Proof of Concept (POC) Grant Program

2D Drawing — 3D Model — Prototype
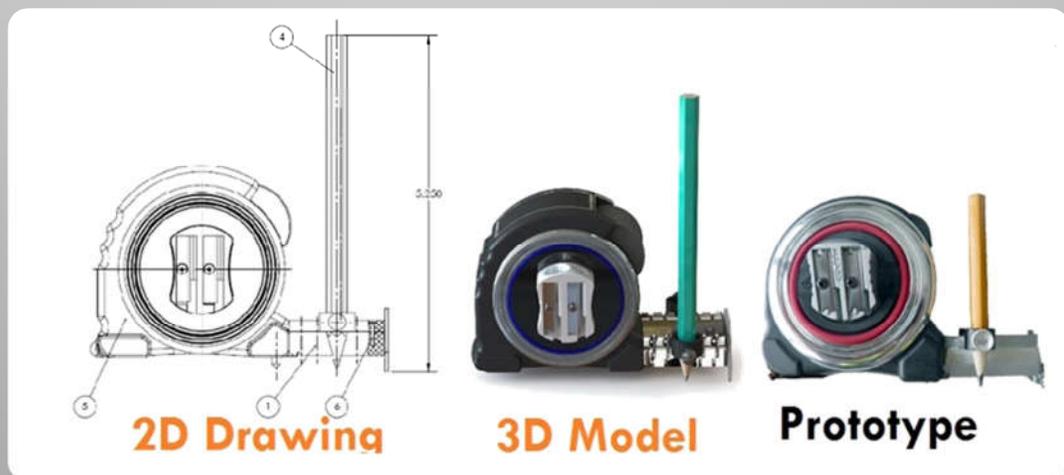
A Collaborative initiative between:

Deanship of Research

Innovation & Technology Transfer

Technology Advancement & Prototyping Center

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1. Introduction

Based on the approval of the University Strategic Plan this proposal of a new grant for Proof-of-Concept (POC) program was proposed. The objective of the program is to support KFUPM researchers and inventors in advancing the development of their research outcome for commercialization opportunities. Currently, a significant obstacle to the development and transfer of KFUPM technologies is the lack of dedicated funding for the proof-of-concept and validation studies needed to demonstrate commercial potential. To overcome this barrier, this POC grant will provide funding and business development support to help KFUPM community validate their nascent technologies and identify potential industry partners to advance these technologies to the market place.

A typical proof-of-concept grant program should cover the following stages:

➢ The discovery validation stage: for validating practicality and the market impact.

➢ The prototyping stage: for aligning the concept with the market need and the buyer/customer driven functionality.

Moreover, the program provides ideas that have originality and true commercial potential, a platform for the following:

➢ Demonstrating the feasibility of certain method/idea.

➢ Verifying that some concept resulting from the original idea is probably capable of exploitation in a useful manner.

The program seeks to support investigator-initiated innovative research in order to transfer the researched/patentable concepts, which might need rounds of focused research and modifications to lead towards commercialization. Its primary goal is to

advance technologies to the point where additional funding from the industry can be achieved.

2.   Grant Objectives

The proof-of-concept grant program supports the pre-commercialization of state-of-the-art technologies emerging from the university research. The strategic objective of this grant is assisting KFUPM to license such technologies more effectively and to expedite technology transfer to local and global markets. With this objective, the program seeks to support innovative research aimed at extending preliminary observations, establishing proof-of-principle, and generating (or enhancing) intellectual property positions.

The objectives of the proof-of-concept grant are:

- ➢ To fill the traditional-funding-gap between basic/applied research and market exploitation.
- ➢ To push innovative research outcomes through the path of commercialization.
- ➢ To improve the level and quality of technology commercialization in the university through the provision of funding for early stage development activities.
- ➢ To initiate appropriate patenting strategy at early stage.
- ➢ To provide technical and financial support to the ideas and inventions from the office/laboratory/classroom to the global market.

3. Scope of Activities

Following are the activities that fall under the scope of the project:

- ➢ Development
- ➢ Testing
- ➢ Prototype construction
- ➢ Conducting specific market research

4. Roles and Responsibilities

The POC grant program and the progress of projects under this program need to be managed by multiple entities at KFUPM due to its nature. The entities involved in this grant are: the Deanship of Research (DR), Innovation & Technology Transfer (ITT), and Technology Advancement & Prototyping Center (TAPC) at KFUPM. For this reason, we propose the formation of a standing committee called: The Proof-of-Concept Committee (POCC) in which we propose the following composition:

- - Dean of Research (Chair)
- - Director, Innovation & Technology Transfer (ITT)
- - Director, Technology Advancement & Prototyping Center (TAPC)
- - 4 experienced faculty from KFUPM

It is proposed that POCC committee will follow the normal reporting process of regular grants managed by DR. Such direction will certainly enhance stronger collaboration and alignment between the research and development activities at KFUPM, in addition to aligning resources towards high value projects. The following

table depicts the proof-of-concept grant program tasks and maps responsibilities to related unit(s).

