



science  
& technology

Department:  
Science and Technology  
REPUBLIC OF SOUTH AFRICA



# Photonics Prototyping Facility (PPF)

## Investment Guide

August 2019

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### **PART 1: INTRODUCTION**

#### **1.1 Purpose of the Manual**

This manual provides information for suitable Photonics technologies and projects to access the Photonics Prototyping Facility (PPF). This manual is a guideline to assist potential PPF stakeholders in accessing the use of the facility. It does not, however, constitute a complete set of policy, procedure or systems supporting the programme.

#### **1.2 Background to the Facility**

Photonics is revolutionising the 21st century with its novel and influential technologies. Even though it is a driving force in accelerating economic growth, South Africa has a miniscule market share of this growing economy.

One of the major contributing factors to this lack of impact is that frequently, many South African invented Photonics technologies are not commercialised, let alone prototyped. The barriers to cross this 'innovation chasm' are a lack of skilled manpower (scientific and business expertise needed to industrialise technologies) and a lack of funding (to develop the necessary infrastructure and facilities).

The PPF is aiming to address this problem by providing world-class facilities, technical support, equipment and scarce skills, to assist in industrialising these un-tapped technologies.

### 1.3 PPF Value Proposition

The PPF is currently hosted at the CSIR National Laser Centre (NLC) in Pretoria. It has been established through financial support from the Department of Science and Innovation (DSI) and the CSIR. It is also in partnership with the Innovation Hub to assist in developing ideas and needs for the current South African market.

The PPF is a prototype development facility that supports the development of photonics based prototypes for market evaluation and testing. Through the PPF program stakeholders will have access to the following facilities and skills:

- World-class laser, optical and workshop facilities: Three class 1 000 clean rooms;
- Technical support facilities: Electronic and mechanical;
- Equipment: Optical components, diagnostic equipment and other specialised components. Consideration will be given to the purchasing/ accessing of unique pieces of equipment for selected stakeholders;
- Scarce skills: Knowledge and experience in optics and photonics and assistance with photonics-related prototype design and testing;
- Access to CSIR expertise in the form of licensing advice, systems engineers and industrial engineers; and
- Funding\* for operational costs, as well as the facilitation of contact to funding agencies and strong business networks. (*\*currently limited*)

### 1.4 Strategic Objectives

The purpose of the PPF is to support and stimulate the growth of the South African Photonics industry by providing the opportunity to develop technologies to a point of market-readiness.

The overall objectives of the PPF are:

- To provide the necessary skills and facilities for the productisation of photonics-based technologies to produce products well-aligned to market-need. This will enhance the competitiveness of the South African photonics industry. Suitable PPF projects will be identified with industry, as well as strategic research and development (R&D) programmes.
- To leverage private sector co-investment from PPF industry partners through either funding contributions or in-kind contributions.
- To develop expertise (amongst current and new PPF staff, students and interns) in the area of prototyping, product development and stakeholder engagement. This will provide interns with the necessary skills for employment within photonics-based industries and small, medium and micro enterprises (SMMEs).

- To support and stimulate the growth of the South African photonics industry by producing new, valuable prototypes for either existing industries or for the formation of new, emerging SMMEs resulting in enhanced industry competitiveness and the creation of sustainable jobs.

## **PART 2: CALL, SUPPORT, ELIGIBILITY CRITERIA AND TIMELINES**

### **2.1 Call for Proposals**

The call for proposals and the application template can be found on the PPF website at the following link: <https://www.csir.co.za/photonics-prototyping-facility>, or from the CSIR at [PPF@csir.co.za](mailto:PPF@csir.co.za). This is an open call as the PPF reviews application on a continuous basis. The application template provided by the PPF is merely a guide and we encourage candidates to formulate their application in a format/ style that suits them (e.g. a video submission or any other innovative means will be considered). Completed applications (or links to the applicant's video submission) with the applicants Curriculum Vitae must be submitted to [PPF@csir.co.za](mailto:PPF@csir.co.za).

Proposals will be screened by the PPF management team, before being forwarded to an independent, external PPF Investment Committee. The technology's proposed application, commercial relevance and scientific merit will be refereed through a peer review mechanism by the PPF Investment Committee to assess the feasibility and impact within the Photonics industry. The PPF Investment Committee will ensure that an unbiased approach is implemented for the uptake of projects into the PPF.

Applicants are encouraged to approach the PPF ([PPF@csir.co.za](mailto:PPF@csir.co.za)) for assistance with their applications.

