



THE PATH TO INNOVATION MANAGEMENT FRAMEWORK

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A. Introduction

The Botswana Institute for Technology Research and Innovation (BITRI) is geared to be the leading technology solutions provider that transforms lives. BITRI will deliver on its promise by undertaking research, identifying and/or developing technology solutions in line with national priorities and the needs of Botswana. Furthermore, BITRI promotes the development of new technology solutions, creates conditions for new jobs and high-tech spin-off companies.

BITRI's technology solutions must of necessity be directly linked to technology transfer and commercialization, leading to a dynamic business environment, creating conditions for technological breakthroughs of industrial partners, establishing high-tech spinoff companies and generating fair returns upon commercial exploitation of the research output/technologies.

It is therefore important for BITRI as a Research and Development organization to have in place an innovation management framework that guides technology transfer and commercialization of BITRI technologies.

About BITRI

BITRI's Vision is: **To be the leading technology solutions provider that transforms lives.**

In addition, BITRI has a strategic intent expressed in short form as **#1640** emphasizing its intent to commercialize its technologies. This translates into BITRI having One (1) Vision, six (6) technologies and generating forty percent (40%) of its revenue upon commercialization of the technologies by the end of the current five year (2016-2021) term strategy.

BITRI's Philosophy

Upon establishment, BITRI adopted the Philosophy: *Technology Solutions from You to Us for You* in line with its mandate of undertaking research, identifying and/or developing technology solutions in line with national priorities and the needs of Botswana.

B. Guiding Principles of Innovation Management

When undertaking, commissioning or managing research, product development and commercialization we will follow these principles:

Relevance: Our research will address clearly-articulated relevant research questions, issues or problems, set in context of national priorities, the needs of Botswana and international community.

Strategic: Our research and technology solutions will help us deliver the ambitions of our strategy and our core purpose;

Outcome-driven: Our research will be designed with clear application in mind; to create a process, solution or technical enhancement in order to increase our efficiency and deliver our core purpose;

Customer-focused: Our research will always have the end user in mind;

Product Innovation: Introduction of a good or service that is new or has significantly improved characteristics or intended uses;

Collaborative: We will work strategically with partners to address research gaps and share knowledge in a collaborative and efficient way;

Timeliness: We and/or our partners intend to commercialize our technologies in a timely manner.

Co-creation: We will engage our stakeholders in the process of creation aiming to get ideas and insights that allow the research and development process to take into consideration the needs of end users.

C. Innovation Management Strategic Objectives

1. To foster and support high-quality applied research

- i. We aim to raise the profile of our research, enhance our reputation and sustain a vibrant research culture that promotes research excellence, and product innovation and commercialization thereof.
- ii. We will ensure that our research is responsive to changes in the markets and relevant to the economic, social, environmental and cultural needs of Botswana and beyond.
- iii. We will promote and develop cross-disciplinary research linkages, internally and with external partners.

2. To be a national leader in technology transfer and commercialization

We aim to become the leading technology solutions provider that transforms lives.

