

# An introduction to proposals...

and how to write them.

# Proposals

- For better or worse, science requires funding... In academics, industry, or elsewhere.
- Before being funded, science is packaged into projects, and then proposed to some authority (funding agency, boss, industry partner).
- Many PhD projects are part of some funded proposal or are based on a proposal for research to professors, deans, etc. at the university.

# Proposals

- The reality of most scientific careers means writing and *winning* proposals.
- Unfortunately, most people are thrown in with little practice and learn as they go.
- In Slovenia, and in many other places, funding for post-docs is available to support recent graduates.
- The goal is to prepare you for that process.

Have you written or been involved in writing a proposal?

Have you read or reviewed a funding proposal?



# Proposal speak...

As you encounter proposals and calls, you will find some fairly common terminology and ideas:

- Work packages (WPs): sub-groups of work within the proposal
- Deliverables: Outputs in the form of reports, software, events, etc.
- Milestones: major achievements or turning points in a project
- Technological Readiness Levels (TRLs): Assigns numbers to the stage of research and innovation (basic research (1-2), applied research (3-6), innovation (7-8), commercialization (9))
- Person months: Units of work (143 hours) used to estimate effort.

# Proposal speak...

## TRLs:

- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated
- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab
- TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)



# pharaon

Pilots for Healthy and Active Ageing

DT-TDS-01-2019: Smart and Healthy Living at Home  
Intelligent and personalised digital solutions for sustaining and  
extending healthy and independent living.

### List of participants

No.	Participant organisation name	Country	No.	Participant organisation name	Country
1	COORDINATOR: Hewlett Packard Enterprise (HPE)	Italy	21	Roessingh Research and Development B.V (RRD)	Netherlands
2	Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna (SSSA)	Italy	22	Stichting Nationaal Ouderenfonds (NFE)	Netherlands
3	Fondazione Casa Sollievo della Sofferenza (CSS)	Italy	23	University of Twente (UT)	Netherlands
4	UP Umana Persone (UP)	Italy	24	AdSysCo B.V (ADS)	Netherlands
5	Co-Robotics S.r.l (CORO)	Italy	25	InnoRenew CoE (IR CoE)	Slovenia
6	Orthokey Italia SLR (OKEY)	Italy	26	National Public Health Service of Slovenia (NIJZ)	Slovenia
7	Technical Research Centre of Furniture and Wood of the Region of Murcia (CETEM)	Spain	27	Izola Retirement Home (DIJ)	Slovenia
8	Murcia Health Service (SMS)	Spain	28	Ericsson Nikola Tesla d.d (ENT)	Croatia
9	Polytechnical University of Cartagena (UPCT)	Spain	29	Ascora GmbH (ASC)	Germany
10	MY ENERGIA ONER, SL (MIWENERGIA)	Spain	30	Stelar Security Technology Law Research UG (STL)	Germany
11	Regional Ministry of Equality and Social Policies of Andalusia (RMESP)	Spain	31	GIP Autonom'lab (GIP AL)	France
12	University of Jaen (UJA)	Spain	32	Information Catalyst for Enterprise, Ltd (ICE)	UK
13	Ageing Social Lab Foundation (FAL)	Spain	33	Age Platform Europe (AGE)	Belgium
14	Robotnik Automation SLL (ROB)	Spain	34	Mind & Sparks gGmbH (M&S)	Austria
15	Indra Company (INDRA)	Spain	35	Domalys SAS (DOMALYS)	France
16	Irmadade da Santa Casa da Misericordia da Amadora IPPS (SCMA)	Portugal	36	Glintt Healthcare Solutions (GLINT)	Portugal
17	University of Beira Interior (UBI)	Portugal	37	SenLab IoT Solutions (SENLAB)	Slovenia
18	Caritas Diocesana de Coimbra (CDC)	Portugal	38	SenTab Estonia (SENTAB)	Estonia
19	University of Coimbra – Marine and Environmental Sciences Centre (UC MARE)	Portugal	39	Tallin University of Technology (TALTECH)	Estonia
20	Maastricht Instruments (MAIN)	Netherlands	40	Deutsches Institut für Normung (DIN)	Germany
			41	Tecnologie Informatiche e Loro Applicazioni (UNINFO)	Italy

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ORIGINAL



## Investigating face veneer check development in decorative plywood panels: the impact of four common manufacturing factors

