



# **MASTER YOUR THESIS!**

Thesis Preparation Workshop

TUM Faculty of Informatics

SS 2024

CAUTION

THESIS  
WRITING

IN PROGRESS



# ANIKO BALAZS, M.A., PH.D.



- M.A. English and Russian language and literature studies
- Ph.D. in Comparative Sociolinguistics, Budapest, Hungary
- Diploma in Science Translation, Munich
- Certified Master Trainer, Munich

Worked several years as interpreter and translator for English, Russian, German

- In medicine (environmental health, epidemiology, cardiology, neurosurgery)
- In IT (technical documentation, programming tutorials)
- For the Hungarian Pen Club & the Music Art Agency Interconcert

## Educational practice

- ❖ Teacher of Medical English, Semmelweis Medical University, Budapest
- ❖ Teacher of English in Computer Science, Univ. of Applied Sciences, Munich
- ❖ Lecturer on Technical Writing, Univ. Appl. Sci. & Carl-von-Linde Akademie (aka wtg@sot)
- ❖ Workshops on Scientific Writing (TUM Graduate School, HM Graduate School, IGSSE, Helmholtz, KIT, iTarget, fortiss, Infineon AG)
- ❖ Freelance coach and editor in Scientific Writing

# GOALS

**U**nveil your immanent writing talent

**A**ctivate already acquired knowledge

**R**ealize project character of writing

**D**iscuss ...

**I**nspire for user needs

**N**otify specious barriers of writing

**G**ain confidence by feedback processes

**PRACTICE** writing and presentation skills

# Non-goals



**Present universally  
valid truths on writing**

**Give absolute and  
finite rules**

**Promise content-related  
help and excellent note on  
your thesis**



**Take off the burden**

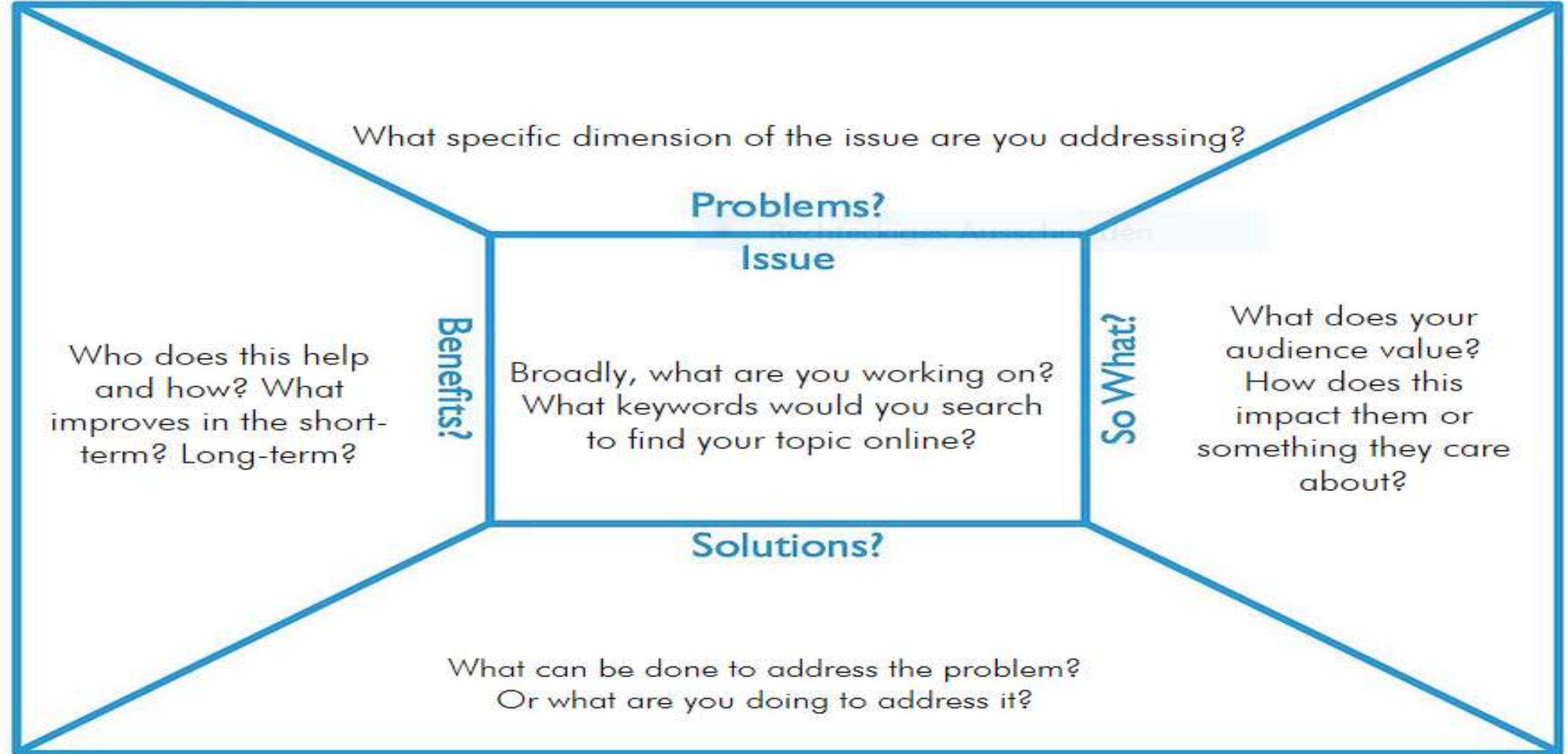
# **NEEDS ASSESSMENT**

Kick-off Questions

- What kind of writing experience do you have (both in English and in other languages)?
- How did you approach these writing tasks?
- Have you already published any of your writings? If you have, where and when?
- Are there any problems with your academic writing that you should overcome?
- What would you like the workshop to focus on?
- What sort of assistance would you like me to provide?
- Is there a particular question about writing to which you always wanted to know the answer? Which is it?

# ITERATE TO YOUR PITCH USING THE MESSAGE BOX

**Audience:** Who is impacted by this? Who can change this? Who cares about this?





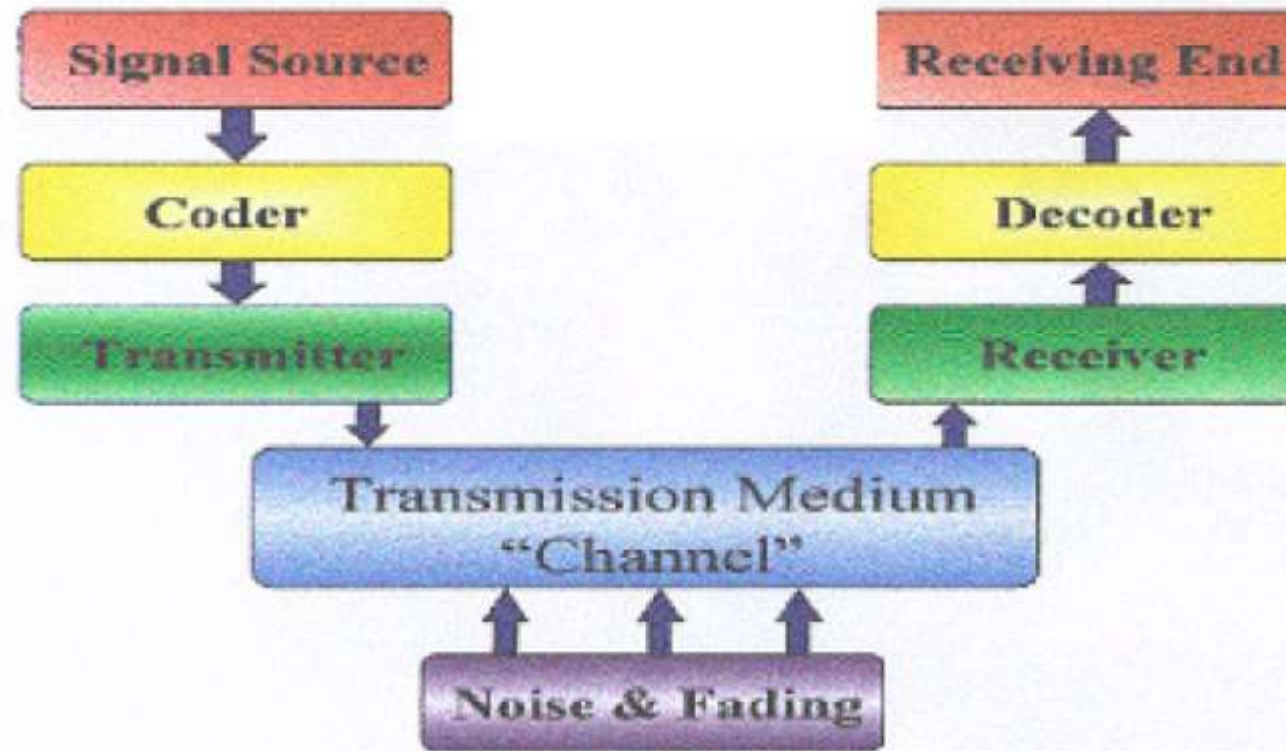
'Good text is like  
a piece of fine engineering:  
it does the job it is designed to do;  
each element complements every other,  
nothing is heavier or more complex than it  
need be—and the end result is pleasing  
to both the senses and the intellect.'

(An essay on text, 1991  
by John Levett, Librarian, Melbourne)



# A VISUALIZATION OF

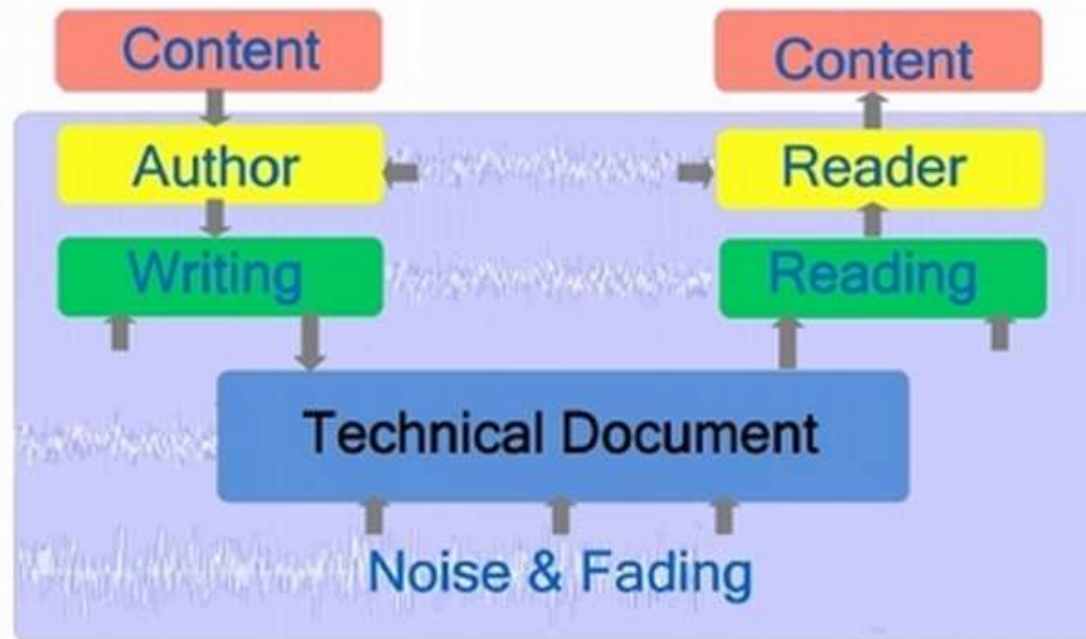
C.E.Shannon's model of communication



[http://www.deas.harvard.edu/courses/es96/spring1997/web\\_page/tech/BASICS.HTM](http://www.deas.harvard.edu/courses/es96/spring1997/web_page/tech/BASICS.HTM)

## ... AND ITS APPLICATION FOR WRITTEN COMMUNICATION.

The extended Shannon-diagram in technical writing



© A. Balazs, 2008



A.B. January 2020



# MASTER YOUR THESIS: KEY DATES

**April**

Friday

**26**

## **Kick-off**

Organizational matters. Status analysis.  
Specification of needs and goals. Master's Thesis writing as a project.  
Writer's block. Outlining rules.

