Module II Plan 👋

R&D+I Project Fundamentals: From Conception to Market

👉 **Lecture 3:** *R&D+I Project Fundamentals: From Conception to Market*

- Project Initiation: Scope definition and scientific and technical merit

- Project Planning: Strategy development, identifying challenges, and risk assessment

👉 **Lecture 4:** *Applying R&D+ I Management*

- Developing R&D+I Capabilities: Techniques to enhance innovation

- Implementing R&D+I: Strategies for effective teamwork and innovation

Ex1. Group discussion: Your Business Opportunity Idea

Let's break into groups of 5 and discuss:

1. **Introduction to BOI (2 minutes):**
Brief presentation on what a BOI Form is and its significance in business planning and entrepreneurship.

2. Idea Generation (15 minutes):
Each group should brainstorm to come up with a unique business idea on flavor water. It could be a product, service, or a solution to a problem they have identified.

3. Research and Discussion (10 minutes):
Groups should conduct basic research to understand the market for their idea, potential competitors, and target audience.
They can use internet resources, industry reports, or case studies.

3. BOI Form Development (20 minutes):
Using the BOI Form template, each group fills out the following sections for their business idea:
Idea Description: A clear and concise description of the product or service | **Potential offering / USP:** What makes this idea unique and valuable to customers? | **Target Market**: Who are the potential customers? | **Competition Analysis:** Who are the main competitors, and how does this idea differ? | **Preliminary size of opportunity or Impact**: What positive impact will this business have (social, environmental, economic)?

4. Presentation (5 minutes)

Scouting: description & key questions

Scouting phase

Description:
Scope, size and shape BOIs focusing on market trends, competitive landscape, customer unmet needs and technological developments

Deliverables:
Business Opportunity, Target & Attainable Market, Identified Customer Unmeet Need, Project Management Charter

Market	• What is the target market and why is it attractive? • What is the Customer's Unmet Need, Job-to-be-done?
Offering	• What is the Unique Selling Proposition (USP)? • How does the potential offering address & satisfy the Customer's Unmet Need?
Business Case	• What are the expected Opportunity Size and the Sales and are they attractive? • What is the strategic fit of the opportunity? • Why us?
Project Management	• How aligned is the Business Opportunity Idea with our strategy? • What is the realistic time to market to realize the innovation project?

Innovation Project Charter

Project Title

Start Date

End Date

Project Scope / Description

Business Opportunity

Project Owner

Project Leader

Incremental / Disruptive

IP Potential

Business Unit / Department

Cost Center

PEP/ MIP

Internal Stakeholders

External partners

Comments / Resources

Key milestones / Deliverables

Scoping & Feasibility: descript. & key questions

Scoping & Feasibility phase

Description:
Develop and assess economically and technically feasible alternatives, translating the business opportunity into a concept justifying the investments into full development, and subsequent commercialization

Deliverables:
Solution Fit | MVP & PoC Results | Competitive & Ecosystem Mapping | Sustainability, IP, and Regulatory | Preliminary Financials

Market	• What is the target market, why is it attractive and who are our competitors? • How has the proposed Value Proposition of been validated with the target customer?
Offering	• What is the Unique Selling Proposition (USP)? Has it been validated? • What is our Value Proposition & why will the customer choose us over the competition?
Business Case	• What is the required investment (Capex)? • How will it make money? • What are the Critical Assumptions and the Net Present Value (NPV)?
Project Management	• What is the full scope of the project? • What are the project risks? • Were they eliminated or can they be mitigated?

Disclosure form: Intellectual Property

INVENTION DISCLOSURE FORM

Date of Submission: _____

1. TITLE OF INVENTION *(a short but sufficiently descriptive title to identify the general nature of the invention.)*

2. DESCRIPTION OF THE INVENTION

Please note:
A. The purpose of your description is to enable a person with similar skills in your field to be able to make and use the invention you describe.
B. Please do not withhold any key elements of the invention (you are obliged to describe the best way of making and using the invention known to you at the time of submission).

