



This crazy little thing called PhD

Presentation at CAiSE 2023 Doctoral Consortium (Zaragoza, Spain)

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**CAiSE'23**



Software and Service Engineering Group
UNIVERSITAT POLITÈCNICA DE CATALUNYA

Who am I?

- Professor at UPC
- PhD at 1996
- 13 PhD tesis successfully advised...

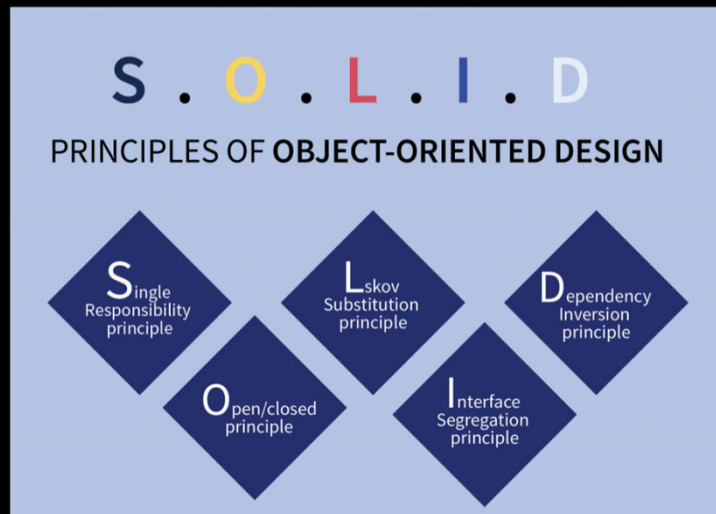
- ...and a few, didn't end so well ☹️

<https://www.essi.upc.edu/~franch/>

The keynote

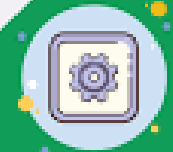
- **Goal:** compile some **key principles** that will inspire you to take charge of your everyday PhD routine
- **Style:** casual
- **Dynamics:** feel free to interrupt me at any moment
- **Disclaimer:** the talk presents my own view and opinions, not necessarily shared by everyone
 - In particular, by your advisors !!

Why principles?



7 SOFTWARE TESTING PRINCIPLES

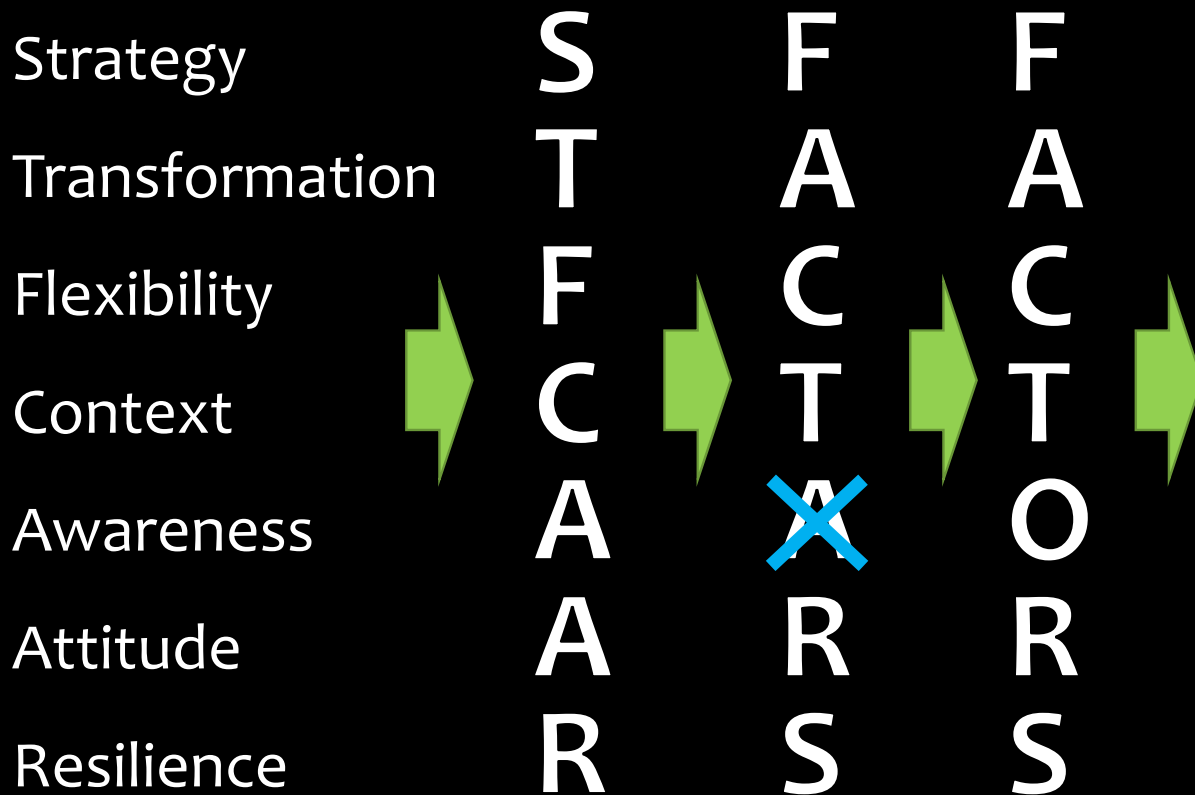
1. Testing shows presence of defects
2. Exhaustive Testing is not possible
3. Early Testing
4. Defect Clustering
5. Pesticide Paradox
6. Testing is context-dependent
7. Absence of errors fallacy



Why not for a PhD?

factors

What are the ~~principles~~ guiding a successful PhD?