#### **2.1.1 Portfolio Make-up**

All projects are to be undertaken with the participation of an industry partner who co-invests in the project. The PPF portfolio will seek to ensure that client engagements are more focused on SMMEs (including new start-ups) and academic collaboration with innovative product development. The target will be 2/3 of the projects active in the PPF will be from this level of clientele and 1/3 of the projects will be servicing industry. This is to ensure an efficient portfolio whereby we achieve the greatest return for the given level of risk.

#### **2.1.2 B-BBEE Status**

The preference would be towards client companies who have or will seek to establishing the following B-BBEE targets in their commercialisation model:

- 51% Black Ownership
- 70% Black Operations Management

If the client is not at the required level, they will have to implement a plan to achieve this target prior to completion of project from the PPF.

## 2.2 Support

Selection into the PPF allows access to:

- Three class 1 000 clean rooms;
- Electronic and mechanical support and facilities;
- Optical components, diagnostic equipment and other specialised components\* - \*depending on the requirements of the applicant and feasibility;
- Knowledge and experience in optics and photonics and assistance with photonics-related prototype design and testing;
- Expertise in the form of licensing advice, systems engineers and industrial engineers based at the CSIR;
- Expertise at the Innovation Hub in the form of business development and incubation; and
- Funding\* for operational costs, as well as the facilitation of contact to funding agencies and strong business networks. (*\*currently limited*)

All of the above-mentioned costs (e.g. rental of a PPF clean room, big-item equipment pieces, manpower for PPF staff expertise), as well as the stakeholder's manpower will constitute the applicant's budget. Selected projects implemented in the PPF are intended to be funded by project owners by using their own staff and their own or third party funds. The PPF plans to use funding from the DSI and the CSIR, as well as other potential sources to support project operations and running costs, especially in the case of High Education Institutions (HEIs) and new or existing SMMEs. The PPF's rates are from R18 000 to R22 000 per week, depending on the applicant's requirements.

## 2.3 Eligibility Criteria

Researchers, engineers, industries and entrepreneurs may participate in the PPF for photonic-related prototype development. Projects at a minimum Technology Readiness Level of 3 (TRL3) of the development stage, i.e. (proof-of-concept – prototype – product development) are welcome to apply, as long as the technology's application is highlighted. Projects at a minimum TRL5, but preferably already at TRL 6 can qualify for funding support from the Department of Science and Innovation under the CSIR PPF agreement. TRL6 implies that a concept or system has been demonstrated in a relevant environment to proof functionality.

The criteria for Photonics-related technologies to enter the PPF are:

- Demonstration of a clear application in the Photonics industry;
- Significant commercial relevance and impact;
- Sufficient funding support (either through own or third party funds) to cover the operational costs of the facility. *(Limited funding is available and special consideration will be given to exceptionally promising proposals.)*

## 2.4 Timeline

The timeline for application to the PPF is presently open for Expressions of Interest with a deadline of 30 September 2019.

The timelines for full PPF proposals has been left open and is considered an ongoing process that will be reviewed regularly. Projects going into the PPF will target a prototype development timeline of between 6 – 12 months from commencement.

## 2.5 Assessment Process

Once proposals are received, they will be screened by the PPF management and technical team for suitability in terms of the theme (photonics based), infrastructure requirements and other resource requirements. Proposals that meet suitability but have budgets beyond the means of the PPF, will be flagged. Thereafter suitable proposals will be evaluated by the external Investment committee of the PPF. Projects will be evaluated in terms of scientific merit, marketability, possibility of commercialisation, project plan, resources and outputs. All reviewers will be appointed subject to the signing of a non-disclosure agreement, as well as a conflict of interest declaration. Proposals will be shared with all reviewers for transparency, however the reviewer may choose not to review a particular proposal. These criteria are clearly stated in the evaluation documents sent to reviewers. The reviews will then be consolidated and shared with the panel and a final decision made on the projects to be executed. The assessment will primarily focus on commercial relevance and scientific merit.