2.1 **Field Of The Invention:**

A sentence or brief paragraph identifying the general field of technology to which the invention relates and keywords that will help define publication and patent searches.

2.2 **Summary of the Invention:**
A brief paragraph (similar to the abstract of a scientific paper) describing the key feature(s) of the invention with some background context.

2.3 **Brief Description Of The Drawings** (if any):
Listing of the captions of each drawing or figure relevant to the invention that you have attached to this invention disclosure.

2.4 **Detailed Description Of The Preferred Embodiments:**
(i) A full description of the invention including background, preferred mode of practice of the invention e.g. basic nature or structure of invention, how it works with reference to relevant attached drawings etc. (This can be a separate attachment).

(ii) What problem(s) the invention solves and advantages over existing methods, devices or materials?

(iii) What are the possible specific industrial applications?

(iv) Does your invention possess any disadvantages or limitations? Can they be overcome? What are the competing ways to solve the same problem(s)?

2.5 **Modifications Of The Preferred Embodiments** (if any):
Discussion of other modes of practice of the invention.

2.6 **References:**
Please list literature references that most closely describe your invention.
List of references cited in this write-up.

3. SOURCES OF SUPPORT AND GRANT RELATING TO INVENTION *Please identify all outside agencies, organizations, or companies that provided funding to the research that led to the conception of the invention. Obligations of the research sponsor(s) will have to be met if patent protection and/or licensing of the technology is pursued Please also disclose any other contractual obligations entered into to come up with the invention including collaborations, research contracts material transfers etc.*

Source(s) of Funding

Sponsor Name: **Grant Ref No.** Title of Project Funded: Collaborators (if any): Was there a formal agreement signed? ☐Yes ☐No Have University resources or facilities been used? ☐Yes ☐No If yes what university(ies):	**Sponsor Name:** **Grant Ref No.** Title of Project Funded: Collaborators (if any): Was there a formal agreement signed? ☐Yes ☐No Have University resources or facilities been used? ☐Yes ☐No If yes what university(ies):
Sponsor Name: **Grant Ref No.** Title of Project Funded: Collaborators (if any): Was there a formal agreement signed? ☐Yes ☐No Have University resources or facilities been used? ☐Yes ☐No If yes what university(ies):	**Sponsor Name:** **Grant Ref No** Title of Project Funded: Collaborators (if any): Was there a formal agreement signed? ☐Yes ☐No Have University resources or facilities been used? ☐Yes ☐No If yes what university(ies):
Sponsor Name: **Grant Ref No.** Title of Project Funded: Collaborators (if any): Was there a formal agreement signed? ☐Yes ☐No Have University resources or facilities been used? ☐Yes ☐No If yes what university(ies):	**Sponsor Name:** **Grant Ref No.** Title of Project Funded: Collaborators (if any): Was there a formal agreement signed? ☐Yes ☐No Have University resources or facilities been used? ☐Yes ☐No If yes what university(ies):

4. DATES OF CONCEPTION & PUBLIC DISCLOSURE *Please defer publication if you think that you may have patentable subject matter. Public disclosure of an invention before filing a patent application will render the invention not patentable in most countries.*

Date of documented conception of invention:

Date of first public disclosure that describes invention, if any:

Attach copies of material if possible.

Do you intend to disclose the invention publicly in the near future? ☐Yes ☐No

If yes, when and where?

Has this invention been reduced to practice? ☐Yes ☐No

Please indicate the status and intention for your invention. (You may ☒ more than one box)

☐ Project ongoing ☐ Looking for collaborators for further R&D ☐ For information only

☐ Project ended ☐ Ready for Commercialization ☐ Application to file a patent

☐ Further R&D ☐ Others (please specify) :

5. CONTRACTUAL OBLIGATIONS: *(Research Collaborations Agreements, Material Transfer Agreements etc.)*

(i) Title of Collaboration:

(ii) Reference Number:

(iii) Name of Collaborator or Provider of Material:

(iv) Relevant Details of Collaboration or Material:

6. COMMERCIALISATION *Please identify any potential licensees or collaborators interested in the invention.*

List companies or organizations, if any, that could be interested in using this invention.