Journal of Systems and Software
Volume 81, Issue 6, June 2008, Pages 961-971

ELSEVIER

A survey study of critical success factors in agile software projects

Tsun Chow, Dac-Buu Cao

International Journal of Information Management
Volume 30, Issue 2, April 2010, Pages 125-134

ELSEVIER

The critical success factors of business process management

Peter Trkman

Success factors for implementing global information systems

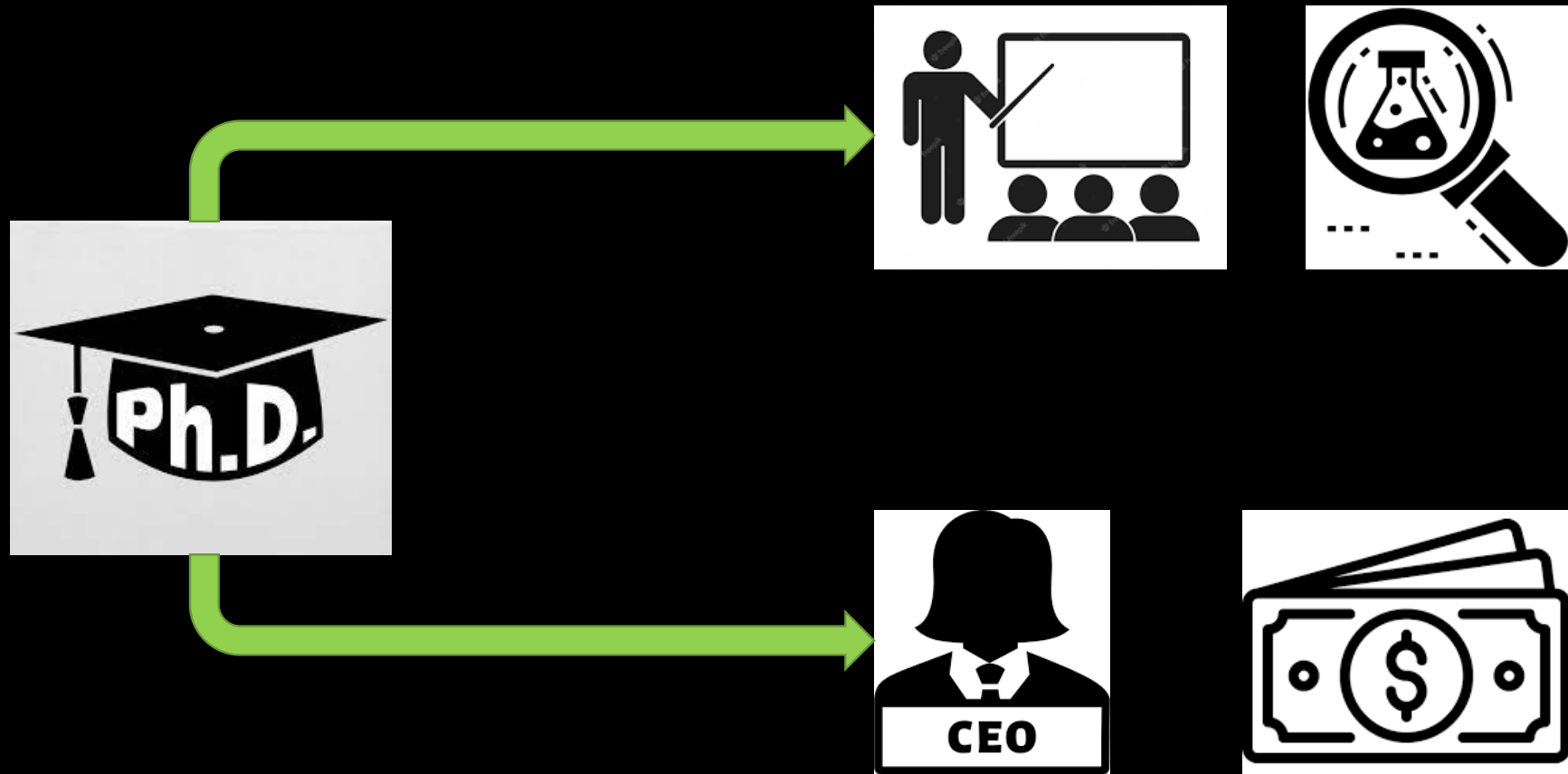
Author: Markus Biehl

Communications of the ACM, Volume 50, Issue 1 • January 2007 • pp 52-58 • <https://doi.org/10.1145/1188913.1188917>

Factor vs. principle

- **Factor**: a circumstance, fact, or influence that contributes to a result
- **Principle**: a fundamental truth or proposition that serves as the foundation for a system of belief or behaviour or for a chain of reasoning
- **Goal (revisited)**: compile some key (success) **FACTORS** that will inspire you to take charge of your everyday PhD routine

Factor 1: Strategy (life-long career)



(Digression) Maybe you don't know yet...



