Project Management in Academia

Hiwa Målen, PhD

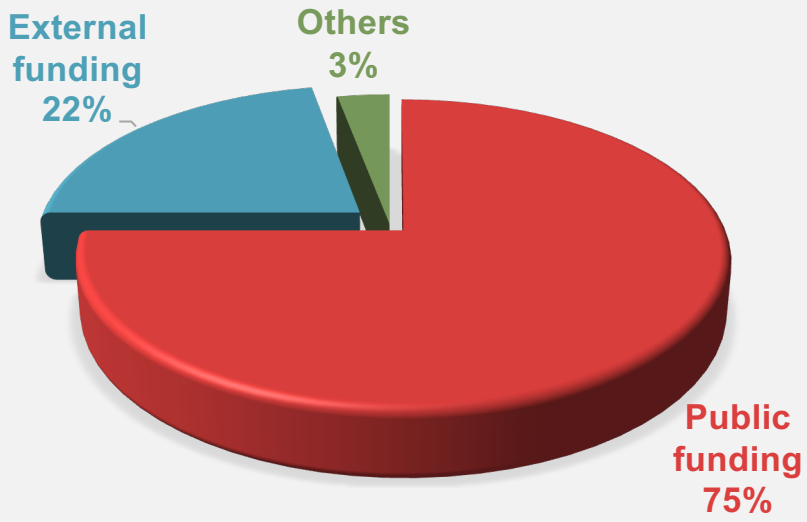
Coordinator of NARMA capacity building program

11.03.2024

Why do need to talk about project management in academia?

The University of Bergen – Annual budget – 2022

UiO - 32%



UiO - 69%

The shifting landscape of research funding

Despite this massive influx of funding, researchers are still struggling to fund their activities. With public funding declining, the industry is stepping in to fill the gap, making it even more crucial to have deep understanding of project management in all its forms and shapes.

Research project management is a complex

Researchers often are been left alone to take on the responsibility of initiating, organizing, and performing research projects

Possible

transition..

Project defintion

An individual or collaborative enterprise that is carefully planned to achieve a particular aim.

Source: www.colourbox.com

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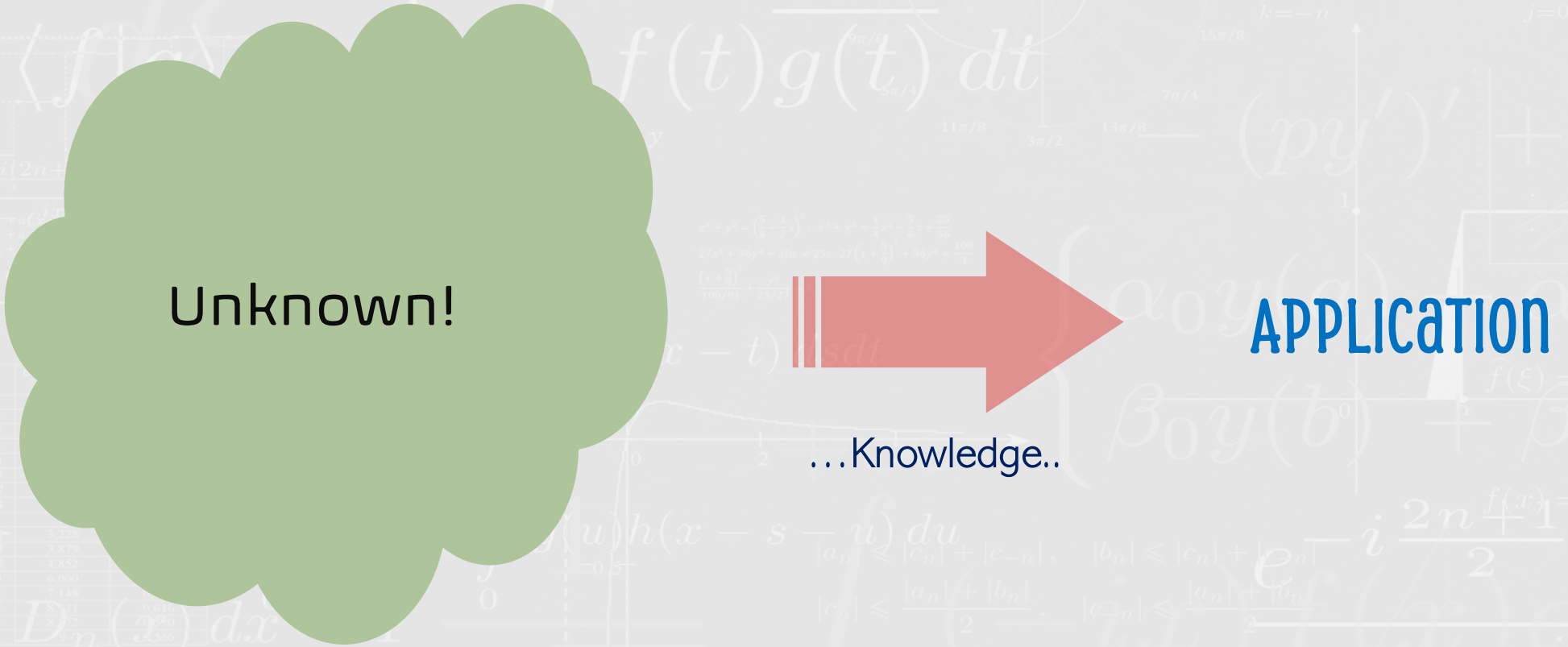
Source: www.colourbox.com

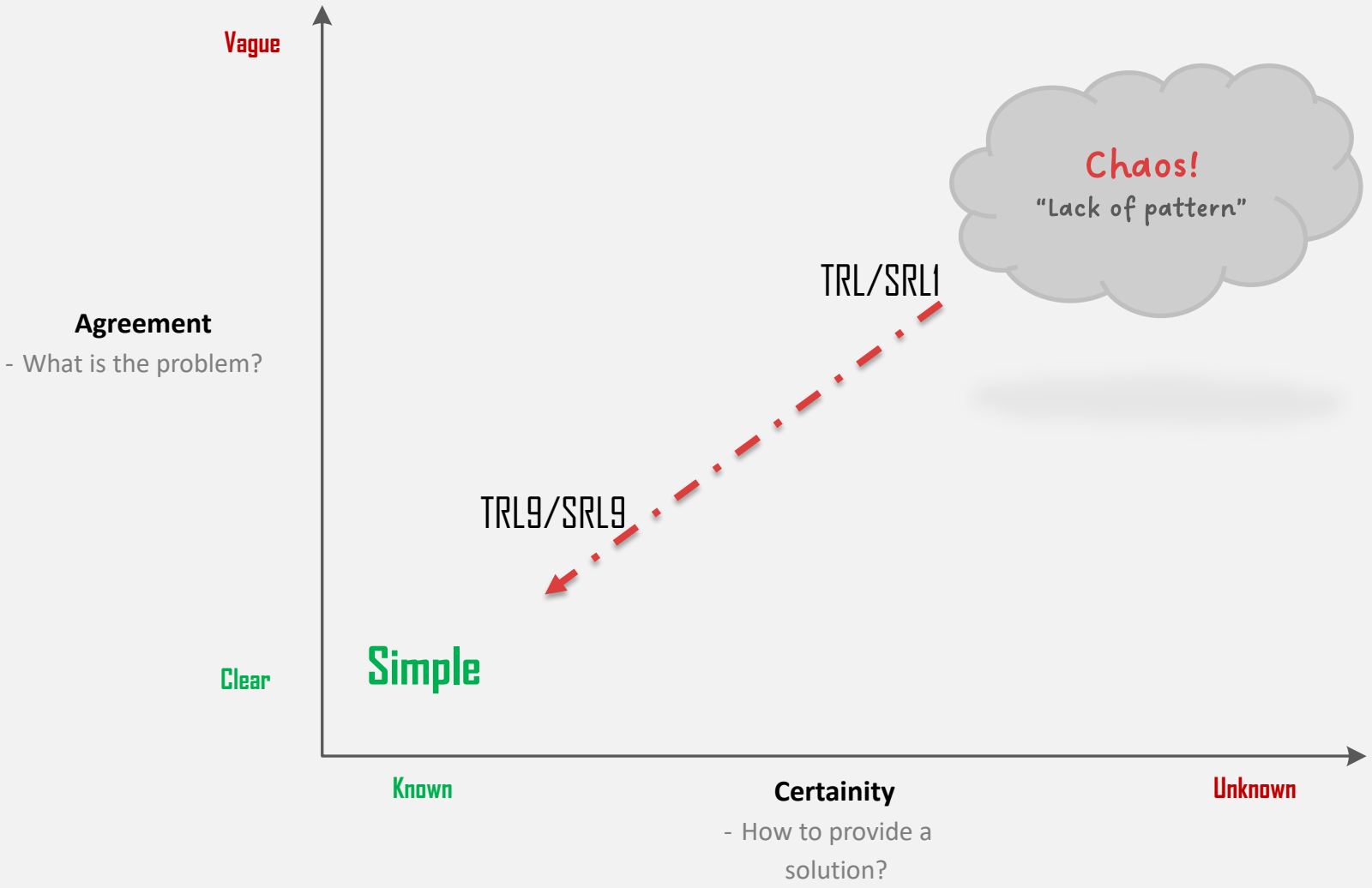
By Chinta Sidharthan, 2022

Let us get philosophical!

The Human Experience

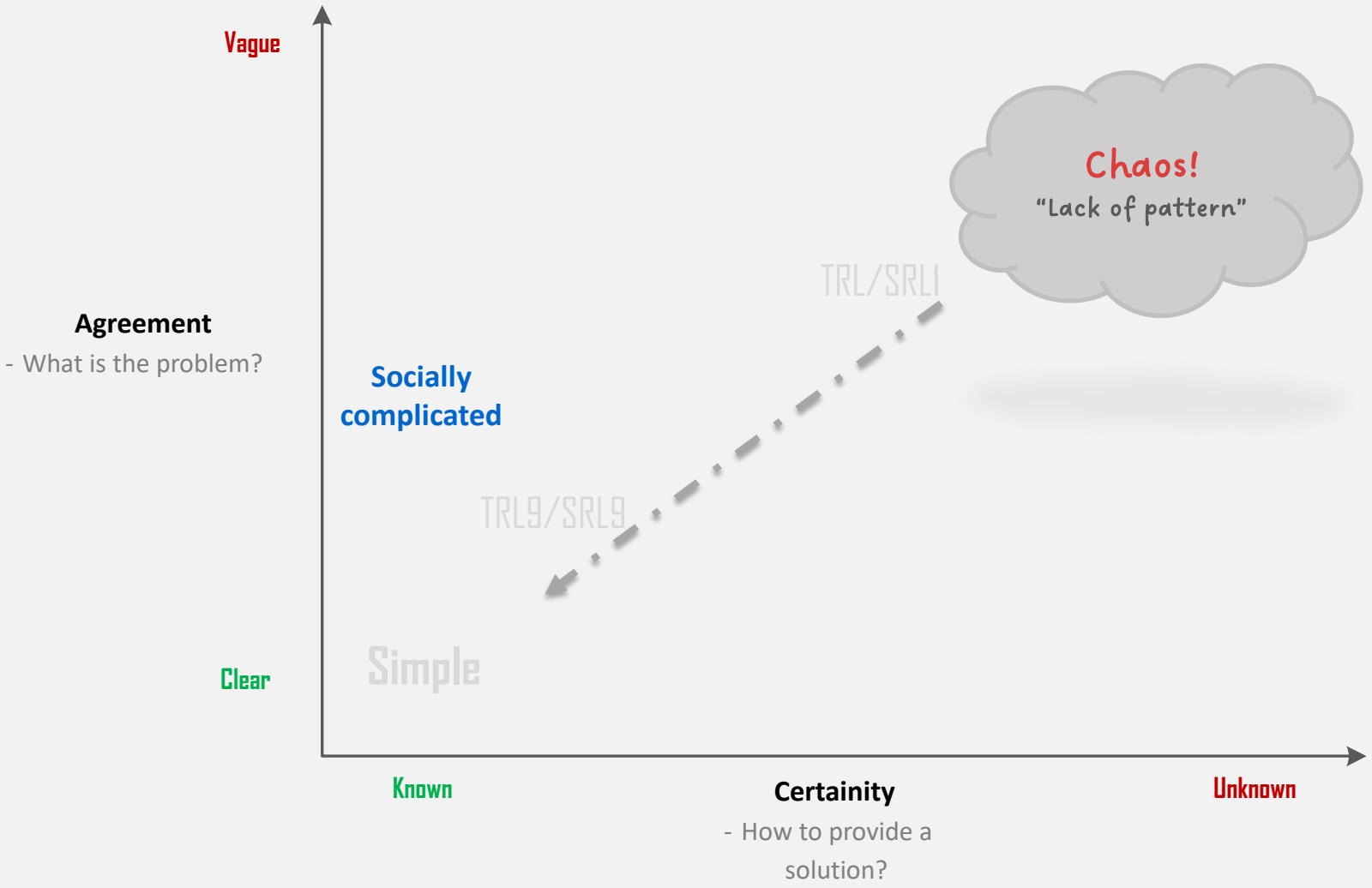


Research Project Management Model



Source: Hiwa Målen, adapted from Ralph Stacey matrix

Research Project Management Model



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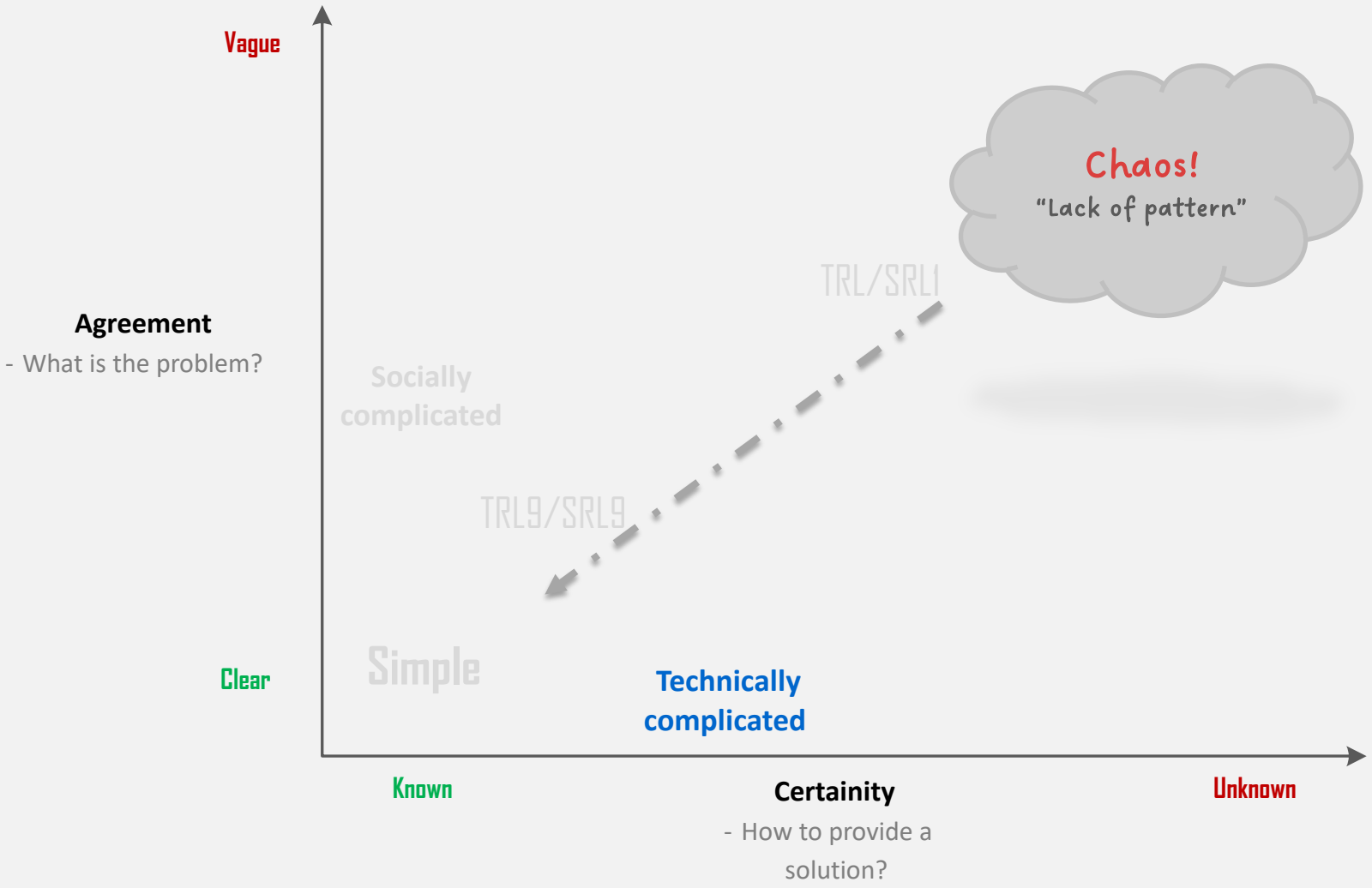

