



UNIVERSITY OF BOTSWANA

## Laying the Foundation for the Commercialization of Research at the University of Botswana

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**"Always start your presentation with a joke, but be careful not to offend anyone! Don't mention religion, politics, race, age, money, technology, men, women, children, plants, animals, food...."**

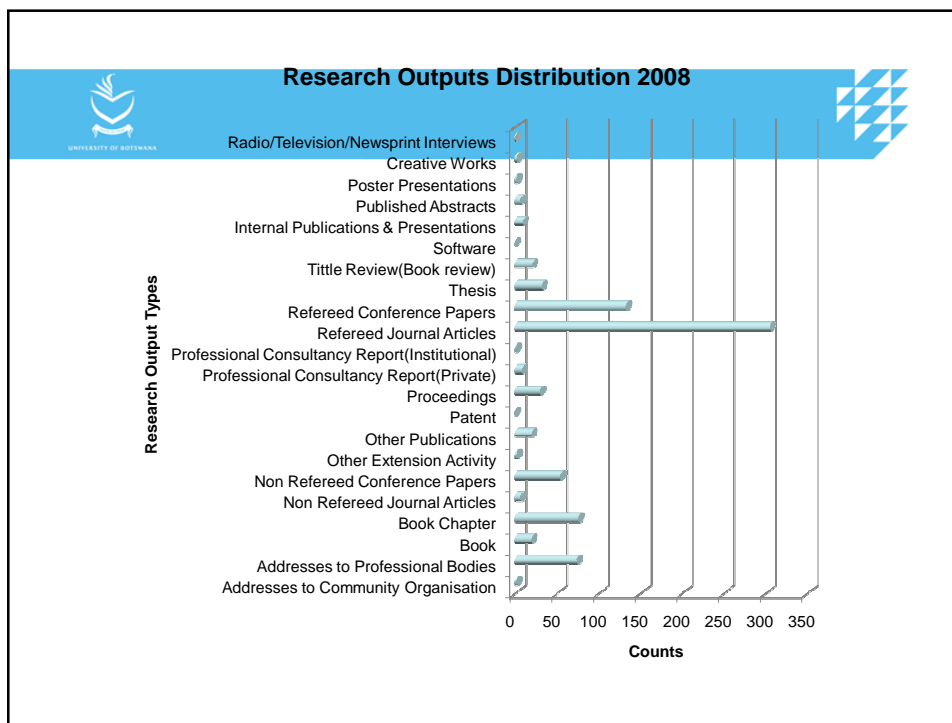


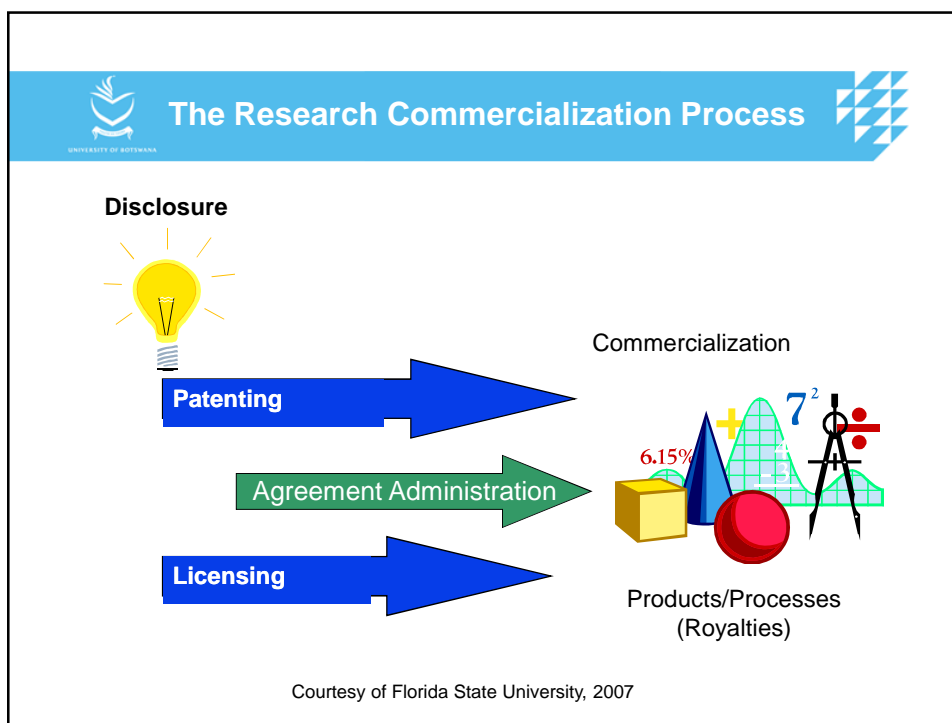




## About the University of Botswana




- Founded in 1982; Vision of becoming **“a leading academic centre of excellence in Africa and the world”**
- Broad-based institution** with a wide range of academic and professional programmes
- Student enrollment at **over 14000**; with over **1447 graduate students**; Total Academic/research staff at **over 800**; Increasing number of graduate students.
- Hitherto **Largely Teaching & Academic**; with a gradualist approach to the development of its research mission.
- Has embarked on a major qualitative and quantitative transformation of its research performance.
- Strategic goal of **“Intensifying Research Performance”**, with the intention of laying the foundations for the attainment of a **research-intensive institution by 2021**.






 **Rationale for the Commercialization of Research at UB: National Drivers** 

- **Botswana Science & Technology Policy:**... *Outlines sets of objectives & strategies designed to stimulate, organize and use scientific & technological potentials in order to achieve national economic, social & cultural goals.....Emphasizes the importance of conducting basic, adaptive & applied research for promoting industrialization...*