Academic career

PhD is the start of your life-long career

- What else do you need?
- Networking is key
 - Increased involvement in events

It may take you a bit longer to finish your PhD, but for a good reason!

Industry career

PhD is the path to achieve advanced skills



- And sometimes, better positions
- What about an Industrial Doctorate?
 - Although may be a bit risky...

In this case, it seems more advisable to go straight ahead to completion!

A PhD rooted on industry problems?

Should not be so strange

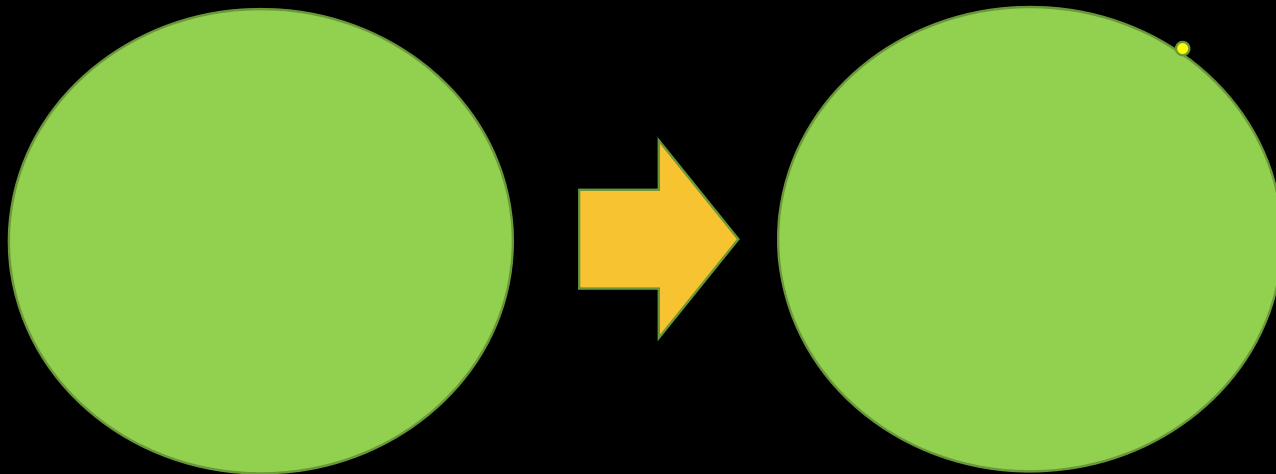
- ...but it is

Pros and cons:

- High motivation
- Less availability

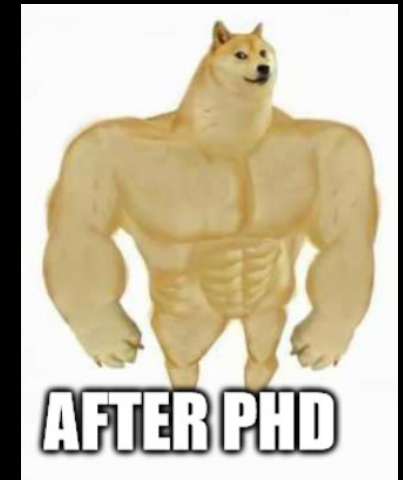
Factor 2: Transformation (personal growth)

- What is the outcome of your PhD?
 - It is not (mainly) your scientific achievement!
 - It's you!!



Scientific knowledge

cf. Matt Might



FACTORS for a successful PhD

Personal growth

To grow so much, do not forget to work on several key aspects

Methodology

Learn a lot

Collaboration

Micro-
management

It may take you a bit longer to finish your PhD, but for a good reason!

Factor 3: Flexibility

- The PhD is a long journey...
 - ...and many things may happen on the way
- Some of them may be not scientific
- But others are normal in a scientific endeavour