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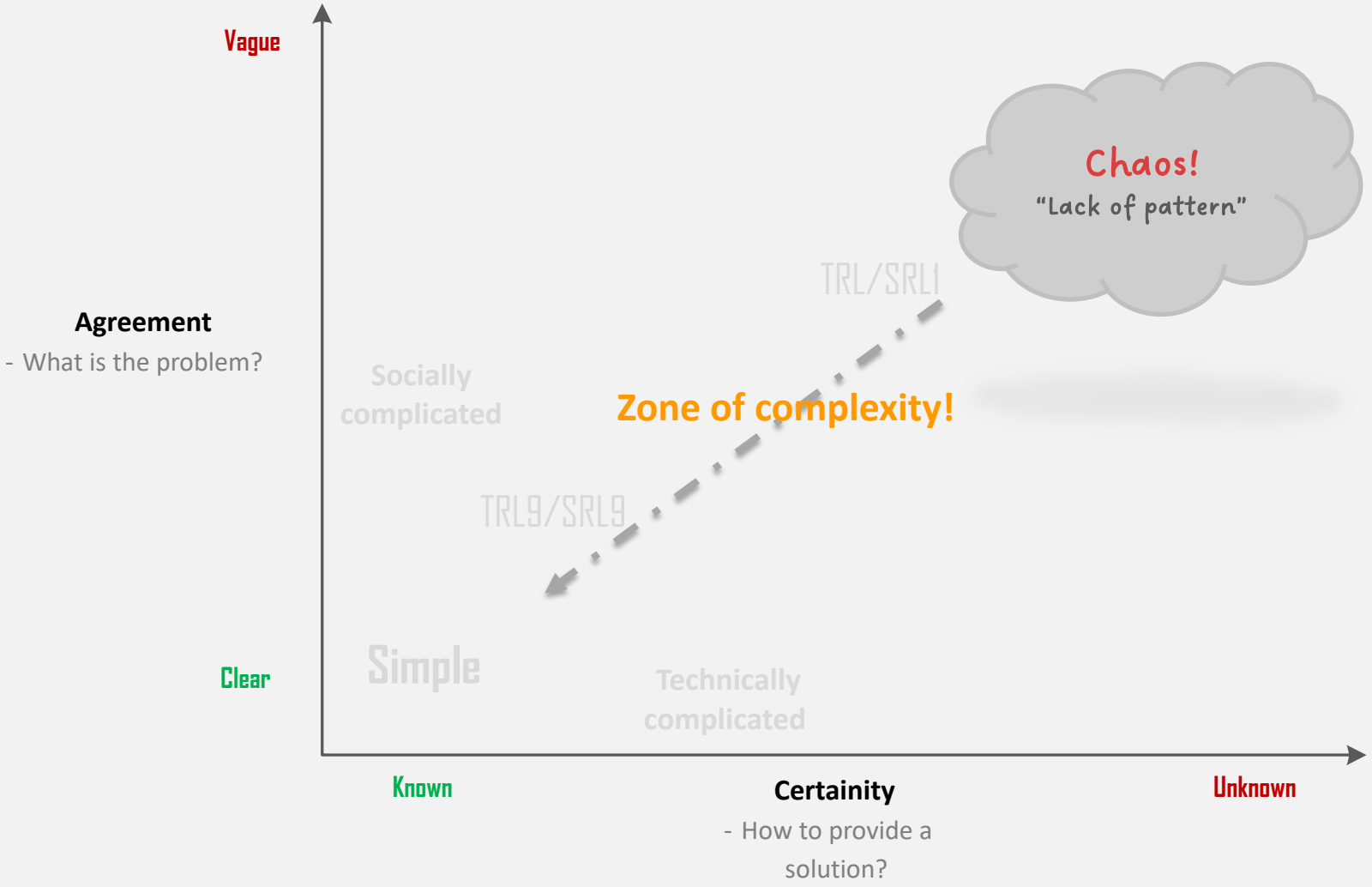

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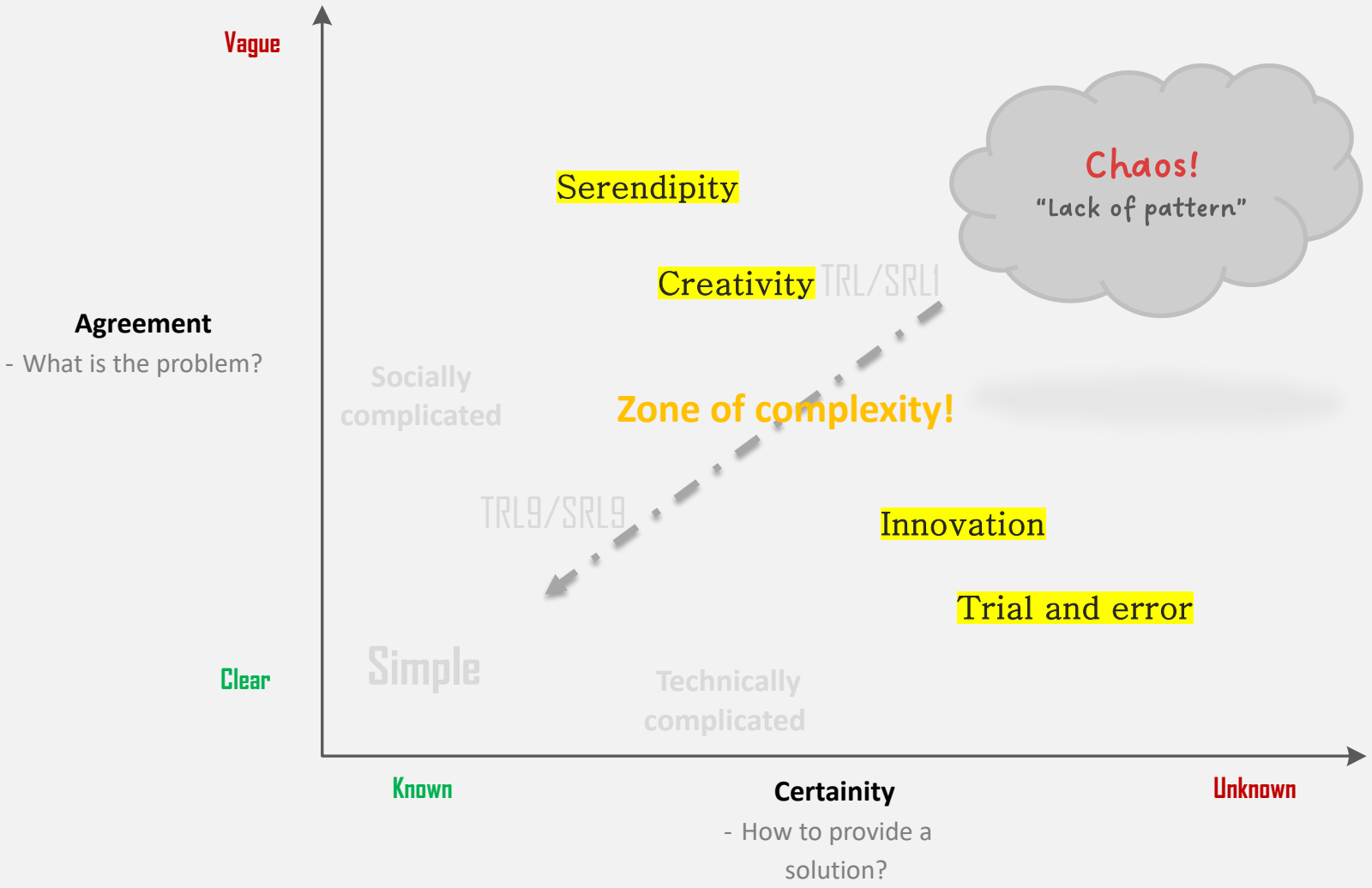

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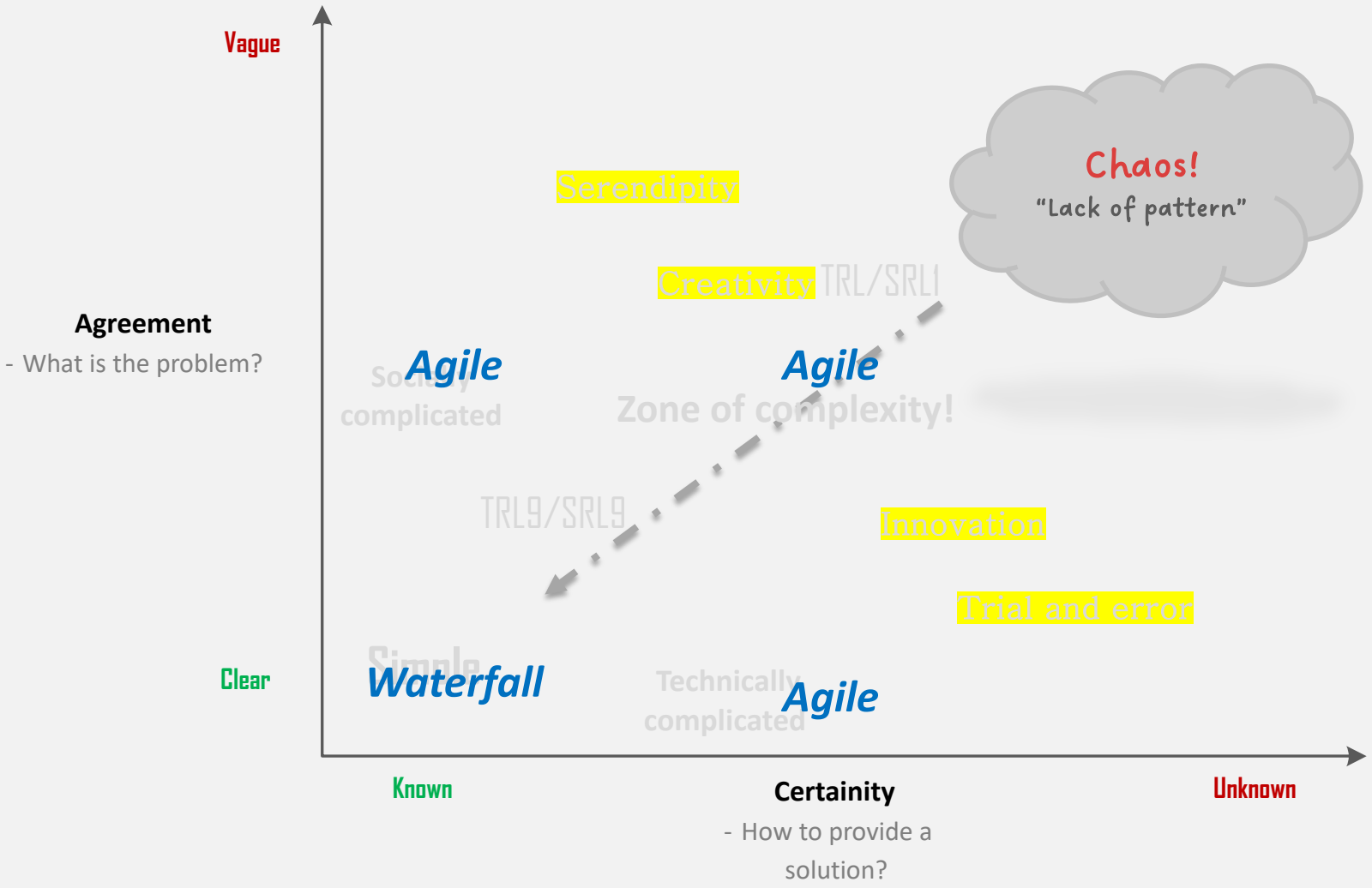


Source: Hiwa Målen, adapted from Ralph Stacey matrix

Development of COVID-19 Vaccine: From Chaos to Application

Chaos:

- Global crisis with no vaccine or treatment
- High uncertainty, low agreement on solutions

Pattern:

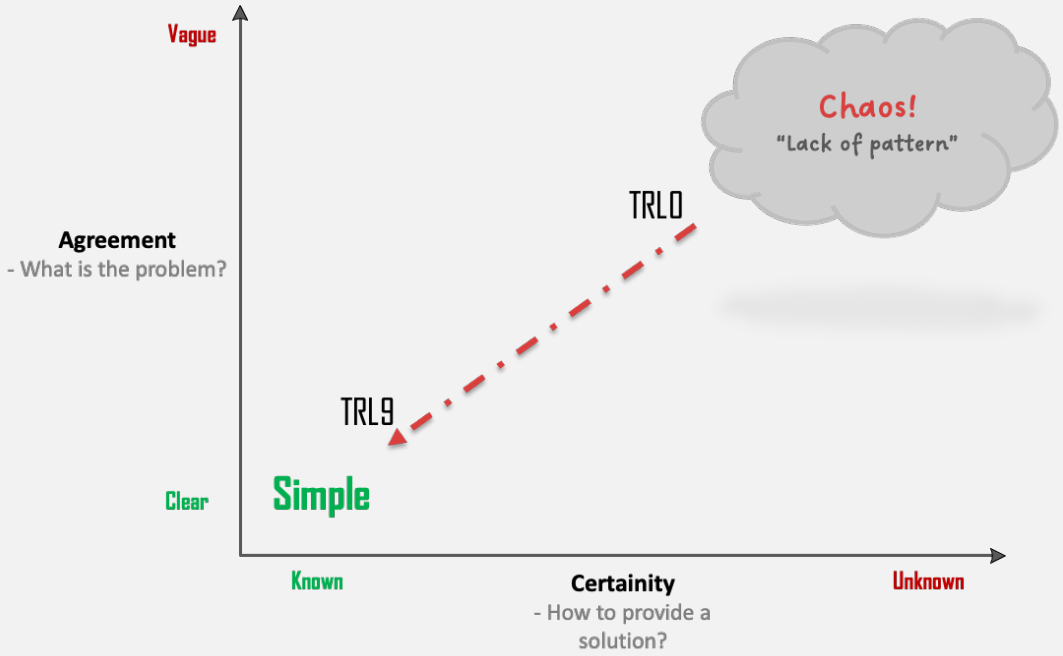
- Global data sharing by researchers
- Identification of virus structure and transmission patterns

Knowledge:

- Collaborative efforts accelerated vaccine target identification
- Multiple vaccine candidates developed

Application:

- Rapid development, testing, approval, and global distribution
- Systematic approach transformed crisis into health solutions



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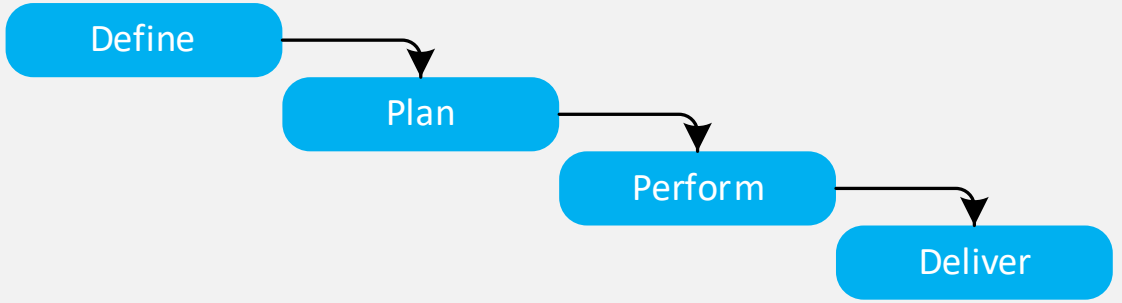
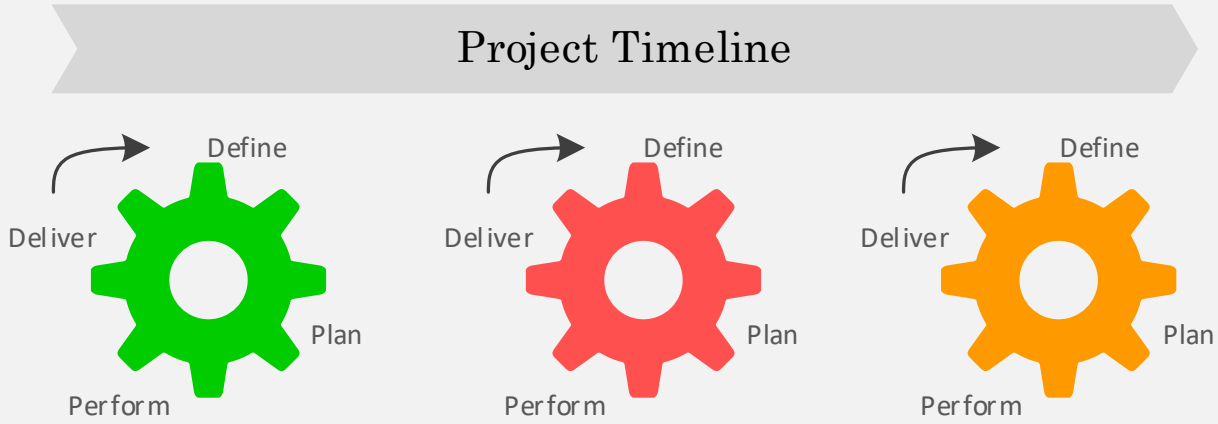
Waterfall project





Agile project

Waterfall project management

Linear, sequential, each phase must be completed before moving onto the next.