**May**

Friday

**03**

## **Writing the Thesis Proposal**

Feedback to outlines. and self- reflections.  
Requirements for MTh and for written proposals.  
Sections of proposals. Focus : Introduction, conclusions, title.

**June**

Friday

**07**

## **Effective Scientific Presentations**

Abstract writing. Telling your story. Visual communication.  
Debriefing of the workshop. Matching achievements against  
envisioned goals. Assessment of group work.

**July**

Friday

**05**

## **Oral Presentations (immanent examination)**

Pre-proposal presentations with peer feedback.

# PURPOSE OF A MASTER'S THESIS

To prove in a formal document that you have made an  
**own contribution to knowledge in your discipline.**

Your Thesis must show:

1. You have identified a worthwhile problem or a gap in knowledge.
2. You have solved the problem or answered the question.

## PARTS OF A THESIS PROPOSAL

- Problem statement, purpose, justification
- Literature review
- Method statement
- Expected study results
- Conclusions and possible uses
- Limitations of study
- Outline
- Planned schedule
- Envisioned reading list

# KNOW YOUR TARGET AUDIENCE

= *thesis commission, your mentor, professors, faculty members*

What do they look for in a proposal?

- motivation and objectives
- hypothesis
- planned setup and methods
- organisation, logical flow, standard structure
- style and language



# FORMAL CRITERIA

- Observe the requirements of the department
- Keep yourself to consistent formatting
  - layout
  - citation method
  - references
- Statutory declaration
- Print and binding requirements
- Conditions of delivery and disposal

*Following these requirements demonstrates:  
you have mastered the basic scholarly methods.*

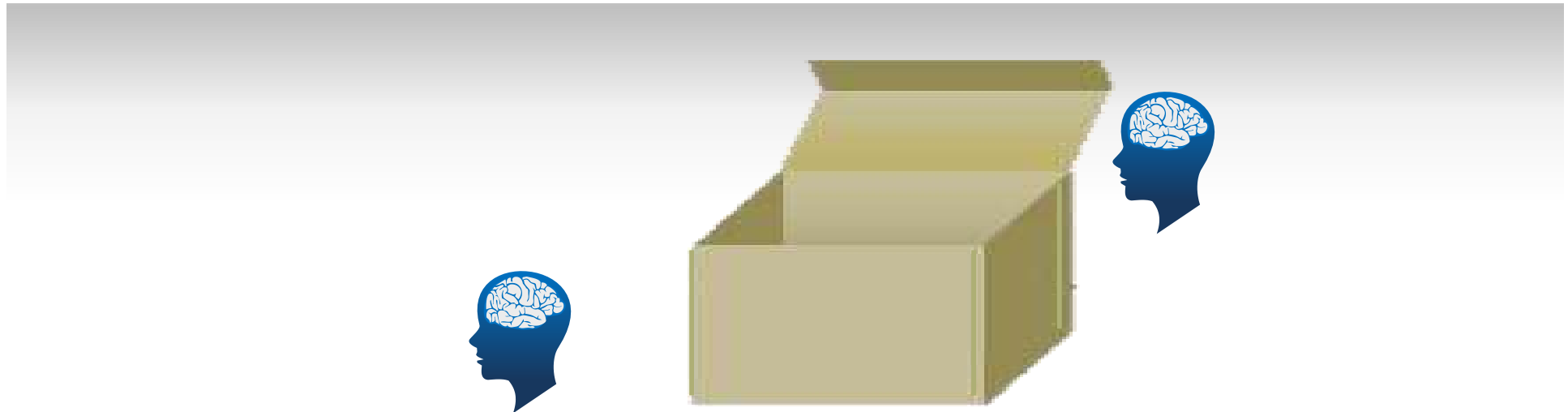


# KNOW YOUR FIELD

- Read relevant literature (papers, abstracts)
- Be up-to-date
- Use online abstracting services  
(IEEE Xplore, CoRR Computing Research Repository, arXiv, ISI Proceedings, ScienceDirect, MedLine, PubMed, NASA ADS, publishers like Wiley etc.)
- Use reference management SW  
(Citavi, Zotero, Mendeley, EndNote, ProCite, Scitation)
- Reference the original

# THINK OUTSIDE THE BOX

- Consider interdisciplinary aspects
- Regard intercultural implications
- Be open to new and different ideas



# KNOW YOUR TARGET AUDIENCE

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# ASSESSMENT CRITERIA OF THE MASTER'S THESIS

- Independence {20%}
- Subject knowledge and results {30%}
  - Quality of the results
  - Knowledge and competencies
  - New insights
- Scientific standards and execution {30%}
  - Methodology, systematic thinking, structure
  - Completeness
  - Delimitation of the problem
  - Critical reflection
  - Attention to detail
- ♦ Written report {20%}
  - Formal structure
  - Layout, structure, criteria for scientific research
  - Language
  - Clarity, readability, style
  - References and citations
  - Correctness
    - appropriate number and quality of sources
    - use of visual aids
    - attention to detail

*(Fachhochschule Vorarlberg, Dornbirn, Austria)*

## GRADED ASSESSMENT *“Very good”*

- The master’s thesis must fulfil the criteria and clearly surpass the standard.
- Independent innovative ideas on the part of the student, an independent approach to the thesis work without the need for support from the supervisor (apart from consultations and alignment)



## GRADED ASSESSMENT

*“Good”*

- The requirements of the thesis were completely fulfilled according to the criteria.
- Occasional instructions or items of information from the supervisor were necessary and were followed or applied well.

## GRADED ASSESSMENT

*“Satisfactory”*

- The requirements of the thesis were fulfilled.
- A significant amount of assistance from the supervisor was necessary.
- The instructions and information provided by the supervisor (e.g. with regard to literature research, calculations etc.) were only partially followed or not at all.



## GRADED ASSESSMENT *“Sufficient”*

- The requirements of the thesis were not fulfilled. Only the minimal criteria were satisfied.
- Instructions and information from the supervisor were neglected.

# GRADED ASSESSMENT

*“Failed”*

- A fail grade must already be apparent during the supervision of the thesis. The student must be made explicitly aware of this situation.
- A thesis that fails the first examination may be resubmitted on one further occasion after corrections have been made and within the time limits expressly stated by the degree program administration. A change of topic is not allowed.



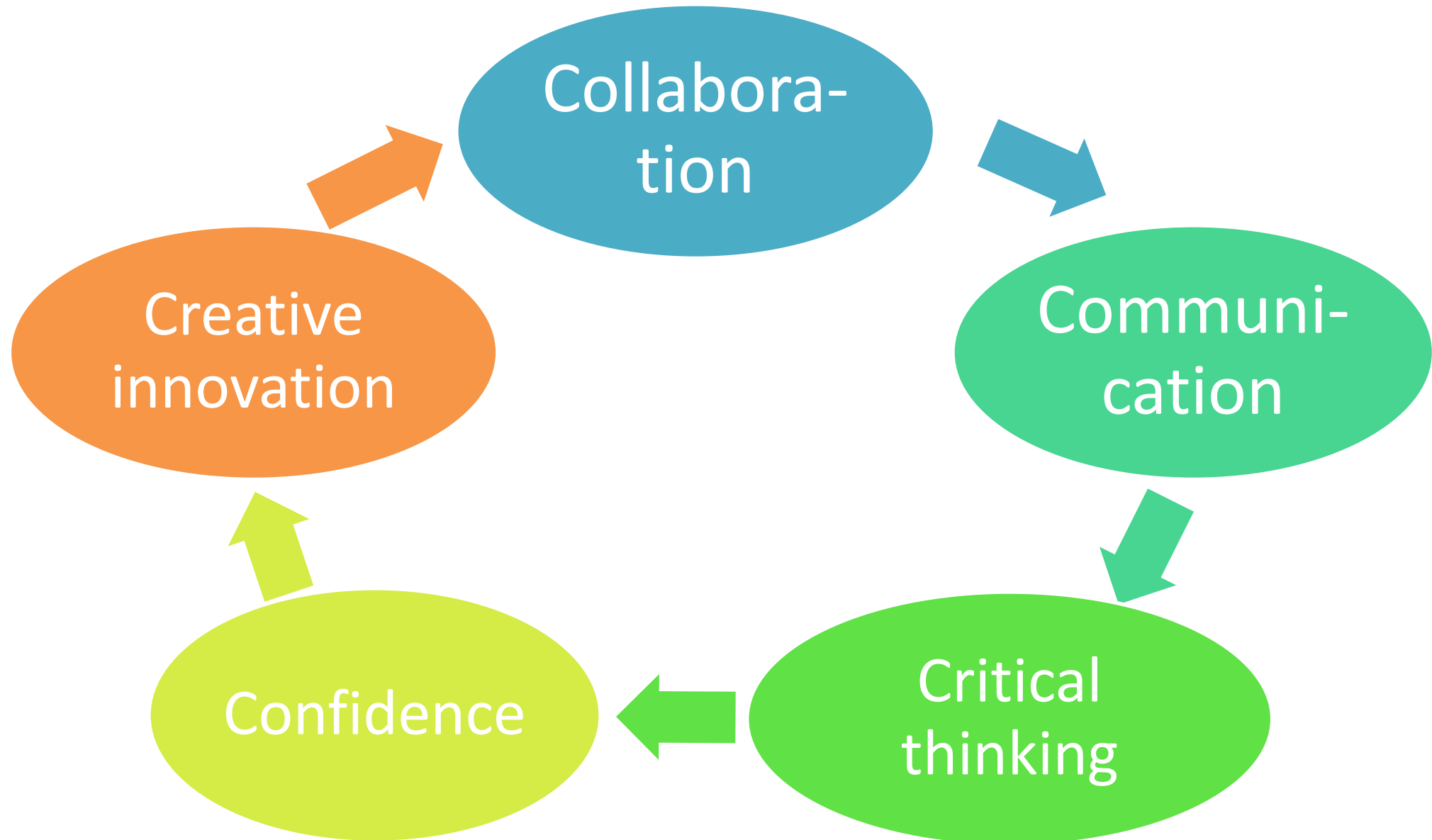
M's Thesis Proposal	Outline
Umbrella term	Part of the proposal
Persuasive	Concrete
Shows: <ul style="list-style-type: none"> <li>• Motivation</li> <li>• Capacity to work</li> <li>• Capacity to manage yourself</li> </ul>	Shows: <ul style="list-style-type: none"> <li>• What will be there in the Master's Thesis</li> <li>• How it will be arranged</li> </ul>
Argumentation	List of full sentences
Compulsory sections	Tree structure
Sections will be extended to or embedded into Master's Thesis sections	May serve as TOC of Master's Thesis