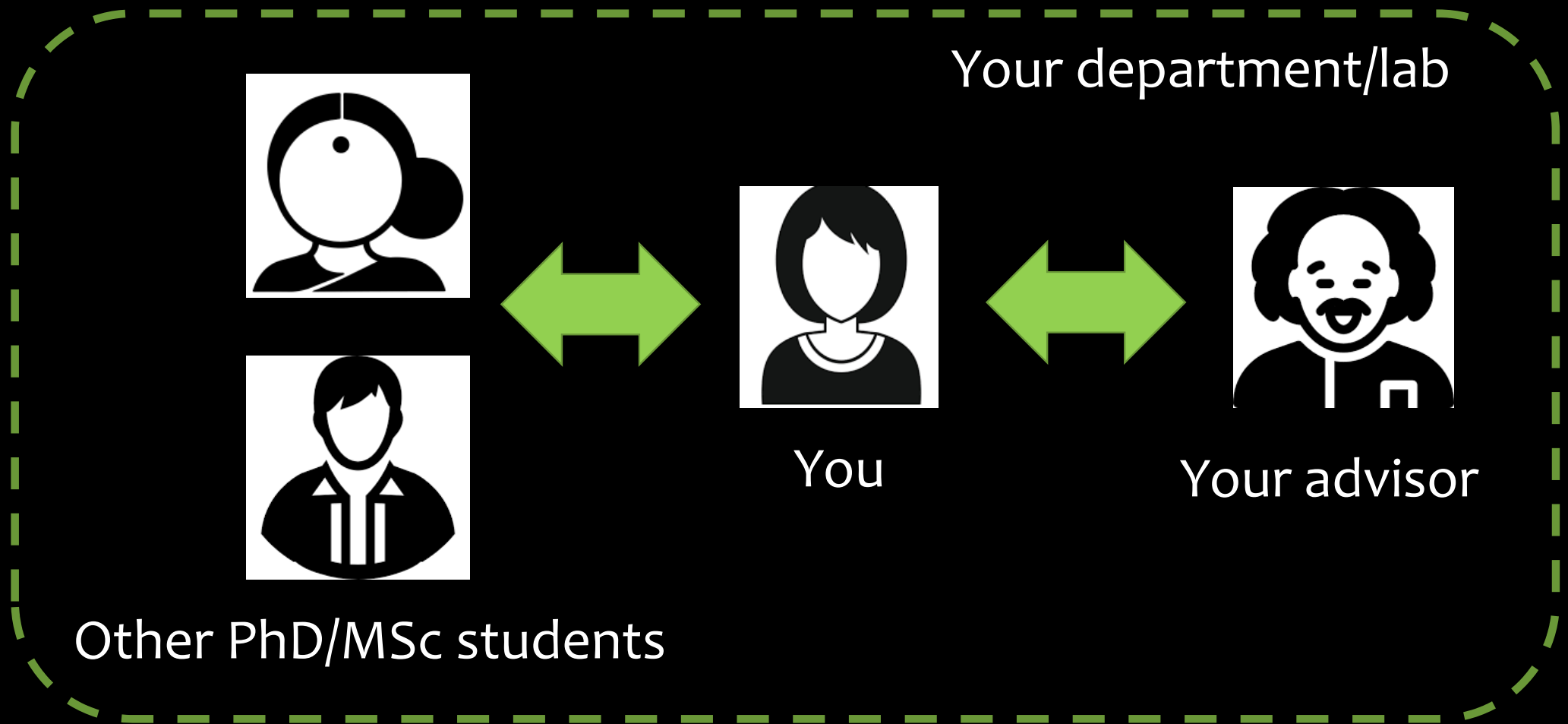


My own case...

What I learned:

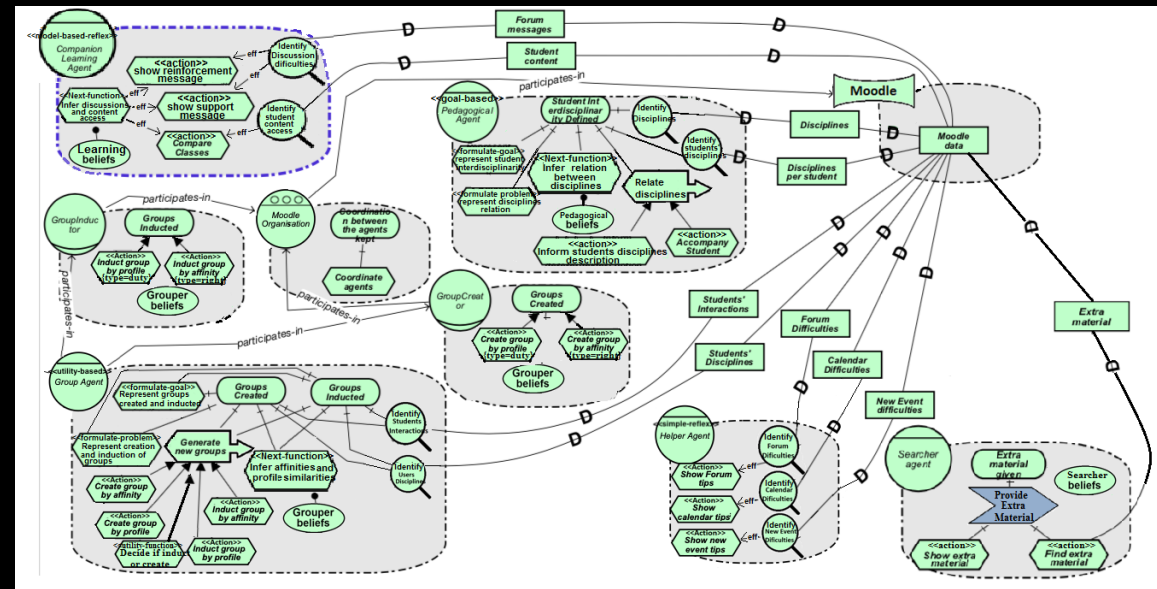
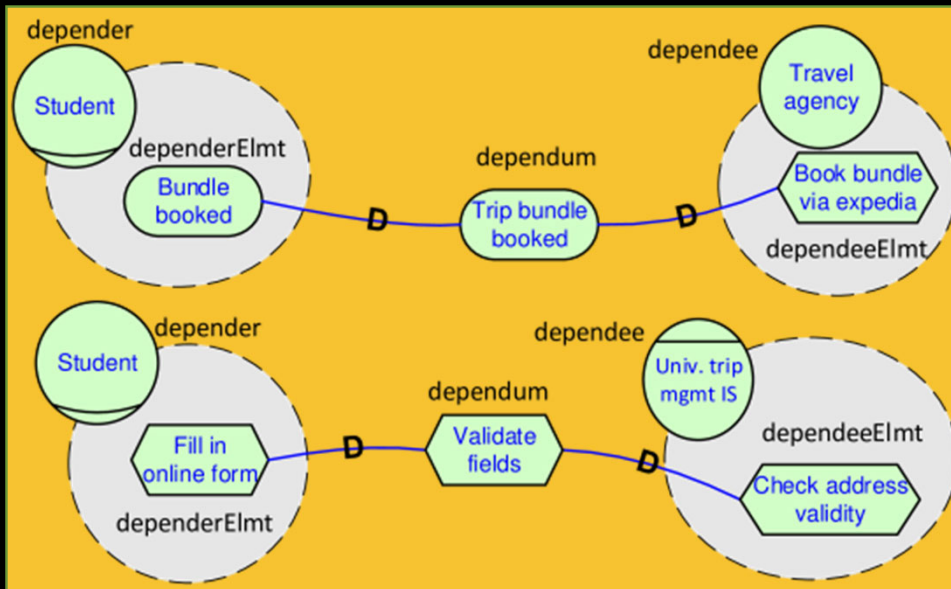
- don't be unnecessarily stubborn
 - but not a weather vane either!
- shifting does not mean forgetting
 - use what you learned
- these situations make you strong
 - cf. resilience factor

