How to Write Good Scientific Project Proposals: A Comprehensive Guide

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Outline

- Introduction
- Preliminary Work
- Structure of a Project Proposal
- About Collaborative Writing
- Further Information
- Submission
- Notification
- Dissemination of Results

Outline

- **Conclusions and Future Work**
- **Acknowledgments**
- **About the Author**
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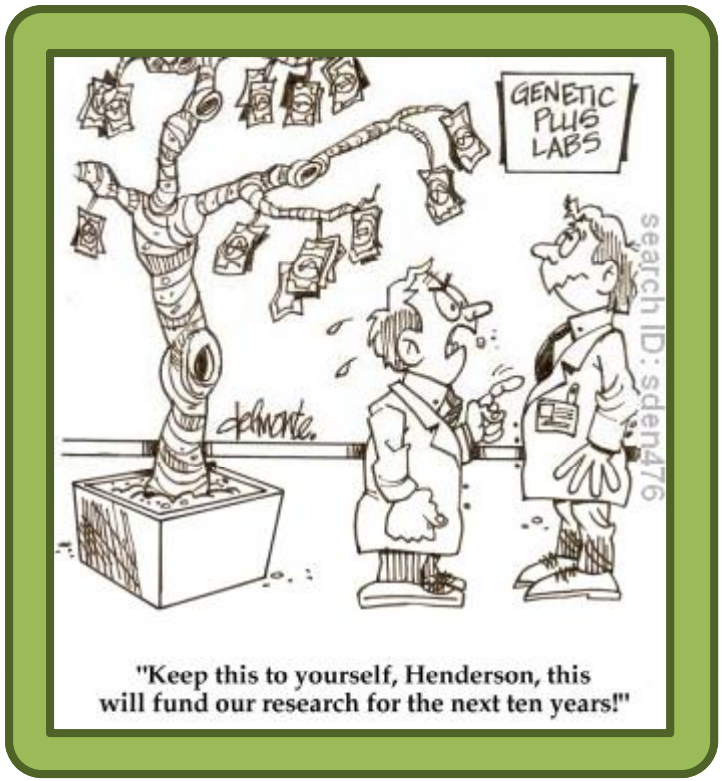
Introduction

- **Motivation and Scope**
- **Objectives and Approaches**
- **Main Contributions**
- **Overview: What makes a good project proposal?**

Note: this section has some overlap with the introductory section on [Paiva, 2013] “How to Write Good Scientific Papers: A Comprehensive Guide”, for the sake of completeness and to make it sufficiently self-contained

Introduction

- **Motivation and Scope**
  - What is a **scientific project proposal**?
    - A **request for financial assistance** to **implement a scientific project** (inspired from [Belmain, 2012])



From http://www.cartoonstock.com/directory/r/research_funding.asp

Introduction

- **Motivation and Scope**
  - Why write proposals?
    - Write proposals so that you have **money to do research** and give your **contribution to understanding the world** **(Scientific career**: should be centered in the **creation of knowledge)**
      - **Fund equipment** and **laboratory facilities**
      - **Fund students** (both under- or post-graduate)
      - Gives you **independence to attending meetings**
        - » E.g., **collaborate** with **other scientists**, go to **conferences**, etc.

Introduction

- **Motivation and Scope**
  - Why write proposals?
    - Important indicator of **external approval of your activities**
      - Raise your academic prestige
    - Increase the **number of scientific publications**
    - May **benefit your evaluation**
      - **Grant-getters** and people **who publish more** (always favoring quality over quantity) are ranked higher
    - May **benefit your university/research institution financially** through **overheads**

Introduction

Proposal writing requires **considerable knowledge** in **many disciplines**

- As any skill, can be learned but **requires practice**

Introduction

- **Motivation and Scope**
  - What to investigate in a project?
    - A **new idea**, e.g., a first solution to an impacting problem
    - A **better solution** to a **known problem**
      - E.g., a better-performing algorithm (accuracy, speed, etc.)
    - **Multidisciplinary ideas**
    - **Knowledge gaps**
    - …

Introduction

- **Objectives and Approaches**
  - The purpose of this document is to summarize a number of **general guidelines** for **producing competitive scientific project proposals**
    - These guidelines do **not substitute the priceless value of experience**
    - As always, these are **general rules of thumb**
      - Particular cases might require particular approaches
  - I resort to both a **literature review** on the theme and my **personal experience**
    - Other people might disagree with some of my perspectives
  - **Illustrative examples** are used extensively

Introduction

- **Main Contributions**
  - A clear, comprehensive and **integrated overview of the main issues** pertaining to the production of good scientific project proposals
    - Information about the topic is scattered across several sources
  - **Lessons learned** from my personal experience writing scientific proposals
    - Enriched with several rejected proposals ☺

Introduction

- **Overview: What makes a good scientific project proposal?**
  - An **original, impacting idea**
    - Demonstrating **scientific, economic, and social impact** of the proposed research
  - Its adequacy to **funding agency requirements** and **program criteria**
    - Idea is strategic for the donor
    - Funding may be target to specific fields, e.g., energy, or profiles, e.g., researchers under some age

Introduction

- **Overview: What makes a good scientific project proposal?**
  - The **way you communicate** it
    - Effectiveness of communication and clarity of presentation are key
  - A good **critical** coverage of **related literature**
  - A **convincing methodology**
  - Convincing **team background** and **ability to succeed**
    - The **project coordinator** and **team's curriculum** must convince the evaluators that the project has a **high probability of success**
      - E.g., past work on related topics, preliminary research

Introduction

- **Overview: What makes a good scientific project proposal?**
  - Adequate **management**, **monitoring** and **evaluation plans**
    - Management structure, planned deliverables, milestones, etc.
  - Realistic **budget**
    - Demonstrate need for financial assistance (resources: equipment, student scholarships, conferences, etc.)
  - **Exit strategy**: demonstration of the **sustainability of the project's outputs**
    - Which project's outputs should live on after the project ends, who will want them, and why?
      - **E.g., software commercialization plans, patents, new knowledge, better trained people**

Introduction

- **Overview: What makes a good scientific project proposal?**
  - **Key questions** (adapted and extended from [Cardoso, 2012]
    - Is the research new?
    - Is the research significant to the field of research?
    - Does it clearly motivate and clearly formulate the research question?
    - Does it outline the current knowledge of the problem domain, as well as the state of existing solutions?
    - Does it present clearly any preliminary ideas, the proposed approach and the results achieved so far?

Introduction

- **Overview: What makes a good scientific project proposal?**
  - **Key questions** (adapted and extended from [Cardoso, 2012]
    - Does it sketch the research methodology that will be applied?
    - Does it point out the contributions of the applicant to the problem solution?
    - Does it state in what aspects the suggested solution will be different, new or better as compared to existing approaches to the problem?
    - Does it state how the expected results will be evaluated or compared to existing approaches to the problem?
    - Does it state how and by whom the expected results can be applied?

Introduction

- **Overview: What makes a good scientific project proposal?**
  - **Key questions** (adapted and extended from [Cardoso, 2012]
    - Is the team's background (and particularly, the project coordinator's) adequate to convince the evaluators that the project will succeed?
    - Does it state how the project evolution will be monitored and evaluated?
    - Is the budget realistic? Is too low or too high? Are the planned equipment, scholarships, missions, consumables, etc. adequate?
    - Does it demonstrate the sustainability of the project's outputs? Which project's outputs should live on after the project ends, who will want them, and why?

Introduction

For beginners: find a **role model**

- Follow the **model of a good scientific project proposal** of the kind you are writing, in your research field

Start writing the day you decide to study the problem

- Even simple, short, unstructured notes will help you
  - Help you staying focused
  - Accelerate the production of the final manuscript
- Write down ideas that come to your mind
- Don’t wait for a month before the deadline to start writing

Introduction

Think about **possible funding sources early**

Check **proposal calls** and **deadlines**

Contact **possible partners as early as possible**

Become a **proposal reviewer**

- It will help you to both read and write better
- How?
  - Approach funding sources
  - Get funding! They may invite you later to become a reviewer

Introduction

Table 2: Ranking of top 50 participant HES organisations in FP7 signed grant agreements in terms of counts of participations for the period 2007-2010.

HES RANK	OVERALL RANK	INSTITUTION NAME	COUNTRY
1	6	UNIVERSITY OF CAMBRIDGE	UK
2	8	IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY AND MEDICINE	UK
3	9	UNIVERSITY OF OXFORD	UK
4	10	EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH	CH
5	11	KATHOLIEKE UNIVERSITEIT LEUVEN	BE
6	12	ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE	CH
7	13	UNIVERSITY COLLEGE LONDON	UK
8	17	KARLSRUHER INSTITUT FUER TECHNOLOGIE	DE
9	18	KAROLINSKA INSTITUTET	SE
9	18	DANMARKS TEKNISKE UNIVERSITET	DK
11	21	UNIVERSITY OF EDINBURGH	UK
12	22	LUNDS UNIVERSITET	SE
13	23	UNIVERSITY OF MANCHESTER	UK
14	24	TECHNISCHE UNIVERSITEIT DELFT	NL
15	26	KØBENHAVNS UNIVERSITET	DK
16	27	KUNGLIGA TEKNISKA HOEGSKOLAN	SE
17	31	UNIVERSITY OF SOUTHAMPTON	UK
18	32	VERENIGING VU-WINDESHEIM	NL
19	33	CHALMERS TEKNISKA HOEGSKOLA	SE
20	34	UNIVERSITEIT GENT	BE

From http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/fourth_fp7_monitoring_report.pdf

Introduction

Further reading

- A. Yavuz Oruc (2011). “Handbook of Scientific Proposal Writing”, Chapman and Hall/CRC

Preliminary Work: What you should do before writing the proposal

- Good research ideas
- Funding sources
- Partners
- Call assessment
- Basic draft
- Task scheduling

Preliminary Work

- **Goal**
  - Plan your proposal before writing it
- **How?**

Adapted from [Belmain, 2012]

Preliminary Work – A Good Idea

- **Goal**
  - **Good research idea**
    key for a good proposal
    - Although not sufficient

From http://en.paperblog.com/three-rules-to-stress-test-your-great-idea-351375/

Preliminary Work – A Good Idea

- **Research ideas and scope**
  - **Pure research** (= basic research = fundamental research)
    - Increase understanding of **fundamental principles**: explain how the world works, refute existing theories
    - Generate **principles and theories**
      - Typically not intended to generate commercial benefits in the sort-term
    - Examples
      - Physics: find the Hibbs boson
      - Economy: explain the world economic crisis
      - Sociology: understand social changes
      - Computer science: analyze algorithm complexity

Preliminary Work – A Good Idea

- **Research ideas and scope**
  - **Applied research**
    - **Practical application of science**: use of accumulated knowledge to address complex **real-world problems**, with possible **commercial benefits**
    - Examples
      - Economy: use machine learning and economic theories to predict economic behavior
      - Computer science: create new programming languages suited for specific goals and tasks
      - Business: apply data mining to enterprise data to discover relations among customers, products, etc.

