# ALCYONE

**a project funded within Horizon Europe: Cluster 4 – Digital, Industry and Space**

**(HORIZON-CL4-2022-SPACE-01-82 - Space science and exploration technologies)**

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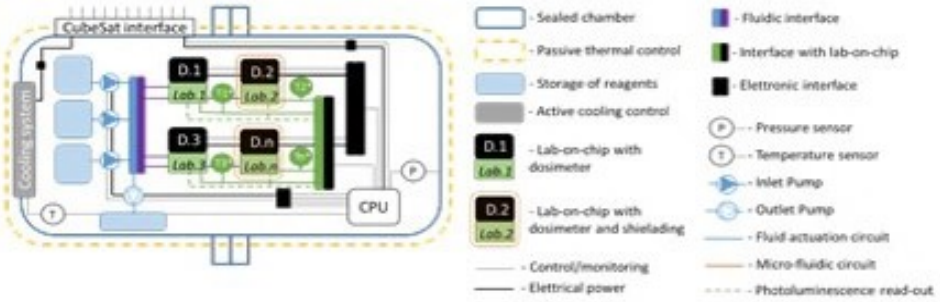
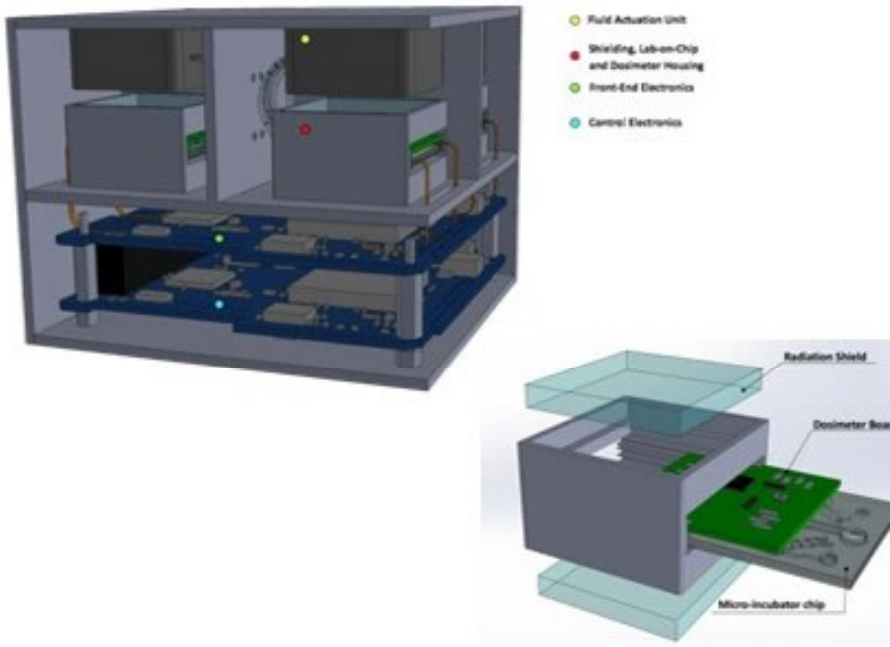
# ALCYONE

## Autonomous Living Cell analYsis ON-chip for Evaluation of space Environment Effects

- Design and realization of a **new analytical platform** based on **lab-on-chip technology** for the **in-situ** analysis of the **effects of the space environment** on **model biological systems** and for the evaluation of shielding technologies combined with radioprotective agents
- To achieve this goal the system combines:
  - An extremely **compact cell-incubator** capable to sample the status of the cell culture during a space mission using **real-time monitoring**
  - Bioanalytical sensing based on **bioluminescence** of ad-hoc **genetically modified cells**



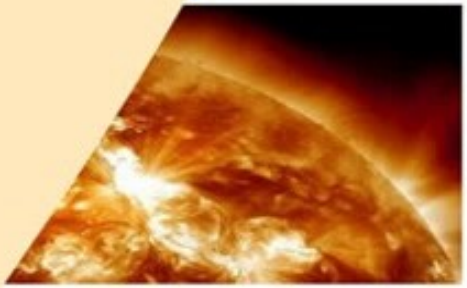
# ALCYONE

Long-term missions in space are inefficient and dangerous for humans due to the risks of high **radiation exposure**. Unfortunately, solutions have yet to be found.