Table 1: Proof-of-concept grant program tasks and maps responsibilities

	Task	Responsibility
1	Run awareness campaign to attract faculty and students	DR
2	Proposals handling and project communications	DR
3	Concept evaluation and Concept decision	ITT, TAPC and DR
4	Market research evaluation	ITT
5	Resources identification	TAPC and DR
6	Funding allocation and monitoring	DR
7	Proposal Decision	POC Committee
8	Proposal Monitoring	POC Committee

5. Grant Life Cycle

The grant lifecycle helps KFUPM community to understand the grant policies and procedures; it provides an overview of the proposal timeline and administration process. The proof-of-concept grant life cycle, depicted in Figure 1, composed of the following steps:
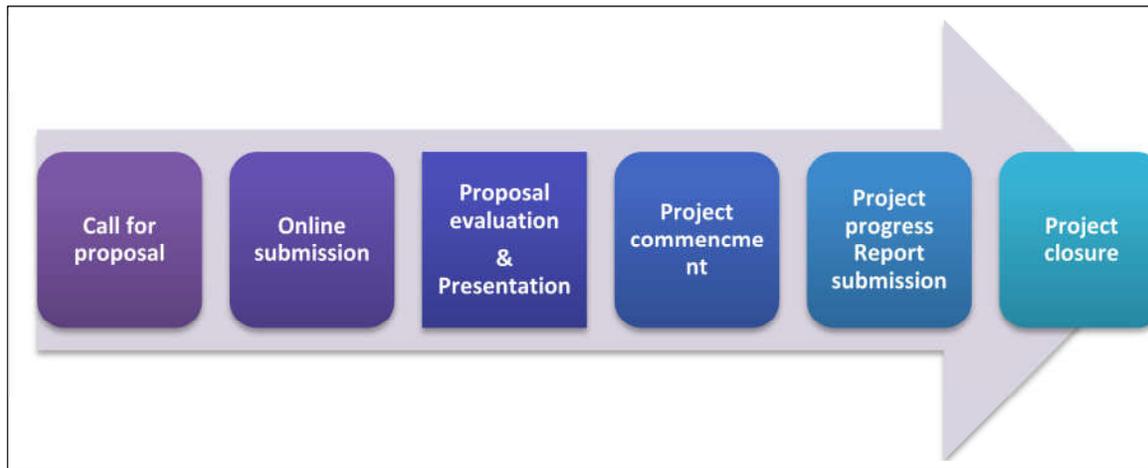
Figure 1: Proof-of-Concept (POC) Grant Life Cycle

1. **Call for proposal:** the Deanship of Research (DR) announcement includes proposal guidelines, proposal submission form, point of contact, commercialization agreement.

2. **Proposal submission:** Online process

3. **The Evaluation:** Proposals are evaluated by **Proof-of-Concept Grant Committee (POCC)** for multiple aspects; scientific and overall proposal evaluation by DR, manufacturability and technical feasibility by TAPC and commercialization and business aspects by ITT. The proposal PI will be asked to present to POCC before the final decision about the grant. The DR will notify the PI about the decision of evaluation.

4. **Commencement of approved proposals.**

5. **Quarterly progress reports:** The project manager needs to submit a progress report after three, six and nine month of the grant starting date to DR for evaluation by POCC. The report should include a detailed financial report to verify appropriateness of expenses to the project.

6. **Final report:** the project manager needs to submit the final report to DR for evaluation by POCC within 45 days of the project ending date. All technological

outcome of POC projects including hardware and software considered a property of KFUPM.

7. **Project closure:** Deanship of Research will announce the project closure.

The call for proposal will be conducted twice a calendar year and will be included in the calendar published by DR. The Proposal Calendar is shown in Appendix A.

6. POC Grant Program

The POC grant program implementation comprises following steps:

1. The DR will register the submitted proposal, assign proposal number and provide copies of the proposal to ITT and TAPC.

2. The proposal will be assessed for market and commercialization aspects by ITT (and if needed, external consultant will be consulted) based on defined criterions.