Preliminary Work – A Good Idea

- **Research ideas and scope**
  - **Hybrid research**
    - Usually, a **mix of the two**
    - Examples
      - Computer science: understand how music signals encode emotions and use machine learning techniques to build emotion-based retrieval tools
      - Medicine: understand the human sense of touch and apply cutting-edge knowledge about robotics and communication technologies to perform tele-surgery with user sensory feedback

Preliminary Work – A Good Idea

- **What makes a good research idea?**
  - **Originality**
    - The idea should be "original"
      - Relevant and previously **unaddressed problem**
      - **Better methodology** to a previously **addressed but unsolved topic** (current results with room for improvement)
      - **Better methodology** to a problem with **known solution**
        - » E.g., much more **efficient** solution
      - …

Preliminary Work – A Good Idea

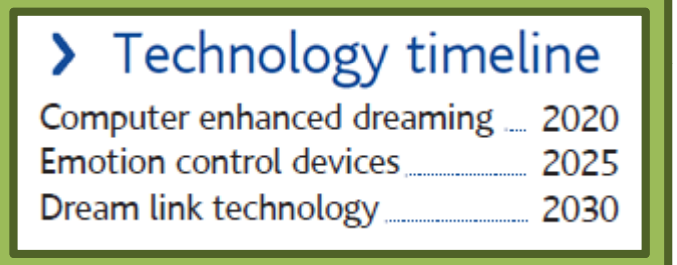
- **What makes a good research idea?**
  - **Impact**
    - The idea should have a significant impact to science and/or to society
      - **Scientific, social, economic, cultural impact**
  - **Riskiness**
    - Topic should be complex, with some associated risk and ambition

Preliminary Work – A Good Idea

- **How?**

Field	Research Front Name
Agricultural Sciences	FOODBORNE ILLNESS; FOODBORNE OUTBREAK DATA REPORTED INTERNATIONALLY; UNITED STATES-MAJOR PATHOGENS; SOURCE ATTRIBUTION; FOODBORNE INFECTIONS
Biology & Biochemistry	VASCULAR ENDOTHELIAL GROWTH FACTOR B ENDOTHELIAL FATTY ACID UPTAKE CONTROL; VASCULAR ENDOTHELIAL GROWTH FACTOR-D RECEPTOR BINDING; VASCULAR ENDOTHELIAL CELLS; GLIOBLASTOMA STEM-LIKE CELLS; HRG INHIBITS TUMOR GROWTH

From http://archive.sciencewatch.com/dr/erf/2011/11decerf/



From BTexact Technologies - a division of British Telecommunications plc

Research Issues in Operating Systems for Reconfigurable Computing

Grant B. Wigley and David A. Kearney

Preliminary Work – A Good Idea

- **How?**
  - Your **own background**, experience and intuition
    - Open issues from your past projects and papers, …
  - Your **colleagues** (in your institution or network)
    - Collaboration is inspiring
  - Research agendas from **reference research labs**
  - **Strategic research agendas** (e.g., Garnter, Forrester, etc.)
  - Research reports from **science "watchdogs"**
    - E.g., Essential Science Indicators (Thomson Reuters), Science Watch

Preliminary Work – A Good Idea

- **How?**
  - Visions by **leading researchers**
  - Topics in **world-class conferences**
  - **"Inventing the Future"-type papers**
    - Revisions and trends, knowledge gaps, etc. in
  - **"Conclusions and Future Work" sections** of recent good papers
    - Suggestions for future work
  - **Information events**
    - Some funding agencies organize programs dedicated to the exchange of ideas
      - E.g., FP7 Info Day

Preliminary Work – A Good Idea

From http://www.gartner.com/technology/research/maverick/

Preliminary Work – A Good Idea

- **Structure your idea**
  - **Divide-and-conquer** approach
    - Define **hierarchy of tasks** and sub-tasks to tackle the problem
    - Useful to identify areas where you need to **look for expertise** somewhere else (i.e., find partners)

Preliminary Work – A Good Idea

Get out of the box! Explore other fields

- Many great ideas are **multidisciplinary**
- **Exchange ideas** with **colleagues from other fields**
- Read **journals outside of your usual themes**
- Engineering: journals and magazines like IEEE Spectrum might be a good source of inspiration

Ask the question: Are there **any studies** that **already answer** the question you are asking?

- → One of the purposes of the literature review (see later)

Preliminary Work – A Good Idea

Remember, you need **time to reflect**!!!

Besides a good idea, have preliminary results

- Most **successful proposals** are based on preliminary results (prospective experiments, your and your partners' past work, etc.)
- They **strengthen** your proposal: useful for **demonstrating feasibility and capabilities**

Preliminary Work – Funding Sources

The purpose of science is to get paid for doing fun stuff. Nominally, science involves discovering something new about the Universe, but this isn't really necessary. What **is** really necessary is a grant. [Schulman, 1996]

Preliminary Work – Funding Sources

- **Goal**
  - Find out about **funding opportunities** (programs, areas, funding amounts, etc.)
- **How?**
  - Look in the **typical sources**
    - Government funding agencies
    - Charitable foundations
    - Businesses
    - Individuals
    - …

Preliminary Work – Funding Sources

- **How?**
  - Have a **database of funding sources**, programs and deadlines
    - About general topics
    - Close to your research idea
  - Check typical **funding amount** per project
  - Check **evaluation time**
    - Mean time between submission and notification
      - Prompt and helpful revision? 3 months, 1 year?
      - Might be relevant depending on your needs

Preliminary Work – Funding Sources

- **Examples**
  - European Union Framework Programs 1-7
  - International Foundation for Science, Sweden
  - Science Foundations from individual countries
    - E.g., Portugal
      - Government agencies: Fundação para a Ciência e Tecnologia
      - Government cooperation programs: MIT-Portugal
      - Charitable foundations: Fundação Calouste Gulbenkian
      - Business: PT Inovação

It is good when your institution has **administrative staff** dedicated to this task.

Preliminary Work – Funding Sources

From http://ec.europa.eu/research/fp7/understanding/fp7inbrief/structure_en.html

Preliminary Work – Funding Sources

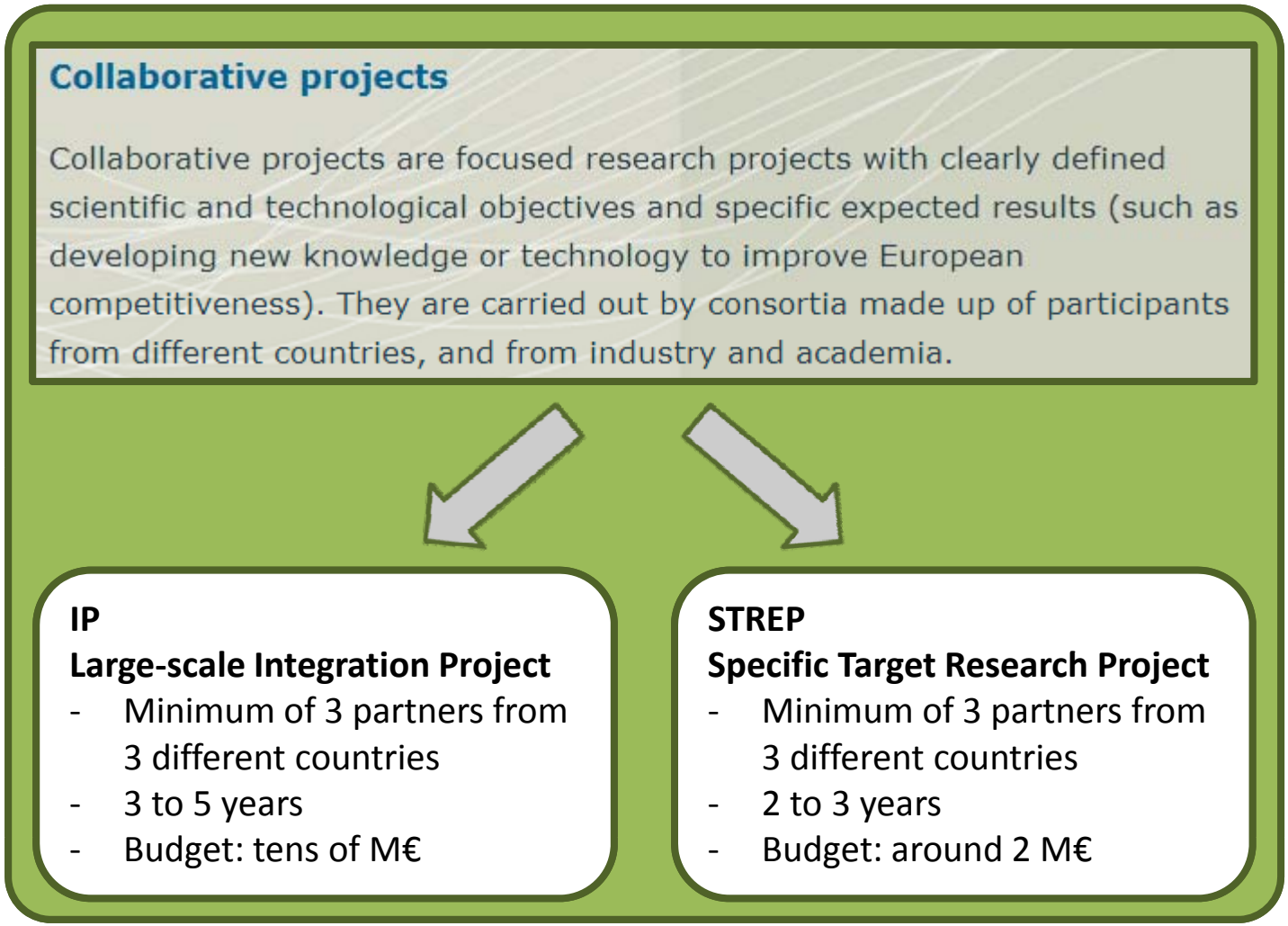
Cooperation

The core of FP7, representing two thirds of the overall budget, is the Cooperation programme. It fosters collaborative research across Europe and other partner countries through projects by transnational consortia of industry and academia. Research will be carried out in ten key thematic areas:

- Health
- Food, agriculture and fisheries, and biotechnology
- Information and communication technologies
- Nanosciences, nanotechnologies, materials and new production technologies
- Energy
- Environment (including climate change)
- Transport (including aeronautics)
- Socio-economic sciences and the humanities
- Space

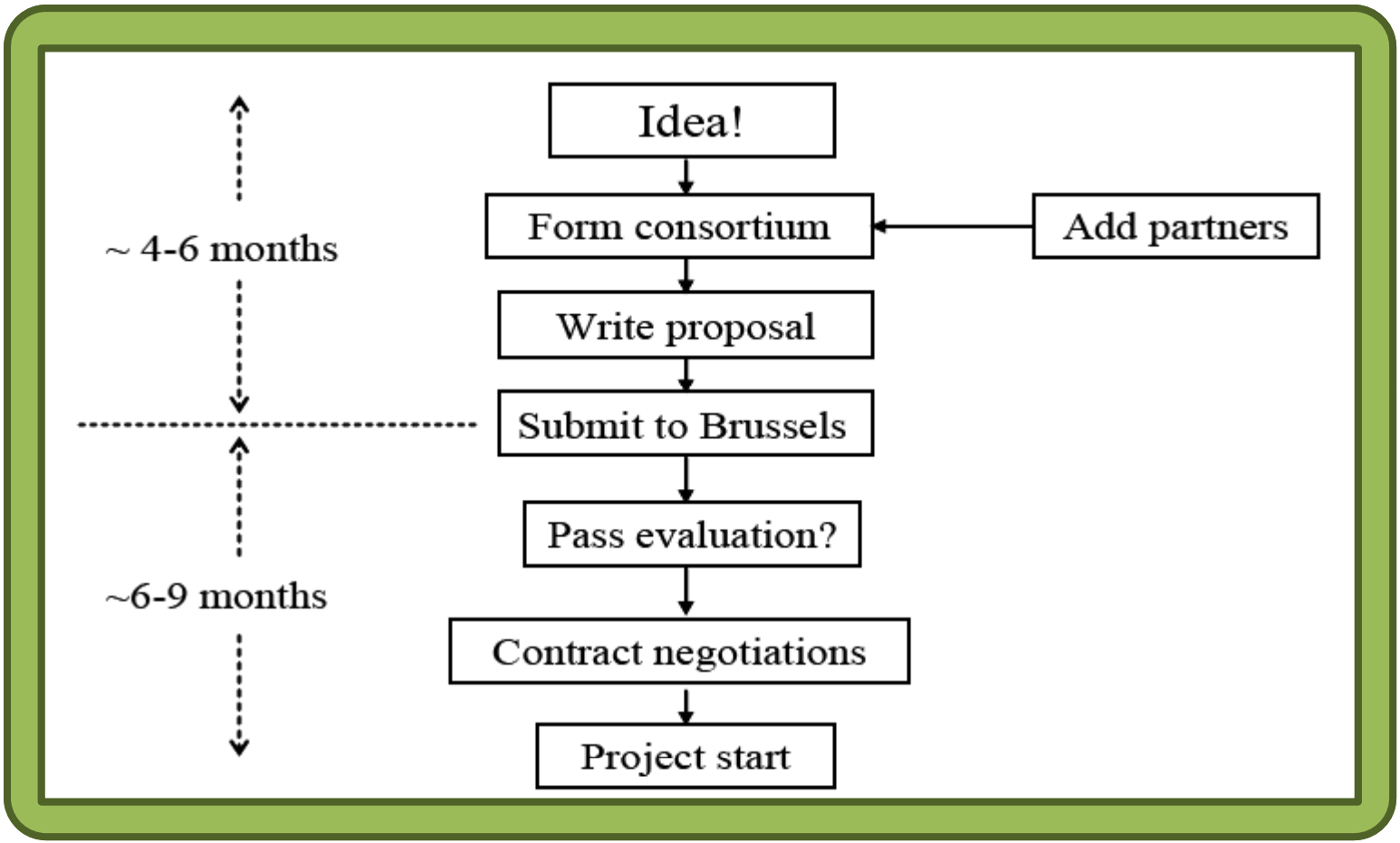
From http://ec.europa.eu/research/fp7/understanding/fp7inbrief/structure_en.html