Do you have plans to spin off a company based on your invention? ☐Yes ☐No

Would you be willing to participate in the marketing of this invention by explaining it to potential commercial partners? ☐Yes ☐No

7. SOFTWARE DEVELOPMENT (*If your invention involves or includes software, please answer the following questions. Else, you may skip this section.*)

Is the software standalone? If not, list associated software that is required for the invention to work.

What language is the software developed in and what platforms is it designed for delivery on? List the minimum hardware specifications required.

Was any of the source code obtained under an open source license (e.g. BSD, GPL, Apache, etc.) or from any other source? ☐Yes ☐No

If yes,
a) Please provide a list of the sources:

b) Explain how the sources listed above have been used in the invention:

Are there any third party rights associated with the invention of the software? List grants or contracts if any, with third parties.

Is the software an improvement of existing software? Has a license been obtained on the existing software? Provide details.

Is the software a proof-of-concept, a demonstration, prototype or fully functional end user version?

Disclosure form: Intellectual Property

8. INVENTORS' PARTICULARS & DECLARATIONS *Original signatures are required. Inventorship is defined as person(s) who contributes, individually or jointly, to the inventive steps that make the invention workable.* ***Do not list any inventor gratuitously.*** *The rules for inclusion are not the same as a scientific publication.*

I / We* hereby declare to the best of my / our* knowledge the information provided in this invention disclosure form are true and correct.

Primary Contact Inventor

Title: ☐Mr ☐Ms ☐Dr ☐Asst Prof ☐Assoc Prof ☐Prof *

Family Name:	Given Names:	Citizenship:
University Position: ☐Faculty ☐Post-Doc ☐Research Scientist ☐Undergraduate Student ☐Graduate Student ☐Technician ☐Other:_____	Staff ID or Student No.:	
Faculty/Department/Institution:	Tel. No. Office: Lab: Mobile: Fax:	
Mailing Address:	Home Address (if different):	
Email:		
Signature & Date:		

Co-Inventor 1

Title: ☐Mr ☐Ms ☐Dr ☐Asst Prof ☐Assoc Prof ☐Prof *

Family Name:	Given Names:	Citizenship:
University Position: ☐Faculty ☐Post-Doc ☐Research Scientist ☐Undergraduate Student ☐Graduate Student ☐Technician ☐Other: _____	Staff ID or Student ID No.:	
Faculty/Department/Institution:	Tel. No. Office: Lab: Mobile: Fax:	
Mailing Address:	Home Address (if different):	
Email:		
Signature & Date:		

Co-Inventor 2

Title: ☐Mr ☐Ms ☐Dr ☐Asst Prof ☐Assoc Prof ☐Prof *

Family Name:	Given Names:	Citizenship:
University Position: ☐Faculty ☐Post-Doc ☐Research Scientist ☐Undergraduate Student ☐Graduate Student ☐Technician ☐Other:_____	Staff ID or Student ID No.:	
Faculty/Department/Institution:	Tel. No. Office: Lab: Mobile: Fax:	
Mailing Address:	Home Address (if different):	
Email:		
Signature & Date:		

Co-Inventor 3

Title: ☐Mr ☐Ms ☐Dr ☐Asst Prof ☐Assoc Prof ☐Prof *

Family Name:	Given Names:	Citizenship:
University Position: ☐Faculty ☐Post-Doc ☐Research Scientist ☐Undergraduate Student ☐Graduate Student ☐Technician ☐Other:_____	Staff ID or Student ID No.:	
Faculty/Department/Institution:	Tel. No. Office: Lab: Mobile: Fax:	
Mailing Address:	Home Address (if different):	
Email:		
Signature & Date:		

NB: *Please attach pages as required for additional inventors

The state of development of the Technology must be defined: Idea/prototype/Finalized

State-of-the-art searches should be carried out in databases of scientific articles, specialized journals and free patent databases, such as:

- www.inpi.pt
- www.pt.espacenet.com
- www.wipo.int/pctdb
- www.uspto.gov/patft

- https://www.perplexity.ai
- https://elicit.com

Develop & Validation: descript. & key questions

Develop & Validation phase

Description:
Develop concept & MVP, test with target customers to learn about the winning features, turning them into real innovative solutions with desired performance in line with customer expectations and at acceptable cost and price levels, Deep analysis of Value Chain & Go to Market strategy

Deliverables:
Validated "Product Market Fit | Validated Offering & Biz Model | Pilot Results - Sustainability, IP, and Regulatory | Go to Market Strategy & VC Analysis | Key Financials

Market	• What is the customer feedback regarding the developed / prototyped Value Proposition? Is the MVP validated? • Did the Target Market undergo significant changes?
Offering	• Has the developed USP (Unique Selling Proposition) been validated? • Is our offering likely to win in the market vs. competitive next best alternatives? • What is the final Value Proposition and (value-based) price?
Business Case	• Are we able to meet the cost, price targets? • Are the Sales, Margins, IRR and NPV still attractive? • Has the variability of key assumptions been reduced and their prospect improved
Project Management	• How is a smooth handover to the New Ventures / Business team ensured? • Are appropriate Experiments designed to validate Critical Assumptions? • Has a Risk Assessment been completed?

Market Entry: descript. & key questions

Market Entry phase

Description:
Handover project to the New Ventures team for market introduction and launch; Implement Go to Market Plan, forge alliances and define contracts and relationships along Value Chain; Refine Business Model based on Market feedback and prepare scale-up

Deliverables:
Commercialization & Launch Plan |Commercial contracts along VC | Market Launch & Scale-up KPIs | Offering Registration

Market	• Is there a clear commercialization & launch plan, as the basis for the Go/No Go decision? • Have sales resources been mobilized? • Are commercial contracts along the VC * ready?
Offering	• Has the offering addressed the true Customer Unmet Need (better than the next best alternative)? • Is the Technical Documentation complete to support commercialization activities?
Business Case	• Have the Business Model been properly validated? • Have all required partnerships (e.g. suppliers, peers, distributors, etc.) been secured?
Project Management	• How was the handover to the new venture ensured? • Have all key deliverables and lessons learned of the project been signed off by the new owner?

Scale-up: descript. & key questions

Scale-up phase

Description:
Scale organization and systems, introduce new markets or customer segments, define clear process & responsibilities for maximum delivery and speed

Deliverables:
Scale-up Plan | Scale-up KPIs | Lessons Learned | Corrective Actions

Market	• Is there a clear scale-up plan, with required resources committed to make it happen? • Have sufficient sales resources been mobilized to launch & scale-up fast?
Offering	• Has the launch validated that the offering addresses the true Customer Unmet Need (better than the next best alternative)? • Can the offering be supplied economically at scale?
Business Case	• What was the launch performance compared to plan, how do we explain deviations? • Have appropriate corrective actions been put in place to address identified deviations and maximize value capture?
Project Management	• Has a proper lessons learned assessment been completed 6-12 months after launch? • Are the key lessons learned and corresponding corrective actions recorded?

Lessons learned

	LESSONS LEARNED	

Lessons Learned Document

Project Acronym	
Project Name	
Project Responsible	
Date (dd/mm/yyyy)	

The purpose of this document is to share the knowledge the project team has gained from its execution, so that the entire organization can benefit from it.

An effective program of lessons learned will help future project teams to:

- Repeat desirable results
- Avoid non-desirable results and redundant work

Discussion of main results of the project	
A. List the biggest achievements of the project	
Description	**Factors that promoted this success**
B. List of the biggest failures of the project	
Description	**Impact on the project**
C. Generated Knowledge	
Description	

	LESSONS LEARNED	

Discussion of main results of the project	
D. List of areas for improvement	
E. Others comments and recommendations	

Please describe by which means the generated knowledge is to be managed (ex.: knowledge dissemination by email, meetings, etc.)

Knowledge Management
Main actions

FailCon is a one-day conference for technology entrepreneurs, investors, developers, and designers to study their own and others' failures and prepare for success.

http://thefailcon.com/

Lessons learned

DID YOU KNOW?