Factor 4: Context (you are not alone)



In more detail...

Do you know the *i** language?

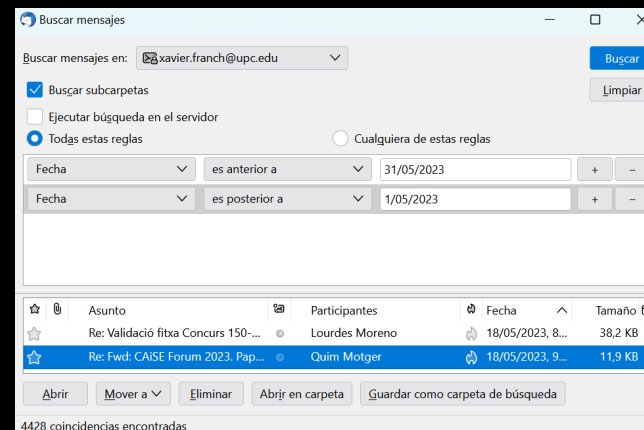
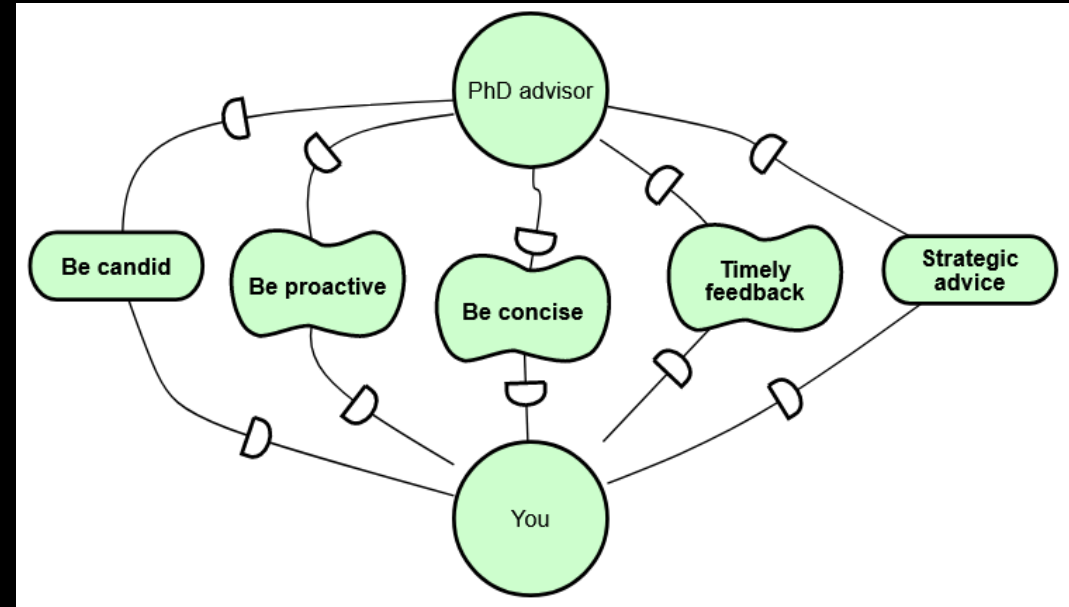


FACTORS for a successful PhD



Your advisor

- Different types of advisors
 - Senior vs. junior
 - Proactive vs. easy-going
 - Maybe even you have two
- Chances are that they are really busy