# PROJECT WRITING

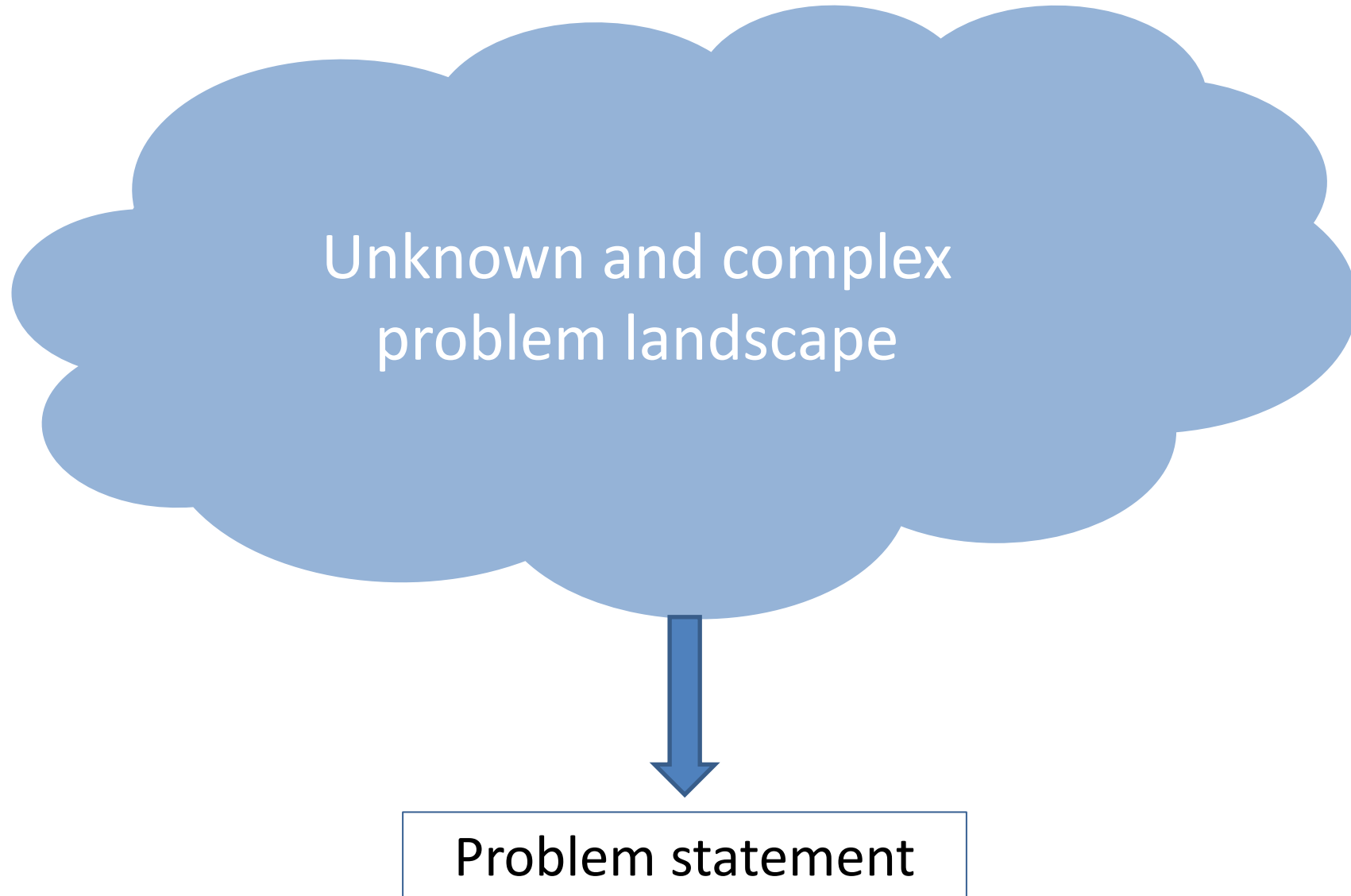
# ARCHETYPES OF ENGINEERING PROJECTS

	Improve an existing entity	Design a new entity
Design of a structure	<u>Examples:</u> <i>Improve the durability of a machine</i> <i>Improve the performance of an engine</i>	<u>Examples:</u> <i>Design a new building</i> <i>Develop a new product</i> <i>Compose a new chemical compound</i> <i>Program a new feature for a software</i>
Design of a process	<u>Examples:</u> <i>Reduce the failure rate on a production line</i> <i>Optimize the development process</i>	<u>Examples:</u> <i>Design a new procedure</i> <i>Develop a new approach</i> <i>Design a new testing process</i>

# SOFT SKILLS FOR ENGINEERING PROJECTS



# PROBLEM ANALYSIS





# INDUSTRIAL PARTNER WISHES

Identify  
and  
verify  
the  
respective  
problems.



1. A power plant asks a project team to take a look at the conveyor belts that transport coal to the plant's ovens from an adjacent lot. *The power plant does not provide any objectives, problems, or reasons why the conveyor belts need to be looked at.*
2. A pharmaceutical manufacturer wants a project group to suggest how to automate the process that wraps pill packets on pallets. *The scope is clear (the wrapping process), but the objective is unclear (is the objective to reduce costs, reduce errors, or speed up the process?).*
3. A manufacturer of dough-mixing machines for industrial bakeries tells a project group that they would like them to redesign a machine to reduce production costs. *Both the scope and the objectives of this project are clear and focused.*

# INDUSTRIAL PARTNER WISHES

Identify  
and  
verify  
respective  
problems  
(if any).



1. A power plant asks a project team to take a look at the conveyor belts that transport coal to the plant's ovens from an adjacent lot.  
*The power plant does not provide any objectives, problems, or reasons why the conveyor belts need to be looked at.*
2. A pharmaceutical manufacturer wants a project group to suggest how to automate the process that wraps pill packets on pallets.  
*The scope is clear (the wrapping process), but the objective is unclear. (Is the objective to reduce costs, reduce errors, or speed up the process?)*
3. A manufacturer of dough-mixing machines for industrial bakeries tells a project group that they would like them to redesign a machine to reduce production costs.  
*Both the scope and the objectives of this project are clear and focused.*

# PROBLEM STATEMENT COMPONENTS

## (FOR PROJECTS THAT IMPROVE AN EXISTING ENTITY)

Component	Description
Interrogative	HOW?
Actor	The industrial partner (perhaps a department or business unit)
Action	One of the verbs <i>reduce</i> or <i>increase</i>
Variable	The variable your project will improve, such as <i>accuracy, capacity, cost, durability, launch speed, memory, traceability, viscosity</i>
Circumstantial specifications	When, where, and what the project is about <i>of gadget X, on production line Y</i>
Relation to other variables	Links to other logically connected variables <i>while, whereas, with, without</i>
Methodological requirements	Limits the project to apply a particular method <i>by (name of the method), using ...</i>

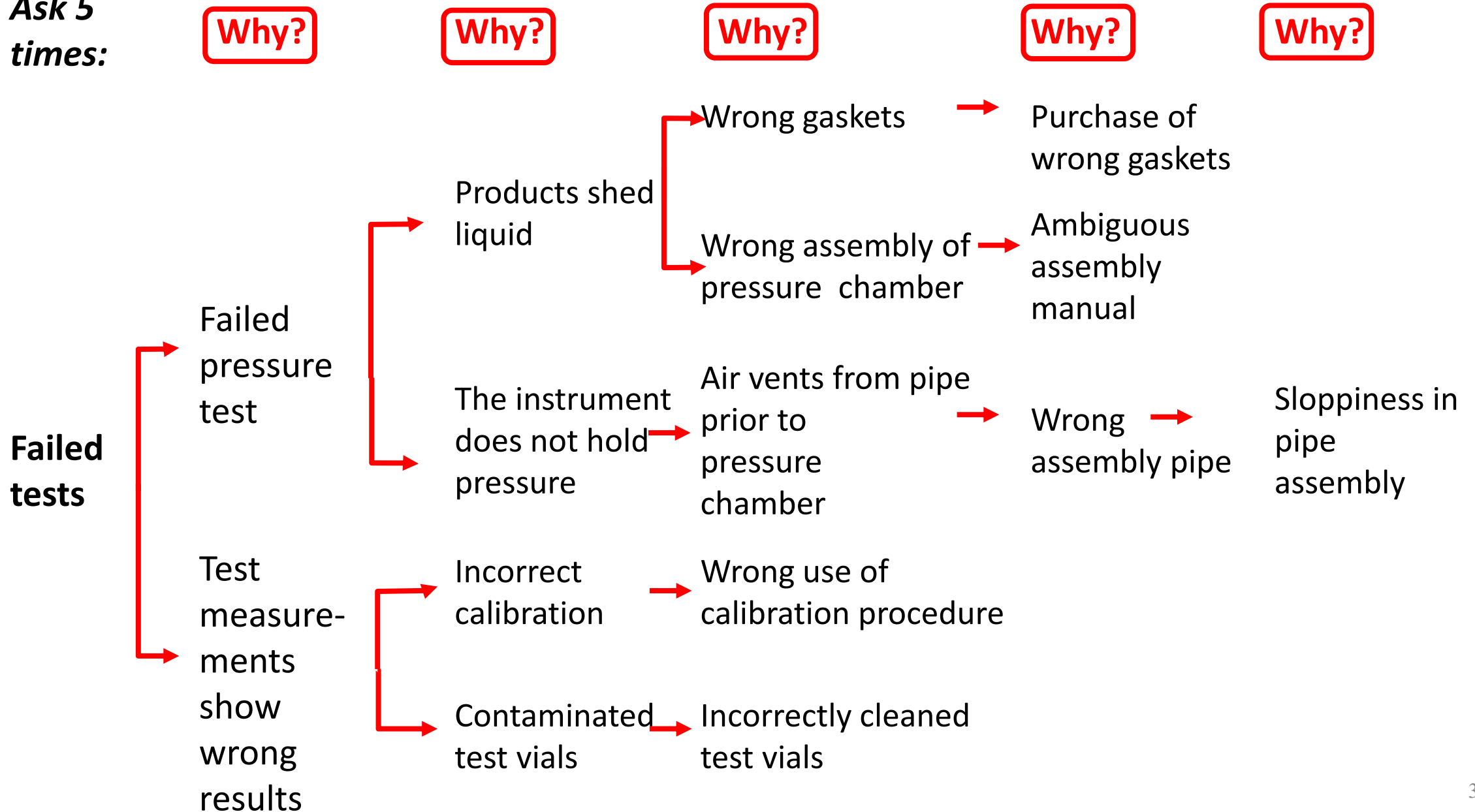
# EXAMPLES OF RESEARCH QUESTIONS

(FOR PROJECTS THAT IMPROVE AN EXISTING ENTITY)

- How can the weight of a handheld camera be reduced without changing functionality and use conditions?
- How can we reduce the thermal emittance of building façades of a historical residence while keeping the original decoration elements characteristic for that architectural style?
- How can the client of our industry partner have an improved user experience when searching for a specific product on the website of the vendor?