The EU-funded ALCYONE project aims to develop an **innovative analytical platform** for studying the effects of space environment on **living cells**.

The project will design a **lab-on-chip** that will implement a **micro-incubator** to study cell cultures and radiation effects on them during space missions using **bioluminescence**.

ALCYONE will allow for *in situ* evaluation of **space environment effects** on model biological systems and further contribute to the search for novel shielding solutions.



## OBJECTIVES

### BIOLOGY

**P**roduce genetically engineered prokaryotic and eukaryotic cells to express bioluminescent reporters in response to ionizing radiations.

**S**et up an experimental protocol for evaluating the effects of space conditions on cells by real-time monitoring of their bioluminescence emission.

### TECHNOLOGY

**D**evelop a micro-fabricated incubator with on-chip thin-film sensors and actuators able to host and monitor cell cultures in real-time.

**D**evelop an ultra-low power dosimeter system for monitoring the radiation environment during the course of the experiment.

### EXPLOITATION

**P**roduce breadboard analytical device that includes all the developed subsystems and test it in laboratory environment.

**D**evise a roadmap for identifying potential space applications and spinoffs for ground-based applications of the ALCYONE technologies.

SAPIENZA UNIVERSITÀ DI ROMA

UNIVERSITY OF TWENTE.

KAYSER

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TOR VERGATA

KIT

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# From Idea to Funding

## The “easy” starting point: a good idea

A quality idea demonstrates that you have a deep understanding of the field and can conduct meaningful research. It also shows that you have taken the time to carefully consider your research question and that your project has the **potential to make a significant contribution to the field.**

A quality idea is one that is

- **Original:** research question is unique and hasn't been explored before
- **Feasible**: project is realistic and can be completed within the given timeframe and budget
- **Relevant to the field:** research question aligns with current trends and issues within the field

**BUT all your competitors will start from a good idea!**

# Working on the idea

**Don't 'love' your idea too much!**

Instead:

- Act as the Devil's Advocate
- Be critical 'against' your idea
- Identify any weakness
- Stress the criticalities