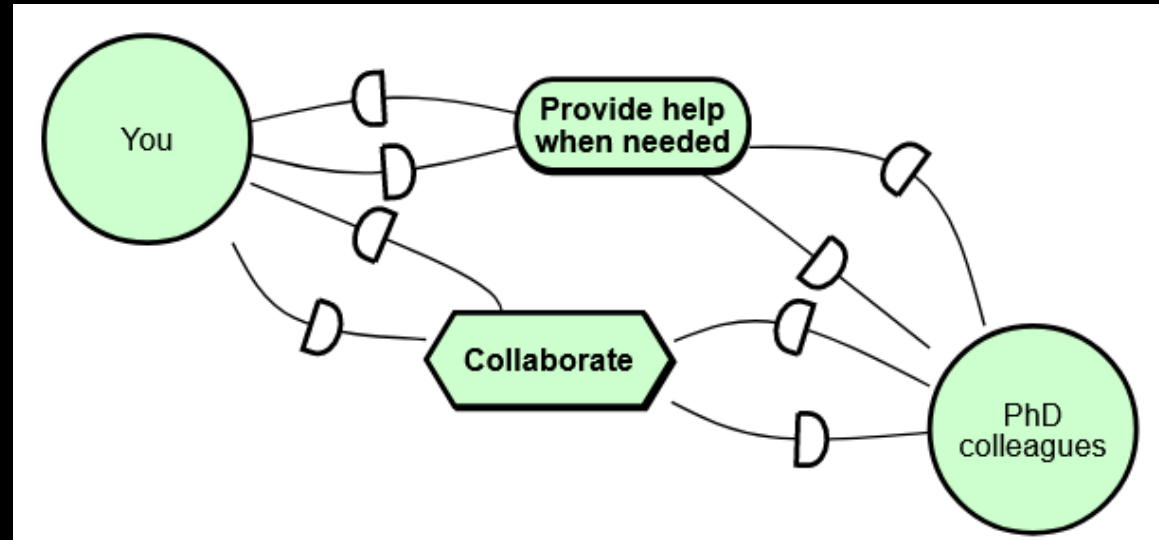
Effective communication with advisor is key!

- Different styles are possible, and all may work
 - Observe what works with other students
- When you interact with your advisor
 - Give a clear message and tell what you expect from her
- Prepare well your meetings
 - Send in advance the agenda and whatever preparations your advisor needs to do
 - Tip: use a meeting template as the following:
- Share a to-do
 - Trello, spreadsheet, ...
- Communicate personal issues asap

- What has been done?
- Open questions for this meeting
- What is the plan until the next meeting?
- Are there potential blockers?
- To-Do:
- Other comments:

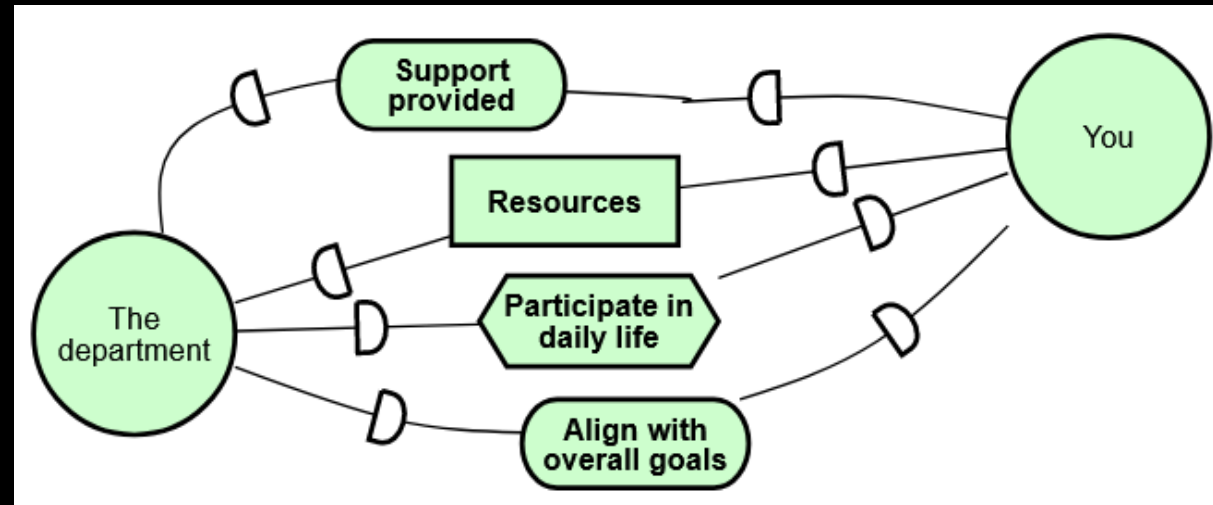
Your colleagues

- You are all in the same boat!
 - Collaborate, don't compete!
- Have a good working relationship
 - Research collaborations
 - They may help in peak seasons
- Different strategies may work
 - Let things flow
 - Learn how to combine work and social life in your context
- Each of us has their own social skills
 - Don't pretend to be who you are not!
- As in any other work, you find different characters
 - Identify and avoid toxic colleagues