3. TAPC will assess the proposal for technical aspects and manufacturability of the prototype.

4. DR will assess the project proposal for its relevance with the strategic technological areas of KSA and will confirm the project's scope to be beyond basic/applied research. Moreover, the DR will evaluate probability of achieving project goals within the proposed budget and available resources at KFUPM.

5. The PI proponent will have to appear in front of POC grant committee (POCC) for presentation and interview. The purpose of the interview is to identify the resource requirements, milestones and deliverables. Moreover, applicants' background, interest and detailed plan about how the resources will be acquired within the budget constraints will be assessed after the interview.

6. Based on the overall assessment, decision will be made by POC grant committee.

7. DR will contact applicants with the final verdict and will call those who grant the fund for signing the grant contract.

8. DR would handle financial and resource management and IIT would monitor the progress.

9. External consultant may also be utilized as business mentors to prepare a business model and to develop marketing plan for the technology developed. Figure 2 depicts a flow chart for program management is illustrated in.
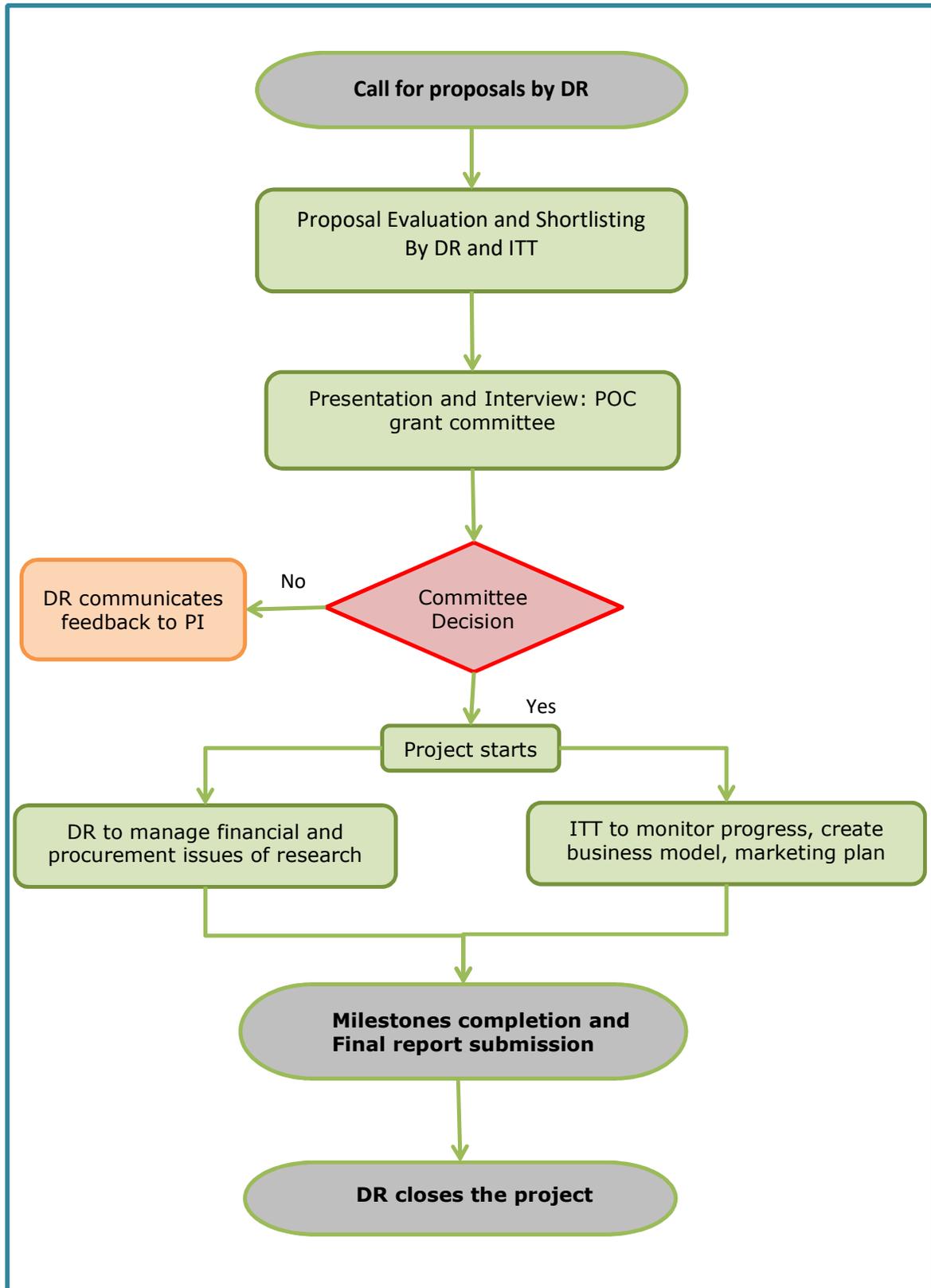
Figure 2: Flow chart for program management

7. Application Eligibility

The application will be considered eligible subject to following conditions:

1. Applicant: Anyone with rights as a principal investigator (PI) and is KFUPM employee or student at KFUPM is eligible to apply.