Preliminary Work – Funding Sources



Adapted from http://ec.europa.eu/research/fp7/understanding/fp7inbrief/funding-schemes_en.html

Preliminary Work – Funding Sources



From www.efpconsulting.com/tools (Mr. M. Morron's FP7 Book)

Preliminary Work – Funding Sources

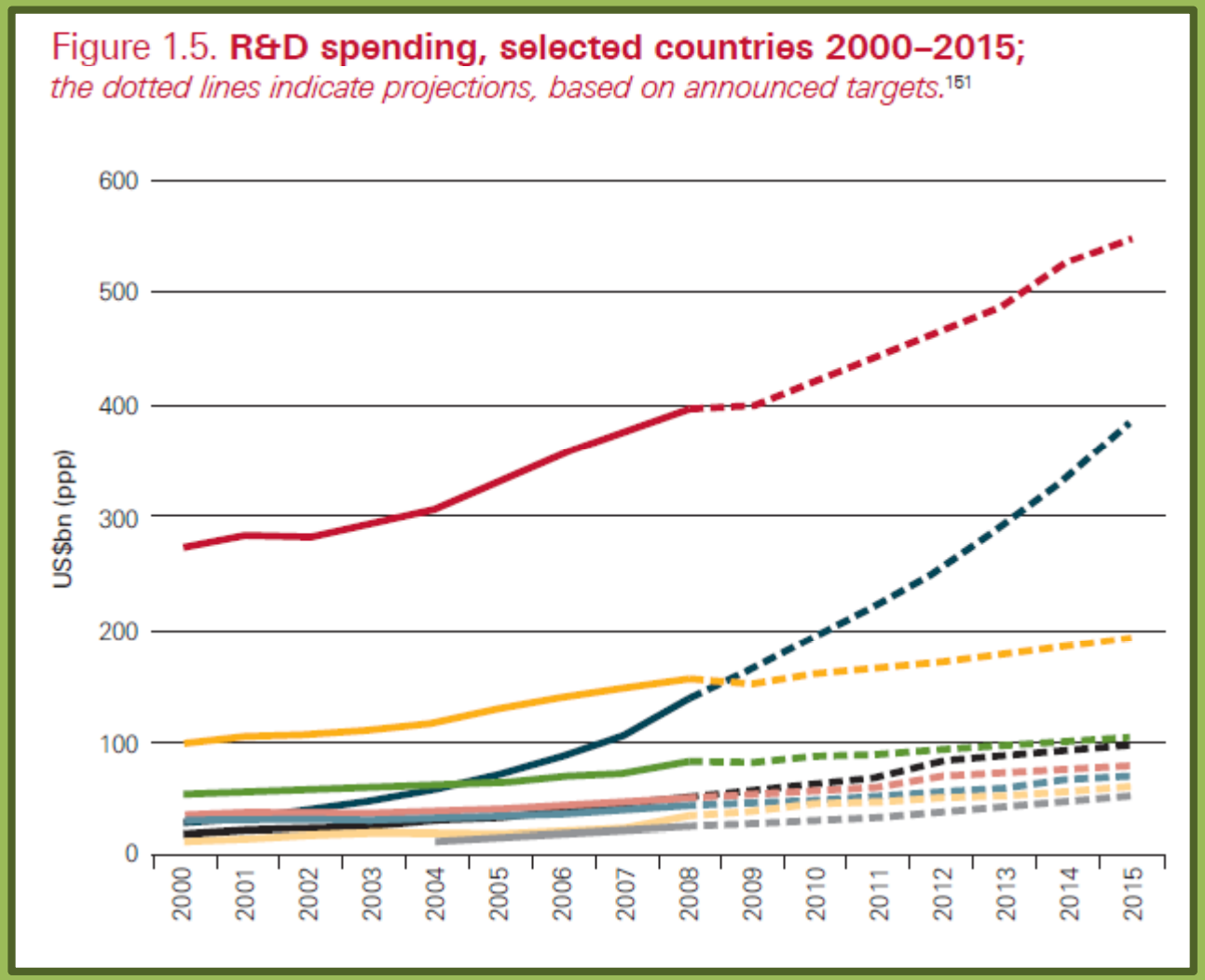
- **The Good News**
  - Investment in science is **growing globally**
    - Nearly doubled since the beginning of the 21st century

Table 1.1. **Global science by numbers.**[9]

	Spend on research and development		Numbers of researchers	Number of publications
	US$	% GDP		
2007	1145.7bn	1.7	7.1m	1.58m
2002	790.3bn	1.7	5.7m	1.09m

From [Royal Society, 2011, p. 16]

Preliminary Work – Funding Sources



From [Royal Society, 2011, p. 42]

Preliminary Work – Funding Sources

- **The Bad News**
  - **World crisis** affects research budgets in several countries
  - **Low proposal acceptance rates**
    - Many funding sources around 10-15%
      - or less, depending on the topic

Preliminary Work – Call Assessment

- **Goal**
  - Get to **know in detail** the nature of the **research calls**
    - A donor might have several programs, each with its own rules (e.g., European Commission FP7)
  - **Evaluate** whether your **research ideas fit**
  - **Select one call**

Preliminary Work – Call Assessment

- **How?**
  - **Suitableness**
    - Does the research call match your research ideas and research scope?
    - If not, you can be
      - **Reactive**
        - » Adapt your ideas to fit an existing program
      - **Proactive**
        - » Propose your own ideas to a program
        - » Sometimes only in specific moments, e.g., public calls for ideas

Preliminary Work – Call Assessment

- **How?**
  - **Eligibility**
    - Are you eligible to apply?
      - Age
        - » Young researchers, experienced researchers
      - Theme
        - » Starting grants, excellence grants, team formation grants, grants to return to your original country, …

Preliminary Work – Call Assessment

- **How?**
  - **Deadline**
    - What is the submission deadline?
    - Do you have enough time to write a winning proposal?
  - **Acceptance rate**
    - For programs with low acceptance rate, how confident are you?
    - What trade-offs are there between provided funding and acceptance rate?

Preliminary Work – Call Assessment

Read the call document in **detail**

Avoid running against the clock

- Many **potentially good proposals fail** because of insufficient preparation time: bad writing, deficient state of the art review, bad planning, no time to review, etc.

Preliminary Work – Call Assessment

Call Fiche	English
Cooperation Work Programme 2013 - General Introduction	English
Guide for applicants (Collaborative projects: Large-scale integrating projects - IP)	English
Work Programme 2013 - Information and Communication Technologies	English
Guide for applicants (Collaborative projects - Small and Medium-scale focused Research Projects - STREP)	English
Cooperation Work Programme 2013 - General Annexes	English
Guide for applicants (Coordination and Support Action: Coordinating - CSACA)	English
FP7 Factsheets	English
Guide for applicants (Coordination and Support Action: Supporting - CSASA)	English
Guide for applicants (Combination of Collaborative project and Coordination and support action - CP-CSA)	English
Guide for applicants FET Proactive only (Collaborative projects: large scale integrating projects - IP)	English
Guide for applicants FET Proactive only (Collaborative projects: small and medium scale focused research projects - STREP)	English
Guide for applicants FET proactive only (Coordination actions - CA)	English
Guide for applicants FET Proactive only (Support actions - SA)	English

From http://ec.europa.eu/research/participants/portal/page/cooperation?callIdentifier=FP7-ICT-2013-10#wlp_call_FP7

Preliminary Work – Partners

- **Goal**
  - Find **research synergies**

Excellence demands **collaboration**

- The **whole** is **more than the sum of the parts**

Preliminary Work – Partners

- **How?**
  - **Identify external needs**
    - Based on the **previous structuration** of your research idea
  - Contact **prospective partners**
    - State your **research idea** and **visions**
    - Clarify **what contributions** your **partners can give**
      - Often more than what you expected initially
  - Attend **collaboration events**
    - Some programs have events dedicated to finding partners for their calls

Preliminary Work – Partners

Have a **database of possible partners**

- From past projects or papers, scientific contacts, authors you've read about, …

Have **Industry partners**

- Depending on the nature of your project, they might be key for later exploitation of project results

Contact people you've never worked with before

- It is usually rewarding

Preliminary Work – Partners

Use **partner search tools**

- E.g., FP7 CORDIS partner search tool

Form the **consortium earlier then the call**

- At least the core team

Optimize the **consortium size**

- Not too large, not too small
- Depends on the project size
  - IP: around 15
  - STREP: around 5

Preliminary Work – Partners

From https://cordis.europa.eu/partners/web/guest/home

Preliminary Work – Partners

- **Collaboration is a growing trend**

Table 11.1 Statistics on the co-authorship distribution in all fields combined in selected years

SCI Volume	*Share of single-authors papers*	*Co-author mean*	*Reciprocal of harmonic mean*
1980	24.8%	2.64	0.52
1990	15.7%	3.34	0.43
2000	10.7%	4.16	0.37

From [Glänzel and Schubert,2004]

Preliminary Work – Partners

- **Why collaborate?**
  - To **share knowledge, experience and skills**
    - → **Promote excellence**
  - To take advantage of **specialization** you don't have
    - Delegate tasks
  - To **sustain motivation** via interaction
  - To have/provide **access to costly equipment**, **data**, etc.
    - E.g., clinical partner: costly hospital equipment and data, enterprise partner: costumer data
  - To **strengthen connections** (and foster future collaboration → virtuous circle)
  - To promote **increased number of publications** and **citations**