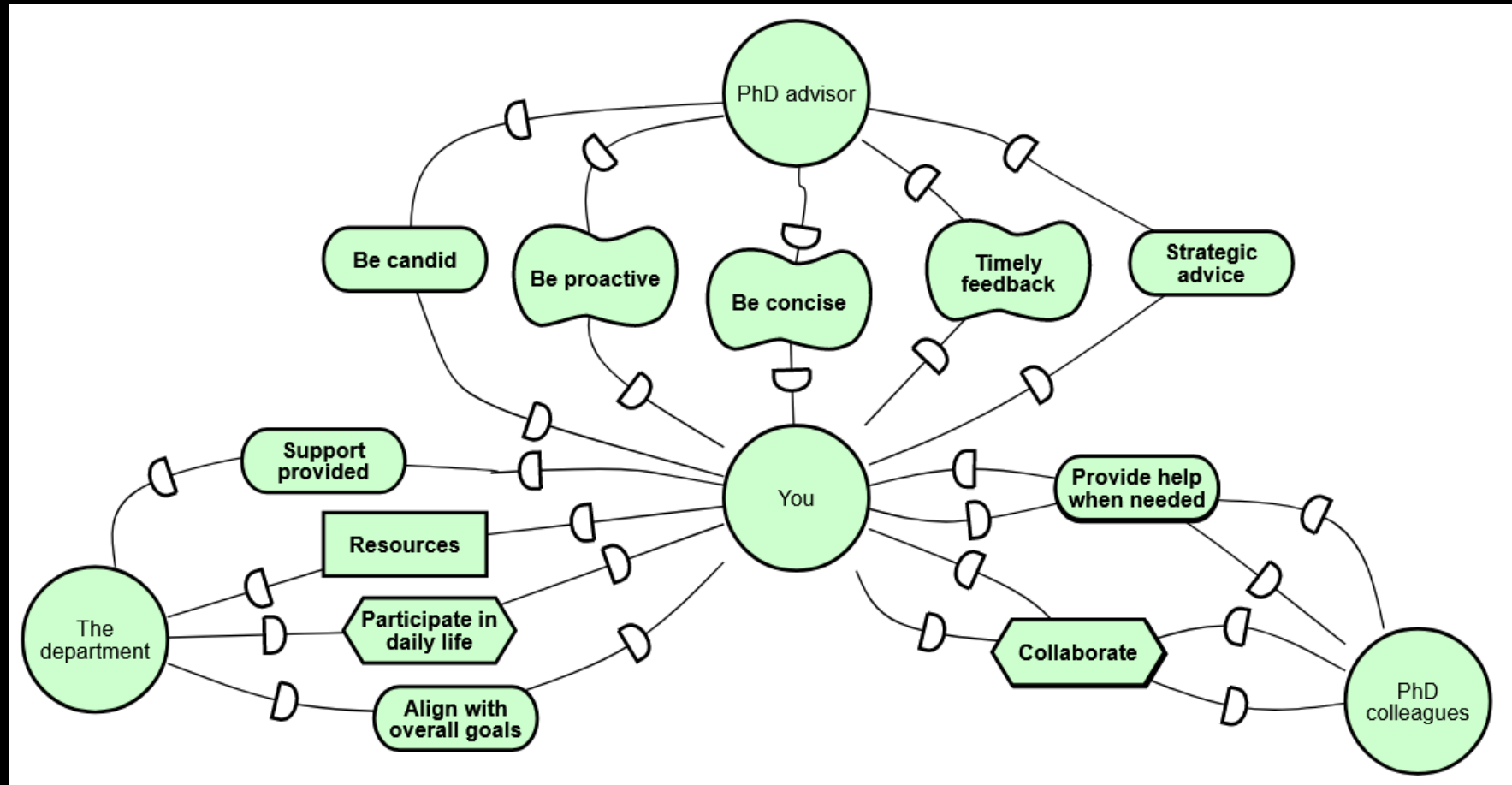


Your department/lab

- At the end, you are working 3-4 years in the same place
 - Be ready to contribute
 - While enjoying some support
- You need to be receptive to take on some responsibilities
 - collaborate with funding-seeking
 - collaborate with paper reviews
 - face grand challenges together
 - ...
 - this also improves your skills



The full picture



Factor 5: Awareness (about your work)

Sharing is the key to create awareness about your work in order to:

- get feedback
- start new collaborations
- get customers / citations / downloads
- be known!

Some tips to create awareness

- Have an attractive, up-to-date webpage
- Tweet, but tweet well
- Present your work at conferences even if in progress
 - If the advisor agrees...
 - Doctoral symposia especially useful (but also workshops, ...)
- Have always ready up-to-date presentations of your work
 - Short one (5 mins) and longer one (15 mins)
 - And a demo of your tooling support too!
- Play open science
 - arxiv, github, zenodo, ...

Factor 6: Outlook (a research attitude)

