015)

- Inexperienced staff both at TTOs and industry, technology maturity;
- Dismissive or uninterested University management; and
- Clueless, uninterested, or uncooperative University researchers with unreasonable expectations about the value of IP

Why a University-Based Technology Transfer Office?

- TTOs serve as an 'intermediary' between suppliers of innovations (university scientists) and firms, entrepreneurs, and venture capitalists.
- University-based TTO provide adequate administrative support.
- TTOs licensing agreements and university-based start-ups - additional revenue, employment opportunities for university-based researchers, local economic and technological spillovers.

Association of University Technology Managers (AUTM) advanced four reasons for academic technology transfer:

- Facilitate the commercialisation of research results for the public good;
- Reward, retain, and recruit high-quality researchers;
- Build closer ties to industry; and
- Generate income for further research and education, and, thus, promote economic growth (Young, 2007).

Measures and Management of Conflicts of Interest

- Guard against patenting and university-industry cooperation negatively affecting universities' core functions;
- Stakeholders in knowledge transfer process have different motives and behaviors and operate in different environments.

International University-Based Technology Transfer Offices

Bayh–
Dole Act

Annual licensing revenue generated by US universities rose from about \$160 m in 1991 to \$1.4 billion in 2005.

- The US Experience
- AUTM Report 2006

Many institutions established a TTO

Rapid rise in formal commercial knowledge transfers from US universities to firms

Patents granted to US universities rose from fewer than 300 in 1980 to 3,278 in 2005

International Context

- In Brazil, the Innovation Agency of the State University of Campinas (INOVA) 2003, manages license agreements and patent applications

By 2000–2005 the majority of Italian universities had established TTOs.

Regional University-Based Technology Transfer Offices

Stellenbosch University (SU) is the example of the large well-developed technology transfer office in South Africa, Unistel Group Holding Ltd and InnovUS.

Addis Ababa University (AAU) in Ethiopia established office of the vice President for University-Industry Linkage and Technology Transfer Office.

In Botswana, recent activities show increasing attention to developing an effective national innovation system, establishment of:

BIUST & UB ORD

**Botswana Innovation
Hub (BIH)**

**Botswana Institute Technology
Research and Innovation (BITRI)**

**Companies Intellectual
Property Authority (CIPA)**

Conclusion and Recommendations

- A decentralised model of technology transfer (Debackere and Vengeler, 2005).

TTO within the university is instrumental to secure a sufficient level of autonomy for developing relations with industry.

- “buffer” against possible conflicts of interest between the commercialisation and the research and teaching activities

Proper incentive mechanisms should be put in place to ensure that researchers generate inventions and disclose them to the TTO



**National TTO Office at BIH and BITRI
should be called upon to provide
technical support to university-based
TTOs, especially in the early phases.**



Thank

You