3. To be a center of excellence in enterprise development and innovation

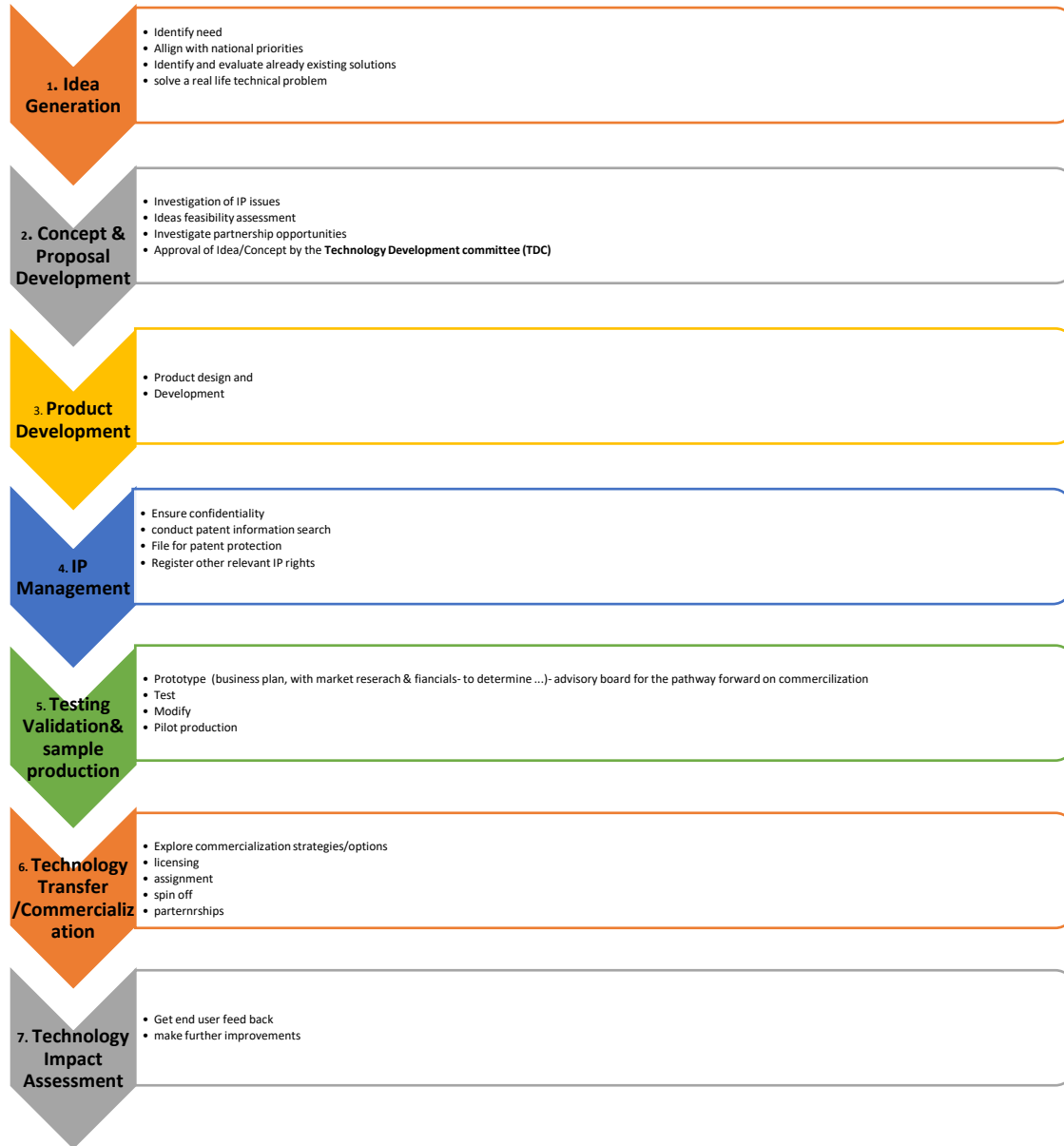
We will create a 'one-stop-shop' for commercial activity particularly for the formation of start-up/spin off companies from BITRI's innovations by providing support to Researchers on commercial matters, IP management, contracts management, marketing and market assessment.

4. To facilitate the commercialization and growth of BITRI innovation for the public good.

5. To protect invented technology solutions and generate fair returns on R & D to supplement Government subvention and reward research excellence.

D. Innovation Management Process

Innovation Management Process at BITRI will go through a process broken down into common activities (Figure 1).



NB: This is not a linear process.

1. ***Ideation:*** The idea is first assessed during the initial screening from the viewpoint of different alternatives and a decision is made whether to go ahead with the project at divisional level.
 - i. Ideation is the preliminary assessment, including market and technical assessment.
 - a. Market assessment is market study, including assessment of the marketplace, possible market acceptance and competitive assessment.
 - b. Technical assessment answers the question of whether the idea is technically feasible so that it can be further developed and manufactured. The principles of co-creation would be applied here as well, to solicit for inputs from potential users and technology up-takers.
2. ***Concept and Proposal Development:*** The respective divisions and units will be responsible for developing business concepts and proposals to submit to the Technology Development Committee (TDC). All proposals will be vetted by the Lead Researchers for the respective submitting unit before submission to the committee.
 - a) The Technology Development Committee headed by the Director, Research and Partnerships and members comprising of (EDs, TTO; Manager Finance, Strategy, Legal; LR (of the project); Design) will assess the proposal.
 - i. TDC will assess the technical feasibility of the project, market assessment, commercialization options, and skills base and notify the division of the outcome.
 - b) The project leader should attend the meeting accompanied by his/her project team members and Lead Researcher.
 - c) TDC will make decisions on whether the projects fit in with BITRI strategy and national priority needs as well as potential for meeting needs of users.
 - d) Decisions on whether to move ahead on an early stage program largely depends on answers to a series of questions.
 - e) TDC will co-opt experts when necessary.
3. ***Product Development:*** The Project will commence, once approved by the TDC - leading to a prototype; and invention or technology disclosures will also take place. There will be quarterly progress monitoring and evaluation of the project.
4. ***Intellectual Property Management:*** Intellectual Property (IP) created by researchers will be identified and classified. Patentable subject matter will be disclosed in Invention Disclosure Forms for evaluation by the BITRI IP Advisory committee. Non patentable IP will be protected with relevant intellectual property rights and confidentiality will be observed until patent application is filed for the technology in question.