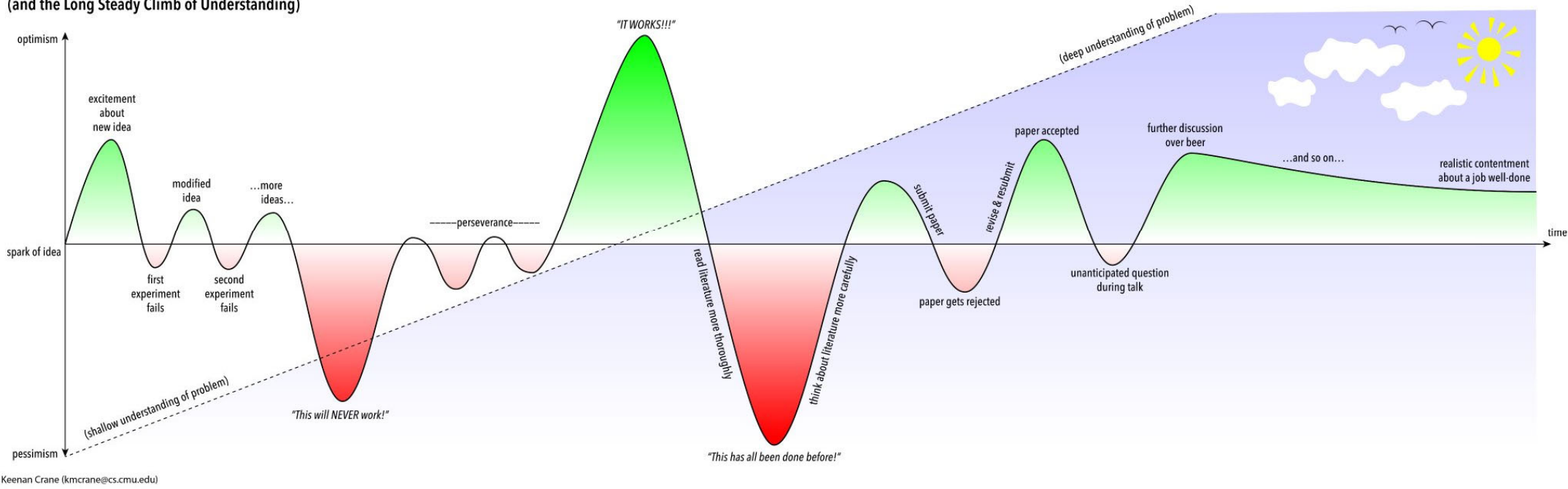
This period is critical to built your researcher's character:

- be humble
 - your work ~~may~~ **will** have limitations
 - several approaches to the same problem
 - don't (systematically) blame Reviewer #2
- give credit to others
 - reference their work
 - don't be (unnecessarily) over-critical
- ethics of publications
 - from PoP to DORA
 - clarify authors' contributions

Factor 7: Resilience (be strong!)

There is a long path to the (successful) PhD

The Emotional Rollercoaster of Research
(and the Long Steady Climb of Understanding)



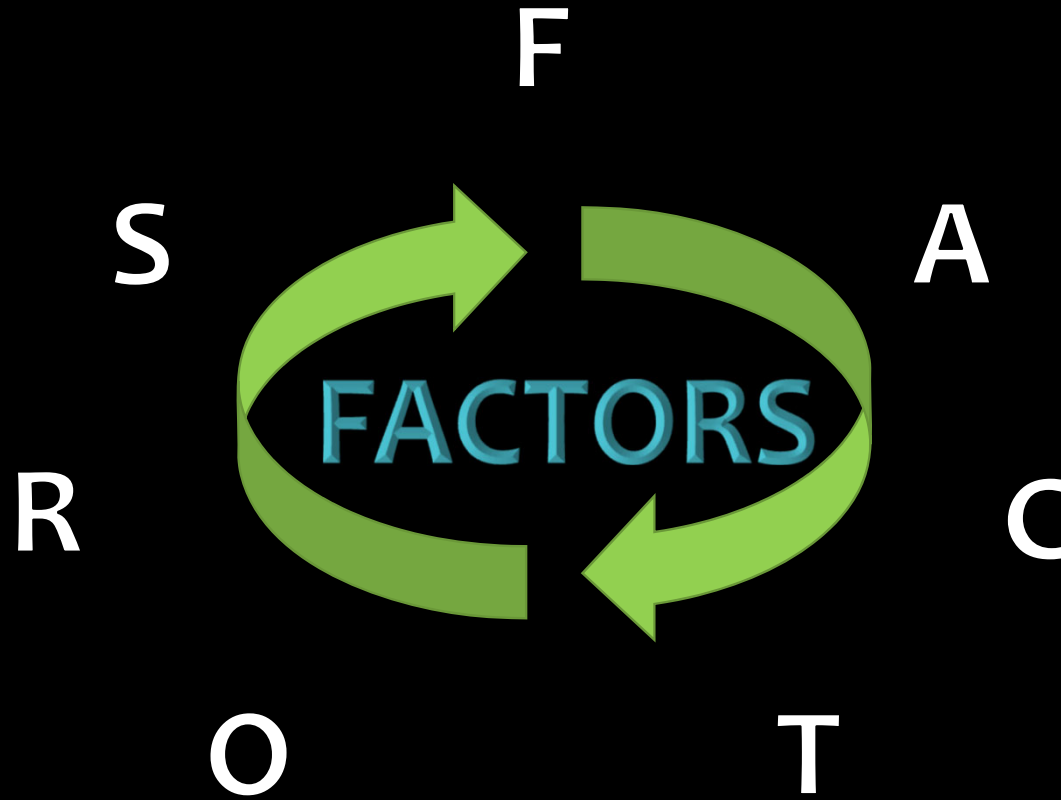
FACTORS for a successful PhD



Some tips for resilience

- Only death has no remedy!
- Work, but not **just** work
 - Balance your workload along time
- Enjoy your achievements
 - Indulge yourself

Summary



Handle with care!

Credits for the title

This thing called ~~love~~ PhD
I just can't handle it
This thing called ~~love~~ PhD
I must get 'round to it
I ain't ready
Crazy little thing called ~~love~~ PhD

~~It~~ She drives me crazy

~~It~~ She gives me hot and cold fever

~~It~~ She leaves me in a cool, cool sweat



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