

## Guidelines – SIEF Experimental Development Program

If you are considering submitting a proposal to the SIEF EDP, please contact the [SIEF Team](#) prior to commencing your application to discuss key aspects including eligibility.

### Contents

- [Table 1 – Eligibility Criteria](#)
- [Table 2 – Assessment Criteria](#)
- [Definitions](#)
  - [Research](#)
  - [Table 3 – Examples of Experimental Development Activities](#)
  - [Technology Readiness Level \(TRL\)](#)

**Table 1 – Eligibility Criteria**

Eligibility Criteria	Definition
1. Lead Applicant must be an Eligible Organisation	Eligible Organisations – PFRA in the Industry, Innovation and Science Portfolio: <ul style="list-style-type: none"> <li>• AIMS</li> <li>• ANSTO</li> <li>• CSIRO</li> <li>• GeoScience Australia</li> </ul>
2. Research activities must primarily be conducted by the Lead Applicant	The greater proportion of the SIEF grant must be used to fund research conducted by the Lead Applicant
3. Pre-screening for commercial viability must have been conducted by the Lead Applicant	The Lead Applicant must provide evidence the proposal has undergone pre-screening (made available to the EDP Panel, on request)
4. Research activities must align with SIEF Primary Purpose	In particular, of benefit to Australia Activities having no or little benefit to Australia will not be considered  Refer <a href="#">Table 2 – Assessment Criteria</a> below and <a href="#">SIEF website</a>
5. Funding will only be available for activities that fall under the definition of ‘Research’, and specifically ‘Experimental Development’	<a href="#">Refer Definitions</a> below Includes all monies outlined in the Funding Agreement (including co-investment)  NOTE: additional associated ‘other activities’ may be funded outside the SIEF Funding Agreement (and as they are outside the definition of ‘Research’)  <i>Examples of ‘other activities’ include:</i> <ul style="list-style-type: none"> <li>• <i>business development, company establishment</i></li> </ul>

	<ul style="list-style-type: none"> <li>• <i>IP advice and costs</i></li> <li>• <i>manufacturing activities, regulatory costs</i></li> <li>• <i>marketing</i></li> </ul>
6. Application must be endorsed by all Collaborating Organisations; Application must be endorsed by a delegate of the organisation having an appropriate level of delegation	<p>A delegate with appropriate level of delegation will hold a position with organisational level commercialisation responsibilities.</p> <p>SIEF Management must approve the nominated delegate(s) prior to submission of the Application.</p> <p>This delegate will be nominated in the Funding Agreement for sign-off for all Reports, should the Application be successful</p>
7. Successful Applicants must enter into a SIEF Funding Agreement by the specified date	<p>Refer to example <a href="#">EDP Funding Agreement</a> on the <a href="#">SIEF website</a></p> <p>Terms and conditions of SIEF funding Agreement are generally not negotiable</p>

**Table 2 – Assessment Criteria**

Assessment Criteria	Definition
1. Activities to be undertaken fall under the definition of 'Experimental Development'	Refer <a href="#">Definitions</a> below
2. Quality of innovation	<ul style="list-style-type: none"> <li>• Is it unique and novel?</li> <li>• How well developed is the innovation?</li> <li>• What is the Technology Readiness Level (TRL)? (refer <a href="#">Definitions</a> below)</li> <li>• What are the major barriers remaining?</li> </ul>
3. Strength of market opportunity	<ul style="list-style-type: none"> <li>• Is there a strong case for market pull?</li> <li>• What is the level of current and future customer engagement?</li> <li>• Is IP underpinning the proposal unencumbered?</li> <li>• What is the competition?</li> </ul>
4. Likelihood of increased commercial outcomes from publically funded research	<ul style="list-style-type: none"> <li>• <b>Path to Impact</b> <ul style="list-style-type: none"> <li>◦ Define intended outcomes and impacts</li> <li>◦ How well developed</li> </ul> </li> <li>• <b>Benefit to Australia</b> <ul style="list-style-type: none"> <li>◦ Economic, environmental and/or social</li> </ul> </li> <li>• <b>Aligns with Federal Government</b> intention to increase commercial outcomes from publically funded research</li> <li>• <b>Why is this not being funded by industry?</b></li> </ul>
	<p><b>Business Plan</b></p> <p>In a concise manner, provide a standalone Business Plan summary which includes a <b>clear indication of the path to commercialisation and commercial viability</b>. This will include:</p> <ul style="list-style-type: none"> <li>• Value proposition of technology, ensuring that the estimated proportion of potential total market size is realistic</li> <li>• Cost-benefit analysis – account for full costs to end user, not just production</li> <li>• Current and future partners along the value chain, eg suppliers, manufacturers, distributors</li> <li>• Risks associated with competing current or in development technologies</li> <li>• Other risks and any mitigation strategies (eg regulatory requirements, supply chain at commercial scale, transport logistics)</li> </ul>
5. Extent to which the Application aligns with:	<ul style="list-style-type: none"> <li>• <b><a href="#">SIEF Primary Purpose</a></b> <ul style="list-style-type: none"> <li>◦ Scientific Research for the purposes of assisting Australian Industry, furthering the interests of the Australian community or contributing the achievement of Australia's national interest?</li> </ul> </li> </ul>
a. SIEF Primary Purpose, in particular national benefit	