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### Abstract

An optical method based on digital image correlation was used to investigate the impact of four decorative plywood manufacturing factors (core type, veneer type, adhesive type and lathe check orientation) on face veneer checking. The four core types were: combination core, medium density fibreboard, particleboard, and veneer core. The four veneer types were: peeled 0.604 mm, peeled 0.706 mm, sliced 0.508 mm, and sliced 0.564 mm. Both loose-side out and tight-side out lathe check orientations were used. The adhesive systems were urea–formaldehyde, polyvinyl acetate, and soy-protein based. 96 treatment combinations with 8 replicates were tested. All specimens were exposed to harsh but realistic drying conditions (approximately 30°C and 26% relative humidity) for 4 h during inspection. Checks were detected on 428 out of a total of 765 specimens (56%). The estimated mean check densities (area of checking per unit area) indicated some unfavourable factor combinations. All factors had some degree of interaction with one another and check development could not be attributed to a single factor examined in this study. The data were fit to a generalized linear mixed model based on Tweedie's compound Poisson distribution. Confidence intervals were calculated via bootstrapping. The check density estimates produced by this model can be used to cautiously guide manufacturers as they decide on panel components. The broader use of the model is to highlight the complexity of the problem and guide future research in this area.

### 1 Introduction

Decorative hardwood plywood panels are wood-based composites comprised of hardwood veneers bonded to centre layers (or “cores”) which may be veneer, lumber, particleboard,

medium density fibreboard (MDF), hardboard, or a combination of these materials (Stark et al. 2010). They are commonly used in applications where quality appearance is desired, including cabinetry, furniture, fixtures, wall and ceiling panels. In uses where appearance is most critical, any defect in the face veneer can lead to complaints by the customer. For many years a common and costly customer complaint has been checking in the face veneer (Holcombe 1952; Cassens et al. 2003; Leavengood et al. 2011). No standard stipulates the minimum wood-tissue separation to qualify as a check, and no study has assessed end-user views on acceptable levels of checking in finished panel products. Therefore, based on physical examination of panels that produced customer complaints, checks in this study were defined as separations of the wood tissue along the fibre direction, greater than 0.2 mm across (i.e. in width) and longer than 1 mm (Burnard 2012). When the surface is exposed to a low humidity environment, moisture gradients between the face veneer and core materials develop; variable shrinkage rates between the face veneer and the core material generate drying stresses, which are the principal cause of checking in hardwood plywood products (Gilmore and Hanover 1990; Forbes 1997; Schramm 2003; Cassens et al.

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# Proposals vs. papers

- Proposals are pitches about a potential outcome. Papers are the story of a past outcome.
- Proposals contain more persuasive writing
- Proposals respond to a (sometimes) specific call with targeted outcomes (you propose the path to get there).
- Each funding agency has their own requirements for applications.
- Both are reviewed.



Proposals are  
more varied  
than  
scientific  
articles.



Where to start with a proposal?

Either the call or the concept.

It's a bit...



# Start with the concept.



# The proposal research cycle



Build consortium!



The proposal research cycle

# Concept notes

- Proposals often start with a concept note.
- They outline the motivation, background, objectives, and work plan.
- Concept notes are the proposal for the proposal.
- Used to get support from colleagues, bosses, and consortium members before working on the full proposal.
- Often called a 1-pager, usually 1-2 pages to start.
- Lots of rapid revisions.

# Finding a call

- Your concept will have to be adjusted to a specific call for proposals.
- But first you need to find them.
- Big public funding comes from governments.
  - EU: Horizon Europe (2021 - )
  - Slovenia: ARRS, MIZS, other ministries too.
  - Other international programmes: often a mix of funds from EU and States (Interreg, etc.)
  - Many others for specific types of work (e.g., Erasmus)

# Finding a call

- EU funding - <https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes>
  - Horizon Europe: [https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/horizon-europe\\_en](https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/horizon-europe_en)
- ARRS
  - <http://www.arrs.si/sl/razpisi/21/pregled-domaci.asp>
  - <http://www.arrs.si/sl/razpisi/index.asp>
  - <http://www.arrs.si/sl/razpisi/21/pregled-medn.asp>



Build the proposal based on the call.

Adapt your concept.

Fill gaps with new partners.



# What's in a call?

- You will get up to 3 pages of guidance about the topic and be expected to write 70+ pages.
- Key things: Topic, Challenge, Scope, Expected Impacts, Budget, Template
- Finding more information: many calls are accompanied by “information days” or webinars where more information is given.
- Contacts at funding agencies (or their national delegates – National Contact Points).