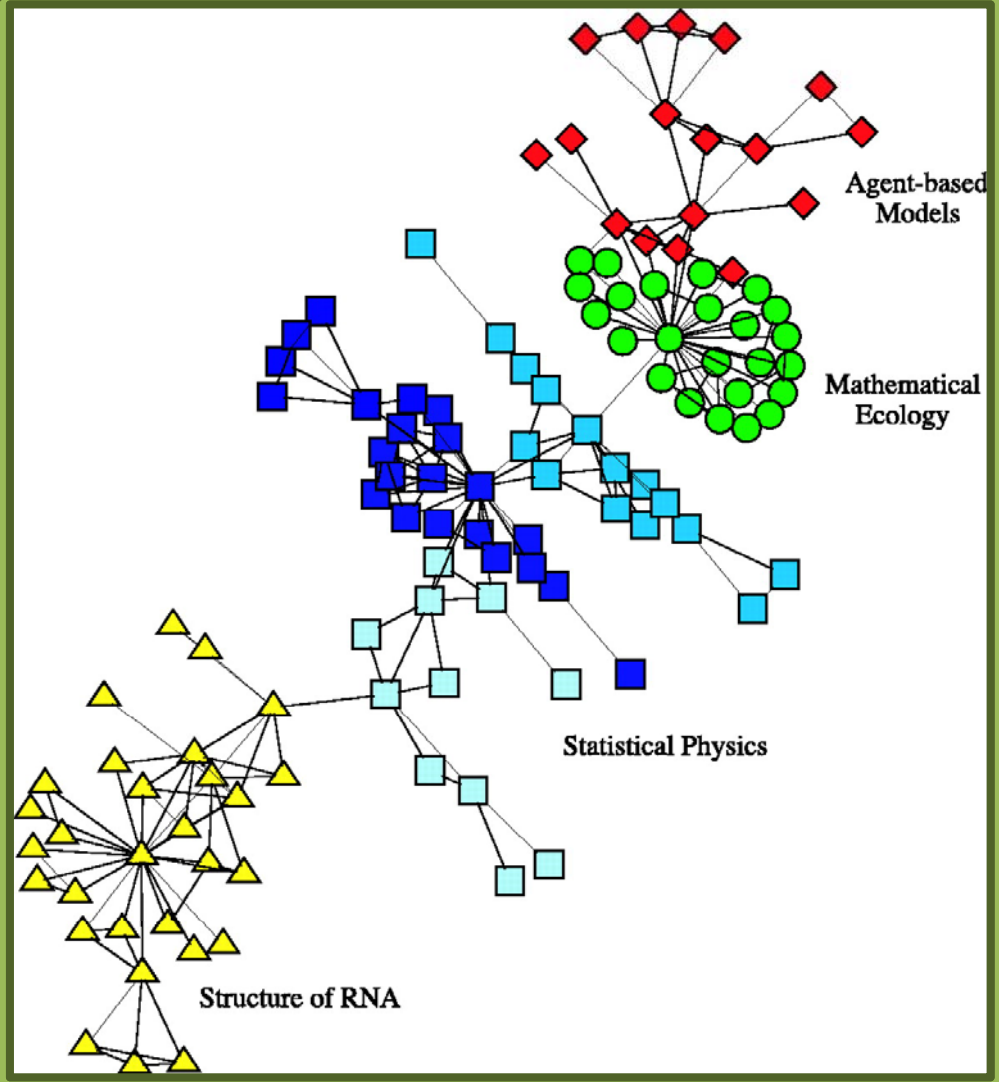
Preliminary Work – Partners

- **Levels of collaboration**
  - **Intra-institutional**
    - Among researchers inside the same research institution
    - Why?
      - Close partnership, **daily discussions**, **seed of good ideas**
        - » Typically, happens naturally → people with similar interests tend to group together
      - Access to **intra-institutional funding** to exploit synergies inside the institution

Exchange ideas with colleagues **far from your field**

- Remember **good ideas** are often **multidisciplinary**

Preliminary Work – Partners



An example of a small coauthorship network depicting collaborations among scientists at a private research institution.

Nodes in the network represent scientists, and a line between two of them indicates they coauthored a paper during the period of study. This particular network appears to divide into a number of subcommunities, as indicated by the shapes of the nodes, and these subcommunities correspond roughly to topics of research.

From [Newman, 2004]

Preliminary Work – Partners

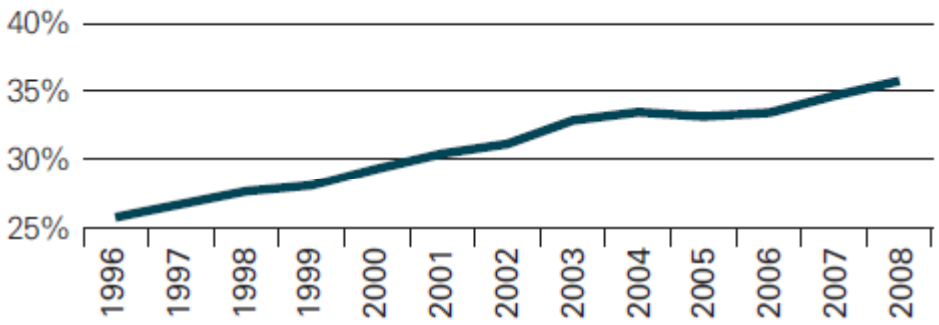
- **Levels of collaboration**
  - **National/Regional**
    - Among researchers from different research institutions in the same country/region or neighbor countries
    - Why?
      - Access to **national/regional funding** to stimulate national networks, **address specific country/region needs**
      - **Cultural, environmental and geographic proximity**
        - » E.g., Ibero-American networks, European Union FP7, etc.

Preliminary Work – Partners

- **Levels of collaboration**
  - **International**
    - Among researchers from diverse countries
    - Why?
      - **Access to International funded projects** to stimulate international networks
        - » E.g., IBSA initiative (India, Brazil and South Africa), European Union FP7 (non-EU partners allowed, with specific conditions)
      - **Highest potential**: the world is the limit
        - » Highest level of **available specialization**
        - » Highest **reward possibilities**: number of papers, citations, budget,, etc.)
    - **Growing faster** than domestic collaborations

Preliminary Work – Partners

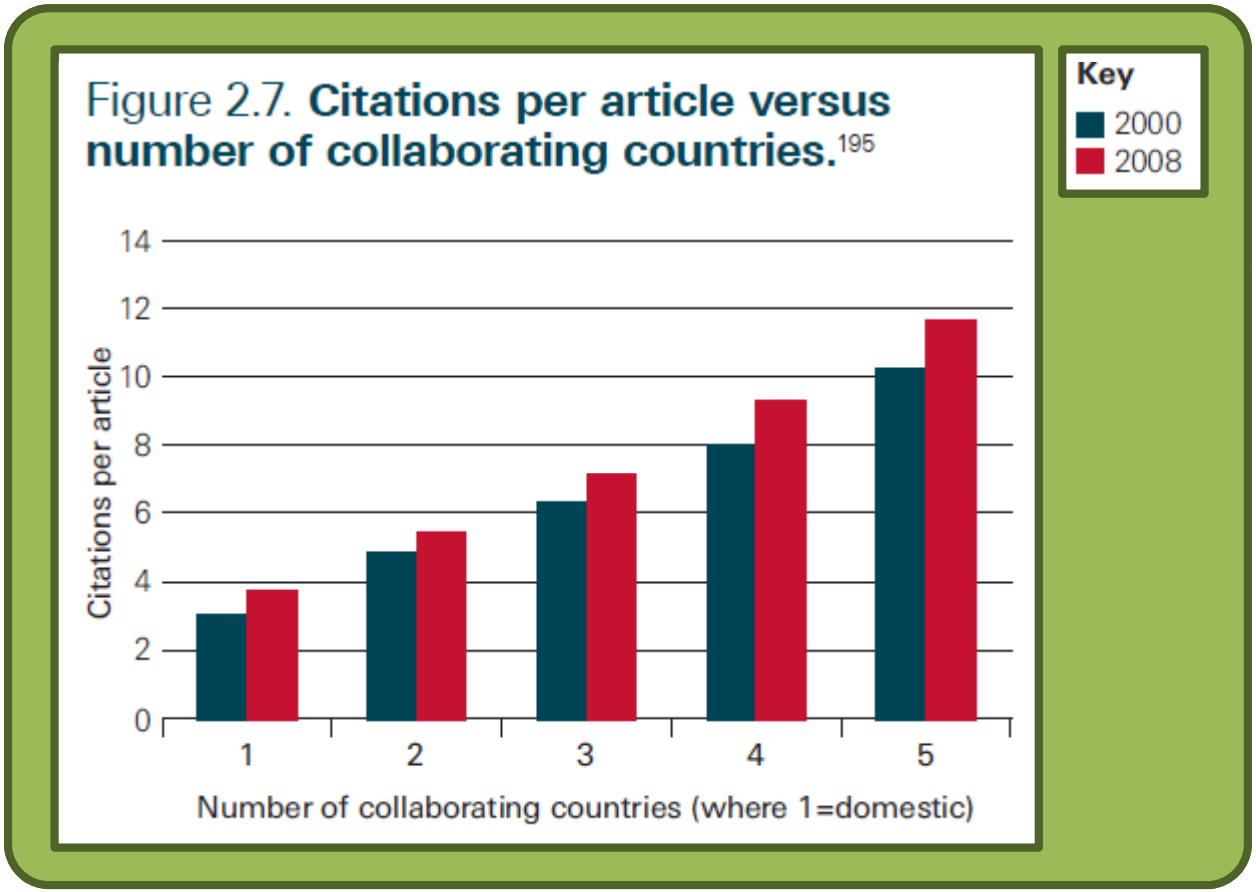
Figure 2.1. **Increase in the proportion of the world's papers produced with more than one international author, 1996–2008.**[161]



"In March 2010, Physics Letters B published the **most multi-authored research paper to date**, when **3,222 researchers** from **32 different countries** contributed to a study of 'charged-particle multiplicities' measured with the ATLAS detector at the Large Hadron Collider in Geneva"

From [Royal Society, 2011, p. 46]

Preliminary Work – Partners



From [Royal Society, 2011, p. 59]

Preliminary Work – Basic Draft

- **Goal**
  - Write a **draft (preliminary version)**
  - **Share** it **among partners** for discussion

From http://www.ehow.com/how_7804861_write-grant-proposal-project.html

Preliminary Work – Basic Draft

- **How?**
  - Employ the **same template** used for the **final submission**
    - Title and acronym, motivation, objectives, research plan, management strategy, etc.
    - See section “Structure of a project proposal”
  - Or write a short, say, **3-page**, document
  - **Discuss it with partners** and **negotiate scope and goals**

Preliminary Work – Task Scheduling

- **Goal**
  - **Schedule tasks**
    - Define **deadlines**
  - **Assign tasks** to **partners**
  - **Schedule preparation meetings**
    - Video-conference, face-to-face (F2F), etc.

Preliminary Work – Task Scheduling

- **How?**
  - **Estimate time needed** for each task
    - The **total time** depends on the **size and complexity** of the **proposal**, **number of partners**, etc.
      - From **several weeks** to **several months**!
    - Define and apply **deadlines**
      - Deadline for the main writing tasks
      - Deadline for budget and justification
      - Deadline for short CVs
      - Deadline for first “almost-ready” version
      - …
    - → **Gantt chart** with tasks until submission

Preliminary Work – Task Scheduling

- **How?**
  - **Assign tasks** to partners, according to their **background specialization** and the previous **initial contact**
    - Writing tasks (literature review, problems to address, objectives, proposed approaches, activities), budget and justification, timeline, …

Preliminary Work – Task Scheduling

- **Who writes what?**

Administrative part (administrative partner)

Technical part

- Contribution (each partner)
  - Beyond state of the art for each challenge
  - Work package content, including WP tables
- Project management structure (coordinator)
- Impact (dissemination partner)
- Partner data (each partner)
  - Partners profiles
  - CV‘s
  - competencies
  - Individual Exploitation /Dissemination plan

Adapted from [TURBO, 2010]

Preliminary Work – Task Scheduling

Bear in mind **delays happen** → have a **cushion of time**

Send **reminders**

Plan to have an **"almost-ready" version** around **2 or 3 weeks before the deadline**

- Depends on the size and complexity of the proposal

Preliminary Work

Negotiation is very import both in the preparation phase and in the proposal writing

- **Ideas may need to be adapted** according to partner suggestion
- **Budgets** may have to be negotiated

The **project coordinator** plays a key role in guaranteeing that **all parts are satisfied** and the project keeps **coherence**

- Positive working atmosphere is essential

Preliminary Work

Further reading

- Main
  - A. Yavuz Oruc (2011). “Handbook of Scientific Proposal Writing”, Chapman and Hall/CRC
  - Belmain S. (2012). “How to write a scientific proposal: Responding to competitive calls”, Presentation, URL: http://www.nri.org/projects/adappt/docs/McKnight/WritingGrantProposals.pdf
- Additional
  - Royal Society (2011). “Knowledge, Networks and Nations: Global scientific collaboration in the 21st century”
  - TURBO (2010). “How to start a successful proposal under FP7?”, Presentation, Turkish Research and Business Organizations, URL: http://www.turboppp.org/home.do;jsessionid=298565811203FFEA0FB0326BE9D8598F?ot=5&rt=10&sid=0&pid=0&cid=9429

Structure of a Project Proposal

Structure of a Project Proposal

- **Goals**
  - Adequately **organize your proposal**, promoting **clarity and objectivity**
    - Communicate exactly
      - The problem to be addressed
      - What you want to accomplish
      - The resources required
      - When the activities will be performed
  - More about this
    - See [Paiva, 2013] ("How to Write Good Scientific Papers: A Comprehensive Guide" – Structure of a Scientific Paper)