Assessment Criteria	Definition
	<ul style="list-style-type: none"> <li>• <b>Why is the work in this EDP Application significant for the nation?</b> <ul style="list-style-type: none"> <li>○ How does it align with current and future, national and international activities in the area?</li> <li>○ From the commercial planning, by what pathway is it anticipated that the proposal will assist Australian industry?</li> </ul> </li> <li>• <b>Why should SIEF support this project?</b> <ul style="list-style-type: none"> <li>○ Why is this not being supported by other mechanisms?</li> </ul> </li> <li>• <b>Additionality</b> <ul style="list-style-type: none"> <li>○ What distinguishes the activities in this proposal from other existing programs/activities?</li> </ul> </li> </ul>
<p>b. SIEF Experimental Development Program Objectives</p>	<p><b><i>Experimental Development is systematic work, drawing on existing knowledge gained from research and/or practical experience, which is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed.</i></b></p> <p>Matters such as business development, company establishment, manufacturing activities, regulatory costs, marketing, IP advice and costs are not included</p> <p>Refer <a href="#">Definitions</a> below for further examples</p> <p>How does the proposed activity:</p> <ul style="list-style-type: none"> <li>• <b>translate</b> research for commercial impact</li> <li>• move discoveries <b>along the pathway</b> to commercialisation</li> <li>• <b>accelerate</b> commercialisation and entrepreneurial activities</li> <li>• <b>'de-risk'</b> for future commercial investors</li> </ul>
<p>c. Organisational strategies – now and in the future</p>	<ul style="list-style-type: none"> <li>• <b>Alignment with individual Applicant and Collaborating Organisation(s) strategic objectives</b> <ul style="list-style-type: none"> <li>○ Outline of how this proposal aligns with the individual organisation's strategic objectives</li> </ul> </li> <li>• <b>The collaborative nature of the proposal</b> <ul style="list-style-type: none"> <li>○ What are the roles of the various collaborators and partners</li> <li>○ How do these roles complement each other?</li> </ul> </li> </ul>
<p><b>6. Expertise of proposed Team</b></p>	<ul style="list-style-type: none"> <li>• What are the roles of the various Team members?</li> <li>• How do these roles complement each other?</li> <li>• What other expertise is required?</li> </ul>

Assessment Criteria	Definition
<b>7. Clarity and justification of:</b>	
<b>a.</b> work program	<ul style="list-style-type: none"> <li>• Outline of the activities to be undertaken</li> <li>• A 'Stage Gate' approach is strongly preferred</li> </ul>
<b>b.</b> financial request and level of co-investment funds committed to Experimental Development activities  <i>Refer Excel document</i>	<ul style="list-style-type: none"> <li>• \$ requested from SIEF and co-invested by Applicants</li> <li>• Distribution of SIEF funds – by Applicant and expenditure type (eg labour, operating, travel, indirect costs)</li> <li>• Timeframe for SIEF funding</li> <li>• Co-investment by Applicants for Experimental Development activities must at least match the SIEF grant</li> </ul>
<b>c.</b> Level of additional investment funds, cash and/or in-kind, committed to 'other activities'	<ul style="list-style-type: none"> <li>• Relating to BD, commercialisation, IP – ie activities that fall outside the <a href="#">Definitions</a> of '<i>Experimental Development</i>'</li> </ul>
<b>d.</b> level of transparency regarding unknowns (both technical and commercial)	<ul style="list-style-type: none"> <li>• Does the Application provide confidence that the Team has a clear understanding of any outstanding unknowns (both technical and commercial)?</li> </ul>

## Definitions:

**Research** comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications.

### Research covers three activities:

1. **Basic research** is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view.
2. **Applied research** is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.
3. **Experimental Development** is systematic work, drawing on existing knowledge gained from research and/or practical experience, which is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed. The primary objective is to make further technical improvements on the product or process.