5. ***Testing Validation and Sample Production:*** Development leads to an actual prototype. After the development is reviewed, tests will be carried out and the innovation will be validated. Tests could encompass in-house testing, customer field trials, and also test markets, if viable.

6. ***Technology Transfer and Commercialization:*** Marketing and identification of partners; candidate companies that have the expertise, resources, and business networks to bring the technology to the market. A business case on the choice of partners and commercialization strategy/option is presented before the TDC and then the Quality and Technology Committee for approval.

E. Innovation Commercialization Strategies

Commercialization is the process by which a new product or service is introduced into the market. The process is broken into phases, from the initial introduction of the product through its mass production and adoption. It takes into account the production, distribution, marketing, sales and customer support required to achieve commercial success.

BITRI's approved commercialization strategies

On 26th June 2015, the BITRI Board of Directors approved the BITRI Intellectual Property Policy which spells out how it intends to commercialize its technologies. There are three main strategies that BITRI has adopted to commercialize and transfer its technologies to the public and they are:

1. Selling/assigning BITRI invented technologies to existing companies
2. Licensing BITRI technologies to other entities
3. Starting new or Spin off Companies to commercialize BITRI Technologies

The policy further states that preference will be given to citizen owned companies and small enterprises. In other words, BITRI perceives itself as a major role player in the national innovation system and will catalyse the local business environment through selling or licensing relevant technologies for production at commercial scale.

BITRI will achieve impact in innovation commercialization through several pathways as follows;

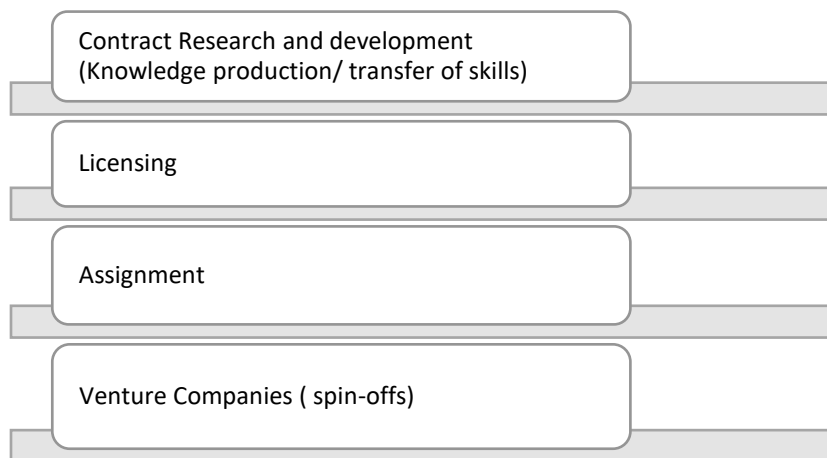


Figure 2: Innovation Commercialisation pathways

1. Contract Research and Development

BITRI will undertake Contract R&D that fits its strategic priorities and such research will be conducted for external clients for the purpose of;

- a) Furtherance of science and technology.
- b) For commercial gain and financial sustainability

The research activities will commence once due diligence on external client contracts have been complied with.

2. BITRI will as much as possible prefer to explore opportunities to either license innovation or create venture companies (spin offs) to contribute in creating sustainable technology based jobs and generate a return on the R&D investment. Based on the final business and financial analysis, BITRI will decide the options or strategies for commercialization as follows

- a) **License:** Technology Transfer Office and Researchers will *identify candidate companies* that have the expertise, resources, and business networks to produce at commercial scale and bring the technology to the market and license the technology or invention out to them.

 - b) **Assignment:** BITRI is open to selling its technology and associated IP rights to local companies that have capacity to commercially exploit the technologies for the benefit of Batswana.

 - c) **The formation of new venture companies (*start-up/spin-off*).** Venture companies will be under the “BITRI Investments (Pty) Ltd” as subsidiaries. Venture companies will be assisted with initial planning, creating and finding funding. When choosing to commercialize a technology or invention through a start-up/spin-off or existing company, it will involve the following steps:
 - i. Engineering prototype
 - ii. Marketing plan
 - iii. Business plan
 - iv. IP protection application
 - v. Preproduction prototype
 - vi. Market validation
 - vii. Business formation.
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