# What's in a proposal?

- Like scientific papers, there are fairly standard sections in proposals.
- Horizon Europe proposals have three main body sections (part b) linked to the proposals scoring criteria:
  1. Excellence
  2. Impact
  3. Implementation

(there are other, more administrative sections, too)

[https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/temp-form/af/af\\_he-ria-ia\\_en.pdf](https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/temp-form/af/af_he-ria-ia_en.pdf)

# HE Proposals: Excellence

- The name is non-sensical.
- Here you describe:
  - objectives,
  - how your proposed project aligns with the work programme and call,
  - Your big picture concept and approach (details are in another section).
  - What will really set this project apart, your non-scientific objectives, your larger societal goals.

# HE Proposals: Impact

- What are the impacts of your project going to be?
  - These need to match the expected impacts from the call, and extend them
  - Your impacts need to be measurable.
  - They need to be realistic
- How will dissemination and exploitation maximise impacts?
- How will communication activities maximise impacts?

# HEProposals: Impact

- How will dissemination and exploitation maximise impacts?
  - Exploitation: further use of the results beyond the project; IP protection, patents, commercialization, base for future research, standardization, etc. What is the plan, how will you monitor it, who will do it.
  - Dissemination: Spreading the results beyond the project (not IP/commercialization), like scientific publications, conferences, etc.

# HE Proposals: Impact

- How will communication activities maximise impacts?
  - Communications are activities that include publicity, awareness raising, social media use, etc. Promote the project! Include societal engagement! (Two-way comms are better than one).
- A canvass-like tool is provided to summarise the impact section

# HE Proposals: Implementation

- The implementation section contains the work plan and supporting information about the outputs (deliverables) and partners.
- Includes scientific work, administrative work, comms, dissemination, exploitation, and other relevant tasks.
- Workplan is broken down into work packages of thematic activities. Each work package has objectives, sub tasks, and outputs.



# HE Proposals: Implementation

- Each work package also has an estimated amount of effort (in person months)
- The responsibilities of partners are also included in each WP
- Implementation also includes risks and mitigations.

# HE Proposals: Implementation

WP#	Title	WP#	Title
1	Administration	4	Small-scale industrial piloting
2	Proof-of-concept work	5	Impact assessment (Eco, Social, \$\$\$)
3	Laboratory testing	6	Communication & Dissemination
7	Ethics & Data Management		

Example simplified work plan



**Different funders have different expectations.**

# Differences between proposal types

- Some funders want to see different things, but the basic concepts apply.
- Biggest differences are between programmes with different goals:
  - ERC: Funds high-risk high-reward basic science
  - Erasmus+: development of educational programmes
  - HE: some basic, but mostly applied sciences
  - All of these have VERY different application processes and reviewer guidelines.

# Differences between proposal types

- Even within HE, there are different types of proposals:
  - Research and Innovation Actions (most common) - Move solid concept research up the TRL scale
  - Innovation Actions - demonstration and piloting, commercializing
  - Coordination and Support Activities – policy, social development, dissemination, institution building, etc.
  - Marie Skłodowska-Curie Awards (MCSA, three types!) – Focus on developing researchers and mobility
  - Widening (Twinning, Teaming, ERA-Chairs) – reduce disparity in RTDI performance between high-performing and low-performing member states in the EU (and neighbouring countries)

# Proposal Review

- Unlike papers, the reviews you get aren't particularly helpful.
- Generally, you get a score and some rather unhelpful commentary.
- All proposals above some score threshold are ranked (by score, then some tie-breaking qualities).
- They get funding based on that ranking until there is no more money to fund them.

# After successful review

- Celebration(s).
- Contract negotiations.
- Shock at the things you promised in your proposal.
- Lots of hard work.
- Disseminating the results of your hard work!
- Reporting.
- Next proposal.

# Tips

- When you get a template, the text usually contains instructions: change the **colour of the text to red** and leave it until the section is responded to. When you have a good response, copy the instructions to a comment linked to the section header. Helps you and other readers to know why you wrote what you did.
- Look for [annotated templates](#) (old version, for h2020)
- Ask advisors / colleagues if they can share previous proposals.



# Points of etiquette

- Proposals are considered confidential and shouldn't be shared outside of the consortium.
- When working in a consortium, a joint working document is expected these days (google docs, O365, etc.).
- Consortium based proposals mean budgeting. It can be more agreeable than you think, but requires careful planning and negotiation.
- Partner input and engagement will vary... be ready to pick up the slack.

# Assignment 5: Review a published article

- Select 1 paper you included in your literature review and review it as if you were reviewing it before publication.
- Due 07.12

Next week you get you will get the details for your final project. You will be writing a post-doc application for the annual ARRS call. You will proceed section by section with intermittent review by your peers.