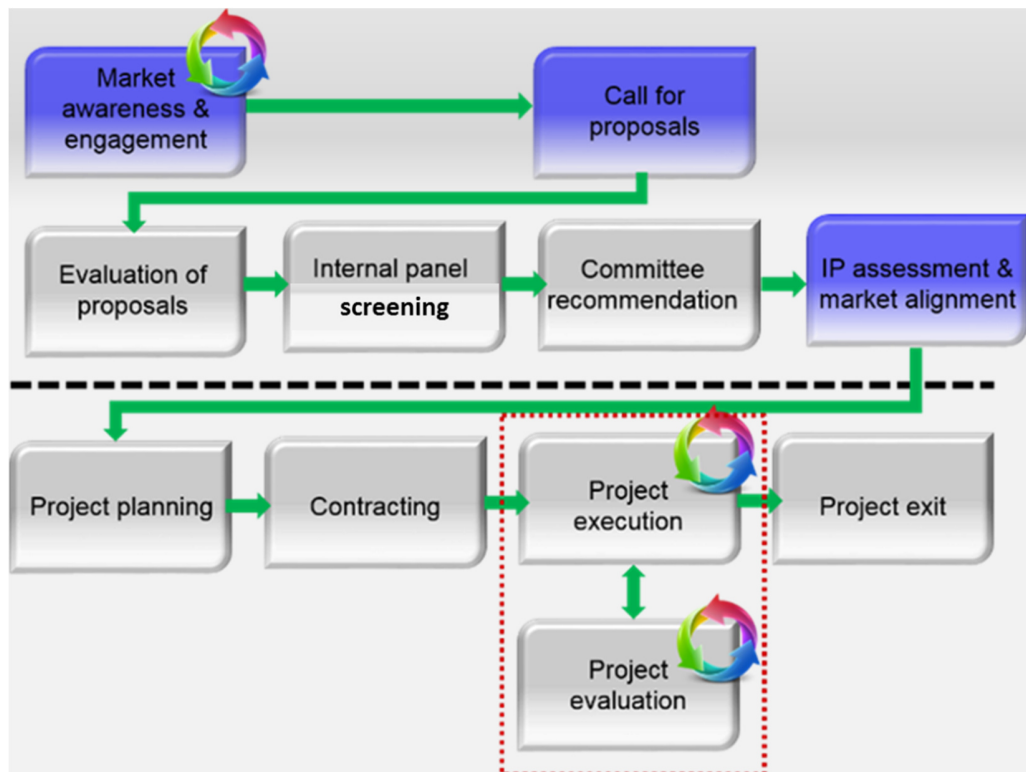
The assessment criteria (Table 2) will be used to maintain consistency during the assessment of proposals. However, the final decision is left to the discretion of the PPF management team.

**Table 2.** Assessment Criteria

<b>Criterion:</b>	<b>Weight:</b>
<b>Relevance and Impact</b>	40 %
<b>Scientific\Technical Merit</b>	30 %

<b>Budget</b>	15 %
<b>Management Plan</b>	15 %

Based on the recommendations from the PPF Investment Committee, the PPF will rank the proposals received and make a decision on the projects which will feature in the PPF.



## 2.6 Duration of a Project through the PPF

The duration of a project through the PPF will be based on the management/ project plan submitted by the applicant, as well as the monitoring of the project through a stage-gate R&D process. Calls for proposals will be requested on a bi-annual or annual basis depending on the speed at which projects are exiting the facility. Selected projects will feature in the PPF as soon as facility space has been vacated by previous PPF projects.

**Target exit 6-18 months.**

## 2.7 Intellectual property

The management of intellectual property developed during the execution of projects hosted in the PPF will be determined by the funding model adopted to support the execution of the prototype development project. All Intellectual Property generated shall be subject to the provisions of the Intellectual Property Rights from Publicly Financed Research and Development Act, 2008 (Act 51 of 2008). There are a range of options available, which can be discussed and finalised for approved projects. The following guidelines are applicable:

<b>Model:</b>	<b>Details and Requirements:</b>
A – Full Cost	The industry/ commercial partner will pay the full cost of the project. The industry/ commercial partner will own the resulting IP.
B – Co-Funded	The industry/ commercial partner and the PPF will jointly cover the cost of the project. CSIR PPF will own the IP. The commercial partner will be granted a commercial licence to exploit the IP for the identified field of use. Any royalty fee in terms of a licence will be discounted by the contribution of the industry partner to the project. Where applicable exclusivity and a royalty holiday may be negotiated based on commercialisation milestones and commercial implementation requirements.
C – Fully Funded	The PPF will cover the cost of the project. The PPF will own the resulting IP. The commercial partner will be granted a commercial licence to exploit the IP for the identified field of use. The industry/ commercial partner will be subject to a negotiable royalty fee (typically under a non-exclusive licence).

## PART 3: MANAGEMENT OF PPF USE

### 3.1 Contracting

A contract will be established that contains the clauses and requirements for using the PPF. The contract will address responsibilities, intellectual property issues, as well as financial arrangements associated with the project.

The contract shall also consider the following criteria:

#### 3.1.1 B-BBEE

The client company will work towards achieving the following target in terms of their B-BBEE scorecards:

- 51% Black Ownership
- 70% Black Operations Management

The client is responsible to report on this metric to the PPF management team.

### 3.2 Reporting

Upon implementing a project through the PPF and signing the contract, the stakeholder will follow a stage-gate R&D process (designed by the PPF management team) to monitor and assist progress, as well as manage the exit strategy of the technology.

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