... and try to improve the idea based on that

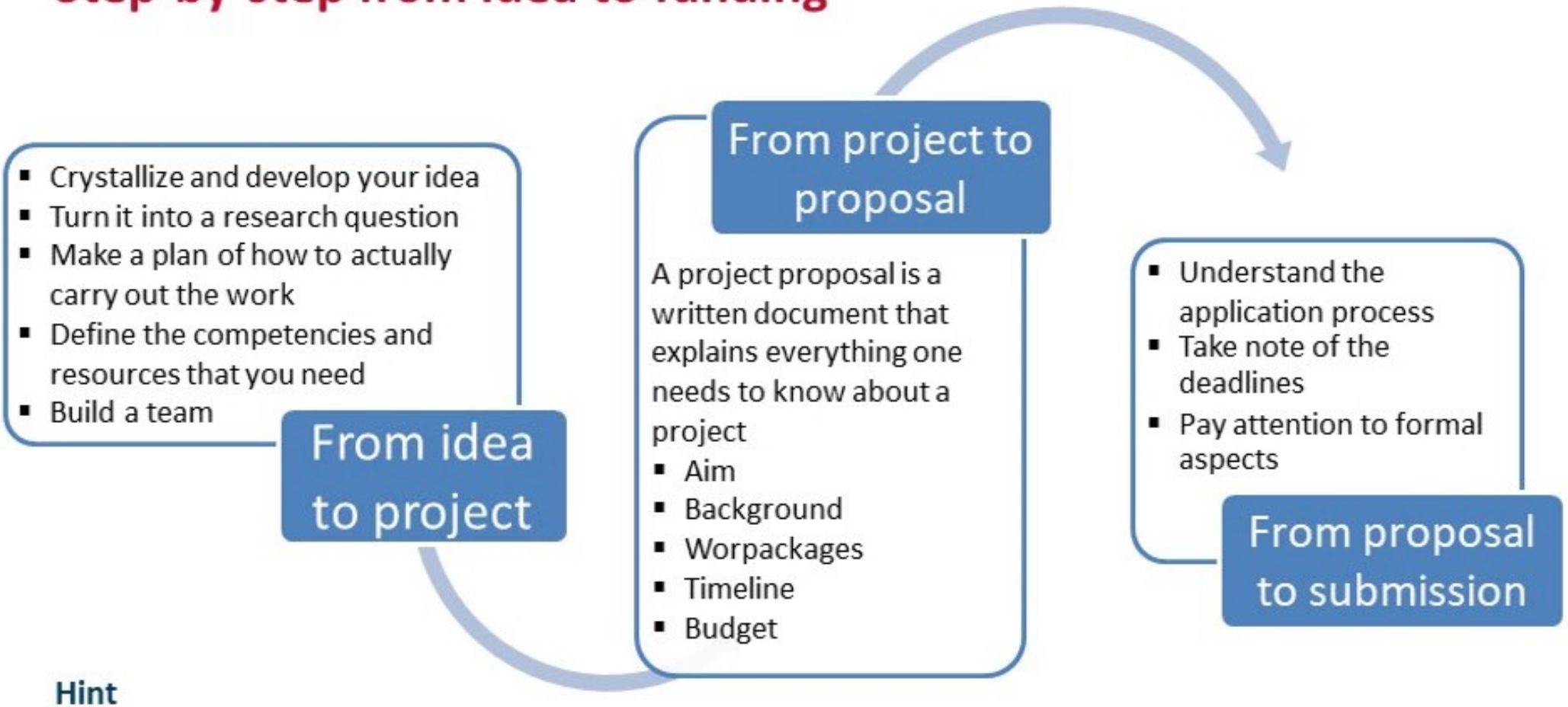
**Express your idea in a clear manner**

Take into account that probably the evaluators are 'less' expert than you in the specific field of research: be sure that they understand teh value of your idea as you perceive it

**Provide a good background and motivation**

Make sure that the relevance and the impact of your project are solid and actually represent a necessity for the progress of the knowledge in the field

# Step-by-step from idea to funding




**Hint**

Use an open and shared approach with your partners to collaborate effectively since the proposal preparation phase (share ideas, brainstorm, discuss, doubt…)

Use tools to implement this shared approach (common shared drive folder with all the useful information and references, use a shared document editing tool (Google Docs, MS Sharepoint, …) to work on a single shared file, etc

# Use all your experience

Exploit any **positive and negative** experiences to learn from them!

Complexity does not help. Often a simpler project with clear scope is preferable to a more ambitious one, which however might result confused to the referees

**Examples (my experience)**

- 2009 FIRB application 2009 with good evaluation but not funded
- 2011 PRIN application with a 'reduced' version of the same project successfully funded

# Attention to the details

When it comes to presenting an application for research funding, attention to detail is absolutely crucial. **Small mistakes or oversights can have a big impact** on how your proposal is received by reviewers.

But attention to detail isn't just about avoiding mistakes. It's also about making sure that **every aspect of your proposal is polished and professional**.

This includes everything from the formatting of your text to the quality of your visual aids. By paying close attention to these details, you can create a proposal that stands out from the crowd and makes a strong impression on reviewers.

# ALCYONE successful application: Horizon Europe

The new version of the ALCYONE proposal was submitted in response to the Horizon Europe call "HORIZON-CL4-2022-SPACE-01-82 - Space science and exploration technologies".

**Different rules and boundary conditions**:

- Less budget
- Some countries not eligible for the Consortium
- Recent progresses in the field…

Basically, **a brand-new proposal** was prepared taking as much as possible the good things of the previous and trying to avoid the weaknesses and the mistakes made in the previous attempt.