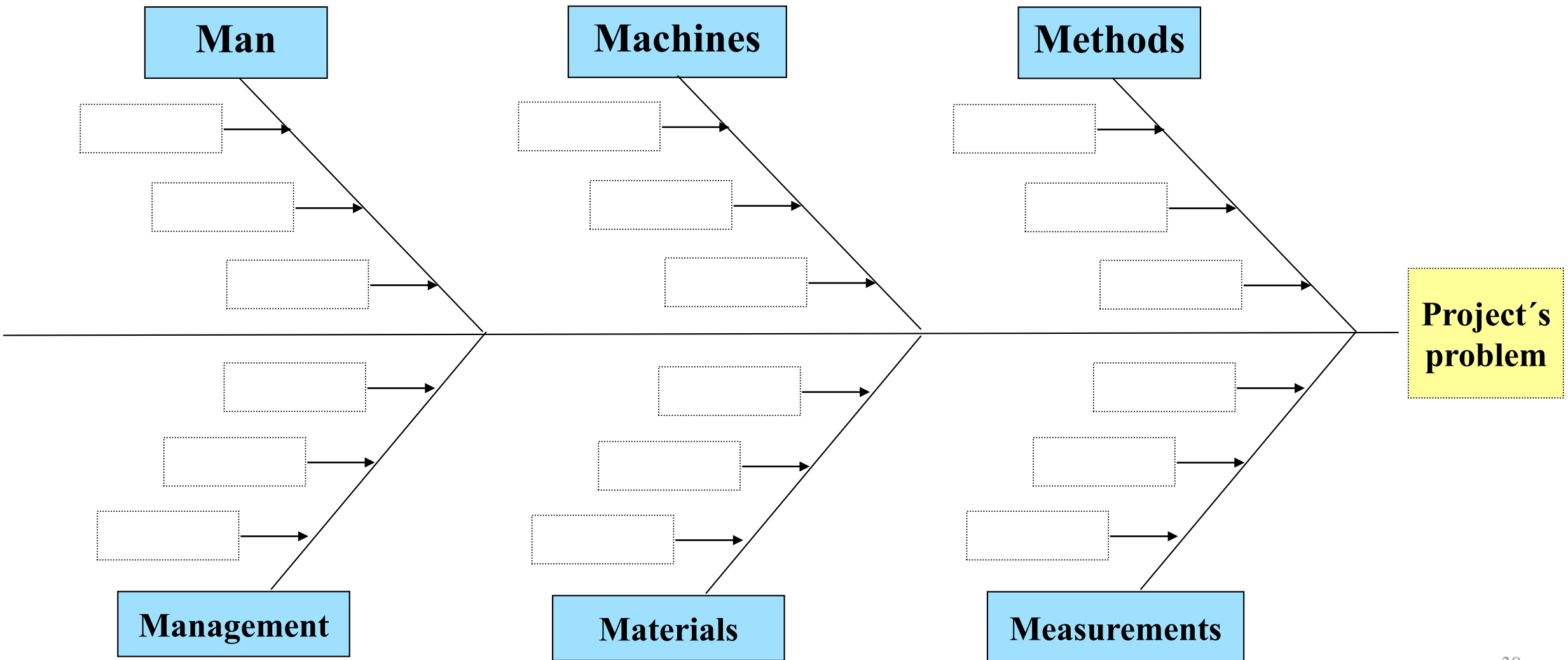
# DEFINING THE ROOT CAUSES OF A PROBLEM

Ask 5  
times:



# DEFINING THE ROOT CAUSES OF A PROBLEM

## USING THE FISHBONE DIAGRAM



**IF YOU FAIL TO PLAN,  
YOU PLAN TO FAIL.**

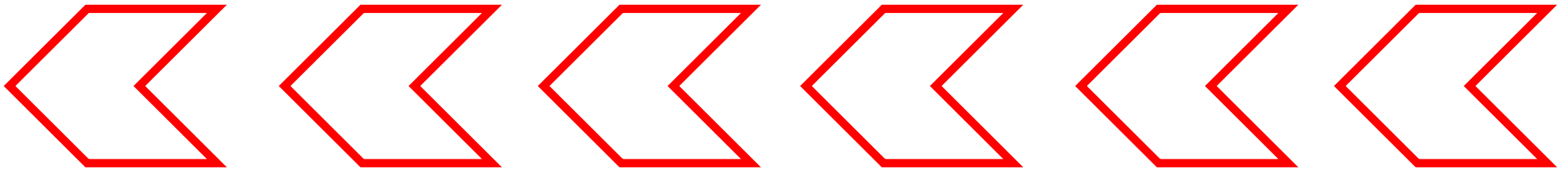


Benjamin Franklin

# PLANNING BACKWARD



- Choose your goal.
- Imagine you have reached it.
- Then plan backward ...

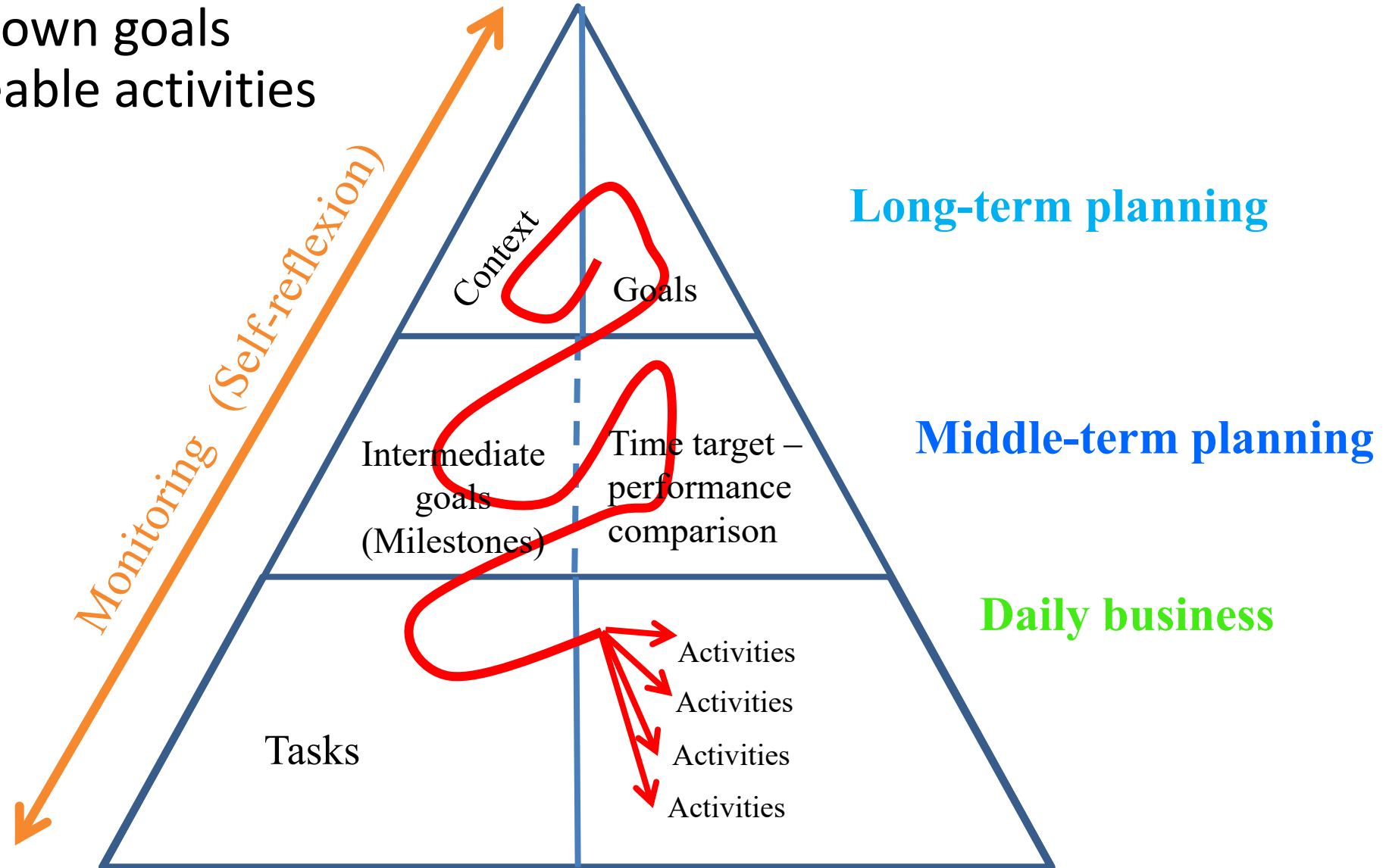


... until you exactly know  
where and when you have  
to start to achieve this goal.