Agile project management

Flexible and iterative, emphasizes collaboration, and continuous improvement.

Source: www.colourbox.com

A few references..

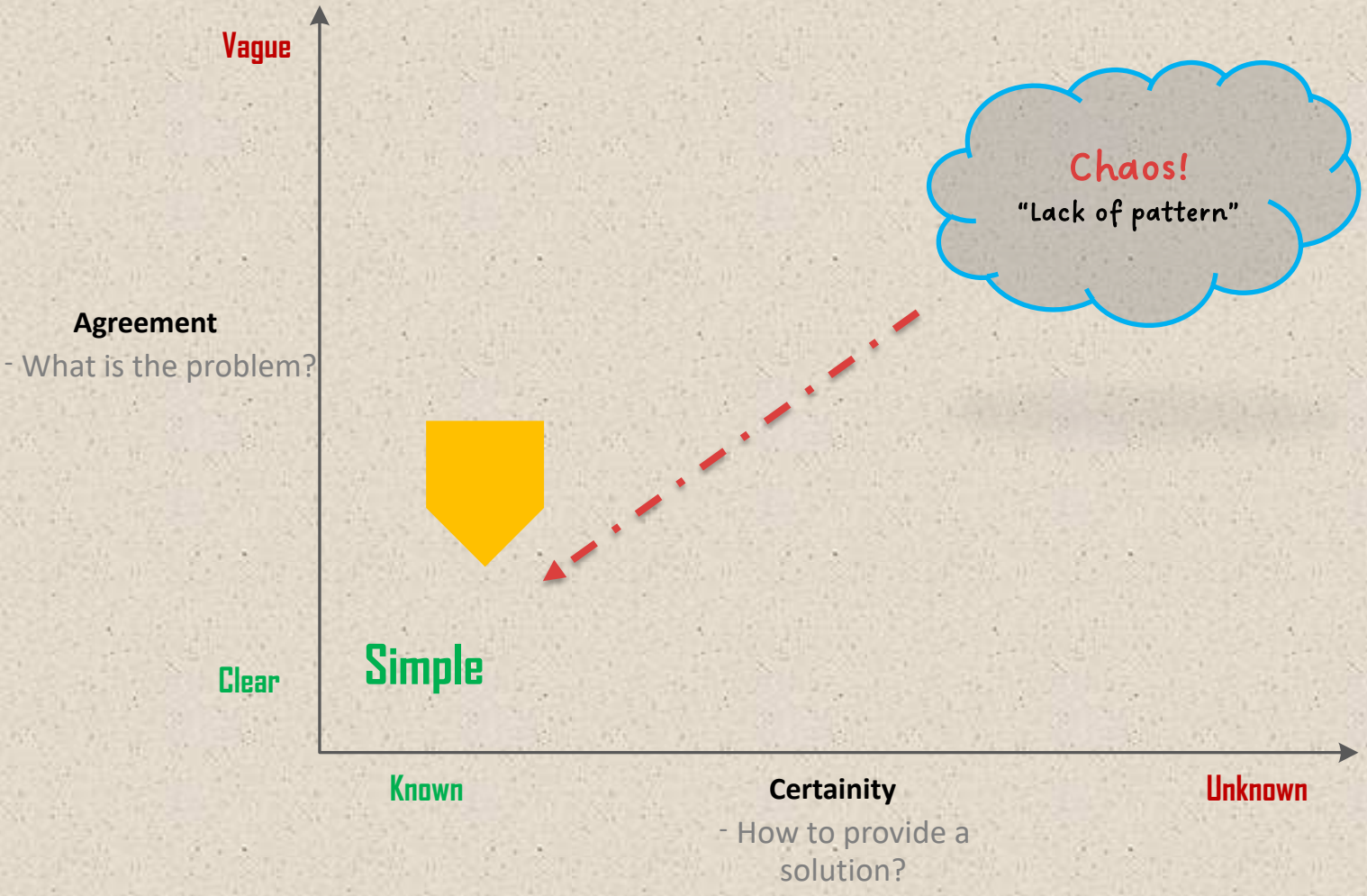
Project Management Theory and the Management of Research Projects - CBS Research Portal. Author: Erik Ernø-Kjølhede. URL: https://research.cbs.dk/en/publications/project-management-theory-and-the-management-of-research-projects

Adapting Scrum to Managing a Research Group. Authors: Michael Hicks and Jeffrey S. Foster. URL: http://www.cs.umd.edu/~mwh/papers/score.pdf

Complexity and Creativity in Organizations. Author: Ralph Stacey. URL: https://www.amazon.com/Complexity-Creativity-Organizations-Ralph-Stacey/dp/1881052893

Source: www.colourbox.com

Project management in **industry**.

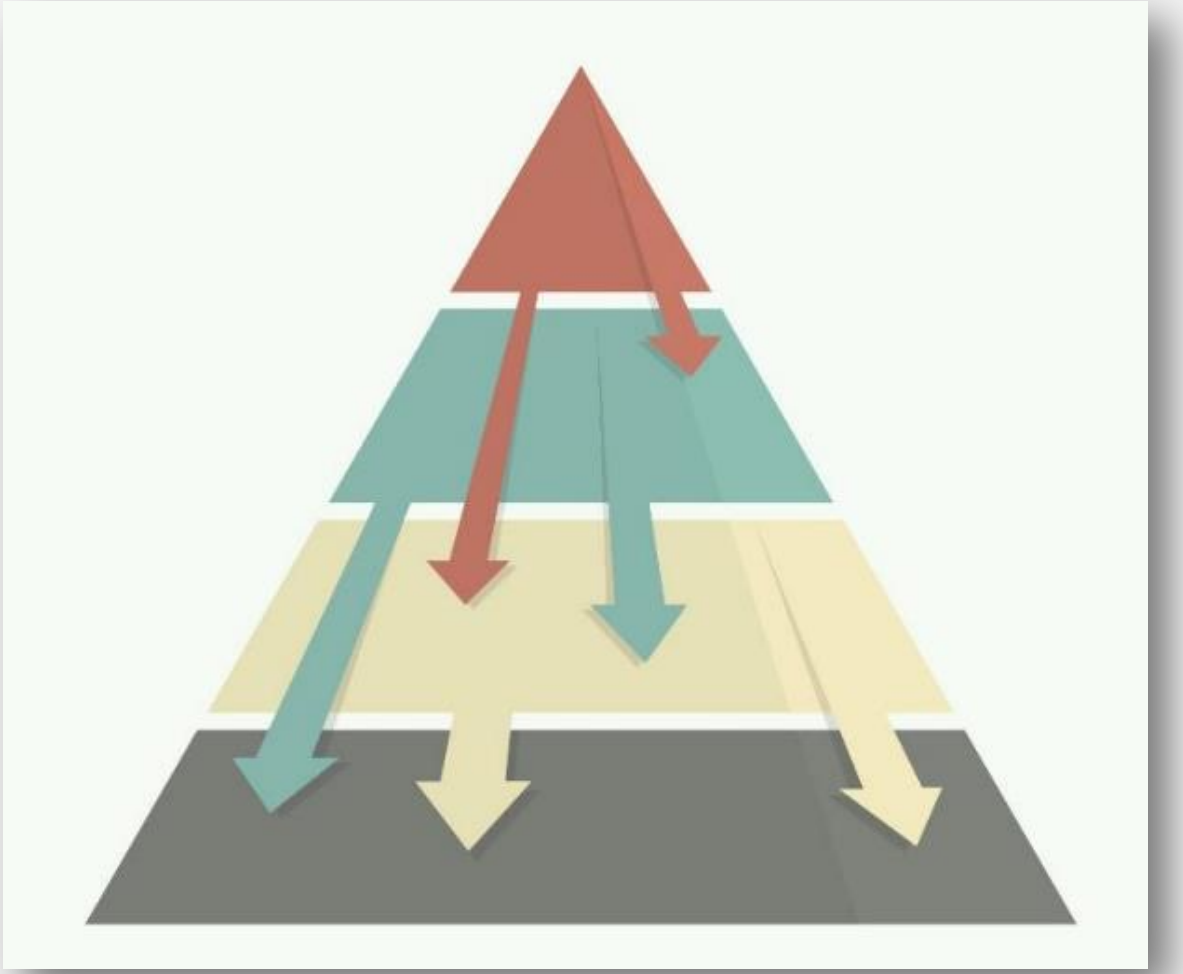


Project Genesis in Industry

Source: www.colourbox.com

Top-down, strategic alignment, problem or need driven!

Decision Gate System..



Source: www.colourbox.com

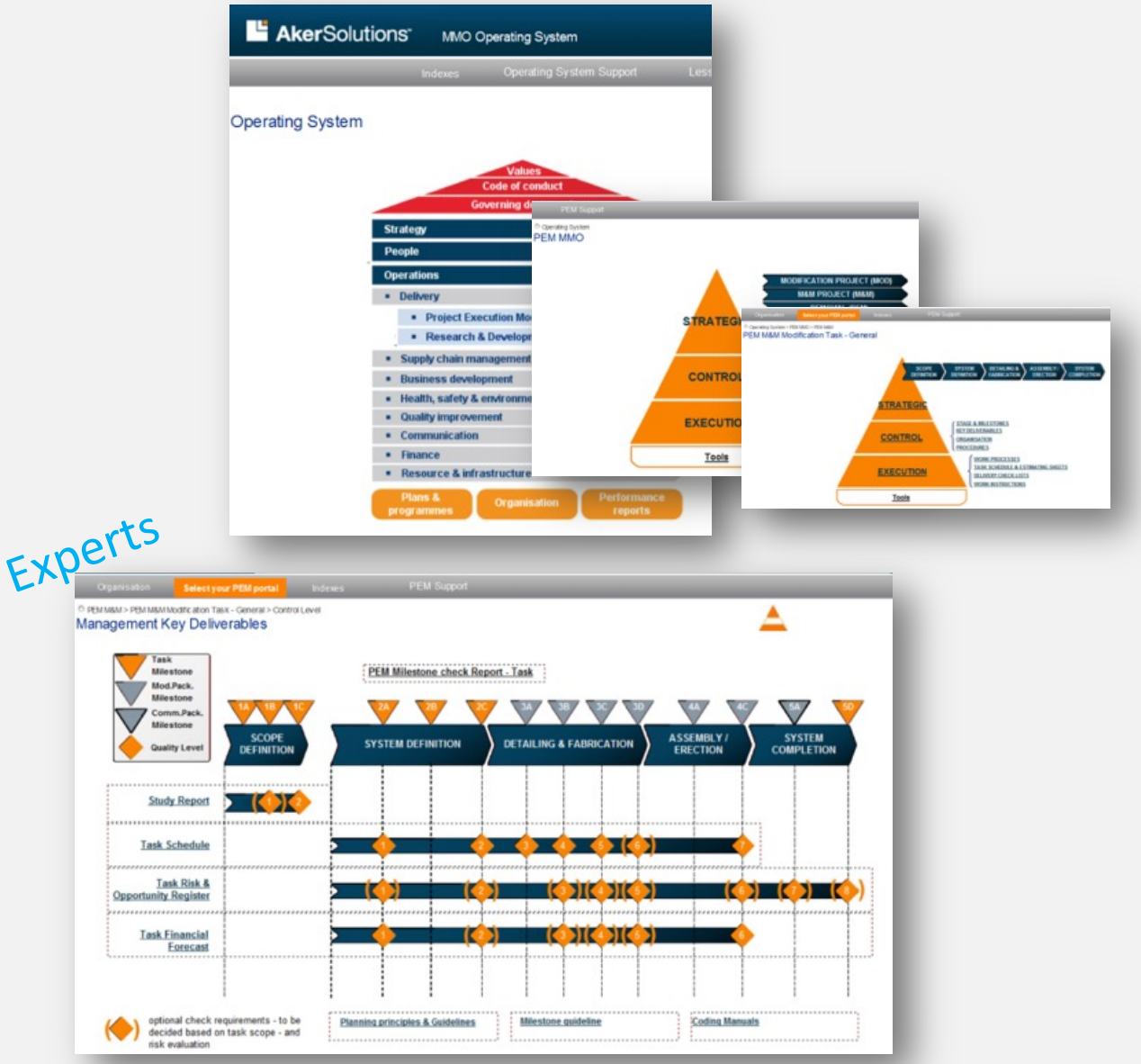
Project genesis in industry

Underlying business **challenge or opportunity** is **determined**, a **solution** is defined, a project concept is formed, suitable project implementation **method** is chosen, and a project **team** is appointed to deliver the solution to the **customer**.

Toolbox for me and my Team!

Ensure streamlining of all project activities across the corporate:

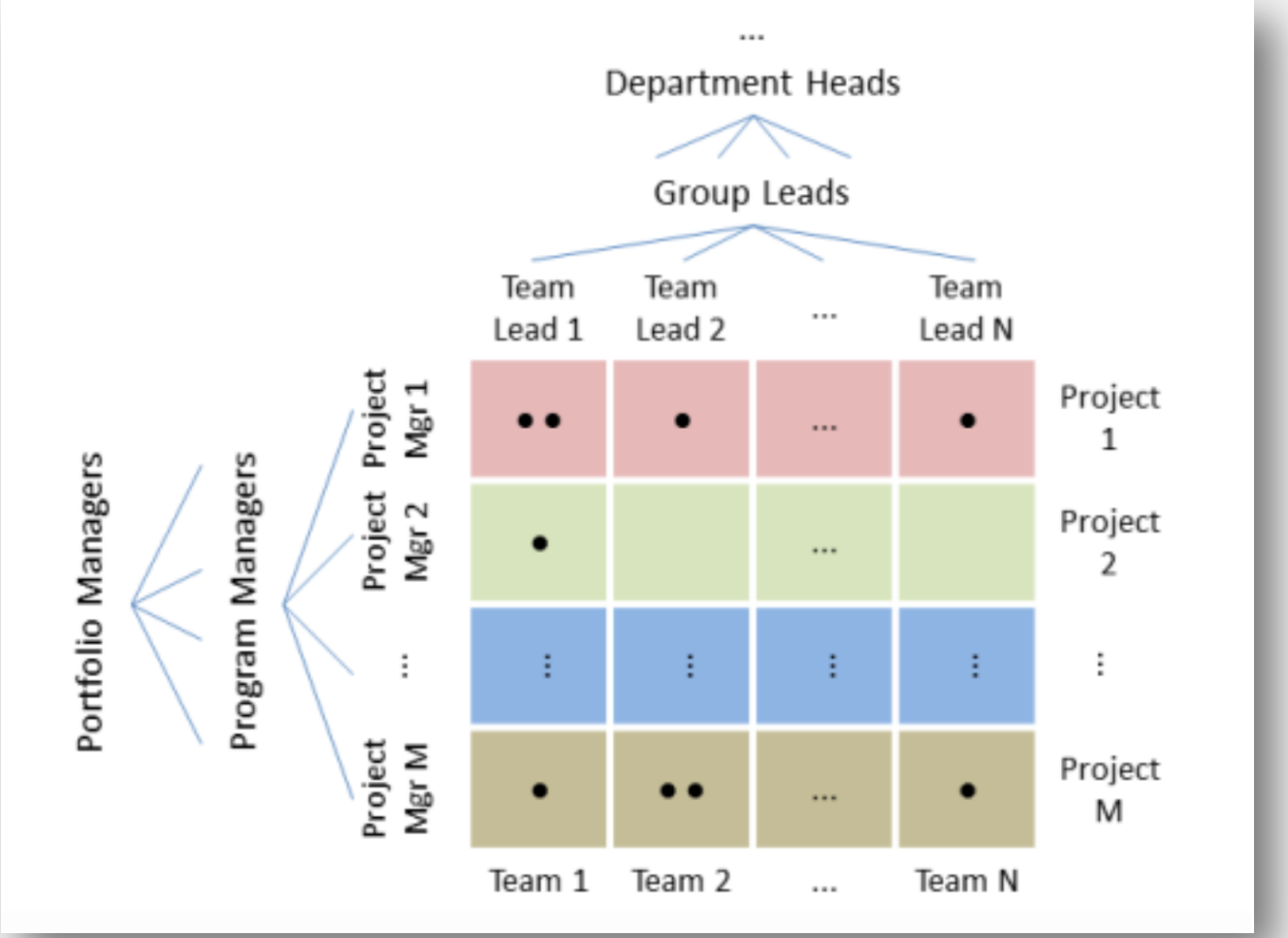
- Reproducibility
- Efficiency
- Improvements
- Reputation
- Knowledge transfer
- ..



Source: AkerSolutions

My Projects Teams!

- Multidisciplinary
- Clear roles and responsibilities
- Clear line management
- Clear career path
- Critical personnel → Permanent positions and competitive salaries
- Excellent support from base-organization!!
- Normally co-localized!