# Mistakes and fixes

**Not using all the available resources**

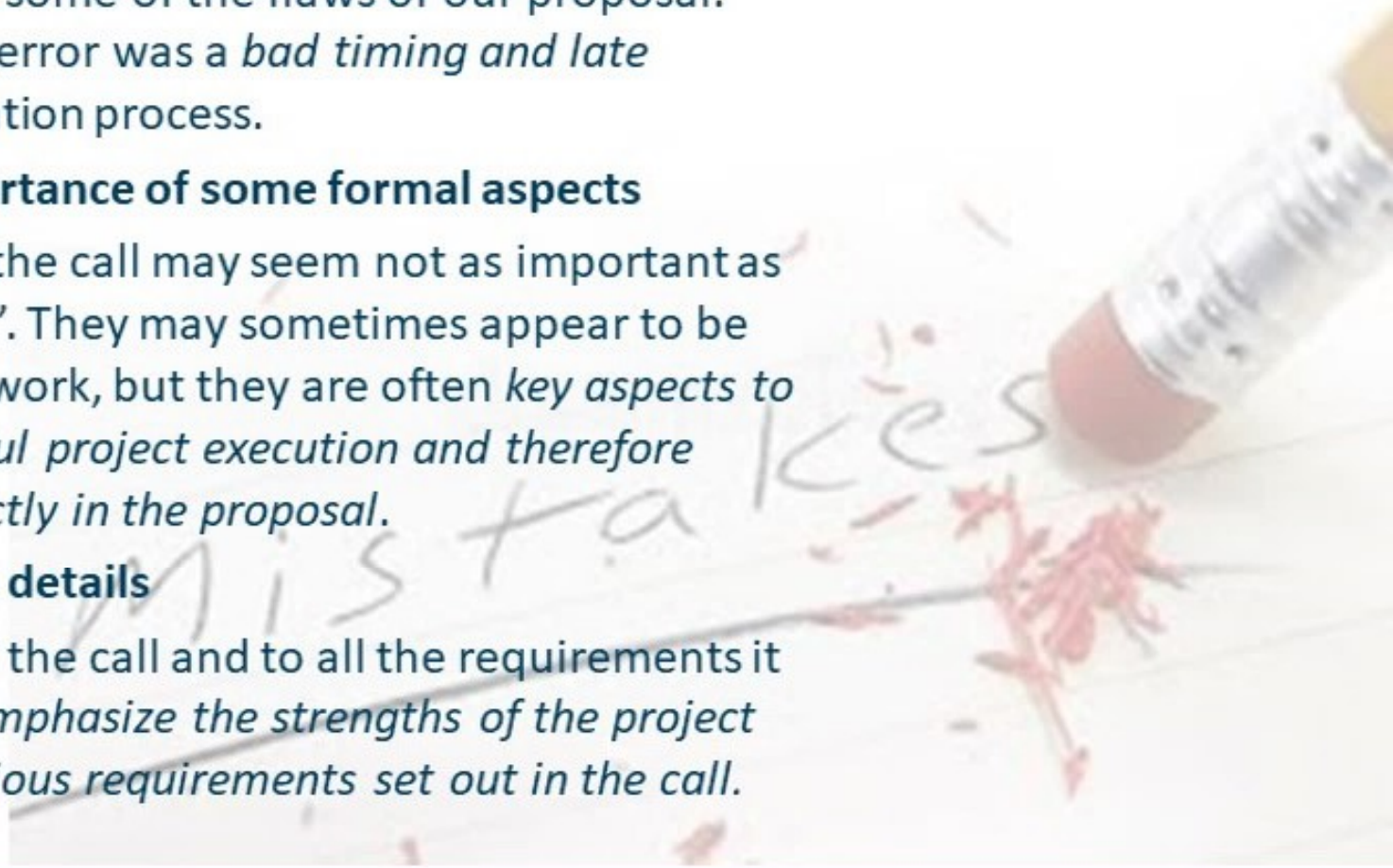
In the first application we 'walked alone' without asking support to any competent office (Grant Office, APRE). Probably they would have spotted some of the flaws of our proposal. The main reason for this error was a *bad timing and late scheduling* of our application process.

**Underestimate the importance of some formal aspects**

Some of the requests of the call may seem not as important as "our great scientific idea". They may sometimes appear to be useless additional paperwork, but they are often *key aspects to be checked for a successful project execution and therefore must be addressed correctly in the proposal*.

**Forgetting about the call details**

It is important to refer to the call and to all the requirements it states. It is essential to *emphasize the strengths of the project with reference to the various requirements set out in the call.*



# Conclusions

The key point is to **aim for excellence**.

To achieve it, one has to search for perfection in each step and action…

but don't be overkilled by perfectionism.

Remember that a **good idea** is not enough but it is a **necessary starting point**.

Be **self-critical** and open to suggestions and discussions.

**Share your ideas** and knowledge in the most open way.

**Build a real team** (Consortium): expertise is not the only important thing. Team empathy is often more important.

Pay **attention to the details**.

And **use all the support you can get from your Grant Office**!

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ALCYONE

# Aim for excellence