Structure of a Project Proposal

- **How?**
  - Typical structure
    - Summary
      - Title, acronym
      - Project summary
      - List of participants
    - Description of Work
      - Problem statement
      - Objectives and justification
      - Relevance to the call
      - Evaluation plan
      - Progress beyond the state of the art
      - Research plan

Structure of a Project Proposal

- **How?**
  - Typical structure
    - Outputs
      - Publications, patents, prototypes, tools, …
    - Exit strategy
      - Demonstration of the sustainability of the project's outputs
    - Budget
      - Numbers, justification of resources, value for money
    - Project management, monitoring and evaluation
      - Management structure, etc.
    - Team background
      - Projects, publications, CVs
    - Dissemination plan
      - Channels and the actions to publicly disseminate the project results

Structure – Title

- **Goals**
  - Define a **project acronym** and a longer (not long!) **title**
    - An appealing **project identifier**
- **How?**
  - Should brief and rigorously summarize the **essence of the project**
    - Attractive, objective, precise, fully descriptive, concise and clear title
  - Should be **specific** (not too general)

Structure – Title

Project acronym:	**HeartCycle**
Project full title:	**Compliance and effectiveness in HF and CHD closed-loop management**

Título do projecto (em inglês)
Project title (in english)

MOODetector – A System for Mood-based Classification and Retrieval of Audio Music

Structure – Project Summary

- **Goals**
  - Like the title, should be **brief** and rigorously summarize the **essence of the project**, now with a few more words (typically, between 200 and 400 words)
    - Like the title, may be the only thing evaluators read
      - If it is not catchy, the proposal may be **excluded without further reading**

Structure – Project Summary

- **How?**
  - Describe concise, clear and objectively:
    - **What** research problem the consortium will address
      - Blunt, right-to-the-point approach
        - » 1 or 2 sentences
    - **Why** it is important
      - 1 or 2 sentences
    - **How** they will do it
      - 3 or 4 sentences
    - The **main contributions** that the project will offer
      - 3 or 4 sentences
    - The **importance and impact** of the contributions
      - 1 or 2 sentences
    - The **nature of the consortium**

Structure – Project Summary

Each year Cardiovascular Disease (CVD) causes over 1.9 million deaths in the EU, causing direct health costs of €105 billion. Coronary Heart Disease (CHD), half of all CVD deaths, is the single most cause of death in Europe. Heart Failure (HF) – a CHD being the most frequent cause of hospitalization for people over 65 – has 10 million patients in the EU.

Current treatment of HF entails recommendations from clinicians on medication, diet and lifestyle. Patients only receive feedback at doctors visits, or when facing symptoms. Daily monitoring, close follow up, and help on treatment routine is lacking. Non-adherence to the treatment regime is a major cause of suboptimal clinical benefit.

HeartCycle will provide a closed-loop disease management solution to serve both HF and CHD patients, including hypertension, diabetes and arrhythmias as possible comorbidities. This will be achieved by multi-parametric monitoring of vital signs, analysing the data and providing automated decision support, to derive therapy recommendations.

The system will contain a patient loop interacting directly with the patient to support the daily treatment. It will show the health development, including treatment adherence and effectiveness. Being motivated, compliance will increase, and health will improve. The system will also contain a professional loop involving medical professionals, e.g. alerting to revisit the care plan. The patient loop is connected with hospital information systems, to ensure optimal and personalised care.

Europe's health system is undergoing radical changes due to an aging population. It's moving from reactive towards preventative care, and from hospital care to care at home. Tomorrow's patients will become more empowered to take their health into their own hands. New ICT is required to enable this paradigm shift.

HeartCycle, coordinated by Philips – leading in electronics and health care –, includes experts on textiles, ICT, decision support and user interaction.

From HeartCycle project

Structure – List of Participants

- **Goals**
  - List the **project partners** and their **affiliations**

List of Beneficiaries

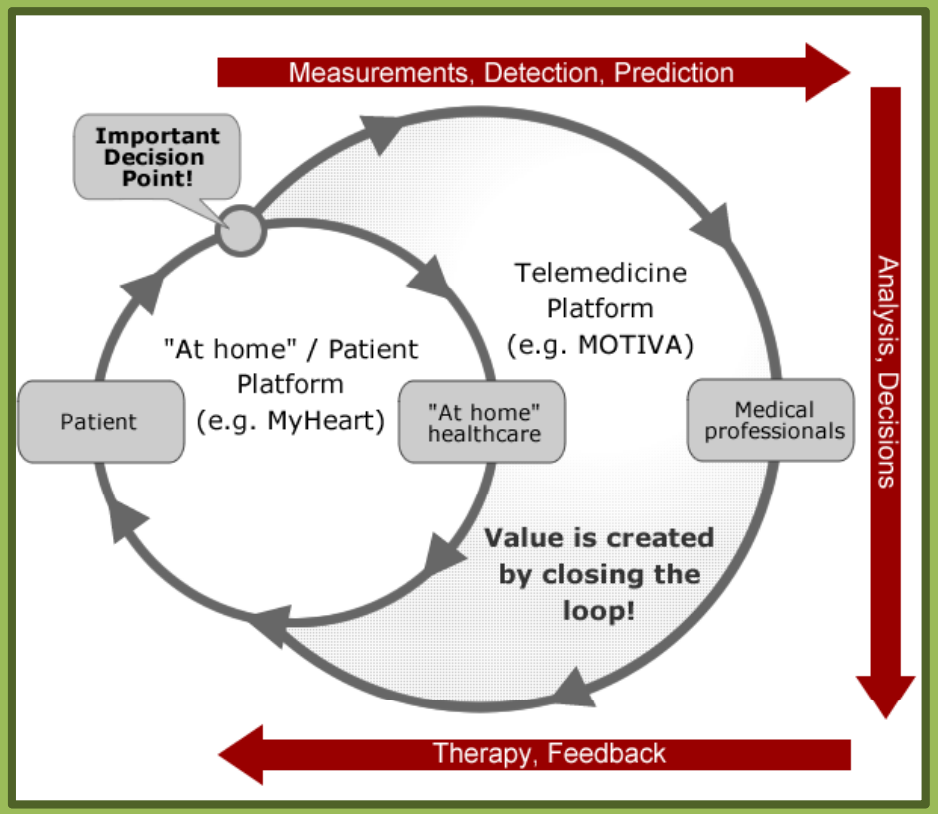
Bene-ficiary no.	Beneficiary organisation name	Beneficiary short name	Country
1	Philips Technologie GmbH Forschungslaboratorien Aachen	Philips D	DE
2	Medtronic Iberica SA	Medtronic	ES
3	Philips Electronics Nederland B.V.	Philips NL	NL
4	T-Systems ITC Iberia SA	T-Systems	ES
5	Fundación Vodafone España	FVE	ES
6	Clothing Plus Oy	Clothing+	FI
7	empirica Gesellschaft für Kommunikations und Technologieforschung mbH	empirica	DE
8	Instituto de Aplicaciones de las Tecnologias de la Informacion y de las Comunica-ciones Avanzadas	ITACA	ES
9	CSEM Centre Suisse D'electronique Et De Microtechnique Sa - Recherche Et Developpement	CSEM	CH
10	Valtion Teknillinen Tutkimuskeskus	VTT	FI
11	Aristotle University of Thessaloniki	AUTH	GR
12	Faculdade Ciencias e Tecnologia da Universidade de Coimbra	FCTUC	PT
13	Politecnico Di Milano - Dipartimento di Bioingegneria	POLIMI	IT
14	Rheinisch Westfälische Technische Hochschule Aachen	RWTH	DE
15	Universidad Politecnica de Madrid	UPM	ES
16	Hospital Universitario Clinico San Carlos	HCSC	ES
17	University of Hull	UHull	GB
18	The Chinese Univerity of Hong Kong	CUHK	CN

From HeartCycle project

Structure – Problem Statement

- **Goals**
  - Describe the **problem** you will address in the proposal
- **How?**
  - **Right to the point**
  - Synthesis **diagram**

Structure – Problem Statement



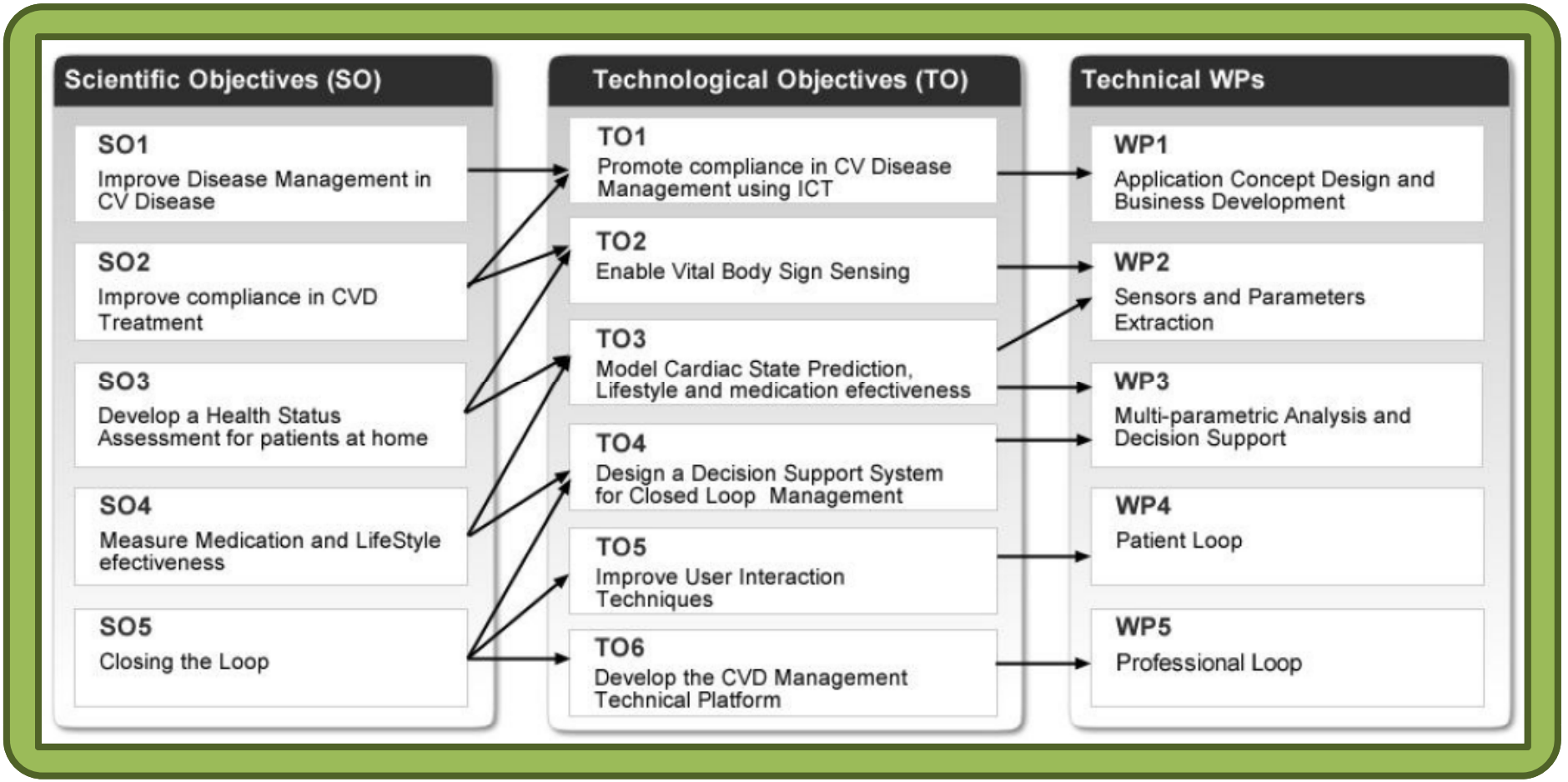
From HeartCycle project

HeartCycle will provide a **closed-loop disease management solution** being able to serve both **HF** patients and **CHD patients**, including possible co-morbidities **hypertension**, **diabetes and arrhythmias**. This will be achieved by multi-parametric monitoring and analysis of vital signs and other measurements. Adverse event alarms will be generated for immediate professional attention and an automated decision support system will derive therapy recommendations from the information acquired. Vital body signs will be used to track health status and the impact of the current treatment, showing the patient the importance of adherence to the treatment, motivating improved treatment adherence, and a more active role in his care. The regular measurement of vital signs will enable early diagnosis and warning of developing problems. Furthermore, it will allow closer monitoring of the effects of medication and lifestyle, making more personalised treatment plans possible. The first three years of the project are dedicated to researching and realizing the technical system solution, whereas year four is preserved for the clinical validation of the achieved results.