2. Field: The focus of the proposal must be in the "Saudi Arabia Strategic Technological Areas" and according to "KFUPM focus areas" such as water, nano, environment, energy, petrochemical, oil & gas, and advanced material.

3. The proposed idea should have IP (patentable) either filed or issued.

4. The IP should be owned by KFUPM (preferably solely owned; in case of joint ownership with another organization, an agreement should already be in place with clear terms on technology development, commercialization and ownership of foreground IPs)

5. The proposal should be feasible within the available budget. A maximum of SAR 200,000 can be requested under this program. Applicants will need to provide strong budget justification with milestones, deliverables, and deadlines.

6. PI must be a full time KFUPM faculty member. Additional collaborators may be included as co-PIs. Major research activities must be at KFUPM.

7. Project milestones should be achievable within 06 months from the start of funding.

8. If a previous POC application has been turned down, the PI may submit a revised proposal for reconsideration in the forthcoming POC grant cycle only. POC grant will be linked to related patent or family of patents.

9. PI and co-PI has the right to be a member in one POC grant proposal per grant cycle. (to be applied from the second year of POC grant program).

8. Program Budget and Resources

In order to support this program, a fund is allocated referred as POC fund. The fund is meant to sponsor investigator-initiated projects through proof-of-concept. A total of 0.8 million SAR is allocated for initial two years to fund 4-6 projects/year.

Towards the closure, POC project should be able to attract other financing alternatives (e.g., private industry and/or venture capital) for taking the concept to market. The POC fund is not designed to accommodate projects of varying magnitude; however, it will focus on KFUPM strategic areas of research programs.

It is proposed that this fund should be structured in such way to support further innovation and applied research at KFUPM. To this end, a portion of any future licensing proceeds that may be generated from the licensing of technologies arising from, or advanced as a result of POC fund should be returned to the POC grant fund pool itself. The details about the operational and capital expenditure of the fund are as shown in Appendix B

All proposals should include a detailed budget. Moreover, POC funding may only be used for covering expenses budgeted under the project and may not be used for any other purpose.

Funding can be provided in cash for external entities or in kind payment to KFUPM entities. Items included in kind payment are the use of Dhahran-FabLab or TAPC resources in addition to any equipment or instruments from inter-department or intra-department. The budget for use of equipment should be mentioned as amount of time required to be spent on it (e.g. use of 10 hours of TEM for imaging the nano size

samples). The uses of Dhahran-FabLab or TAPC staff time are also included in kind payment.

Items included in cash are the purchasing of equipment or instruments, travelling expenses, approved contract consultants. **Budget items include compensation to PI and project team as per Deanship of Research grant policies.**

9. Proposal Review and Selection Process

Proposal must be prepared in the form of presentations in accordance with the outline in attached template Appendix D.

DR and ITT will work closely with principal investigators to provide assistance in the development proposals, in particular the identification of sound technical milestones and preparation of appropriate budgets. The proposal will be submitted to DR and proposals will be reviewed by POCC for decisions. DR will coordinate all communication (similar to other KFUPM grants) with PI's, and among ITT, TAPC and POCC.

10. Evaluation Criteria

Selection of proposals for funding will be based on an equal weighting of criteria related to scientific/technical merit, commercial potential and management. The following factors comprise the major evaluation criteria, which will be taken into consideration as part of the proposal review process:

10.1 Scientific and Overall project evaluation aspects

a. Quality of the proposed concept and scholarship

b. Proposal alignment with the Kingdom and KFUPM Strategic research areas.

c. Clarity and focus of the objectives (Is it ready for development or still at research stage)

d. Proposal milestones.

e. Probability of achieving project goals within the proposed budget and available resources at KFUPM.

f. Team or Individual experience in project management (background experience on product development)

g. Interest in commercialization does this will affect their other duties (teaching).