### Research does **NOT** cover the following:

- Routine activity or any non-R&D activity (for full details refer [OECD Frascati Manual](#)).
- If the product, process or approach is substantially set and the primary objective is to develop markets, do pre-production planning or get a production or control system working smoothly
- Education and training - research by students at the PhD level is OK
- Other related scientific and technological activities
  - general purpose data collection
  - testing and standardisation
  - **patent and licence work**
  - routine software development
- Other industrial activities
  - other innovation activities
    - acquisition of technology (embodied and disembodied)
    - tooling up
    - industrial engineering, industrial design
    - other capital acquisition
    - production start-up
    - marketing for new and improved products
  - production and related technical activities
    - industrial preproduction and production
    - distribution of goods and services
    - using social science disciplines, such as **market research**
- Administration and other supporting activities
  - Purely R&D-financing activities
  - Indirect supporting activities

**Table 3 – Examples of Experimental Development Activities**

Able to be funded	Excluded from funding
<p><b>Pilot plants and prototypes</b></p> <p>The construction and operation of a pilot plant as long as the principal purposes are to obtain experience and to compile engineering and other data to be used in:</p> <ul style="list-style-type: none"> <li>○ Evaluating hypotheses.</li> <li>○ Writing new product formulae.</li> <li>○ Establishing new finished product specifications.</li> <li>○ Designing special equipment and structures required by a new process.</li> <li>○ Preparing operating instructions or manuals on the process.” (Frascati at para 116).</li> </ul>	<p>Once a pilot plant is operating for a commercial purpose then even if still called a ‘pilot plant’, the operating of it is not Experimental Development.</p>
<p><b>Industrial design and drawing</b></p> <p>Industrial design and drawing required for R&amp;D</p>	<p>Design and drawing required for production purposes</p>
<p><b>Industrial engineering and tooling</b></p> <p>Industrial engineering and tooling up associated with the development of new products</p>	<p>Industrial engineering and tooling up associated with production processes</p>
<p><b>Trial production</b></p> <p>Trial production required for testing and subsequent further design</p>	
<p><b>Data collection</b></p> <p>Data collection as an <i>integral part</i> of the research and development.</p>	<p>Data collection (except where an integral part of the R&amp;D)</p>
<p><b>Other Activity</b></p>	<p>After sales service and trouble shooting</p>
	<p>Routine testing</p>
	<p>Patent and licensing work</p>
	<p>Regulatory costs etc.</p>
	<p>Costs associated with establishing companies; marketing; commercialisation effort</p>

## **Technology Readiness Level (TRL)**

The Technology Readiness Level (TRL) is one way to indicate the maturity of a technology. The levels span the earliest stages of scientific investigation (Level 1) to the successful use in a system (Level 9).

TRLs are not a measure of design validity, nor do they indicate the difficulty in achieving the next TRL level. Rather, they indicate the level of maturity to assist in risk evaluation and budget planning.

The original TRLs developed (by NASA in the 1980s) are quite generic and over time a number of organisations have developed TRLs that are more domain specific - wording and definition of the individual levels may vary, but the basic 9 level TRL scale is consistent. The accompanying Excel spreadsheet provides examples of TRL scales across a range of domains. The source/reference for the scale is provided, where you will find additional information if required.

In addition, while retaining the 9 levels, a number of organisations also consolidate to broader classifications as a more practical application of the tool. In general, TRL1-3 are consolidated as Basic Research/Research to prove feasibility; TRL4-6 Technology development/demonstration; TRL7-8 Innovation/system commissioning; and TRL9 Product support/system operation. This broader classification illustrates the phase of development of the technology, with basic research occurring in TRL1-3 and the more advanced stages of R&D occurring at TL4 and above.

SIEF has chosen to use TRLs as an indication of the maturity of your technology and whether it is at the Experimental Development end of R&D; all Applications should self-assess their current TRL and the TRL expected at the end of the EDP funding period. The expectation is that to be eligible for EDP funding, the technology must already be at TRL 4 at a minimum, and is expected to move up at least one, preferable several TRL levels during the EDP funding period.

**NOTE: To be classified at a particular TRL, the technology must meet all activities listed for that level (eg a technology is rated at TRL4 once it completes all of the activities listed in TRL4).**