# CHUNKING

= Breaking down goals into manageable activities



# SETTING GOALS

S

Specific, significant

M

Measurable, motivating

A

Action-oriented, ambitious, attractive, accepted, agreed

R

Relevant, realistic, rational, rewarding, result-oriented

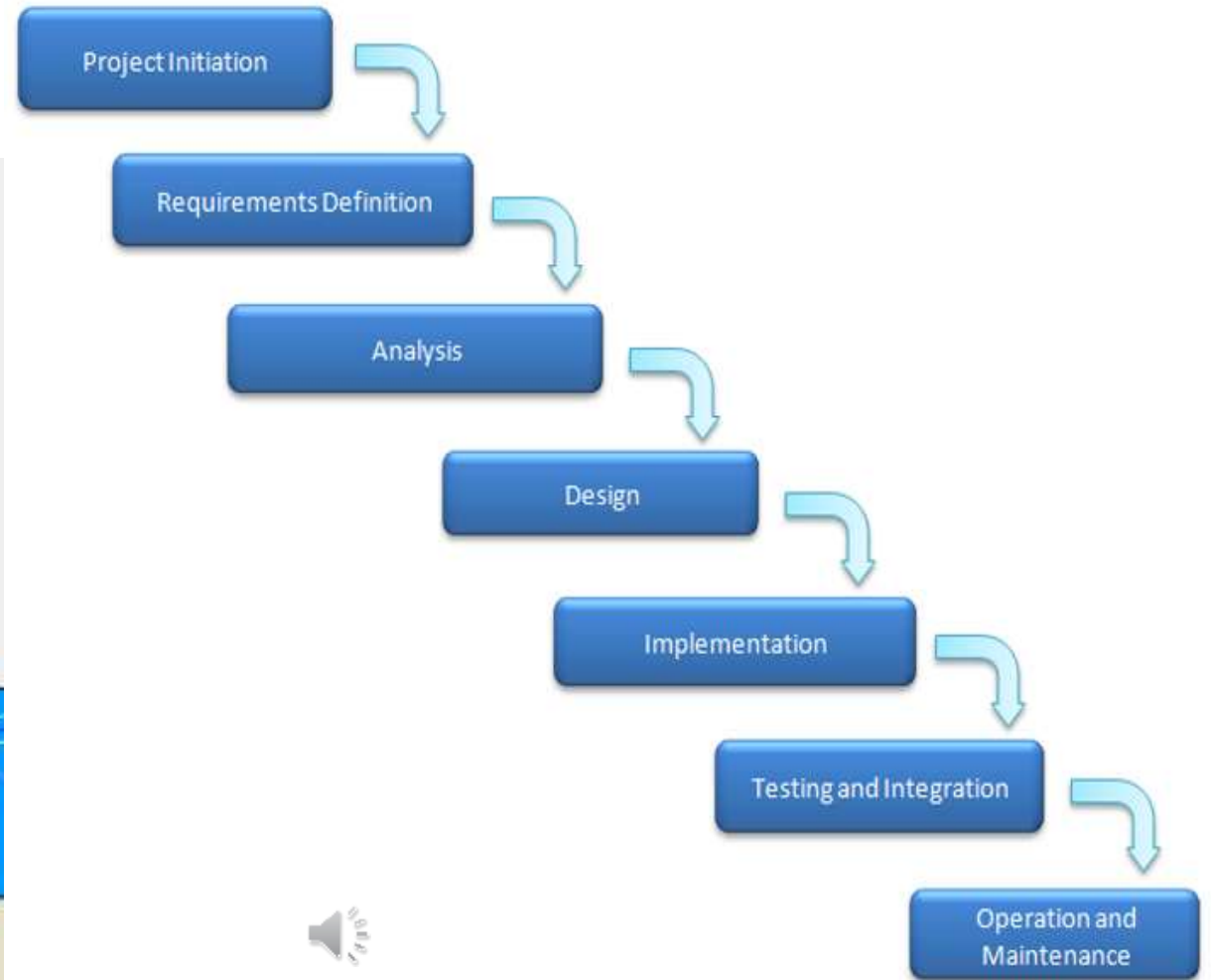
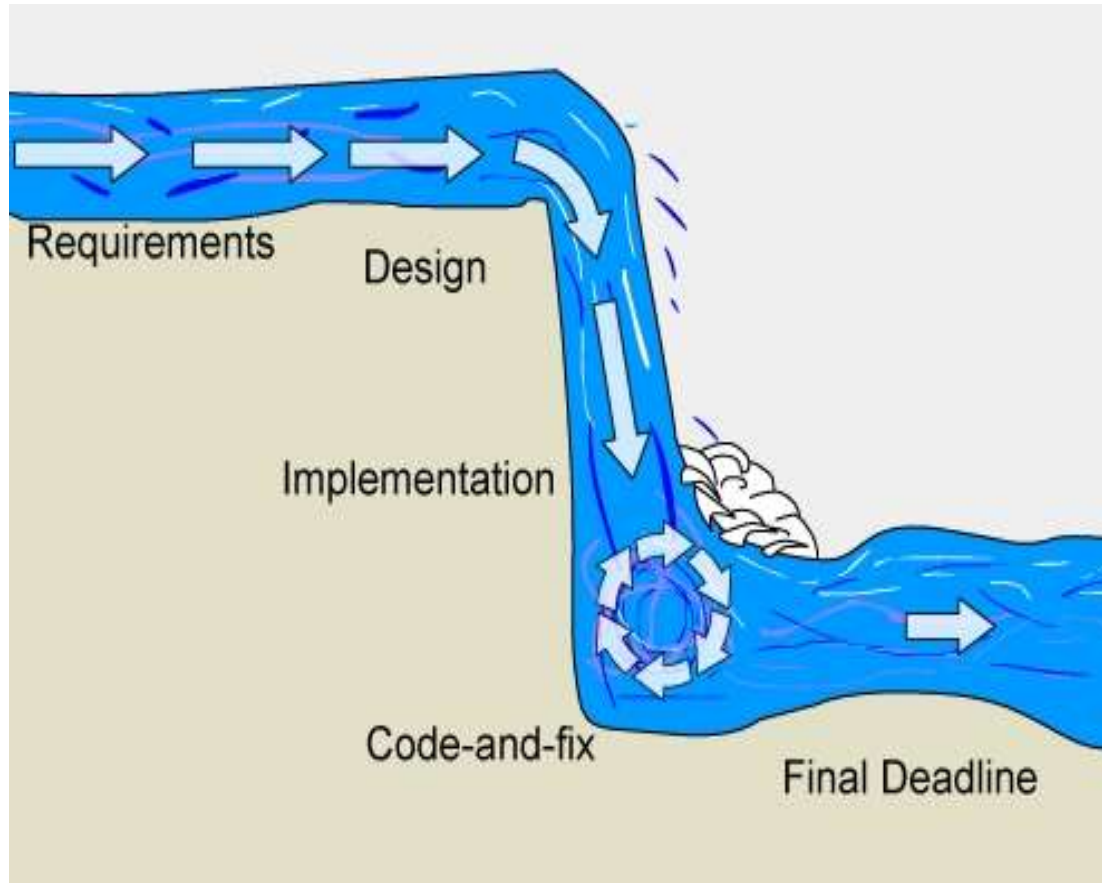
T

Time-bound, thought-provoking, trustworthy

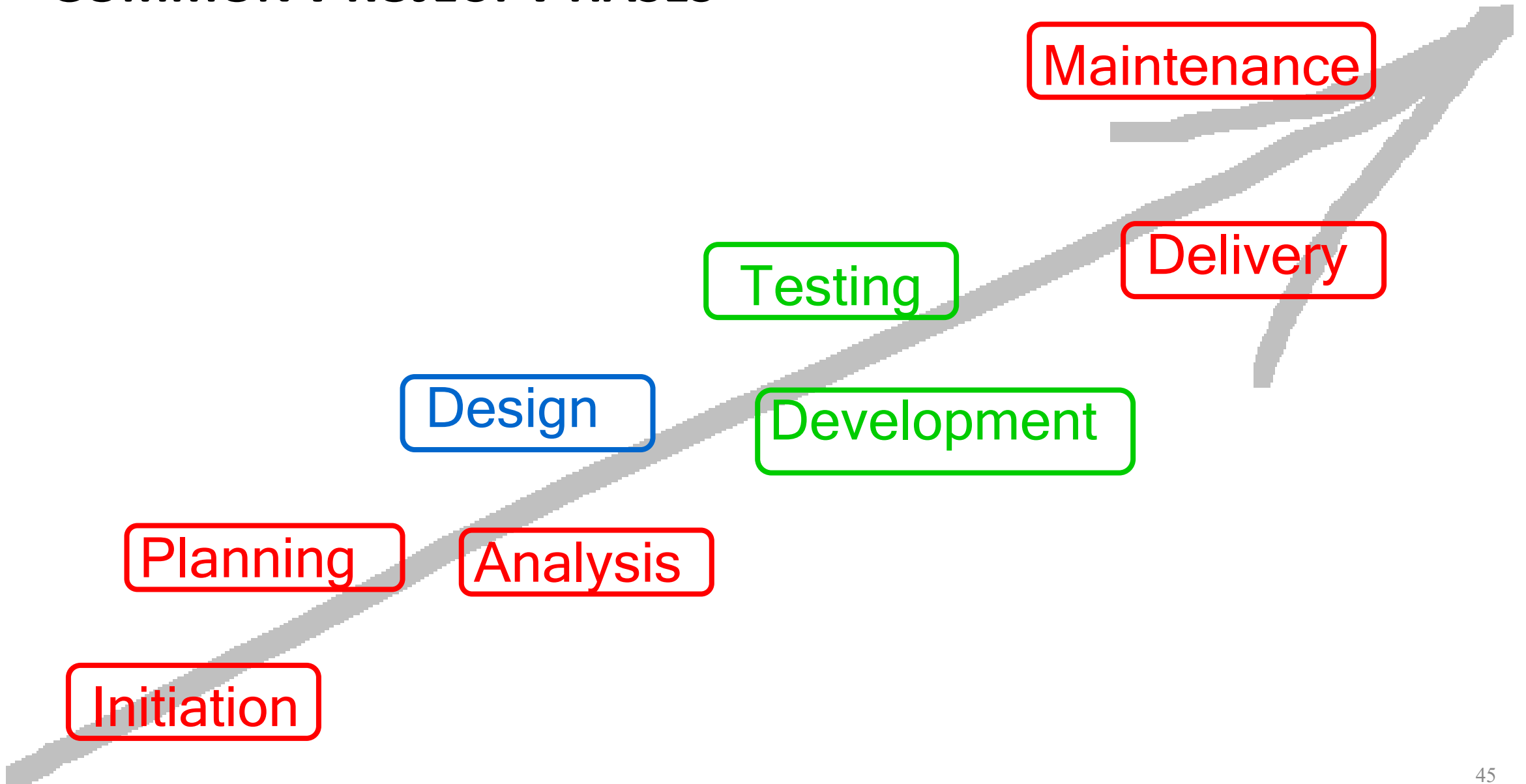
# PRIORITIZING: THE EISENHOWER- METHOD

	Urgent	Not urgent
Important	<b>I</b> Crises/Fire/Flood Emergency cases Deadlines Some meetings Teaching	<b>II</b> Planning, Provisions Contact care Search for opening chances Following trends Recreation
Unimportant	<b>II</b> Some meetings Emails Breaks Urgent calls	<b>IV</b> Trivial daily routine Minor issues in mails Dispensable calls Pleasant distractions 😊