Structure – Objectives

- **Goals**
  - Clearly state the **objectives** of the proposal, their **context** and **justification**
    - **Scientific (more generic)**
    - **Technological (lower-level)**
- **How?**
  - **Right to the point**
  - In accordance with the **call document**
  - Use a **list, diagram**

Structure – Objectives



From HeartCycle project

Structure – Objectives

- **How?**
  - **Justification**
    - Why is the objective relevant to the field?
    - What applications do this research problem have?
    - What's the socio, economic, cultural, etc. impact of addressing this problem?
      - Use (inter)national **statistical studies**, e.g., OECD, WHO, United Nations, etc., → prove problems, identify trend

SO1: Improve Disease Management in Cardiovascular Disease
The population of the EU, and indeed in the western world, is aging. According to Charlie McCreevy, European Commissioner for Internal Market and Services, "over the coming decade, Europe will change from having four people of working-age for every elderly citizen to a ratio of two to one" [1]
[1] Charlie McCreevy, 'The future of Europe', to Limerick City Council, 24 February, 2006

From HeartCycle project

Structure – Relevance to the Call

- **Goal**
  - Prove **adequacy of the proposal to the call**
- **How**
  - **Matching** between **call objectives** and **proposal objectives**
    - E.g., table

Structure – Relevance to the Call

Overall Challenge 5 Objectives	HeartCycle Objectives
Challenge 5: … support will go to highly interdisciplinary research aiming at…	The aim of the project is a multidisciplinary approach where researchers, health professionals and health planners are cooperating. Multi-national companies covering electronics. Healthcare and telecommunication, will collaborate with universities, clinics and SMEs.
• Improved productivity of healthcare systems by facilitating patient care at the point of need, health information processing and quicker transfer of knowledge to clinical practice. • Continuous and more personalized care solutions, addressing the informed and responsible participation of patients and their informal carers (family and friends) in care processes, and responding to the needs of elderly people.	Our disease management approach consists of two loops. An inner home-based loop that directly interacts with patients in their daily life and an outer loop involving in addition the medical professionals for optimal therapy. The aim of this approach is to provide personalized care solutions to the patients informal carers and care givers. The elderly patients should play an active role in the management of their health.

From HeartCycle project

Structure – Evaluation Plan

- **Goals**
  - Describe how the **results of the project will be evaluated**
- **How**
  - **Validation of algorithms**
  - **Efficiency evaluation**
  - **Real-world validation**
    - Usability tests
    - Clinical validation
    - …
  - **Business validation**
    - Cost benefit analysis

Structure – Progress beyond SOTA

- **Goals**
  - Summarize the **contributions** the project will offer to **extend the state of the art**
- **How?**
  - **Summary table**
    - Current approaches
    - New approaches resulting from the project
  - For **each objective**
    - Literature review
    - Innovation

Structure – Progress beyond SOTA

TO	State-of-the-Art	On-going research	HeartCycle goal
TO1: Promote Compliance in CV Disease Management Using ICT	Mainly patient-related single focus	TOPCARE has confirmed the acceptance of telehealth solutions for promoting adherence. WHO recommends further research	Multidisciplinary, holistic approach ICT objective indicator of treatment adherence
TO2: Enable Vital Body Sign Sensing	mainly weight measurement and blood pressure measurement	SFit cluster provides important advances in textile integration. MyHeart and SENSATION includes measurements of bioimpedance, ECG, and nightly monitoring in bed	Contactless ECG, arrays of electret foils, inductive impedance, non-invasive blood pressure, novel SpO2, motion compensation in ECG

From HeartCycle project

Structure – Progress beyond SOTA

TO2: Enable Vital Body Sign Sensing

This technological objective is aimed at enabling measurements **medically relevant** for the HeartCycle application using methods that are **easy-to-use** by the target group of CVD patients.
The following technologies will be investigated, and those found to be medically relevant for the application,
and realisable in an easy-to-use way, will be selected for further development.

ECG

State-of-the-Art
The electrocardiogram is a key signal from which many heart parameters can be extracted. A good ECG requires gel-sticky electrodes, which are uncomfortable, their placement requires medicalknowledge and they may cause skin irritation on the long term. MyHeart proposed textiles with embedded electrodes. Despite several precautions, the developed technology turned to be still sensitive to motion artefacts.

Innovation
The motion artefacts originate from the reorganisation of the charges at the interface junction of the electrode with the electrolyte. It is proposed in HeartCycle to enhance the ECG signal not only by means of signal processing on the ECG signal, but also by taking into account *additional* information provided by other sensors, such as accelerometer located on the electrode and/or direct measurement of contact impedance. This requires developing specific electronics at the location of the electrode. The electrodes become 'smart sensors' that can sense extra information from their use conditions so as to deliver a fully corrected and de-noised signal. If demonstrated as effective, such smart electrodes would make a significant step forward in the textile dry-electrode technology.

From HeartCycle project

Structure – Research Plan

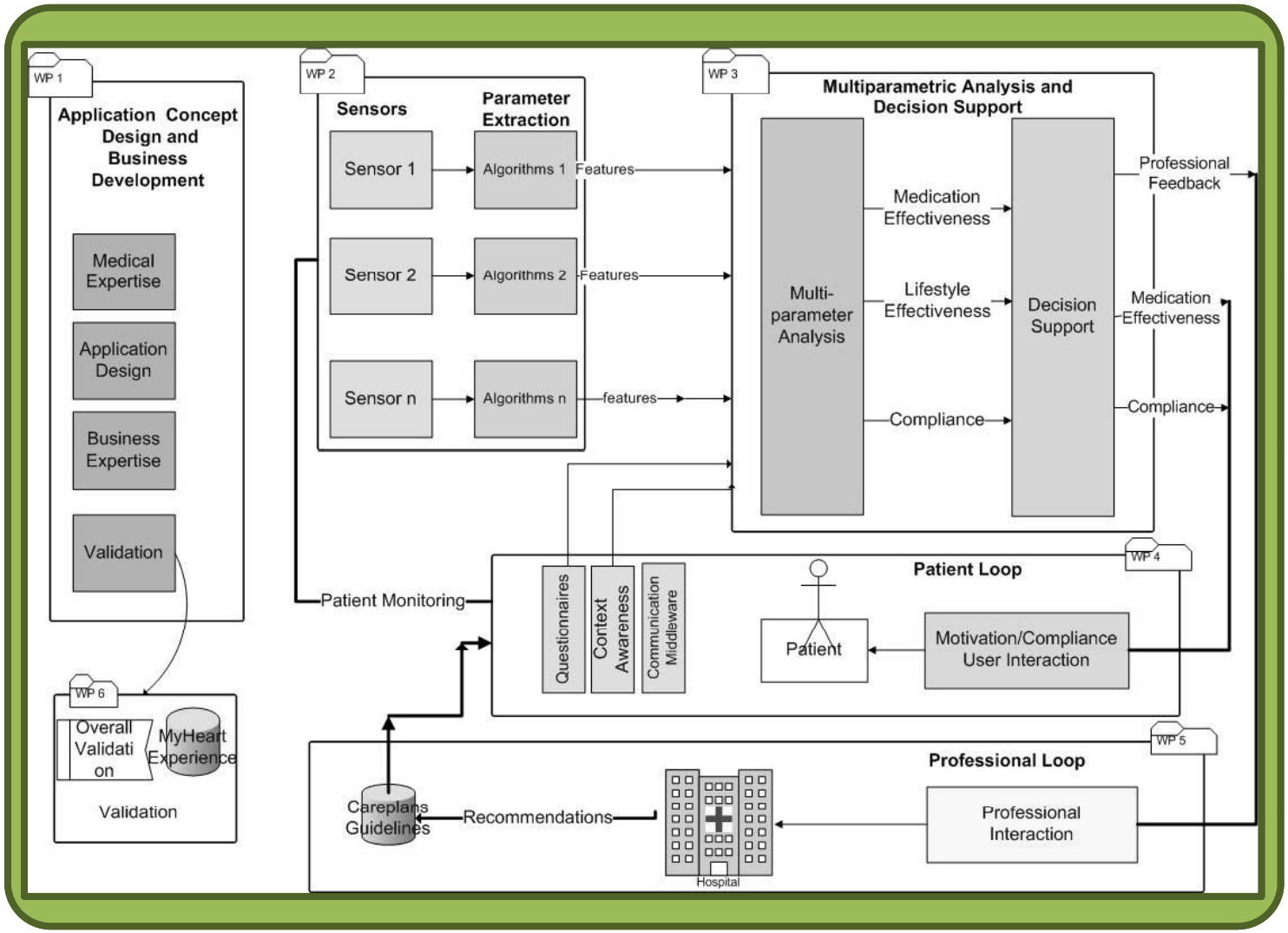
- **Goal**
  - Describe in the detail the **proposed work** and **methodologies**
- **How?**
  - **Divide-and conquer** approach
    - Organize activities according to **work-packages, tasks, sub-tasks**
      - Particularly important in large, multi-disciplinary projects
  - Describe proposed **methodologies in detail**
  - Describe **risks** and **contingency plans**
  - Define the **project timeline**
    - Gantt chart

Structure – Research Plan

- **How?**
  - For each **activity describe**
    - **Partner involvement, objectives, tasks, outputs, milestones, deliverables, timeline, labor input**
  - **Relate activities**
  - Describe **risks** and **contingency plans**
  - Prove **feasibility** of work plan
    - Adequate human resources, preliminary results, equipment (available and required), etc.

Longest and most important part of the proposal

Structure – Research Plan



From HeartCycle project

Structure – Research Plan

WP1 – Application Concept Design and Business Development
WP1 defines and manages the two target applications, heart failure and coronary heart disease and guarantees that all application aspects are based on clinical excellence and the medical expert knowledge.

WP6 – Validation
This Work Package aims to prove the effectiveness of the solution offered by HeartCycle in improving the adherence of patients to lifestyle and medication recommendations and the benefit that the improved adherence has on the course of the disease, exemplarily for CHF and/or CHD.

WP7 – Knowledge Management
WP7 will account for the management of all knowledge related to the project in all aspects, including providing visibility of the project to the public.

WP8 – Project Management
The WP on Project Management deals with the coordination and management of the project and the consortium as a whole in all aspects and comprises the implementation of the management processes.