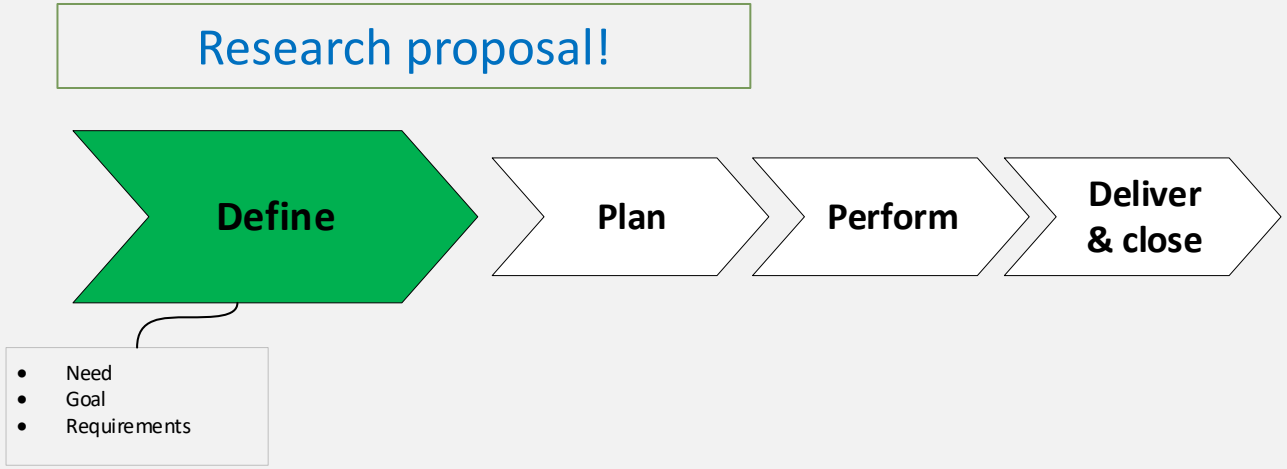


https://janfarkas.com/why-matrix-organizations-not-agile/

Life Cycle of Typical Projects

Source: www.colourbox.com

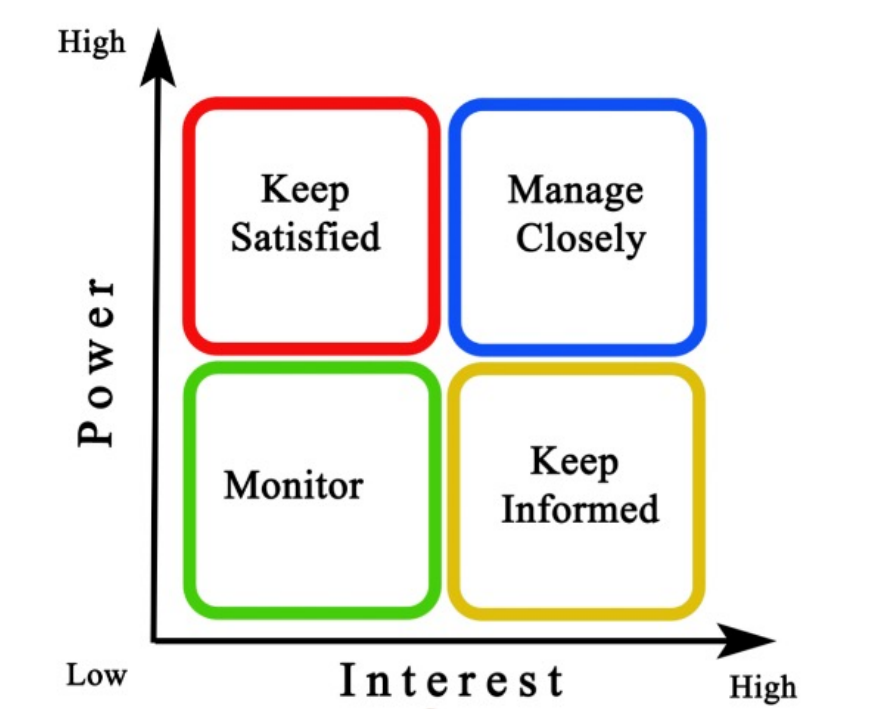
Phase 1



Landscape and the rules of the game!

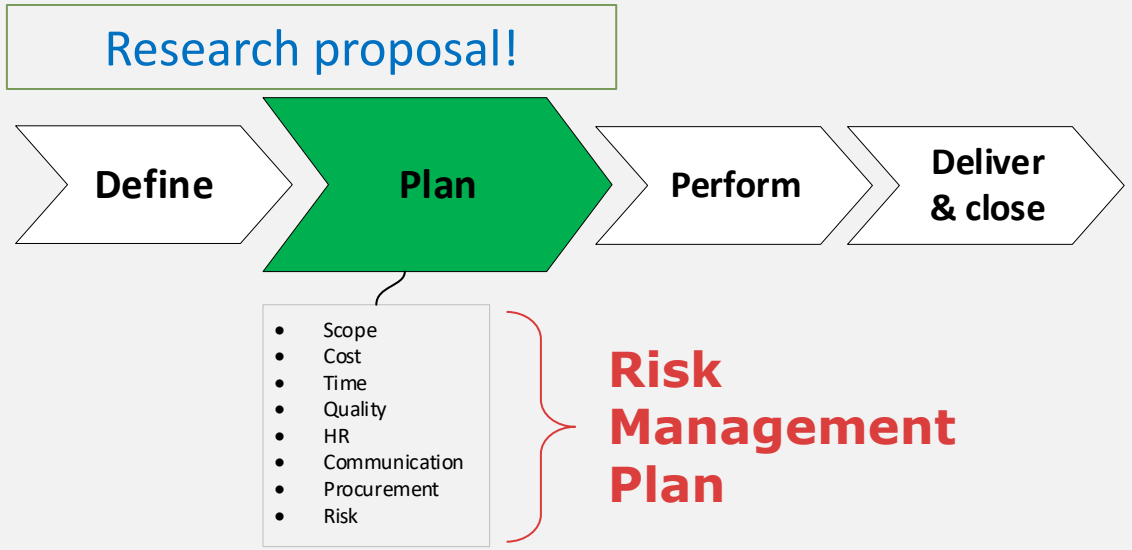
Stakeholder analysis

Project stakeholders are individuals and organizations that are directly involved in the project, or whose interests may be affected as a result of project execution or project completion.



Source: www.colourbox.com

Phase 2

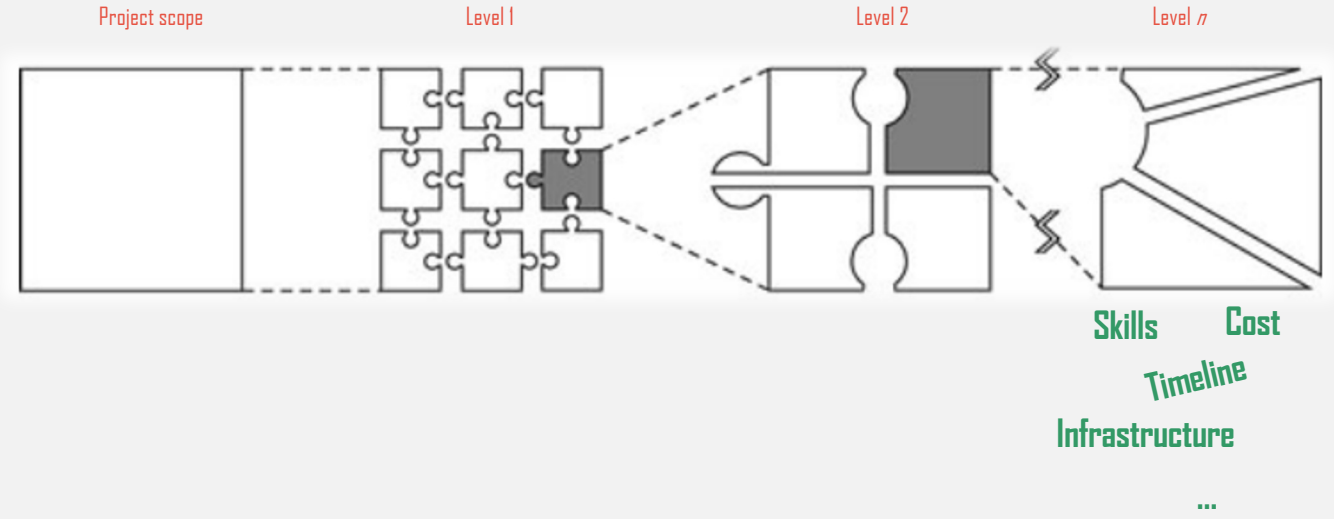


What is your battle plan? What would you do if something goes wrong?

Project scope decomposition to smaller pieces!

A hierarchical decomposition of the total scope of work to be carried out by the project team to accomplish the project objectives and create the required deliverables.

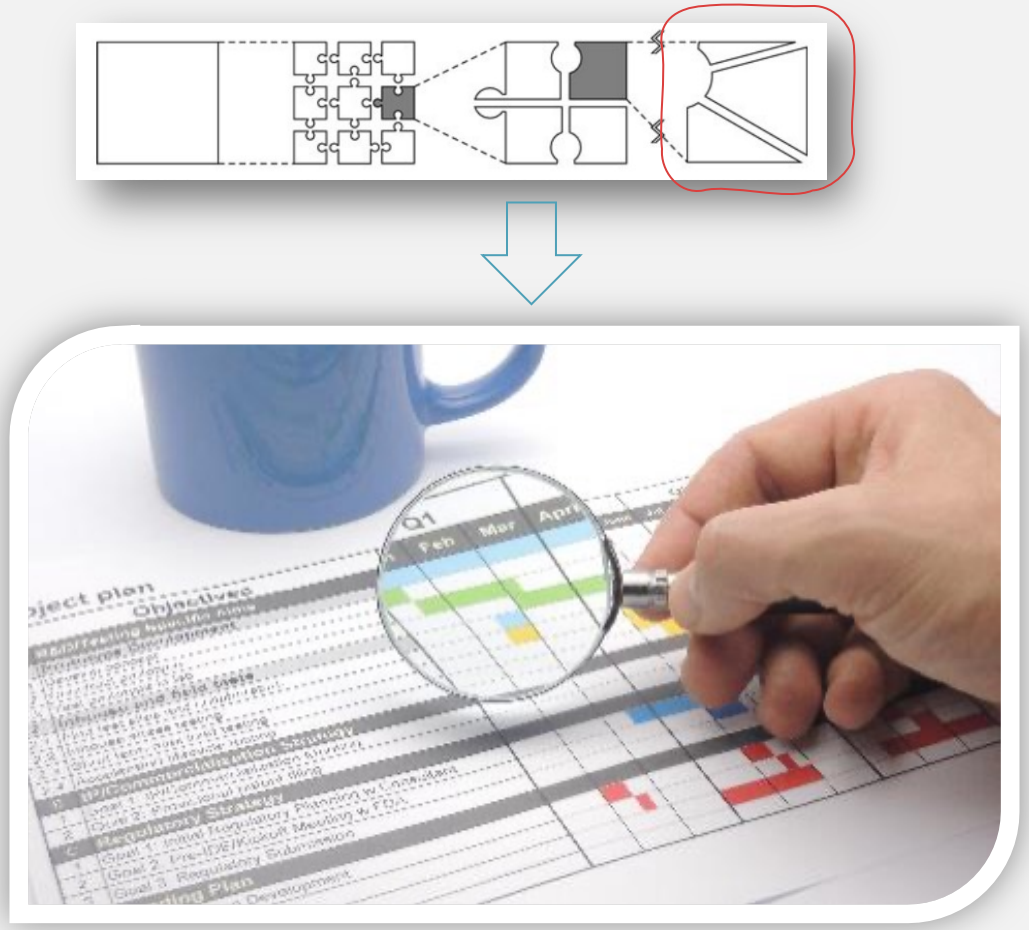
More points to accurately measure progress.



Management Body of Knowledge (PMBOK 5)

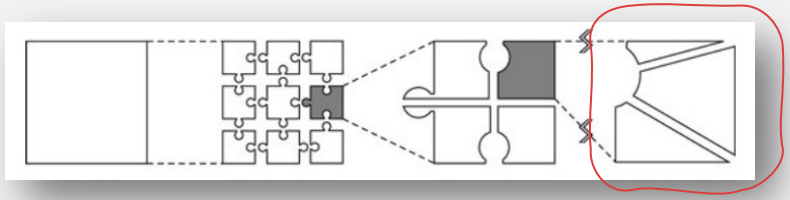
Project duration

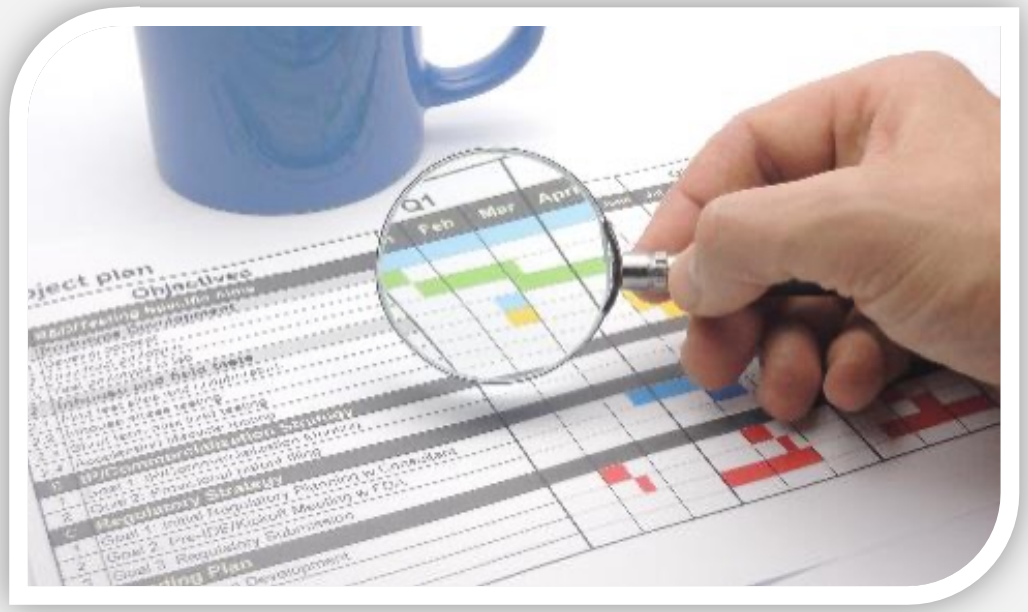
Gantt chart: A visual view of tasks scheduled over time.