# CONVENTIONAL PROJECT MANAGEMENT: THE WATERFALL MODEL

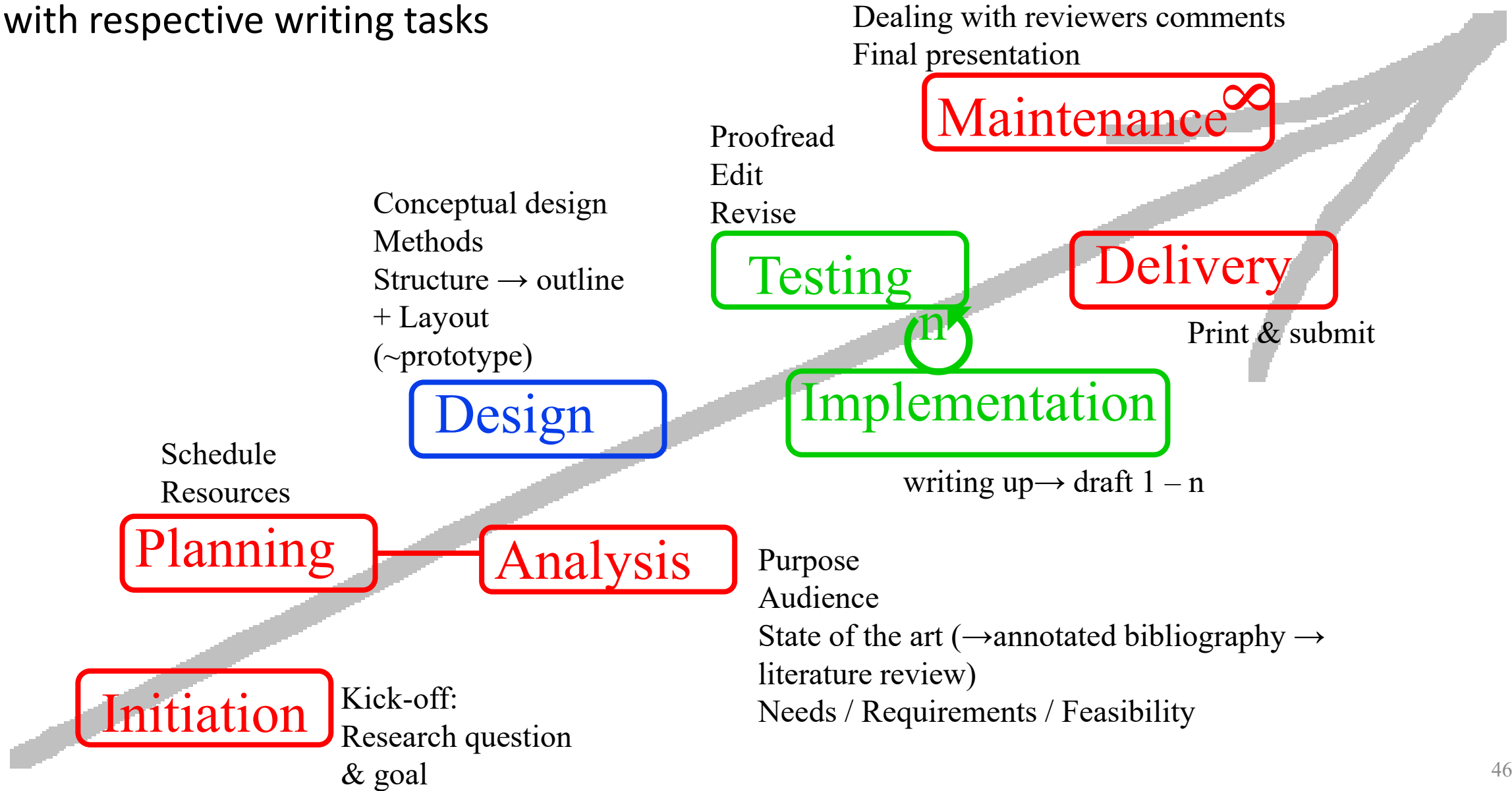


# COMMON PROJECT PHASES

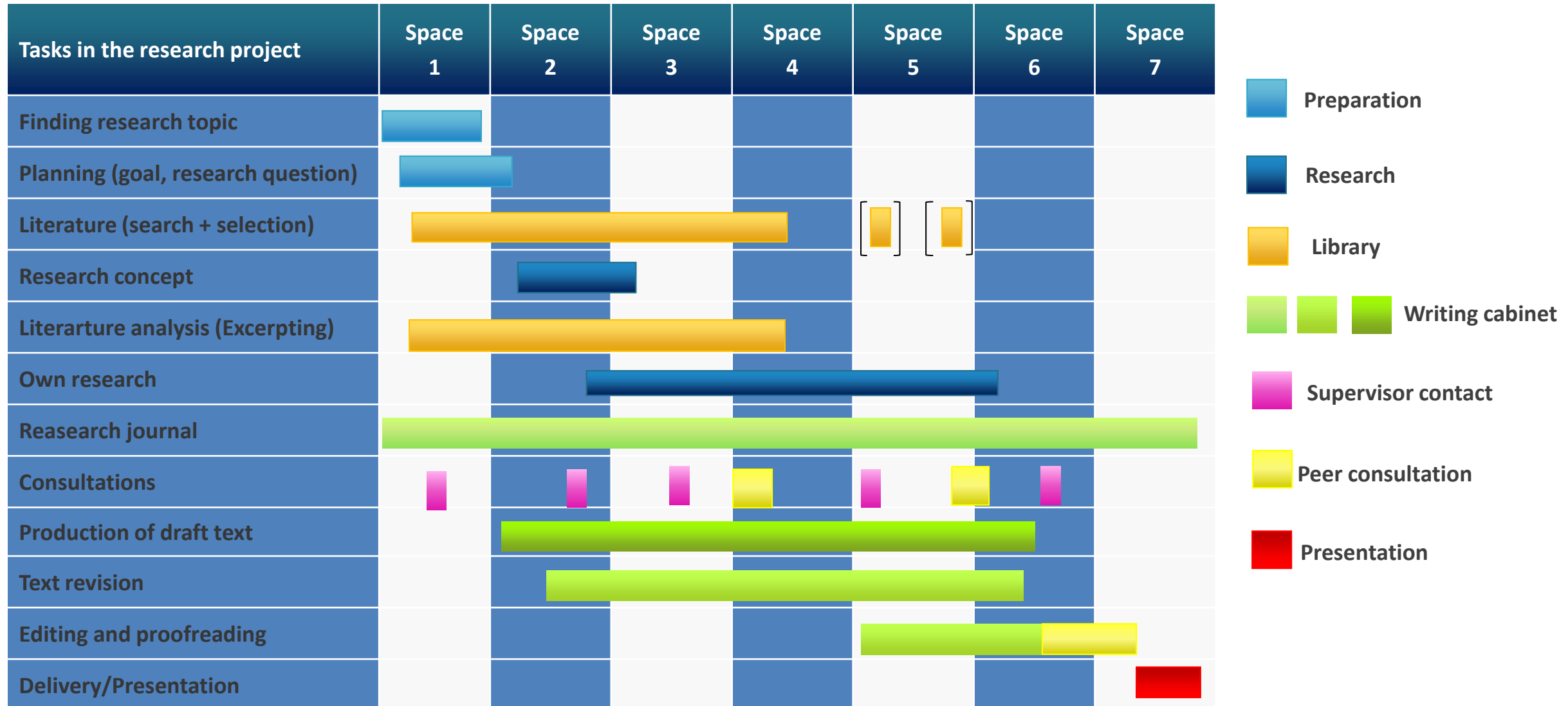


# COMMON PROJECT PHASES

with respective writing tasks



# GANTT-CHART AS PLANNING INSTRUMENT



# WRITING PROJECT PHASES: MASTER'S THESIS

**Initiation**

Idea/Topic/Problem

**Planning**

Aim of study, thesis statement, scope, schedule.

**Analysis**

Audience/needs = Journal/literature analysis.

P  
R  
O  
P  
O  
S  
A  
L

**Design**

Conceptual decisions

Style and structure of MT → Outline.

**Development** Research & writing. Parallel & modular.

**Testing**

Is the MT complete, correct, consistent, readable?  
Reviewing, editing, rewriting, proofreading.

**Delivery**

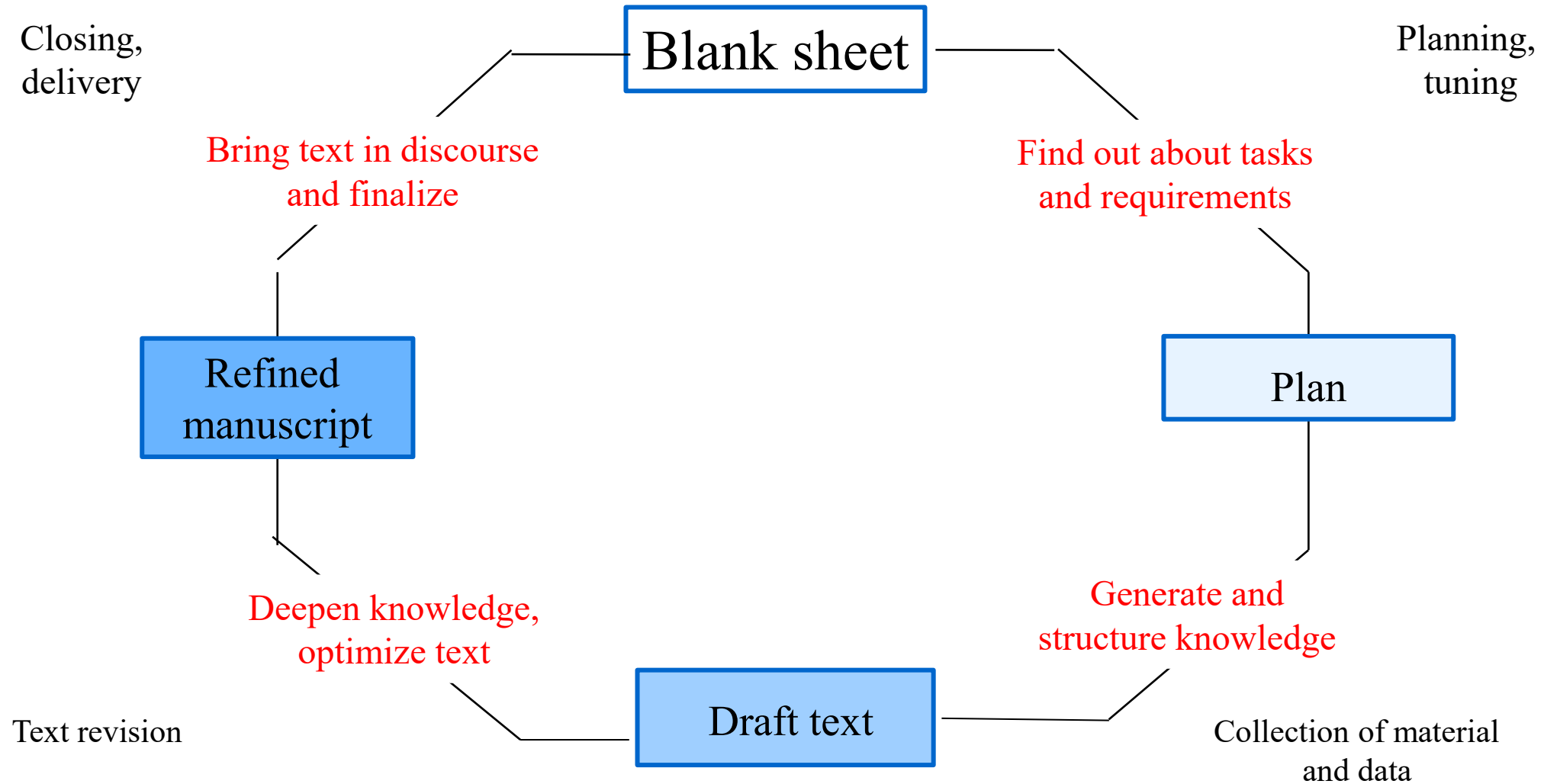
Submit min. 2 hard copies (official + supervisor's)

**Maintenance**

Archive (copy for faculty library, advisor),  
re-use (publish parts or in full).