WP9 – Socio-economic monitoring and concertation activities
WP9 will support the business development process through analyses of the clinical and organisational outcomes from an economic perspective, i.e. assessment of the socio-economic impact of the application to individual stakeholders and to society at large. WP9 will be closely related to WP1 and WP6

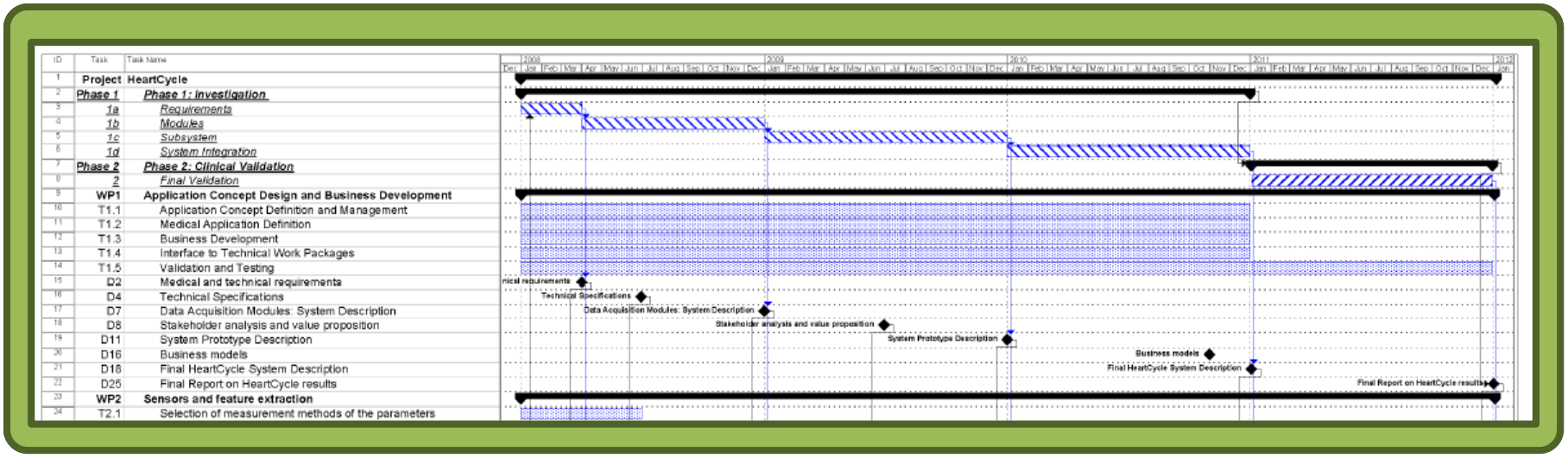
From HeartCycle project

Structure – Research Plan

Potential Risk	L	Effect/Impact	Minimisation and Contingency
The final requirements for CHF and CHD management are too different to be fulfilled by one system approach	M	Identification of common user needs difficult	Early evaluation of specific concepts in interaction with users/stakeholders. Redistribution of task efforts, stressing work in application adaptations.
Data from MyHeart study missing	L	Statistical analysis delayed	Very early provision of data from new studies e.g. pre-studies in HeartCycle will be intensified or results from external studies will be integrated
Compliance not completely measurable with the system	M	Limited diagnostic capacities and therapeutic impact. Low acceptance	Use additional information for improving the model performance
System is too complicated for target groups	M	Low user acceptance	Development of an easy-to-use system. Simplicity is evaluated by early user involvement and iterative development.

From HeartCycle project

Structure – Research Plan



From HeartCycle project

Structure – Research Plan

Work Package no[1]	Work Package title	Type of activity[2]	Lead beneficiary no[3]	Lead beneficiary short name	Person months[4]	Start month[5]	End month[5]
WP1	Application Concept Design and Business Development	RTD	17	UHull	250	1	48
WP2	Sensors and Parameter Extraction	RTD	9	CSEM	436	1	48
WP3	Multi-parametric Analysis and Decision Support	RTD	1	Philips D	321	1	48

From HeartCycle project

Structure – Research Plan

WP no.	WP2			**Start Date** (Project Month)			1
WP title	Sensors and Parameter Extraction						
Activity Type	RTD			**Lead Beneficiary**		9	**CSEM**
Beneficiary No.	1	2	3	4	5	6	7
Beneficiary Short Name	Philips D	Medtronic	Philips NL	T-Systems	FVE	Clothing+	empirica
Person Months	64		51			48	
Beneficiary No.	8	9	10	11	12	13	14
Beneficiary Short Name	ITACA	**CSEM**	VTT	AUTH	FCTUC	POLIMI	RWTH
Person Months		**122**	29		16		34
Beneficiary No.	15	16	17	18			
Beneficiary Short Name	UPM	FIB-HCSC	UHull	CUHK			**TOTAL**
Person Months				72			**436**

From HeartCycle project

Structure – Research Plan

Del. No.[1]	Sub Del. No.	Deliverable Name	WP no.	Estimated Indicative Person Months	Nature[2]	Dissemination Level[3]	Delivery Date[4] (project month)
D1	D1.7	Public Project Website http://www.HeartCycle.eu	WP7	1	O	PU	1
D2	D2.1	Medical and technical requirements	WP1	21	R	CO	3
	D2.2	Sensor and parameter extraction research and realization plans	WP2	16	R	CO	3
	D2.3	Multi-parameter analysis and DSS System architecture definition	WP3	13	R	CO	3
	D2.6	Templates and guidelines for small tests	WP6	7	R	CO	3
D3	D3.7	Initial dissemination plan	WP7	1	R	CO	3

From HeartCycle project

Structure – Outputs

- **Goal**
  - List **concrete results** of the activity
- **How?**
  - List planned **scientific publications**, **databases**, **reports**, **tools**, **prototypes**, **patents**, **methodologies**, **organized meetings**, **workshops**, **conferences**

Structure – Outputs

Publications	IEEE Trans Biomed Eng	RWTH, POLIMI, AUTH
	Circulation	Possibly RWTH, POLIMI
	Circ Res	POLIMI
	J Am Coll Cariol	UHULL, HCSC, RWTH
	Eur Heart J	UHULL, HCSC, RWTH
	Cardiovasc Res	Possibly RWTH
	Eur J Heart Fail	UHULL, HCSC, RWTH
	IEEE T. Inf. Technol. Biomed.	VTT, RWTH, ITACA, FCTUC, AUTH
	IEEE T Signal Proces.	RWTH, FCTUC, POLIMI, CSEM

From HeartCycle project

Structure – Exit Strategy

- **Goal**
  - Demonstrate the **sustainability of the project's outputs**
    - Show you have planned what happens when the project finishes
- **How?**
  - Describe **what concrete results will last** after the project ends
    - Better facilities and equipment?
    - Better trained, more capable staff?
    - Better/new technology, knowledge?
    - Changes in the common practices in the field?
    - Scientific network?
  - Describe **commercialization plans**

Structure – Exit Strategy

The university partners have common exploitation goals in the areas of scientific knowledge dissemination.
In particular, this includes:

- the production of new measurable knowledge evidenced as publications in high impact peer review journals in the general area of biomedical technology, cardiovascular physiology and clinical cardiology
- the creation of new reference knowledge / information entities on HF and CHD in the form of www applications, annotated databases, and tutorials aimed at researchers, medical personnel and citizens
- international networking through the collaboration with the high level partnership of the project with the aim to set-up maintainable European structures such as for example centres of excellence in the area of pHealth and cardiology.
- connecting with leading European clinical and medical institutions in the specific fields of cardiology, cardiovascular rehabilitation, clinical medicine, sleep and stress

From HeartCycle project

Structure – Budget

Once you get the grant, your university, company, or government agency will immediately take 30 to 70% of it so that they can heat the building, pay for Internet connections, and purchase large yachts. [Schulman, 1996]

Structure – Budget

- **Goal**
  - **Plan all costs** and justify the **need for funding**
- **How?**
  - Define need of **human resources**
    - Scholarships, number, salary per month
  - **Missions**
    - Conferences, meetings, visits to labs
  - **Equipment**
    - Computers, experimentation materials,
  - **Stationery**
  - Institution **overhead**

Structure – Budget

- **Funding sources do not give 100% of the required funding!**
  - From 50% to 95%
  - “creative accounting” is often a common practice
- **Check what you can include**
  - Overheads can be limited to less than what your institution charges
  - Existing staff salary complements may be limited or inexistent
  - Equipment purchases may be limited to a certain amount and kind
- **Budget must be realistic**
  - And should demonstrate need for financial assistance

Structure – Project Management

- **Goal**
  - Describe **project management, monitoring and evaluation** mechanisms
    - How project costs, quality, schedule, and scope will be monitored, controlled, and corrected if necessary?

Structure – Project Management

- **How?**
  - Define the **management structure**
  - Define **communication mechanisms**
    - F2F meetings, telcos, video-conference
      - Work-package, whole project, etc.
  - Plan **accounting reports**
  - Progress **monitoring**
    - Reports, milestones, etc.
  - Define **measurable goals**

Structure – Project Management

- **Accounting**
  - Recording of **financial information**
    - Very important to funding agencies
    - Must be transparent and accurate
- **Quality control and evaluation**
  - Specify project **deliverables**, **milestones**, etc. as a means to evaluate the project stays on track
    - Quarterly, bi-annual or annual reports
  - Milestones
    - **Significant events** (check points)
      - Typically decision/evaluation points in the process: completion of certain phases of the project, evaluation of project progress
      - Should be **significant** and **attainable**

Structure – Project Management

The **General Assembly** (GA) is the body consisting of representatives of all beneficiaries, with the task to supervise the project and will be chaired by the Project Coordinator.

The **Project Coordinator** is responsible for the management of the entire project. The Coordinator of the project is the official link between the consortium and the European Commission. The Coordinator has appointed a Project Manager and has installed a Project Office, which together run the project HeartCycle.

The **Project Manager** deals with the overall scientific and technological management of the project. The Project Manager will supervise the Work Package Leaders and makes sure that communication between the various WPs proceeds as smoothly as possible for a successful integration of the various components of the Project.

The **Project Office** will in general be involved in non-technical matters related to project management, i.e. all managerial, organisational, administrative and financial matters of the project.

A **Work Package Leader** (WPL) will coordinate the work carried out in a specific Work Package and is responsible for the planning, monitoring and technical reporting of the progress in the WP.

…

From HeartCycle project

Structure – Partners

- **Goal**
  - Demonstrate the **consortium's quality and ability** to conduct the proposed research plan
- **How?**
  - Present the **short CV** of all partners
    - Significant **projects**, **publications**, **awards**
      - In the light of the project, to help demonstrate the feasibility of the work plan
    - The **principal investigator's CV** is **particularly significant**
  - Describe the **profile** of each **institution**
    - How their **mission and vision** fit the call
    - Their **reputation** is crucial

Structure – Partners

The University of Coimbra, Portugal, founded in the year 1290 comprises eight Faculties, more than 2000 teachers and 22000 students. The participation in the proposed project is carried out through the Adaptive Computation Group of the Department of Informatics Engineering (DEI), which is one of the 14 departments of the Faculty of Sciences and Technology (FCT-UC) and integrates one of its 42 research units. FCT-UC offers a large array of different undergraduate and post-graduate degrees (MSc and PhD) in Engineering, Life Sciences, Exact Sciences, Architecture and Anthropology. The Department of Informatics Engineering of the FCT-UC comprises more than 100 researchers, of which 40 hold Ph.D. degrees. Inside DEI, the group involved in the current project is the Adaptive Computation Group (ACG). The main core expertise of the Adaptive Computation Group concerns R&D for intelligent data analysis, modelling and complex systems integrating data driven as well as knowledge driven approaches. The group has a vast experience in fundamental and applied research on on-line system identification and control, non-linear modelling and prediction, biosignal processing, image processing, pattern recognition and Medical Informatics. In the last few years the group has published more than
200 papers in international conferences and magazines, and has been involved in several R&D projects at national and European levels, such as MyHeart (IST-2002-507816), COSY-Control of Complex System, Eunite - EUropean Network on Intelligent Technologies for Smart Adaptive Systems.

From HeartCycle project

Structure – Partners

Prove that **partners are perfect** to accomplish the defined tasks

- Expertise, background, reputation

Prove the **need for collaboration**

- E.g., complex, multidisciplinary work
- Lack of in-house expertise

Structure – Dissemination Plan

- **Goal**
  - Channels and the actions to **publicly disseminate the project results**
- **How?**
  - **Project identity**
    - For all public communication
  - **Internet**
    - Project homepage
  - **Scientific publications and events**
  - **Press releases**
    - Attained results
  - **Demo installations**

Structure – Dissemination Plan

Structure of a Project Proposal

Further reading

- Main
  - A. Yavuz Oruc (2011). “Handbook of Scientific Proposal Writing”, Chapman and Hall/CRC
  - FP7 (2012). “Template for Description of Work”, Microsoft Word document
- Additional
  - Belmain S. (2012). “How to write a scientific proposal: Responding to competitive calls”, Presentation, URL: http://www.nri.org/projects/adappt/docs/McKnight/WritingGrantProposals.pdf
  - TURBO (2010). “How to start a successful proposal under FP7?”, Presentation, Turkish Research and Business Organizations, URL: http://www.turboppp.org/home.do;jsessionid=298565811203FFEA0FB0326BE9D8598F?ot=5&rt=10&sid=0&pid=0&cid=9429

About Collaborative Writing

About Collaborative Writing

Your proposal will be more appealing if you allow each partner to freely express his/her creativity.