Source: www.colourbox.com

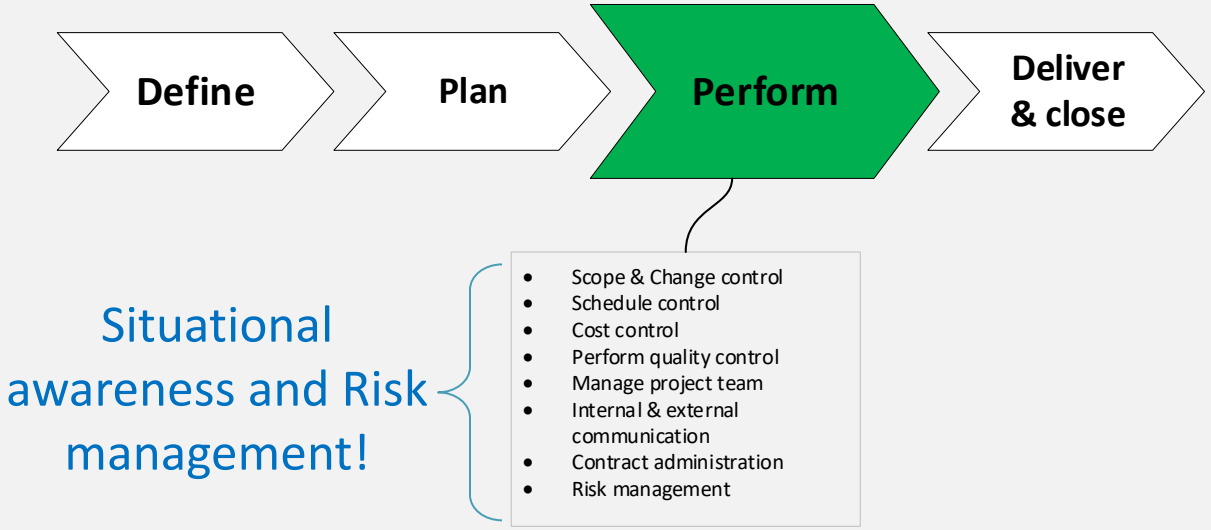
Project Cost Estimation





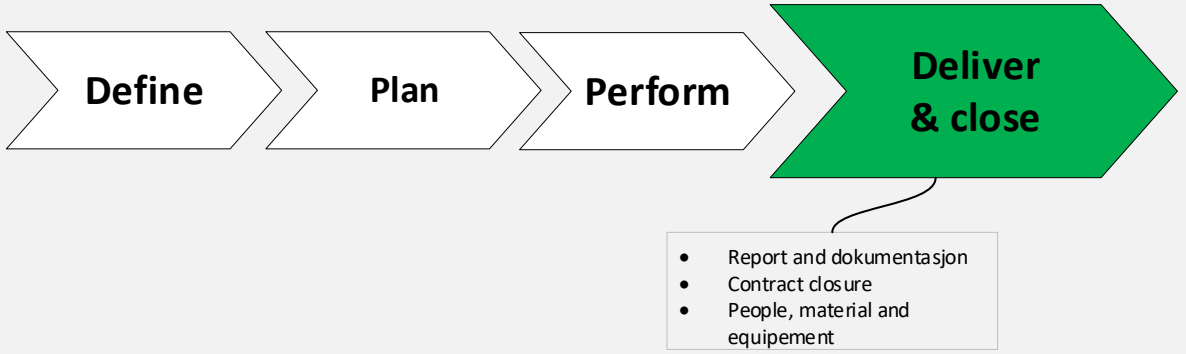
Source: www.colourbox.com

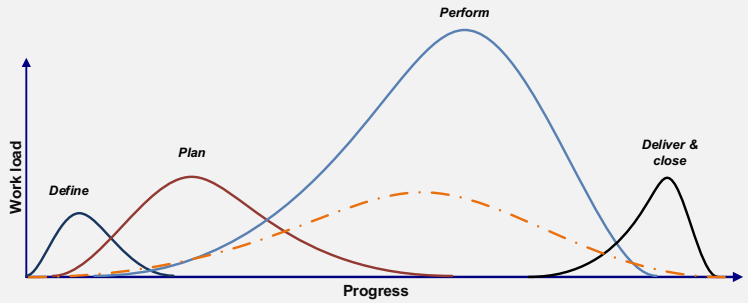
Phase 3



Source: Hiwa Målen

Phase 4



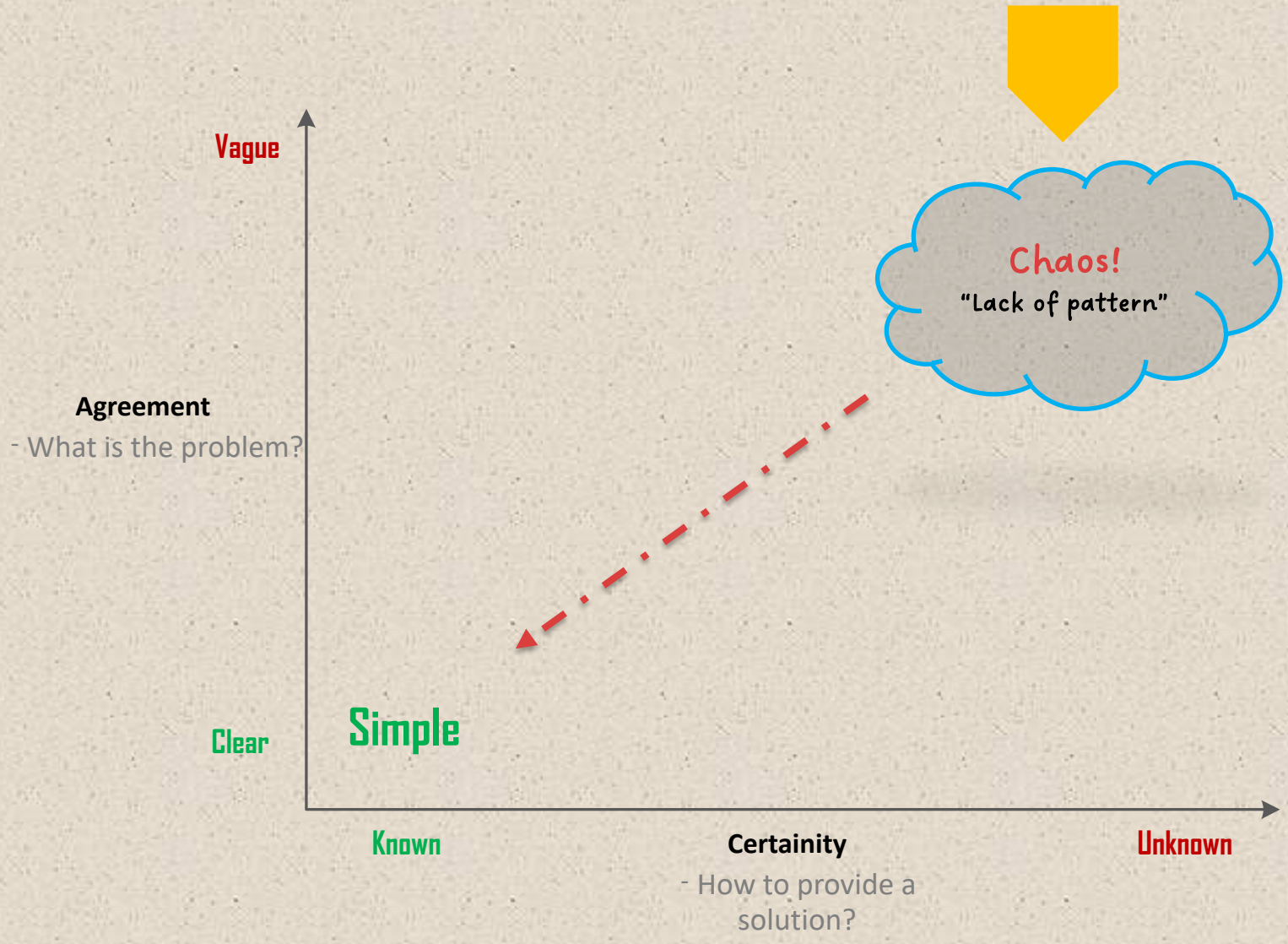


Source: Hiwa Målen

10 min reflection

Source: www.colourbox.com

Project management in **academia**

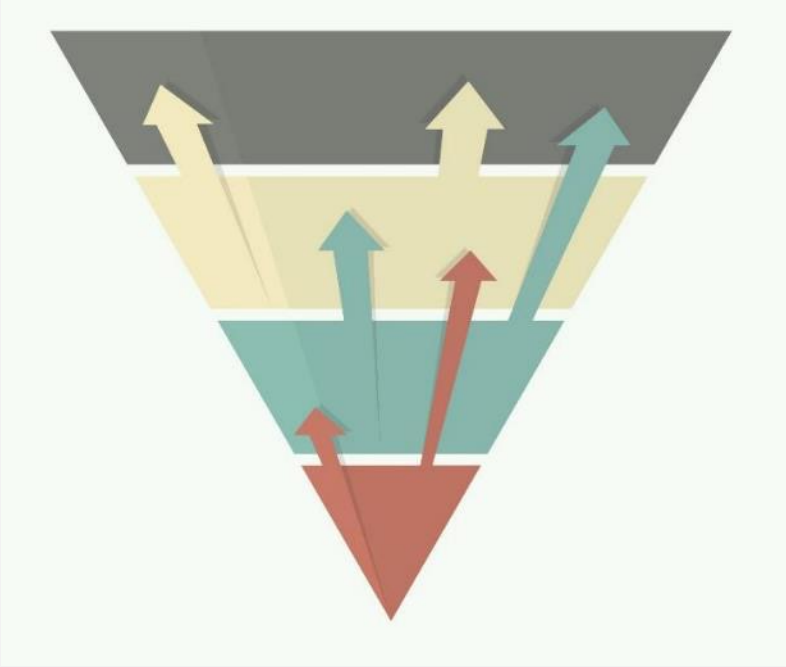


Project Genesis
in Academia

Bottom-up, mainly motivated by curiosity!

The PI determines if the project is worth undertaking.

No/limited decision gate system..



Source: www.colourbox.com

Project genesis in academia

Knowledge gap identified by PI, research question is developed, suitable methods are defined, and a project **team** is appointed move the existing boundaries of state-of-the-art of the cumulative knowledge of humankind!

Genesis of research projects

Societal impactx

Scientific impactx

Fundability x workability?x

Past & present reserach activities

Researcher skills

Partners

Mono/multi/inter/trans-disciplinarity…

Project outcome

Research area

Literature

Context

Topic

Research questions

Theory

Hypothesis

Project Organisasjon

Research infrastructures

Design

Data collection

Data analysis

Test hypothesis

Project output

Sc

Q

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What data are required to test hypothesis?

Project management

Research data management system – Threats & opportunities

Knowledge management

Preaward → Postaward

Landscape

Pre-empirical stage

Empirical stage

∞

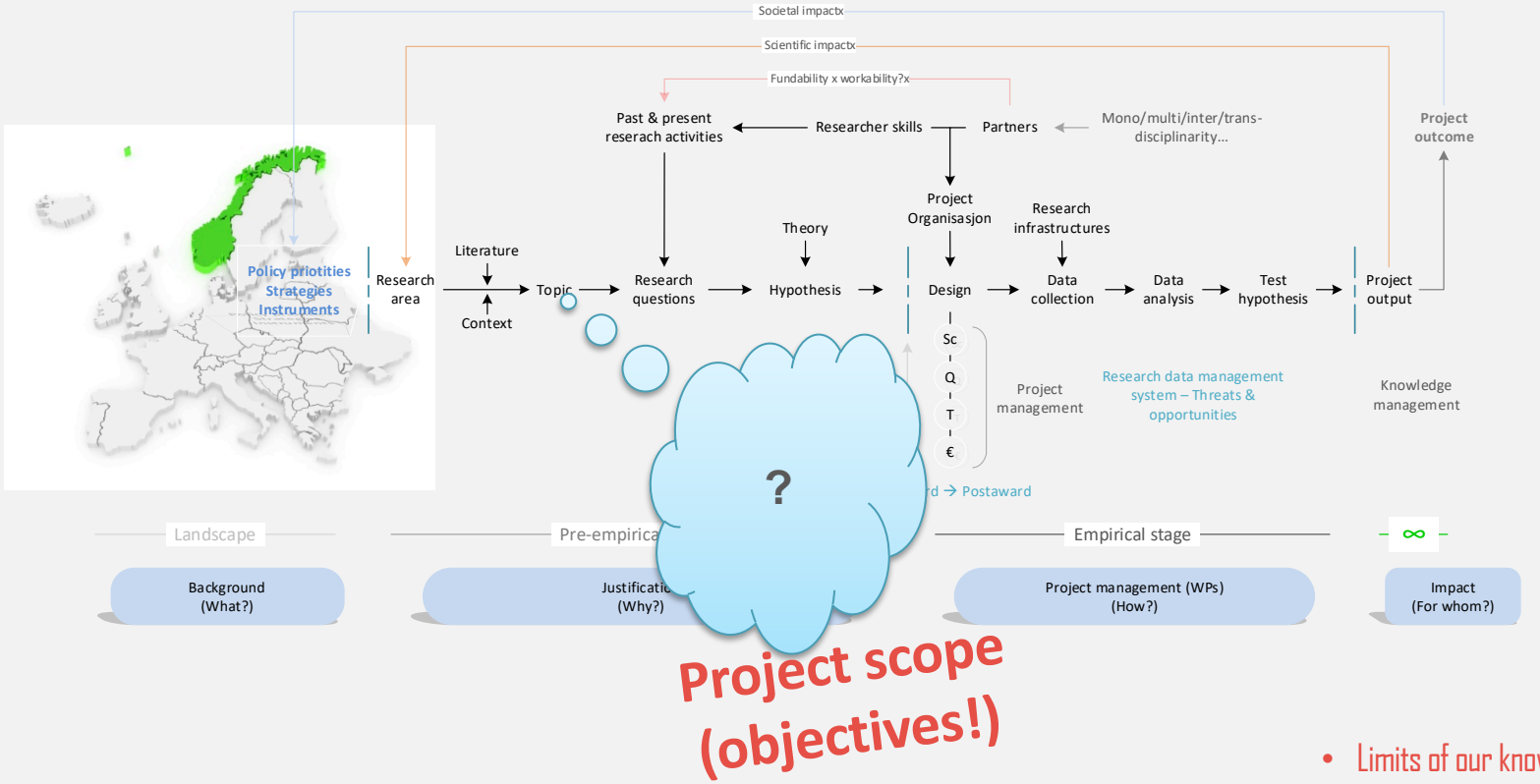
Background (What?)

Justification (Why?)

Project management (WPs) (How?)

Impact (For whom?)

Genesis of research projects



Project scope (objectives!)

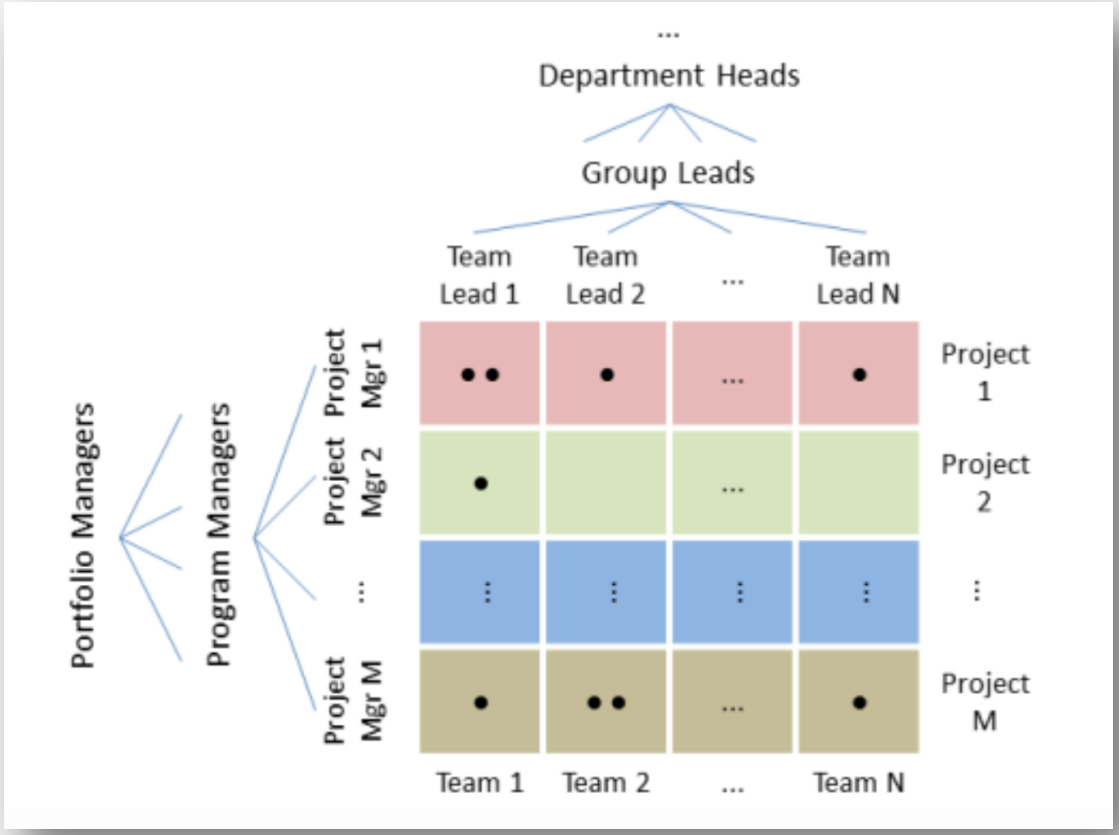
- Limits of our knowledge and key research question
- Project objectives based on State-of-the-Art moving knowledge boundaries
- Rigorous methodology
- End-goal → Short-term <> Long-term Impact

Human Resource Management

- Talent recruitment and retainment.
- Continuous skills development to ensure quality and competitiveness.
- Career plan for critical personnel..
- Institutionalized knowledge transfer mechanisms from project to project..