- **Policy on Tertiary Education...** *Mandates the University to contribute in a more significant measure to the new national research & innovation system, which is identified as a critical component of the next stage of Botswana's national development.*
- **Technology Policy** *is a CRITICAL component of the Government's Economic Diversification Programme*




## Rationale for Research Commercialization at UB: Institutional Drivers




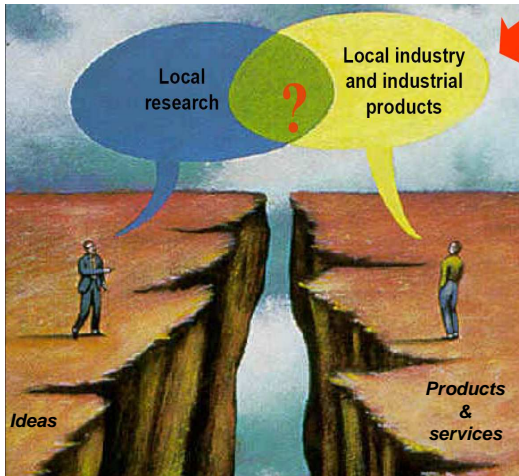
- **UB Mission Statement:** ...to advance the intellectual and human resource capability of the nation and the international community”.....(Retired Mission:...to improve the social and economic conditions of the nation)
- **UB Research Strategy:**...to enhance the impact of research....a new emphasis will be given to the impact of its research on the wider community and the goal of ensuring that research has public benefits, so that whenever possible knowledge is turned into actions, innovations, products and services.
- **UB IP Policy (Section 2.2.4):** All members of the University community shall be obliged to assist and to cooperate with the University to protect and maintain the intellectual property rights of the University and the University community and any deliberate action to the contrary shall be a disciplinary offence.....

....The University shall have the right to exploit its IP, on behalf of the inventor(s), by signing agreements with appropriate organisations.