Success is all about what you define you want to measure

X on Demand

Project Overview

PoC started in August

Pilot started in August in Loulé municipality for c.1 week, proceeded to Cascais for 2 weeks and then took advantage of three selected e-mobility events

Pop-up solution in selected locations in Algarve (Quinta do Lago, Praia do Ancão and Quarteira) and Cascais (Marina de Cascais, Casino Estoril, praia de Carcavelos, praia de São Pedro and parking area of Cidadela)

Provided free EV charging during approximately three hours every day

Addvolt provided the technology (proprietary and tested last year at Galp)

Nissan provided the EV that transported the trailer w/the battery (the trailer was made specific for this action and to match the look & feel)

Two promoters/operators, merchandising and logistics ensured by Galp

Powerbank based on AC charging and with limited charging power (battery able to charge a total of 153 km, ie, c.8 sessions of 15 minutes. Each session enabled client to travel at most 20-30 km)

PoC at a Glance

17
Total charges made

219
Answers to the survey[1]

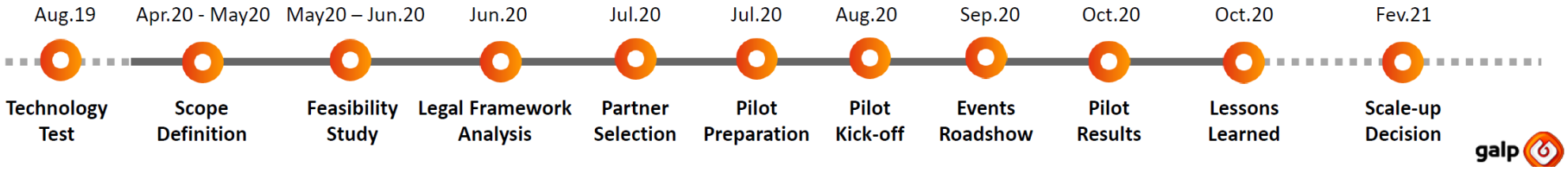
68
News, including three written press

35.4 kWh
Energy delivered

17%
Willing to use the service regularly (at least once a month)

71%
Willing to pay for the service (and c.65% of these to pay €5 or more)

Timeline



galp

Key Takeaways

✓ Innovation starts with identifying a need or opportunity in the market

✓ Define what sucess looks like from the very begging

✓ Assess the technical, financial, and commercial viability before committing resources

✓ Define clear goals, timelines, and deliverables for the project

✓ To get agility you need to continuously evaluate progress against goals to ensure the project stays on track

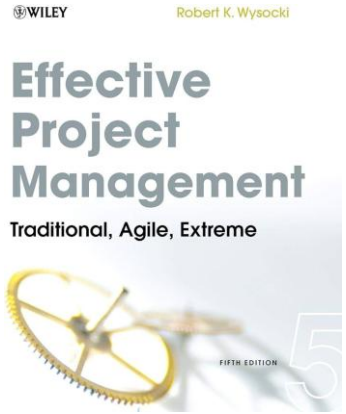
✓ Prepare for the market launch with a focus on marketing and distribution strategies

✓ Write & share in all phases (especially when you fail)

Highly Curated Reading List

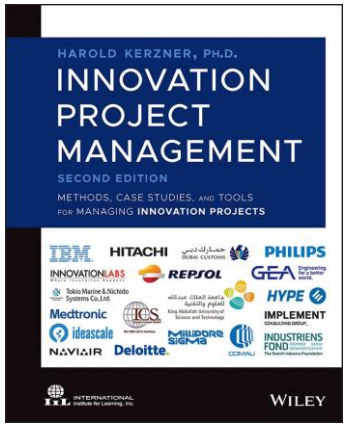
Because you can't read everything all at once

A well-rounded resource on the complexities of managing R&D processes within organizations



This book addresses various project management methodologies that can be applied to R&D projects

This book is focuses on the execution of innovation, which is a critical aspect of R&D project management



This book provides tools and case studies specifically tailored for managing innovation projects