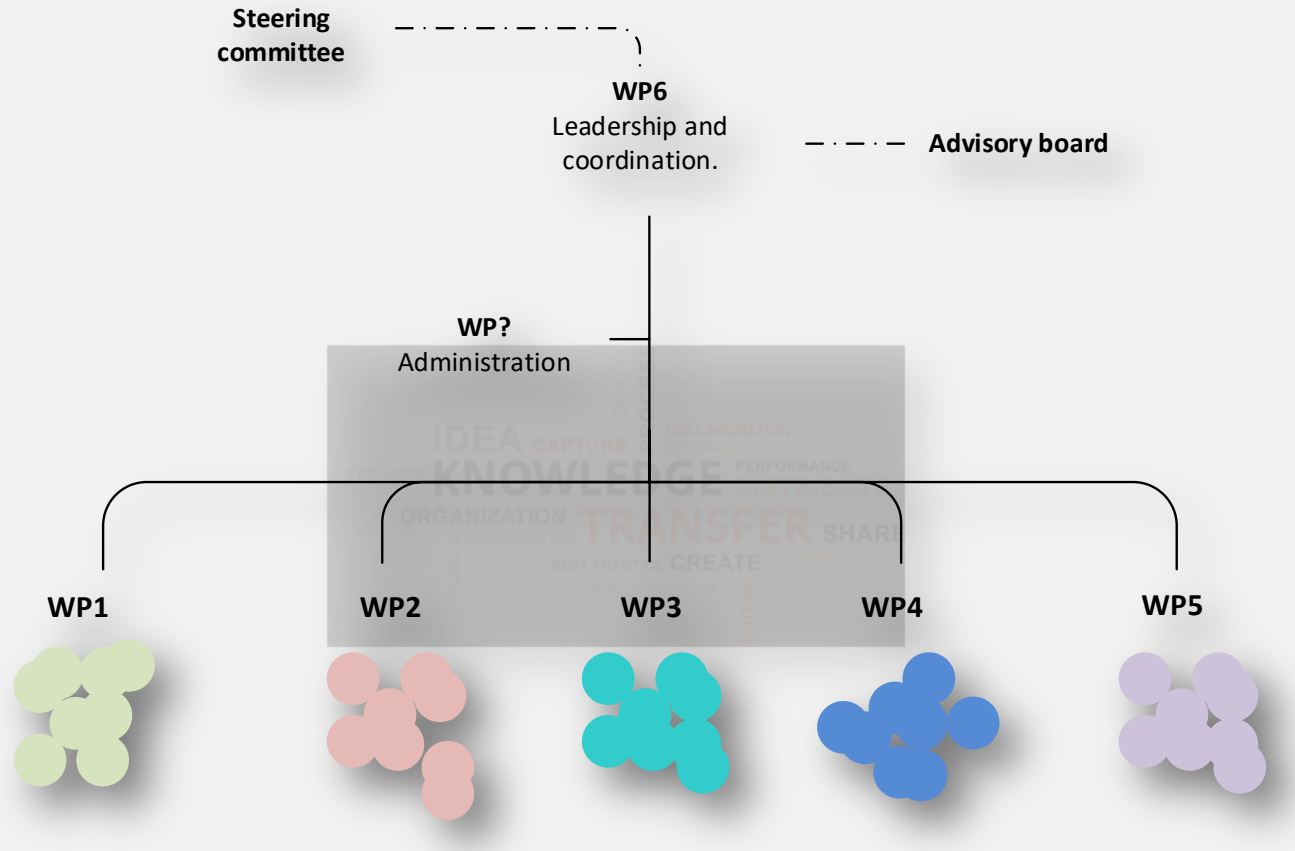
Supervisor → You are committed to research for the rest of eternity

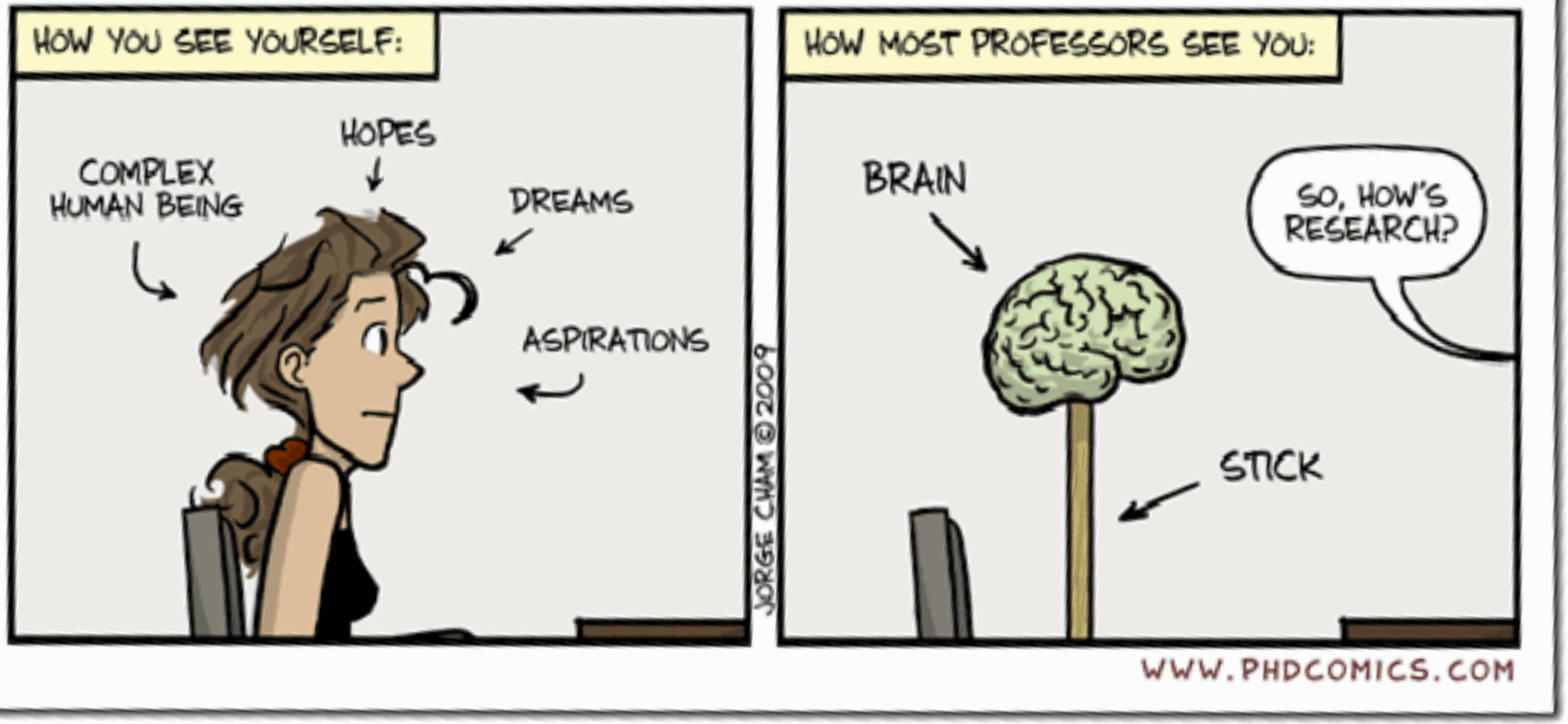
UiB → We are not committed to provide you with a permeant position for the rest of eternity..



Putting together a collaborative team

- Excellent academics! Not interested in management.
- Line management, only on paper.
- Formal and informal leadership
- To kind of team members: Permanents and NOT permanents.
- Common goals? Maybe or maybe not..




HOW YOU SEE YOURSELF:
HOPES
COMPLEX HUMAN BEING
DREAMS
ASPIRATIONS
HOW MOST PROFESSORS SEE YOU:
BRAIN
SO, HOW'S RESEARCH?
STICK
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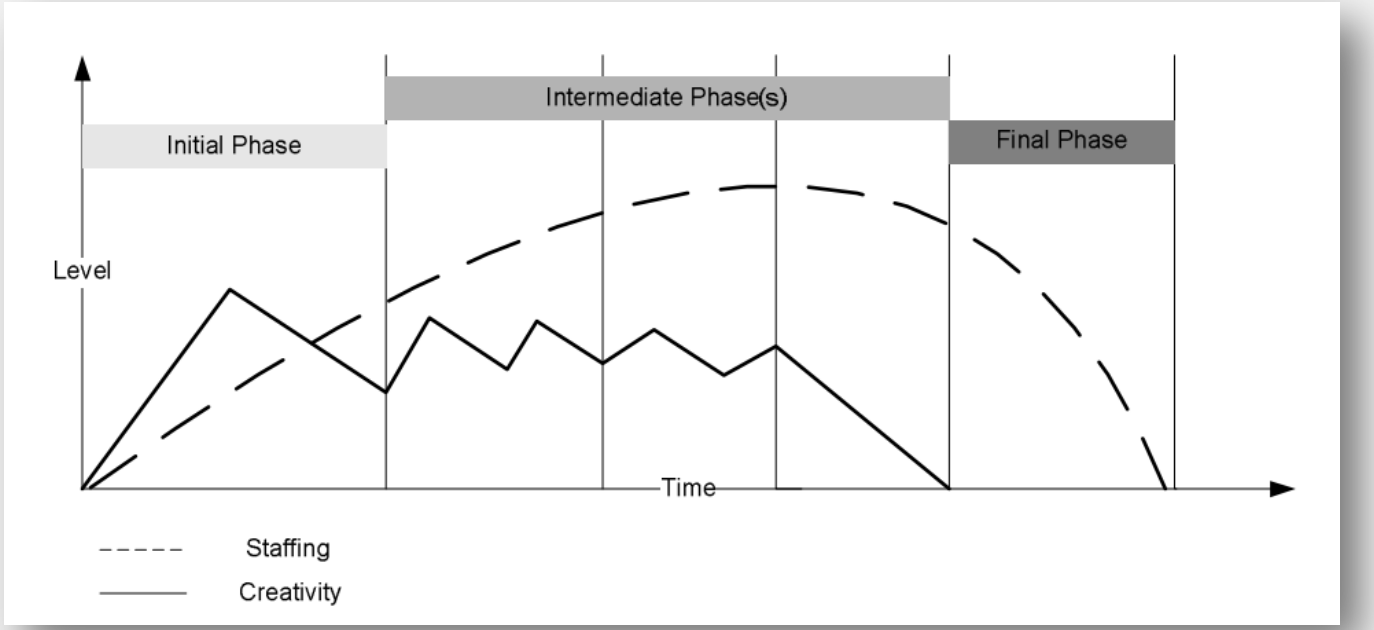
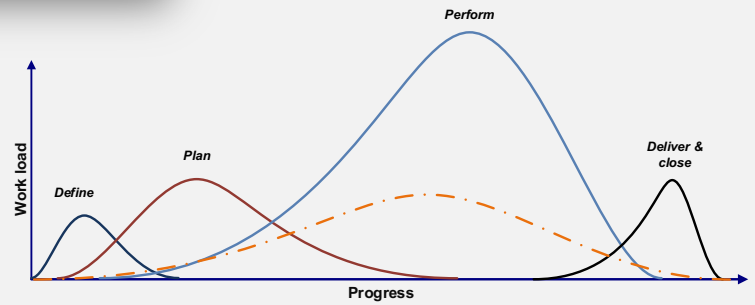
Creativity in research projects



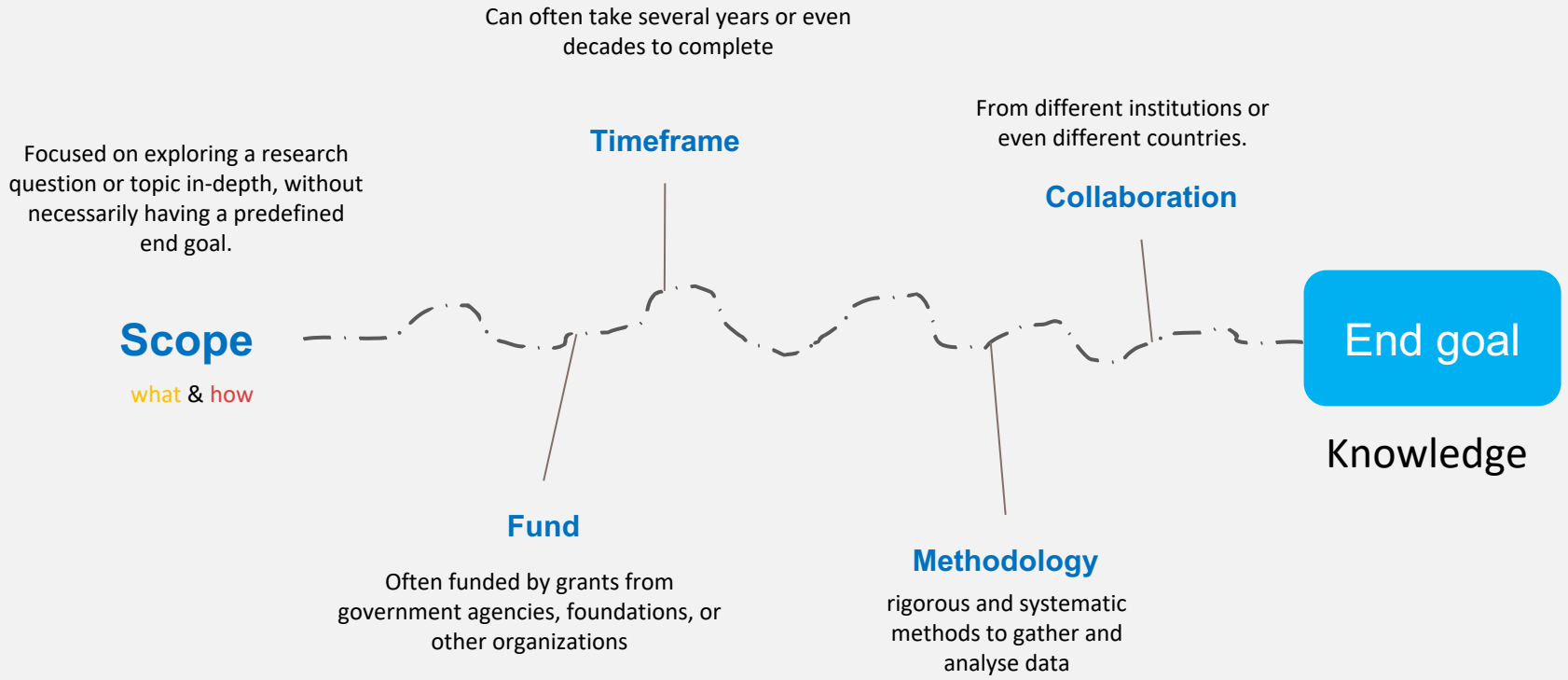


Source: www.colourbox.com

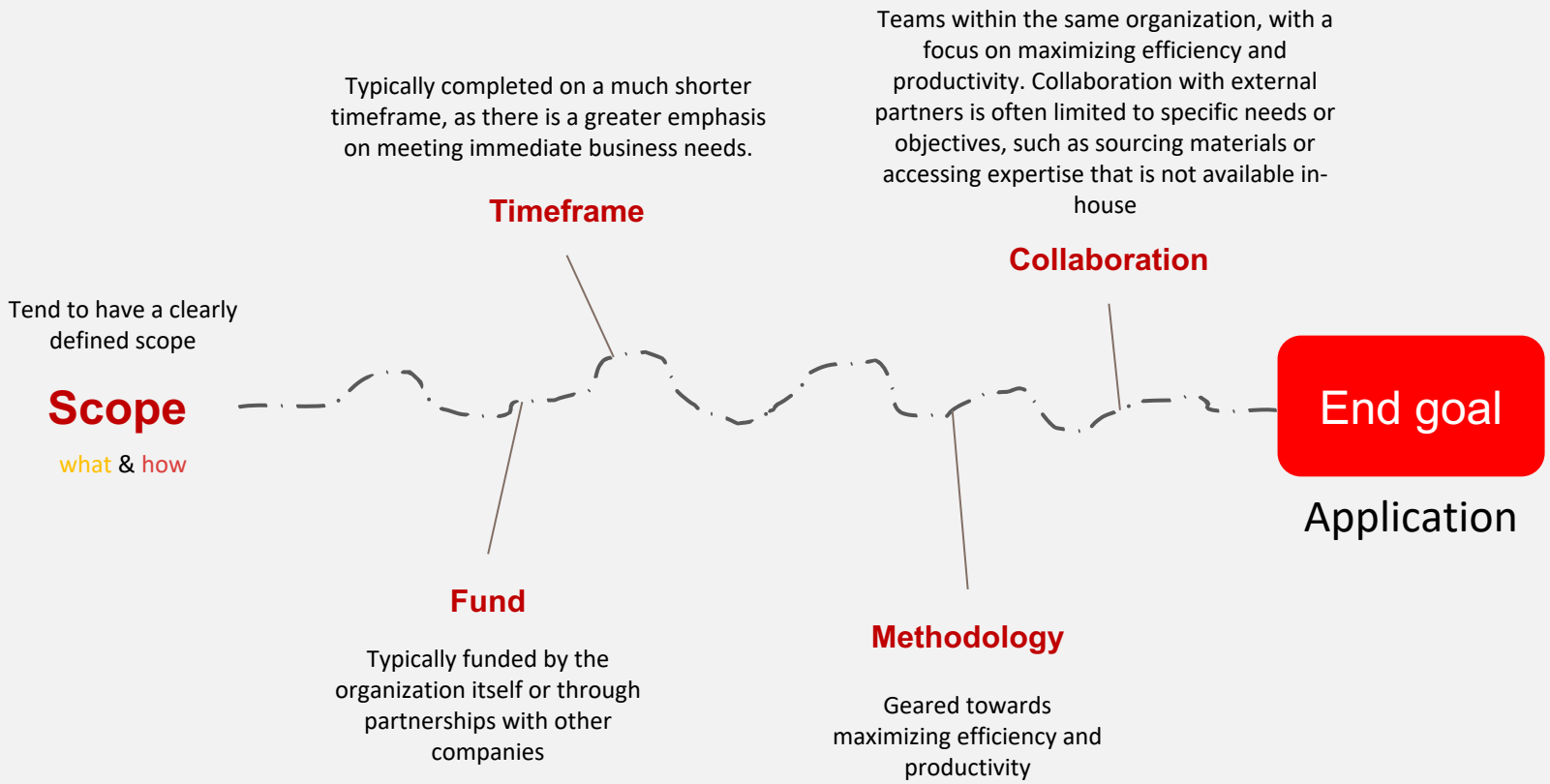
J. Brocke, S. Lippe, et. al., 2010. Engineering