## The Commercialization of Research Challenge



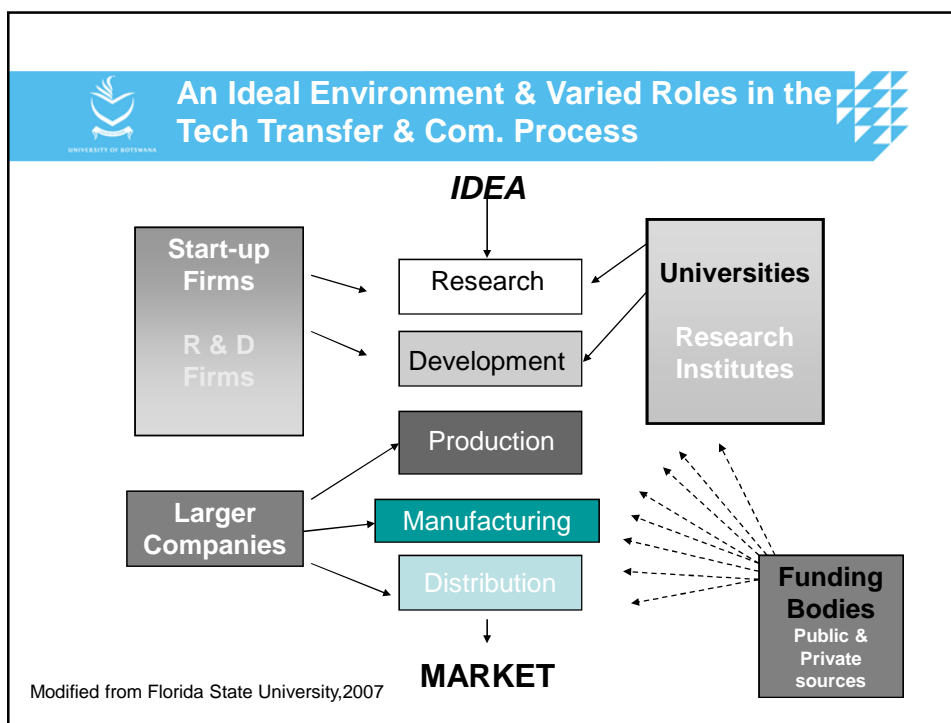



How to achieve the efficient transfer and application of new and existing, knowledge and technology, from research actors to the commercial / industrial / development sectors in the form of products and services which promote growth and development?






Modified from Daan Tu Toit, 2005 & Florida State University




 **Watershed Events that Changed Course of Research Commercialization at UB**


- **The University Research Policy 2002**, which provided among others, research management, ethics review of research & commercialization of research outputs
- **The Establishment of the Botswana Innovation Hub (BIH) by the Gov't of Botswana ([www.bih.co.bw](http://www.bih.co.bw))**
  - BIH established as vehicle to diversify national economy
  - Largely modeled on providing irresistible incentives to attract a broad range of foreign based & local research & innovation companies and institutions to invest and commercialize research and other technologies in Botswana
  - Incentives include tax breaks, tax free capital and profit repatriation, labour exemptions etc, provision of state-of-the-art telecommunication and other infrastructure, access to credit and funding etc
  - UB was, and is expected to play a leading role in its successful operation, being the foremost and well-resourced research institution in Gaborone.




Watershed Events...




- **The University Research Strategy (2008)**, which specifically places emphasis on the impact of the University's research on the wider community and the goal of ensuring that research has public benefits, so that whenever possible knowledge is turned into actions, innovations, products and services
  - 7 STRATEGIC AREAS:
    - To increase staff participation in research
    - To increase and enhance student research training
    - To increase internal and external research funding
    - To increase international collaborative research
    - To increase the volume and quality of research outputs
    - To enhance the impact of research**
    - To improve the integration of teaching and research




Watershed Events...



- **The Establishment of the new Botswana International University of Science and Technology (BIUST)**. A well-resourced science and technology based University, with its own science park designed to facilitate the commercialization of its research outputs



**Foundations for Research Commercialization at UB**





- **Implementation of the Research Strategy**
  - The first strategic goal is to significantly increase the number of staff that are producing high quality and high impact research:
    - ✓ **More time for staff to engage in research** through introducing workload guidelines and a new staff allocation model, through improving the management of sabbatical leave, research leave and course release time for those receiving external grants, and through the use of PhD students being created;
    - ✓ **Positions of Research Chairs, Research Fellows and Post-Doctoral Fellows being established** to ensure a strong professoriate, and to include research considerations in the recruitment and retention strategy for academic staff;
    - ✓ **Capacity-building activities being undertaken to increase the ability of staff to attract and manage research grants** and contracts, to train and mentor junior researchers, and to meet the research dimension of Individual Development Plans;



**Foundations for Research Commercialization at UB...**




- ✓ **Increased collaboration amongst staff**, particularly on interdisciplinary research projects being encouraged
- ✓ **Incentives for staff participation in research** through the Performance Management System, the promotion criteria and other modes being implemented
- ✓ **The University Research Committee has been mandated to identify a full range of appropriate interventions** to ensure the University's strategic intention of becoming a research-intensive institution by 2021 is realized. The implications of the successful implementation of the research strategy on the commercialization of research is self-evident


Foundations for Research Commercialization at UB...



- **Development of UB-BIH Concept Paper**
  - URC approved the UB-BIH Concept Paper in Sept 2008. Concept Paper envisages & specifies 5 modes of participation at the BIH:
    - **UB will conduct cutting edge research within the four sectors** that the Botswana Innovation Hub has selected (Biotech, Mining, Energy & ICT).
    - **UB will commercialize the technologies** that result from the research of its staff, within the commercialization activities of the BIH and the framework of the UB Enterprise.
    - **UB will undertake contract research and provide consultancy services** based on its areas of expertise for companies within the Hub.
    - **UB will develop an attachment programme** in which graduate students will undertake industry related projects and placements for the mutual benefit of the companies and the students.
    - **UB will design customized courses and relevant modules** that people in full time employment can take on a part time basis to develop the skills that are critical to the growth of industry and enterprise.