# THE WRITING PROCESS





# 1. GET KNOWLEDGE

# LITERATURE REVIEW

- Begin early
- Make notes with
  - exact citations
  - page references
- Set up file with annotated bibliography
- Read critically
- Interpret what you read

## 2. STRUCTURE KNOWLEDGE



# OUTLINE

- Arrange your material in a logical structure
- Use it as a skeleton
- Change and rearrange items if necessary
- Zoom in to see more details
- Zoom out to get overview



### 3. FORMULATE KNOWLEDGE



# WRITING UP

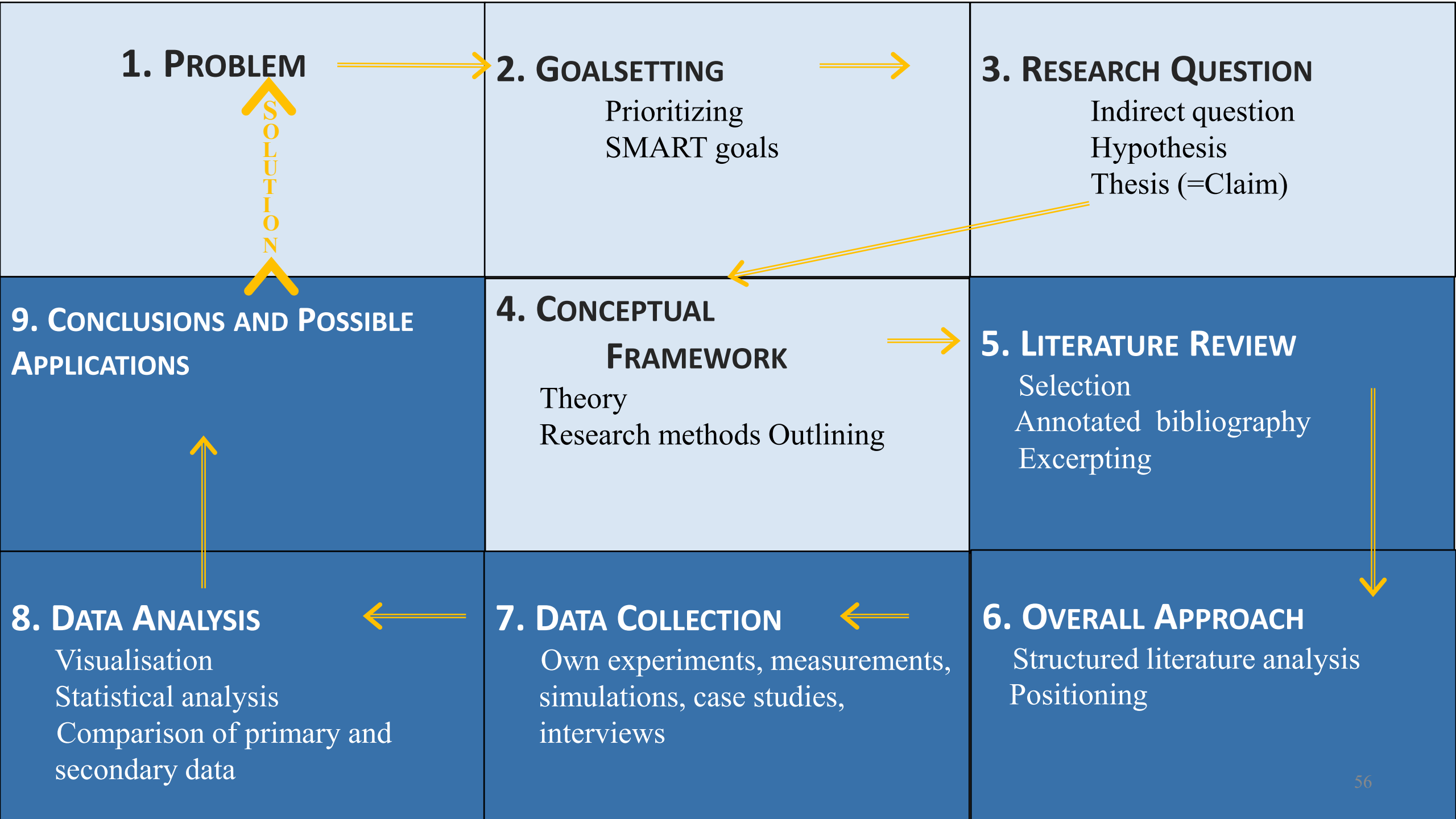
- Takes longer than your most pessimistic plan



- Iterative process
- Write randomly as convenient
- Write regularly to keep yourself at stake
- Write and correct later
- Leave time for kind reviewers





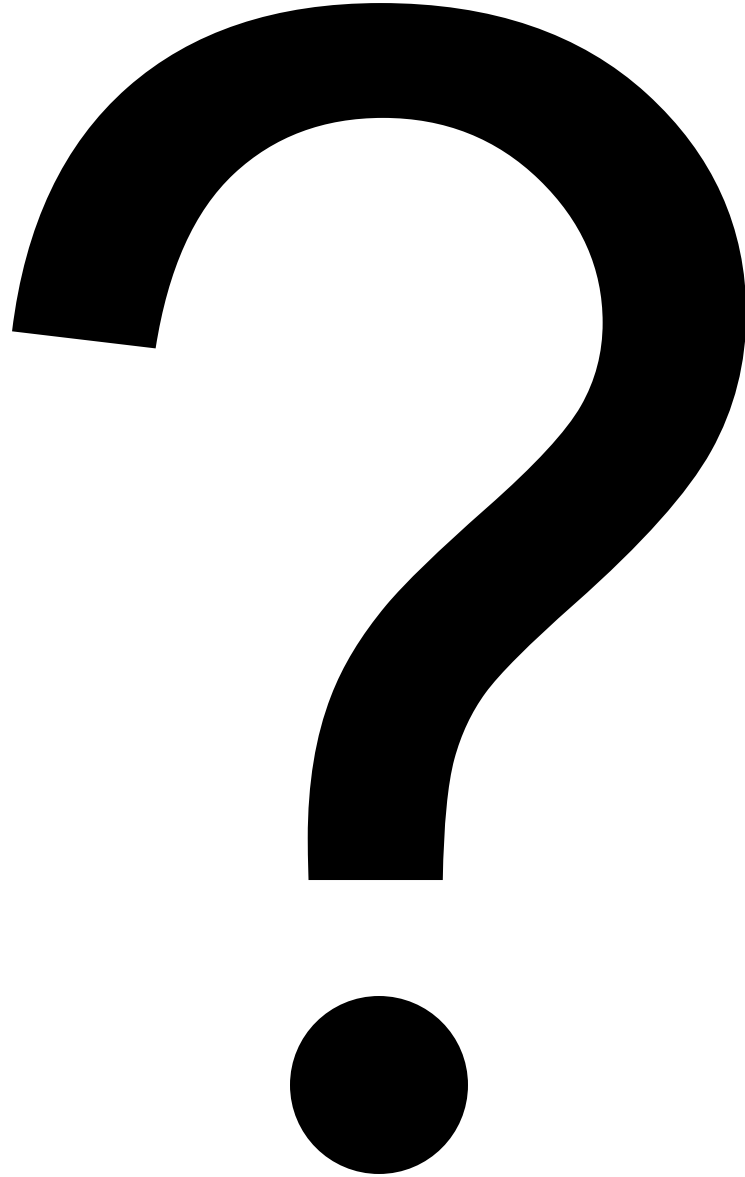





# About Writer's Blockade









**RESULTS**

**Frustration**

**Stress**

**Missed deadlines**

**Poor quality work**

WHAT IS  
YOUR  
BIGGEST FRUSTRATION  
AS A WRITER?

*Organising thoughts and ideas into structured, readable material! It's why I write well under duress and less well (if at all) when left to form something from free floating thought. If I don't have a solid deadline, it's likely to **NEVER** get done!*

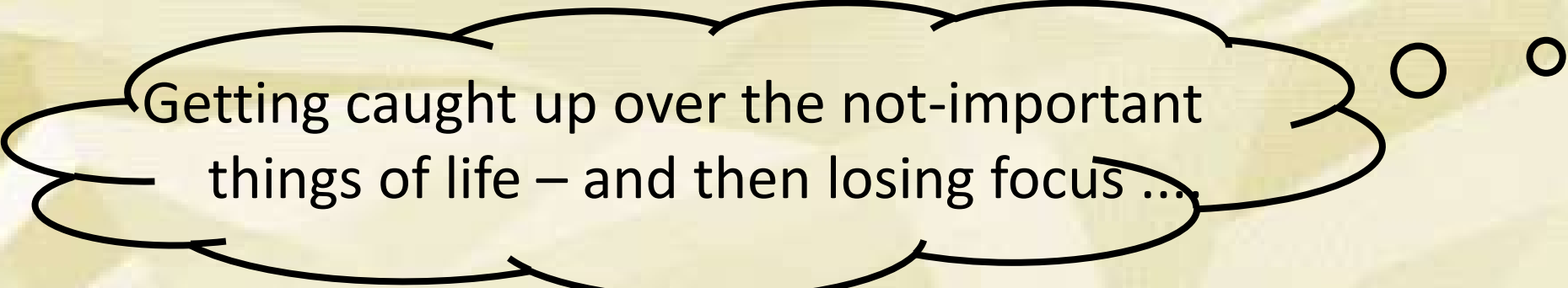
**Not enough hours in the day or night (I never get enough sleep), esp. when "normal life duties" interfere with creativity.**

Trying to remember all the rules, whether it is showing or telling, passive voice or not.