Research projects compared to other types of projects

Research Projects

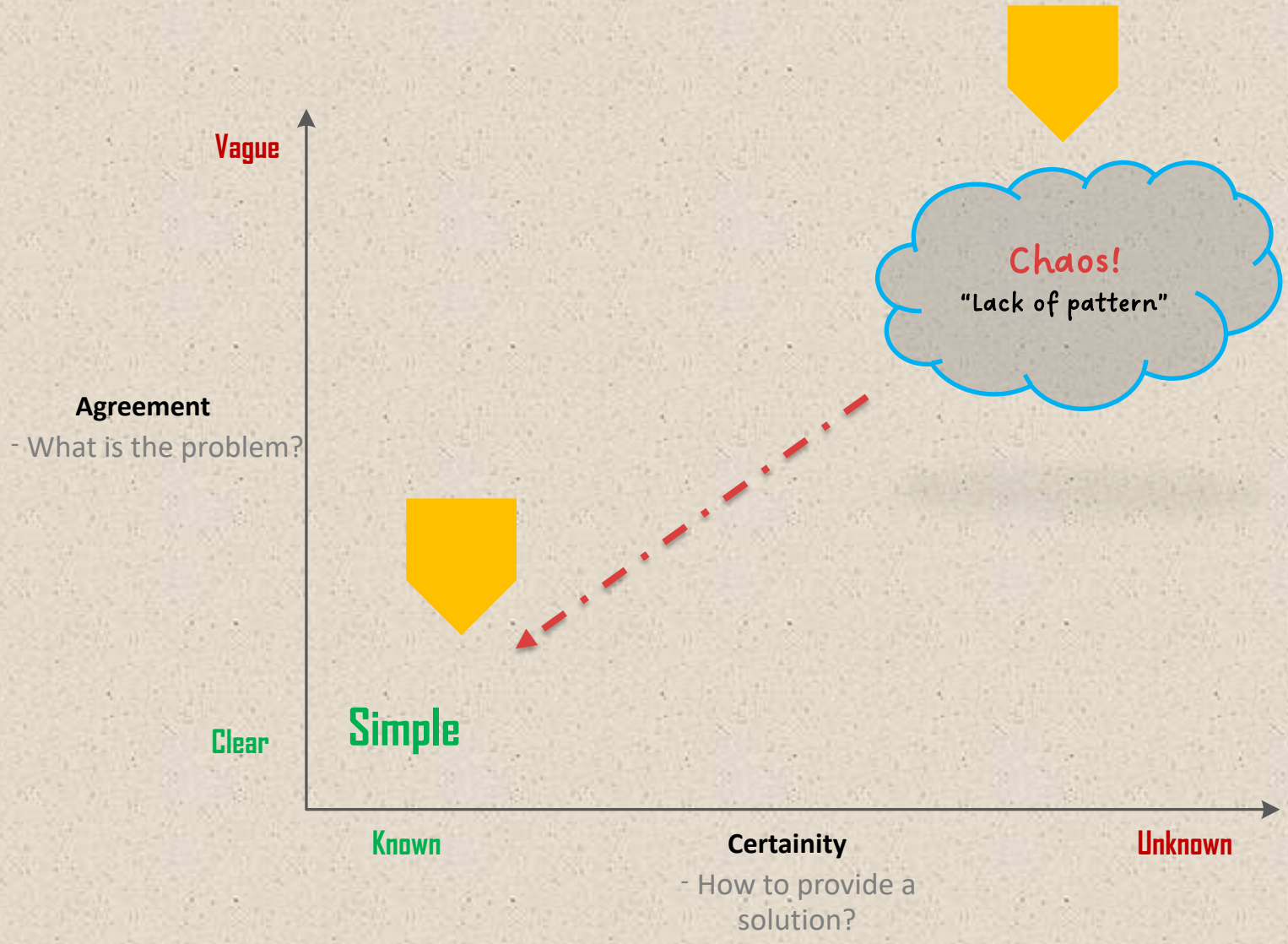


Other Projects



Source: www.colourbox.com

A universal key for **project management**!



5 key questions!

i. **What** problem are you trying to solve?
ii. **Who** are interested?
iii. Are you familiar with the **state-of-the-art**?
iv. **What** happens if the project is not funded?
v. **Why** you and do you have the best network to undertake this work?

Small projects

[Project Title]

Date: [Insert Date]
Prepared by: [Your Name/Team Name]

Executive Summary

Briefly describe the project's background, the problem it aims to solve, and the expected outcomes.

Project Objectives

i. Objective 1: Description → KPIs → Tasks
ii. Objective 2: Description → KPIs → Tasks
iii. Objective 3: Description → KPIs → Tasks

Background and Rationale

Provide context for the project, explaining the current situation, the identified problem or opportunity, and the rationale behind the project's initiation.

Project Scope

Define the scope of the project, including the key deliverables, features, and boundaries.

Methodology / Approach

- Research Design: Overview of the research methodology.
- Data Collection: Sources and methods of data collection.
- Analysis: Techniques for data analysis.
- Implementation Plan: Steps to implement the project.

Timeline & Budget

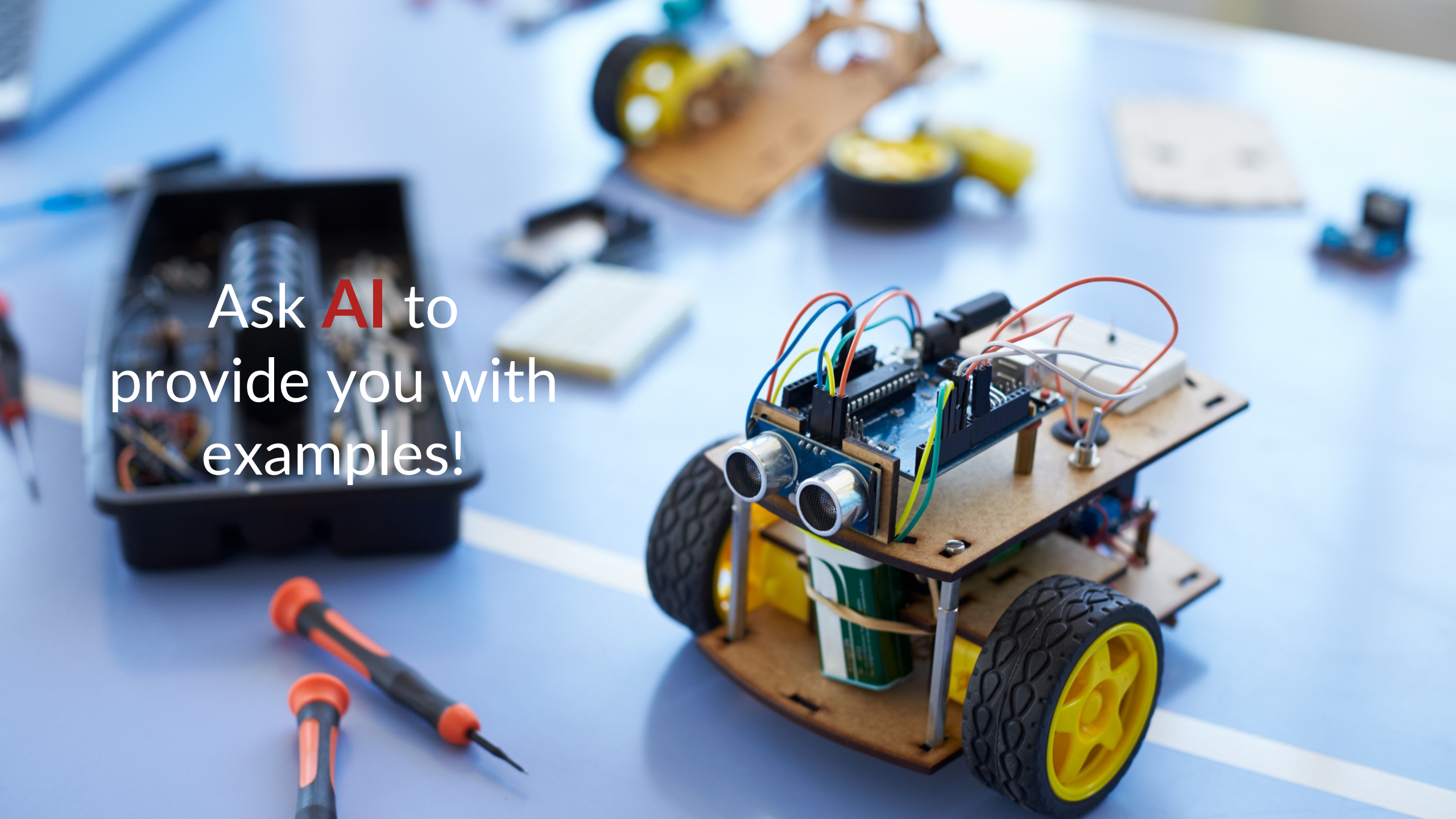
Outline the project timeline, highlighting key milestones and their expected completion dates. Provide an estimated budget, detailing the costs associated with each aspect of the project.

Expected Outcomes and Impact

Detail the expected outcomes of the project and its impact on the field, stakeholders, or community.

Conclusion

Summarize the proposal, emphasizing the project's significance and the positive change it aims to bring.


Ask AI to
provide you with
examples!

Large Projects

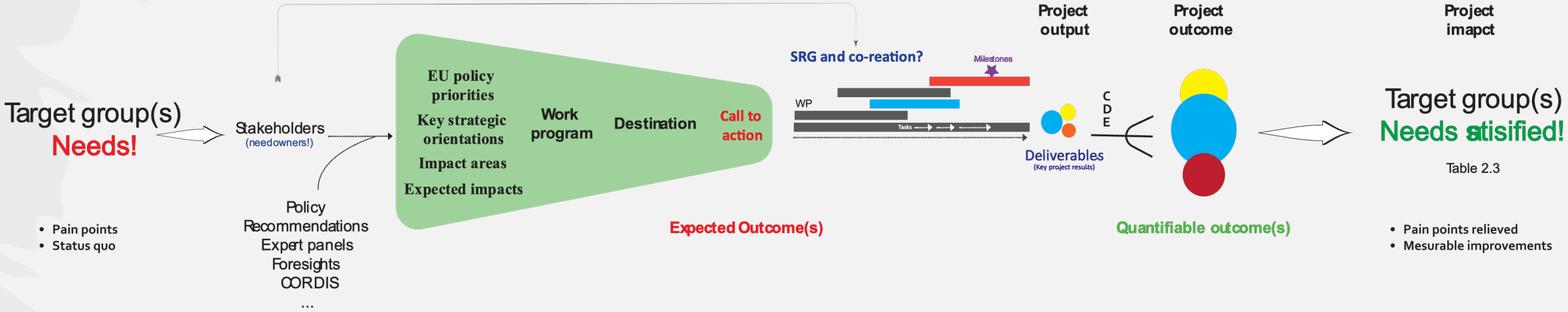
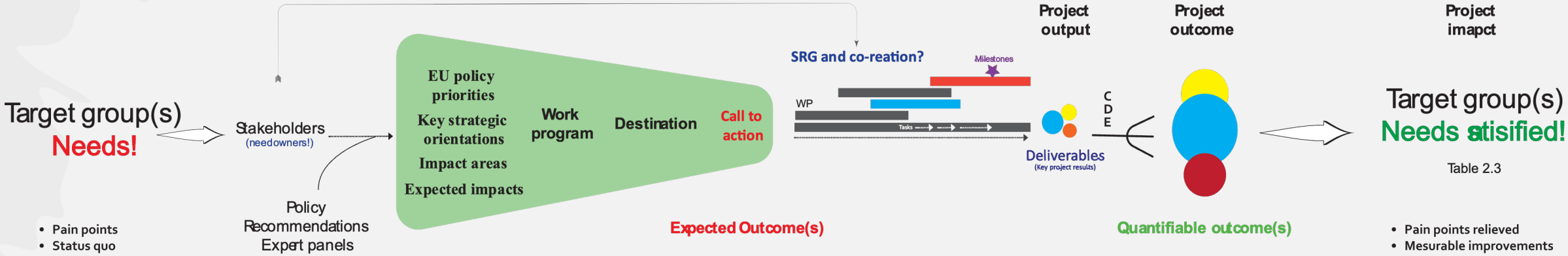


Illustration source: Hiwa Målen, FiA – UiB, 2023.

Large Projects



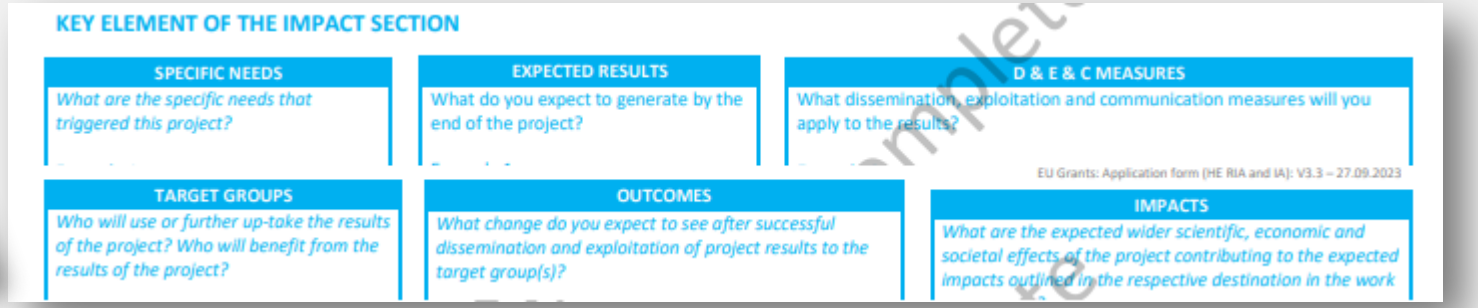
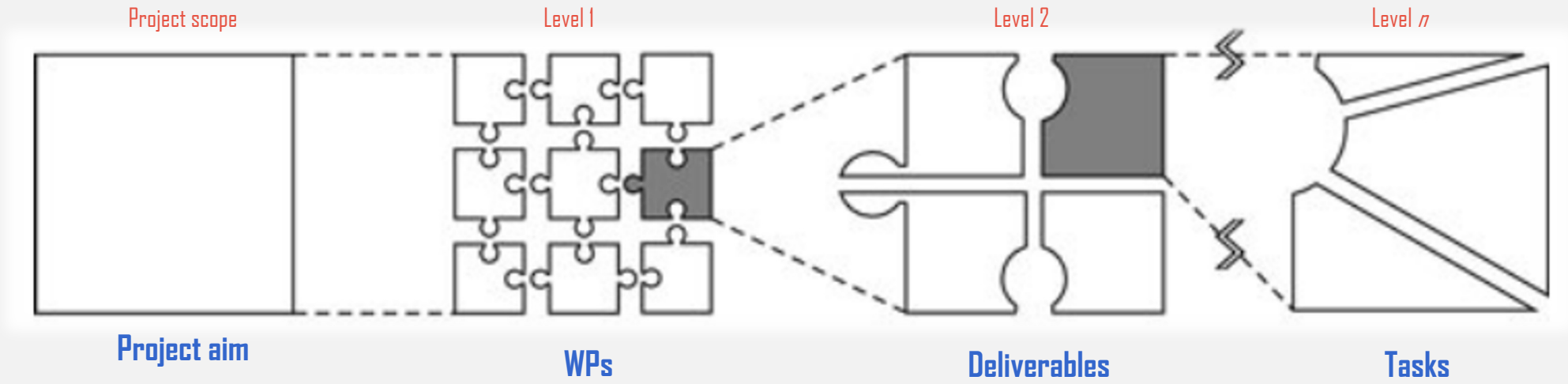


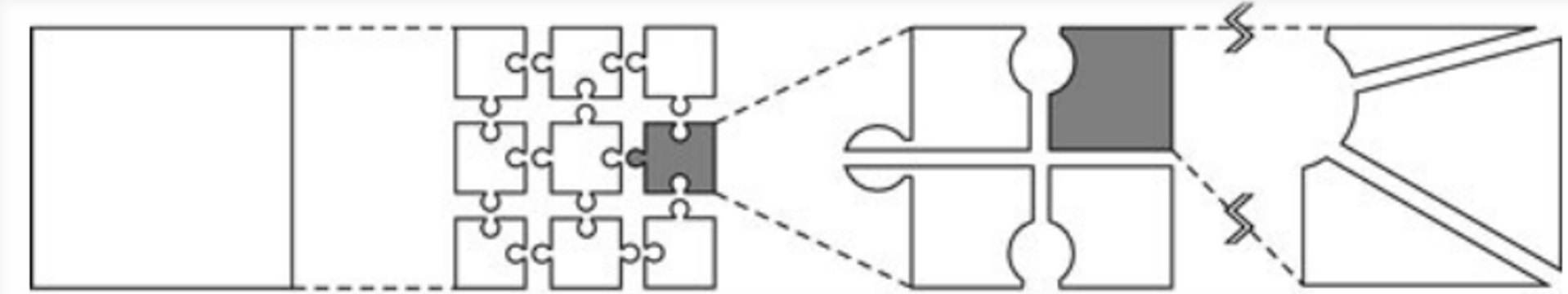
Illustration source: Hiwa Målen, FiA – UiB, 2023.