Foundations for Research Commercialization at UB...


- DVCAA Appointment of UB-BIH Committee
- DVCAA Appointment of UB-BIH Liaison Committee
- Creation of the Post of Assistant Director, Comm at the Office of Research & Development (ORD)
- Seed Funds Allocated for the support of Commercialization of Research Activities at UB (BWP500,000.00 2008/2009 academic year)
- Establishment of Research Clusters to encourage multidisciplinary research
  - Biotechnology
  - Energy
  - ICT
  - Mining



**Foundations for Research Commercialization at UB...**



- **Development of Research Commercialization Strategy**
  - Spells out institutional structures for the management of research commercialization
  - Identifies key focal areas
  - Identifies key partners, both internally and externally
  - Identifies financing models etc
- **Revision of Intellectual Property Policy**
  - New policy being contemplated takes into account many contemporary and emerging issues, concepts, new knowledge areas etc which are not dealt with in old IP Policy
- **Development of Processes and Procedures for the Commercialization of Research at UB**
- **Design of relevant support documentation for commercialization of research e.g. invention disclosure forms, invention assignee forms, royalty sharing forms etc**



**Foundations for Research Commercialization at UB...**



- **Awareness Creation on Research Commercialization at UB**
  - Seminars and workshops on research commercialization
  - Update of ORD Webpage to include relevant Research Commercialization Information and other useful resources
- **Training & Capacity Development**
  - Business Incubation training(Botswana Innovation Hub and Technopolis, Finland)
  - Bio-entrepreneurship certificate course (University of Pretoria)
  - Genetic Resources & Intellectual Property course in Sweden (SIDA)
  - Sponsored Tours to Innovation institutions & Tech Transfer Offices at selected universities for benchmarking and for sharing experiences: (Gauteng Innovation Hub, the Innovation Fund, NRF, UCT, Stellenbosch etc),
  - Visits to innovation and research institutions in France including biotech parks e.g.Genopole & regional tech transfer offices in Bordeaux
  - COFISA Workshop on technology transfer



## Foundations for Research Commercialization at UB...



- National, Regional & International Collaboration Initiatives on Research Commercialization
  - Active in SARIMA
  - Collaboration with WIPO on IP management issues
  - Pursuit of MOUs with relevant entities both internally and externally with respect to Research Commercialization opportunities
- Institutional Audit of Innovation to gather baseline data on Innovation Activities
- Identification & Creation of Databases of Relevant internal & external stakeholders
- Acquisition and implementation of Research Management System



## The Immediate Road Ahead



- Finalise and implement research commercialization strategy
- Operationalise Research Clusters
- Establish & activate collaborative relationships with external stakeholders esp. within focal areas of Biotechnology, ICT, Mining and Energy
- Consolidate relationship and interactions with the BIH, and other technology based organizations in the country including Botswana Technology Centre, Rural Industries Promotions Company (RIPCO), Rural Industries Innovation Centre (RIIC), the Dept of Research Science and Technology (DRST)
- Generate sufficient interest in research commercialization within academic and research staff and provide necessary institutional support mechanisms for commercialization of research.
- Develop and expand institutional skills and capacity in the broad range of activities involved in the commercialization of research including intellectual property management, new technology valuations, marketing, licensing, deal making and productization etc



## Main Challenges



- UB, a historically teaching & academic institution, with a gradualist approach to research; Staff teaching workloads means very limited time allocations for carrying out research; Research Strategy has identified this and other challenges and has proposed solutions that are gradually being implemented
- Research largely basic and blue sky; efforts to increase engagement in applied research underway
- Internal funding for research very limited (about BWP 4,000,000.00 equiv. Euro 40,000.00);
- Botswana economy largely service oriented, with no large private sector companies that could be brought on board to support commercialization efforts
- Apparent lack of interest and financial support for research by the few private sector companies in Botswana



## Conclusion



- UB recognizes the commercialization of research as a critically important undertaking through which its relevance as an institution and its impact on the broader society may be extended.
- While the challenges (both at the institutional level and at the national level) that must be overcome to effectively set up a vibrant research commercialization enterprise at UB is undoubtedly a daunting task, management's commitment in this regard is unquestionable
- With management's support, UB hopes to master driving "a little research commercialization car" in preparation for driving "a Formula 1 research commercialization car"