I guess it would be not believing in myself and my writing abilities.

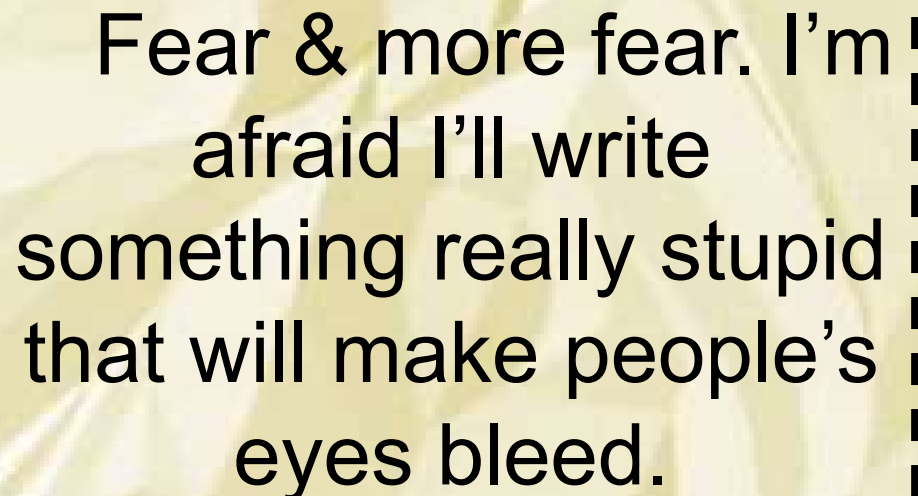
*Translating the richness of my knowledge into the written word and that I must condense the universe into a sentence.*

## WHAT KEEPS YOU FROM WRITING?

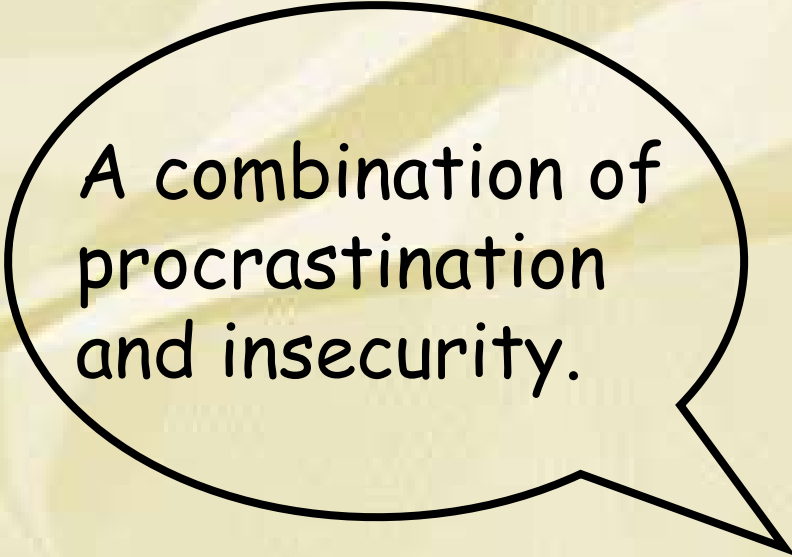


Getting caught up over the not-important things of life – and then losing focus ...

I can't stand not being able to do something right the first time or it taking more time than I'd estimated.



Fear & more fear. I'm afraid I'll write something really stupid that will make people's eyes bleed.



A combination of procrastination and insecurity.



# ORIGINS

Blank sheet horror      Crash horror

XXS self-awareness      Outing horror

XXL self-criticism      Perfectionism

Lack of organisation

Specious barriers



# WHAT TO DO?

Think about some good advice  
that might help  
your suffering peers  
overcome writing blockade.

# WHAT TO DO?

- Think “*problem solving*” rather than “*creation*.”
- Schedule regular time and show up, even if you think you cannot write.
- Write nothing but headlines.
- Get distance.
- Write what you know.
- Mindmap.
- Write “crap” without feeling guilty. Write anything!
- Write about how you solved a problem.
- Edit older articles.

# WHAT TO DO?

- Type out other people's articles.
- Make your point out loud.
- Separate the section on which you are currently working from the rest of the document.
- Make a list of ideas you want to include in the next paragraph.
- Consider saving the introduction, conclusion and transitional paragraphs for the last, not the first, phase.
- Remind yourself that the first draft doesn't have to be perfect.
- When you're really stuck and feeling down, read some of your earlier papers.
- Keep a daily journal.

"The secret of getting ahead is getting started.  
The secret of getting started is breaking your  
complex overwhelming tasks into small  
manageable tasks, and then starting on the  
first one."

(Mark Twain)

# 10 STEPS TO BECOMING A BETTER WRITER

BY BRIAN CLARK

1. Write.
2. Write more.
3. Write even more.
4. Write even more than that.
5. Write when you don't want to.
6. Write when you do.
7. Write when you have something to say.
8. Write when you don't.
9. Write every day.
10. Keep writing.

# WHEN THERE IS NO WIND, ROW.



[http://www.geo.de/GEO/kultur/geo\\_tv/51795.html?t=img&p=1](http://www.geo.de/GEO/kultur/geo_tv/51795.html?t=img&p=1)

# YOUR NEXT STEP TOWARDS YOUR MASTER'S THESIS

1. Prepare a tentative **outline** to your Master's Thesis.
  - If you already know your topic, please work on it;
  - If you are still not decided, you can choose any topic arising to you (from a current seminar paper, your Bachelor's Thesis, a project you are engaged with) just in order to try yourself writing an outline.
- For outlining please consider the sheet "Rules for a Clear Outline."
- Please upload your outline at latest by **May 02, 2024, 8:00pm**.
- Use the following format for your file name: **Your\_Name\_Outline**
- Put **your name** in the header **on each page** of your document.

(.doc, .docx, and .odt are fine; if you use Latex, please convert your document to PDF and allow me copying and printing of your file. Please do not upload any other file formats).
2. Give feedback to two of your peers on their submitted outline, respectively. This will be done in a workflow on Moodle, beginning **May 03, 2024, 8:00pm**.
- Please upload your feedbacks by **May 10, 2024, 8:00pm**.

# WRITING YOUR THESIS OUTLINE

NOTHING SAYS "I'M ALMOST DONE" TO YOUR ADVISOR/  
SPOUSE/PARENTS LIKE PRETENDING YOU HAVE A PLAN



STEP  
1

Aim for a respectable number of chapters:

## THESIS OUTLINE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

↖ chapter #s

5 = "That's IT??"  
6-7 = "Not bad"  
8+ = "Are you crazy??"

STEP  
2

Fill in the "freebies":

## THESIS OUTLINE

1. INTRODUCTION
2. LIT REVIEW
3. METHODOLOGY
- 4.
- 5.
- 6.
7. CONCLUSIONS

You're half way done!

STEP  
3

Make up titles for the "meat" chapters:

2. LIT REVIEW
3. METHODOLOGY
4. (THAT STUFF YOU DID YOUR FIRST YEAR)
5. (STUFF YOU'RE SUPPOSED TO BE DOING NOW)
6. (MAKE STUFF UP)
7. CONCLUSIONS

(It'll be years before you actually have to work on that later chapter, and by then your thesis topic will have changed anyway)

STEP  
4

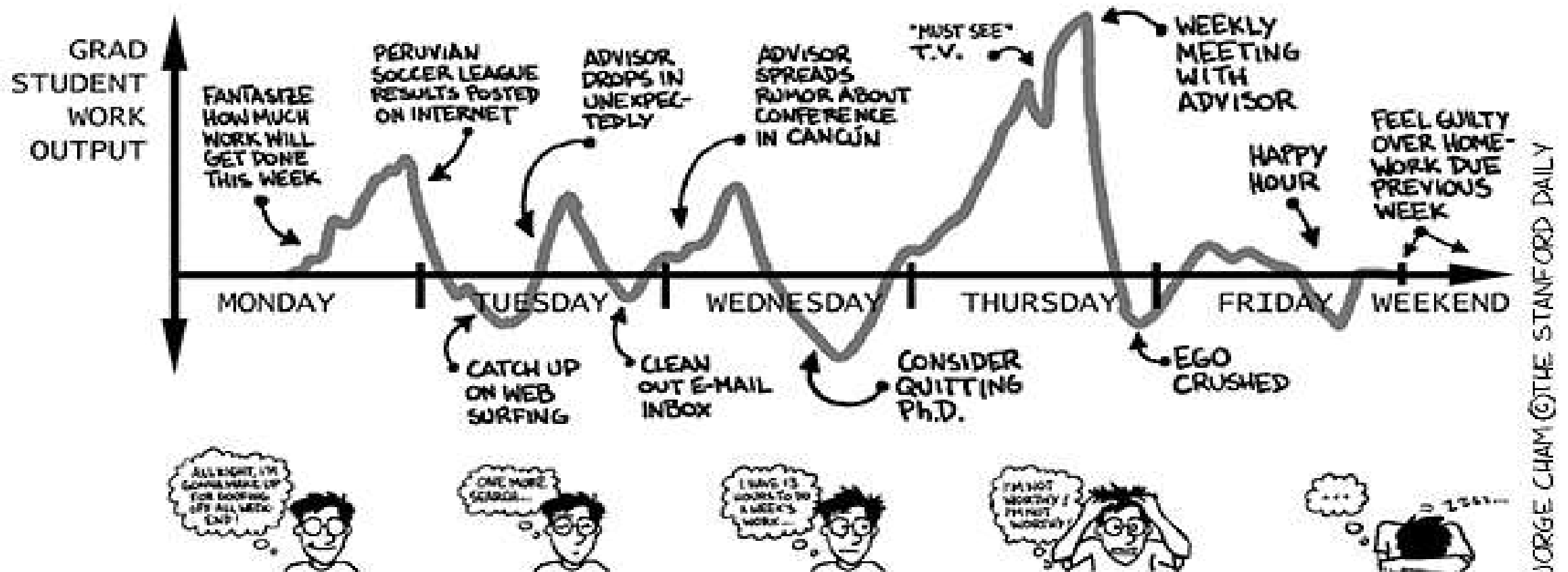
Voilà! You just bought yourself another two years





# KNOW YOUR WORK CYCLE

Everybody has a different work cycle. Find out when you get most of your work done and dedicate this time to working on your thesis.



"Is academic writing more important than spending time with your family and friends, petting the dog, and drinking coffee?  
A dog unpetted is a sad dog...  
Protect your real-world time just as you protect your scheduled writing time."



(Paul J. Silvia)

Silvia, P.J. (2007). *How to Write a Lot*, Washington: APA. (p. 132)