About Collaborative Writing

- **Goal**
  - Promote **uniform** and **consistent** writing style
  - Guarantee **sufficient** and **balanced depth**
- **How?**
  - Agree on **terminology** and **style**
  - Make sure **all partners follow the proposal's template**
  - **Eliminate redundancies**
  - Make sure the **proposal doesn't diverge to a different direction** than the one agreed
  - Make sure different tasks have **adequate (maybe balanced) depth**

About Collaborative Writing

Project coordinator → warrant of quality in collaborative writing

- Responsible for resolving all the mentioned issues

About Collaborative Writing

Further reading

- Lowry P. B., Curtis A. and Lowry M. R. (2004). “Building a Taxonomy and Nomenclature of Collaborative Writing to Improve Interdisciplinary Research and Practice”, Journal of Business Communication, Vol. 41, No. 1, pp 66-99.

Submission

Submission

If you can't submit on time, the responsible is obviously… the system

- The submission site can't even handle a "few thousands" of simultaneous submissions! What a poor scalability!
- Your electricity company always fails when you most need it
- Your hard disk Mean Time Between Failure decided to prove it is an urban myth

Submission

- **Goal**
  - **Prepare** your submission in advance
  - **Submit** your proposal **on time**

Don’t overlook this task!

- Often, it is not as simple as it seems

Submission

- **How?**
  - **Collect** all needed **information in advance**
    - Data about partners institutions, etc.
    - PIC: Participant Information Code
    - CVs
  - Sometimes, it is necessary to **manually copy** from your document **to online form fields**
    - Surprises may happen
      - You have too many characters in a specific field
      - Form field doesn't accepted quotation marks

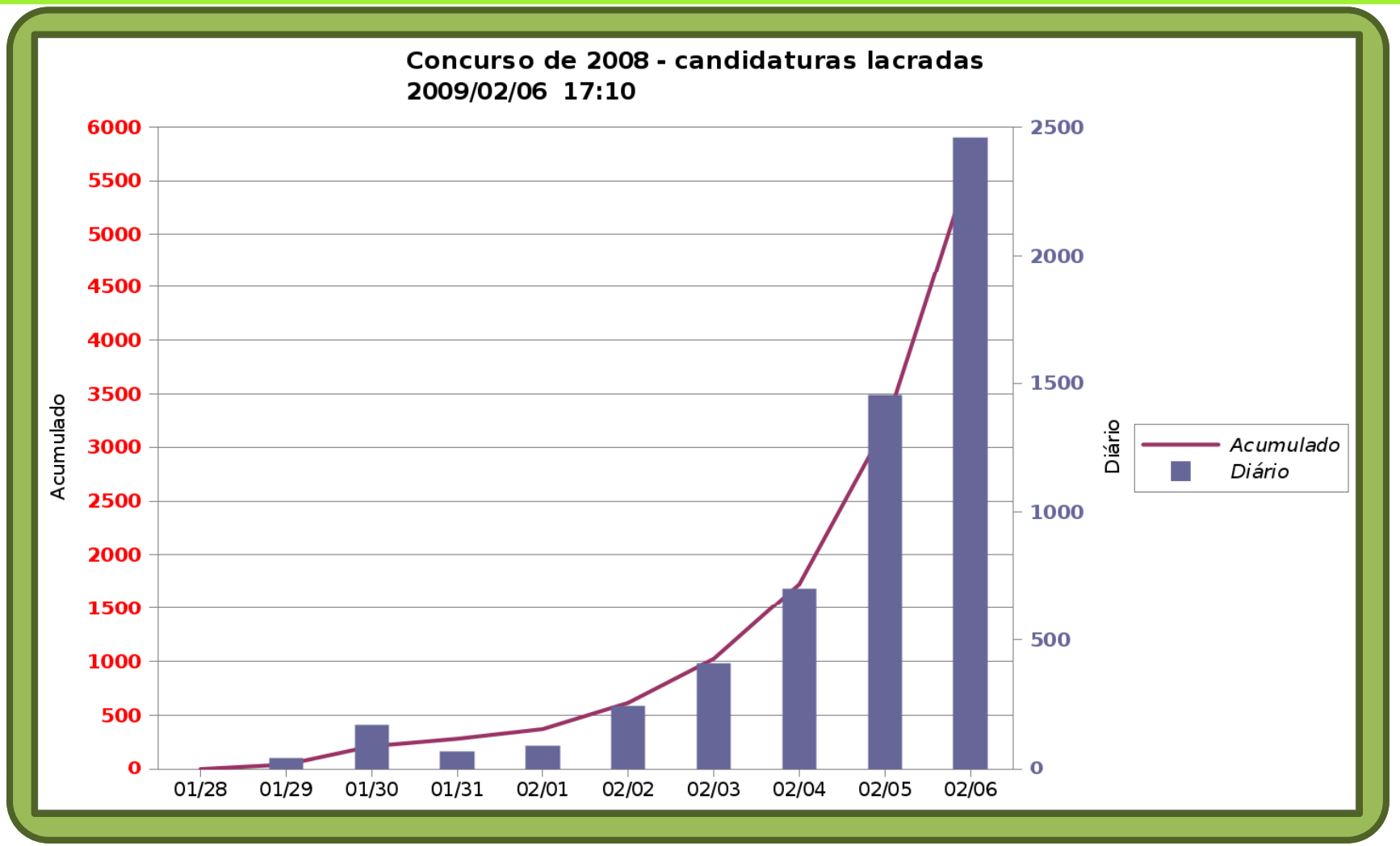
Submission

- **How?**
  - **Don't wait** until the **last minute**!
    - Not even the last day
    - Remember human nature ☺
      - Submission peaks by the deadline

Submission dates and <u>times</u> are usually strict

- If the systems closes, it doesn't matter if you missed it for just one minute…

Submission



From http://alfa.fct.mctes.pt/images/LacragensProjectos.png
Illustration of daily sealed submissions in a call by the Science and Technology Foundation (FCT, Portugal).

Notification

Notification

- **Goals**
  - To inform the authors about the **decision** resulting from the **proposal review** process
    - **Acceptance**
    - **Rejection**
- **How?**
  - External **reviewers send their comments** about the paper
  - **Funding agency sends the decision** according to the reviews

Notification

- **Notification results**
  - **Acceptance**
    - The proposal is accepted
    - However, maybe not as you proposed
      - Budget may (is often) cut a bit
      - Human resources, equipment, number of missions may be cut a bit
    - In addition, reviewers may add suggestions
      - Literature references, problems to address
  - **Rejection**
    - The proposal is rejected

Notification

Recommended for Funding
Overall Rating: Outstanding
Comments:
This is a well motivated proposal involving important innovation in eHealth.
This is a highly rated team with strong papers in relevant areas.
[…]

Recommended for Funding
Overall Rating: 86
Comments:
Overall it is an interesting proposal.
The Panel would recommend to look at the following papers:
[…]
One PhD student suffices to conduct the proposed work. Thus the budget has been reduced.

Notification

Not Recommended for Funding
In face of high competition for funding, this proposal did not reach a position to be funded.
Overall Rating: Good
Overall Comments: The main value of the project is that it has some practical implications. The weakness is perhaps that it does not offer anything significantly new.
Comments:
The proposal lacks detail about how […] are going to be implemented and how the different.
Only *Participant X* has a strong background. The team lacks common publications in the past.
The expected publications are too few. Only # journals from # researchers in 2 years are quite few.

Overall Rating: Excellent
Overall Comments: Strengths: The team has high quality research results, the novelty of the theme of the proposal, the multidisciplinary point of view
Weakness: There is no clear definition of the development, the proposal does not clarify the improvements in the research field

Notification

- **Typical rejection causes**
  - Irrelevant topic
  - Work not sufficiently original or with insufficient social, economic, scientific impact
  - Low acceptance rate
  - Theme doesn't fit the funding program
  - Proposed methodology is not convincing
    - Lack of detail, only list of general ideas
  - Unconvincing output
    - Does not significantly advance the state of the art
    - Unrealistic number of publications, lack of relevance of selected publications, etc.
  - Shallow, uncritical literature review

Notification

- **Typical rejection causes**
  - Unconvincing collaboration strategy
    - Inadequate team background
      - Lack of past related publications, “weak” team members
    - Failure to prove need for collaboration
      - E.g., you have all need skills in-house
  - Inadequate management, monitoring and evaluation plans
  - Unrealistic budget
    - Either to high or too low
  - Lack or deficient demonstration of the sustainability of the project’s outputs
    - Unclear market, poor commercialization plans
  - Bad writing quality and presentation

Notification

Now it's time for the actual research. You will quickly find out that (a) your project is not as simple as you thought it would be and (b) you can't actually solve the problem. However -- and this is very important -- you must publish anyway. [Schulman, 1996]

Further Information

Further Information

- **Further information on**
  - **Structure**
  - **Writing Sequence**
  - **Writing Style**
  - **Reviewing your document**

See [Paiva, 2013] (“How to Write Good Scientific Papers: A Comprehensive Guide”)

Conclusions and Future Work

Conclusions and Future Work

- **Conclusions**
  - This document summarized a number of **general guidelines** for **producing good scientific project proposals**
    - These guidelines are **general rules of thumb** based on **literature review** on the theme and my **personal experience**

Conclusions and Future Work

- **Future Work**
  - **Improvements** to the current document
  - **How to evaluate scientific papers**
  - **How to evaluate scientific proposals**

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About the Author

About the Author

- **More info at http://rppaiva.dei.uc.pt/**

Bibliography

Bibliography

- **Main**

Yavuz Oruc (2011). “Handbook of Scientific Proposal Writing”, Chapman and Hall/CRC

FP7 (2012). “Template for Description of Work”, Microsoft Word document

Bibliography

- **Additional**

Bartle P. (2007). " Proposals for Funding: How to get money out of donor organizations". Technical Report, URL: http://cec.vcn.bc.ca/cmp/modules/res-prp.htm

Belmain S. (2012). "How to write a scientific proposal: Responding to competitive calls", Presentation, URL: http://www.nri.org/projects/adappt/docs/McKnight/WritingGrantProposals.pdf

Cardoso J. (2012). "The points your paper should address", Technical Notes, URL: http://http://eden.dei.uc.pt/~jcardoso/ForStudents/students.html

Glänzel W. and Schubert A. (2004). "Analyzing Scientific Networks through Co-authorship". In Handbook of Quantitative Science and Technology Research, H.F. Moed et al. (eds.), 257-276.

Jones S. P. and Bundy A. (2006). "Writing a good grant proposal", Technical Report, URL: http://research.microsof t.com/en-us/um/people/simonpj/papers/Proposal.html

Lowry P. B., Curtis A. and Lowry M. R. (2004). "Building a Taxonomy and Nomenclature of Collaborative Writing to Improve Interdisciplinary Research and Practice", Journal of Business Communication, Vol. 41, No. 1, pp 66-99.

Bibliography

- **Additional**

Newman M. (2004). “Coauthorship networks and patterns of scientific collaboration”, Proceedings of the National Academy of Sciences of the United States of America, Vol. 101, pp. 5200-5205

Paiva R. P. (2013). “How to Write Good Scientific Papers: A Comprehensive Guide”, Tutorial: http://rppaiva.dei.uc.pt/publications/Tutorials/goodPapers.pdf

Roll-Hansen N. (2009). “Why the distinction between basic (theoretical) and applied (practical) research is important in the politics of science”, Technical Report

Royal Society (2011). “Knowledge, Networks and Nations: Global scientific collaboration in the 21st century”

Schulman E. R. (1996). “How to Write a Scientific Paper”, Annals of Improbable Research, Vol. 2, No. 5, pg. 8, URL: http://members.verizon.net/~vze3fs8i/air/airpaper.html

TURBO (2010). “How to start a successful proposal under FP7?”, Presentation, Turkish Research and Business Organizations, URL: http://www.turboppp.org/home.do;jsessionid=298565811203FFEA0FB0326BE9D8598F?ot=5&rt=10&sid=0&pid=0&cid=9429