10.2 Commercialization and Business Aspects

a. Probability that outcomes can enhance an existing patent position.

b. Innovation and novelty of the proposed concept in question (existing IP)

c. Significance of market need and opportunity (What is licensing potential?)

d. Whether and the extent to which, the technology in question offers a competitive advantage over currently available technologies.

e. A relatively clear and short path to a commercially viable technology.

f. Potential impact and significance of results on Kingdom economy.

10.3 Manufacturability and Technical Feasibility:

a. Technical feasibility and risk of the project and/or technology in question

b. Specifications of the prototypes to be developed based on the proposed idea are clearly defined.

c. Development of a prototype based on the proposed idea falls under the scope and capabilities of TAPC.

d. All necessary recourses (technology/equipment/space/manpower etc.) needed to develop the prototype are either available at KFUPM or can be arranged within duration of the project.

e. The allocated budget for TAPC and the time duration for development of the prototype are reasonable considering the capabilities of TAPC.

11. Duration of Funding Period

Proposals will be funded for up to 6 months. Extensions or renewals for a second year may be granted, subject to demonstrated progress, submission of a new application and approval. If during the 6-month period, funding support for the same project is secured from an industry, the remaining (unused) funds will be returned to the POC fund.

12. Project Monitoring Requirements

The project would be monitored by POCC and its role is limited to providing administrative support, monitoring the milestones and setting deadlines. It will be the first point of contact for PI's for budget approvals and administrative challenges. POCC will be meeting bimonthly to discuss the ongoing projects – milestones, deadlines, administrative challenges, final reports and any mid-course revision in the proposal. The principle investigator will be responsible for the technical and operational aspect of the project and for preparation and submission of the quarterly and final reports. The final report will be due within 30 days of the end of the grant period. The final report

should specifically address outcomes related to each specific objective and a statement of any inventions made in the course of the performance of the project.

13. Other Requirements: Terms and Conditions

a. **Time and Effort**: The PI will commit his/her time and effort, as appropriate, to lead and oversee the project.

b. **Inventions and Intellectual Property**: In the event that any invention is conceived or reduced to practice in the course of performing a POC project, it must be disclosed to KFUPM Innovation & Technology Transfer (ITT) and ownership must be assigned to KFUPM. The PI must report any and all inventions to IAO in advance of a public disclosure or within 30 days of the disclosure, in order to allow IAO staff to determine if such public disclosure contains new potentially patentable subject matter.

c. **Research Plan**: Any significant mid-course revisions to the research plan will require approval by POCC.

d. **Milestones**: The applicant's proposal must comprise a project plan that includes proposed objective technical milestones, which need to be accepted by POCC. The achievement of such milestones will serve as key decision points for the assessment of progress and the determination of continued funding. A project may be terminated if agreed-upon technical milestones have not been met.

Appendix A: Annual POC proposal calendar

	PROOF OF CONCEPT	
	First Semester	
1	Call for proposal	Start date (semester 1)
2	Proposal submission	Last date (One month after start date)
3	Proposal evaluation	Eligibility Screening
4	Announcement of non-eligible candidates	After 3 weeks from proposal submission
5	Announcement of interview and presentations	After 4 weeks of proposal submission
6	Announcement of successful project selected	After 6 weeks of proposal submission
7	Commencement of Project	After 7 weeks of proposal submission
	Second Semester	
1	Call for proposal	Start date (semester 2)
2	Proposal submission	Last date (One month after start date)
3	Proposal evaluation	Eligibility Screening
4	Announcement of non-eligible candidates	After 3 weeks from proposal submission
5	Announcement of interview and presentations	After 4 weeks of proposal submission
6	Announcement of successful project selected	After 6 weeks of proposal submission
7	Commencement of Project	After 7 weeks of proposal submission

Appendix B: Program Budgeting Guide

Following is estimate of total capital and operational expenditures of program.

	Approved Budget (SAR)	
	0.8 million	
No. of projects per year	4-6	
Max. total expenses (per project)	200,000	
Consultation expenses	Upto 50,000	
Prototyping / scale up	Upto 100,00	
Equipment / instruments, Staff compensation, materials, travel and consumables	50,000 - 100,000	
Business model and Marketing plan	50,000	

Appendix C: A Sample Evaluation sheet

	Criteria	Score 1-5 (1-Low, 5-High)	Comment
1	Projects novelty, scientific and technological level		
2	Strategic area relevance		
3	Degree of project readiness		
4	Evaluation of the methodology		
5	Evaluation of expected results		
6	Feasibility of requested funds (on basis of time and budget)		
7	Evaluation of available facilities (equipment, expertise)		
8	Market opportunity		
9	Project Management		
10	Competitive advantage		

Appendix D: Proposal Presentation