Two-dimensional decomposition

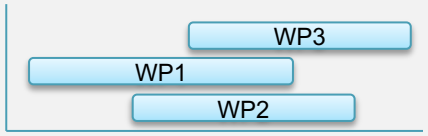


Two-dimensional decomposition

Project aim | WPs | Deliverables | Tasks

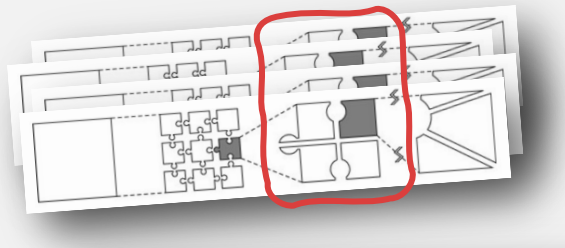


What, why, how, why now & why you?



Risk management → What can og wrong?

I. Program Evaluation Review Technique or PERT



An excellent tool for early involvement and expectation management!

- Is the work plan of good quality and effective?
- Does it follow a logic structure (for example regarding the timing of work packages)?
- Are the resources allocated to the work packages in line with their objectives and deliverables?

PERT in practice

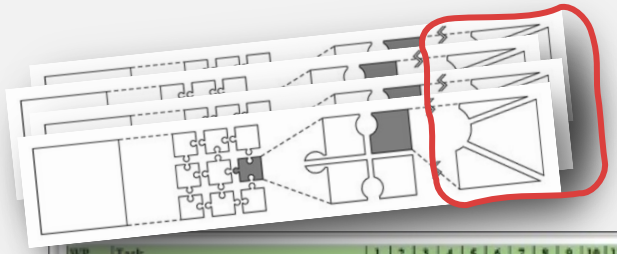
An example from a non-academic setting.

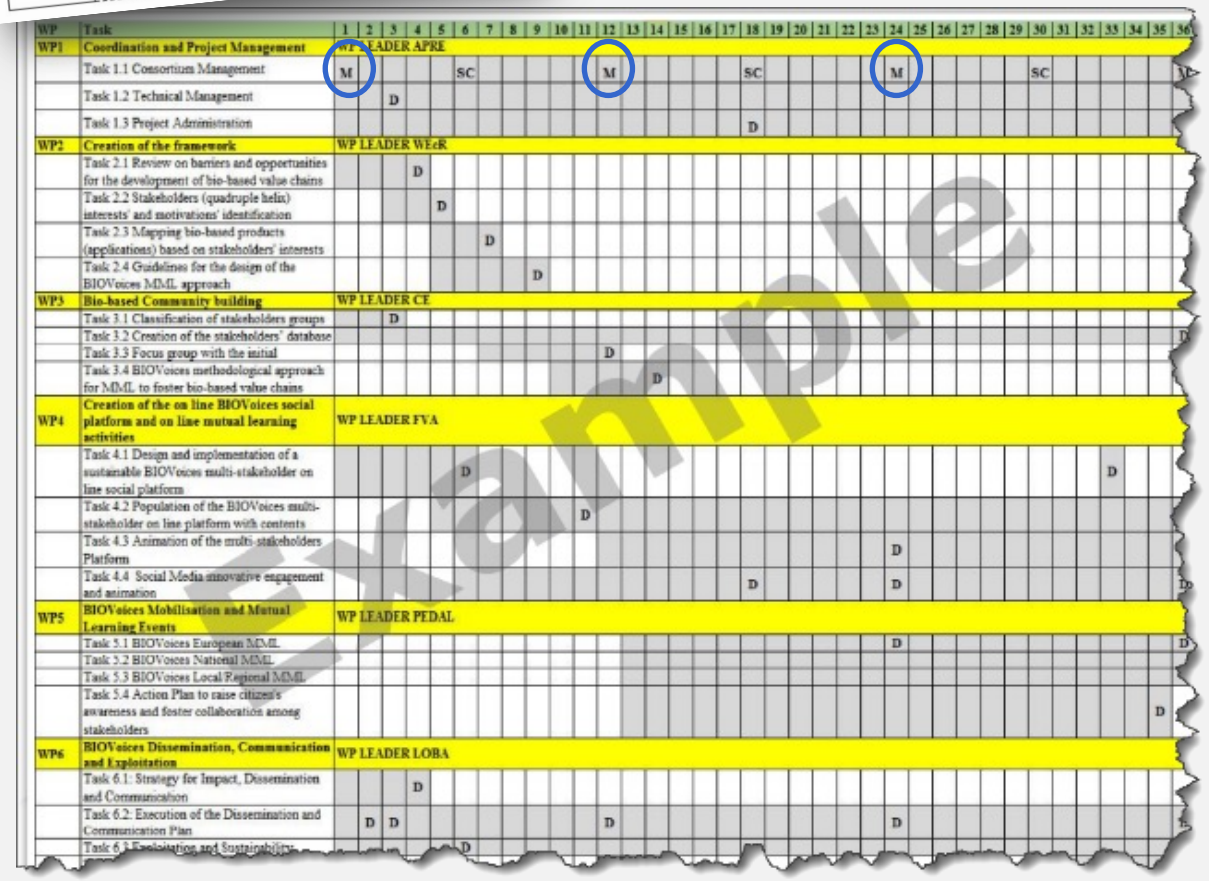
Example from a complex, multidisciplinary, multi-million NOK projects..

II. Gantt chart - a logical timeframe

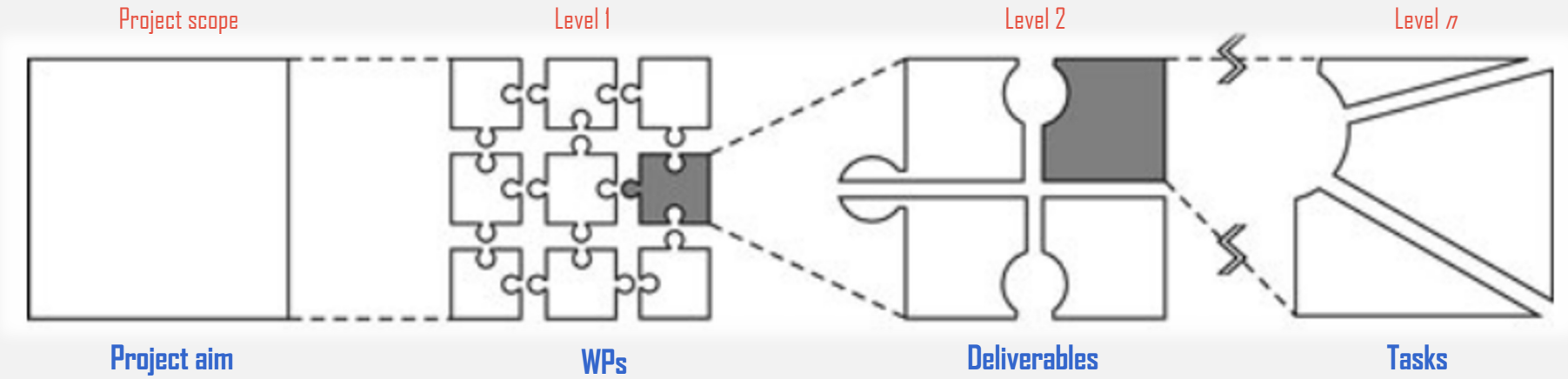
Crucial when creating the project schedule, tracking how work progresses throughout the project lifecycle.

A logical sequence of events! Includes WPs, deliverables, tasks, milestones, interdependencies.





- Does it include quantified information so that progress can be monitored?

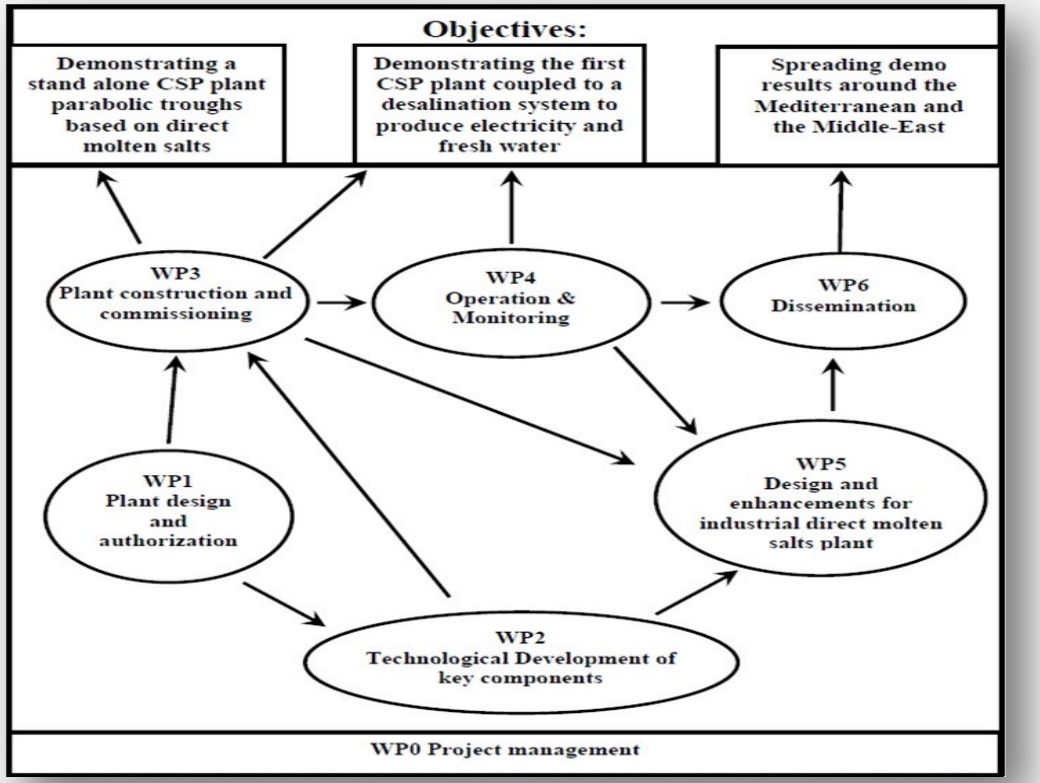


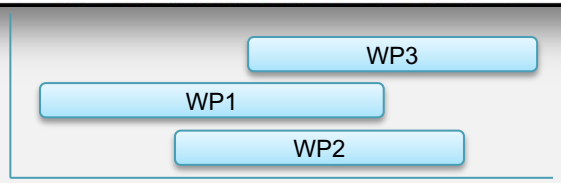
- Should be easily described and understood by project participants.
- A meaningful unit of work where specific responsibility and authority can be assigned to a responsible individual(s).
- It should be possible to estimate duration and cost to complete.

The number of work packages should be proportionate to the scale and complexity of the project.

Work package relationships

- Explicitly defines and makes visible dependencies and relationships between the work breakdown structure elements
- Where feedback is needed to/from
- Reduces overlapping of activities and tasks

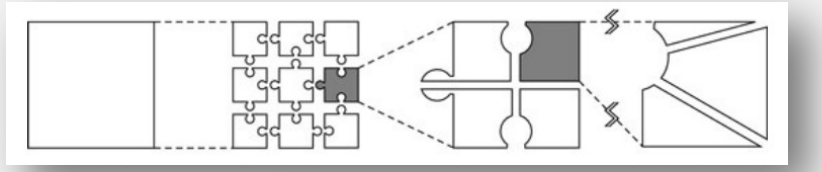


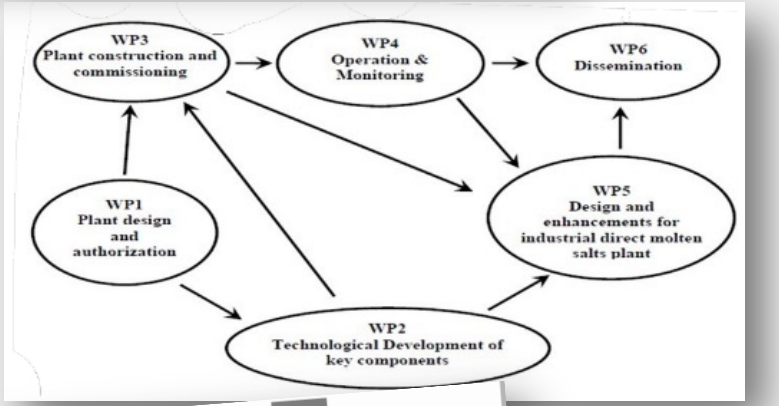


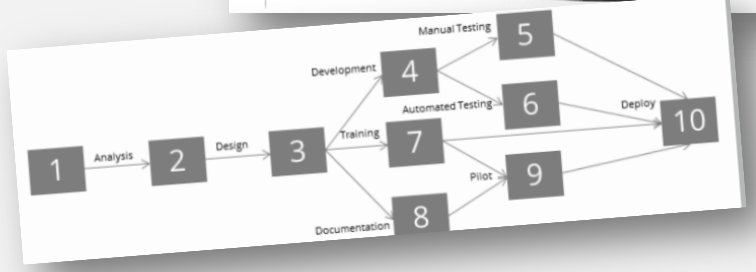
Source: TH2020II/APRE

How to Manage Risk?

Start with a clear and precise definition of what your project plans to deliver.





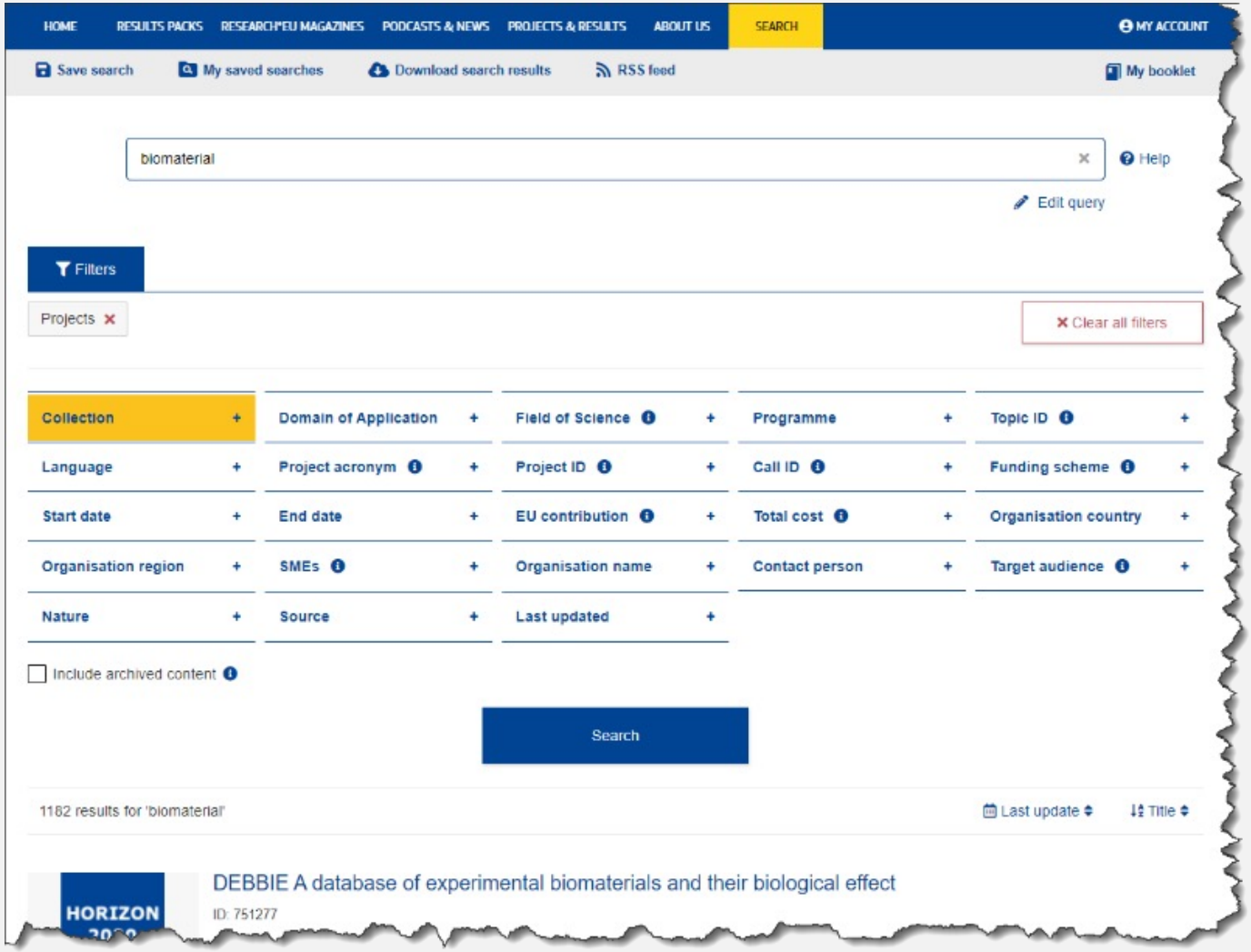


Bonus ☺

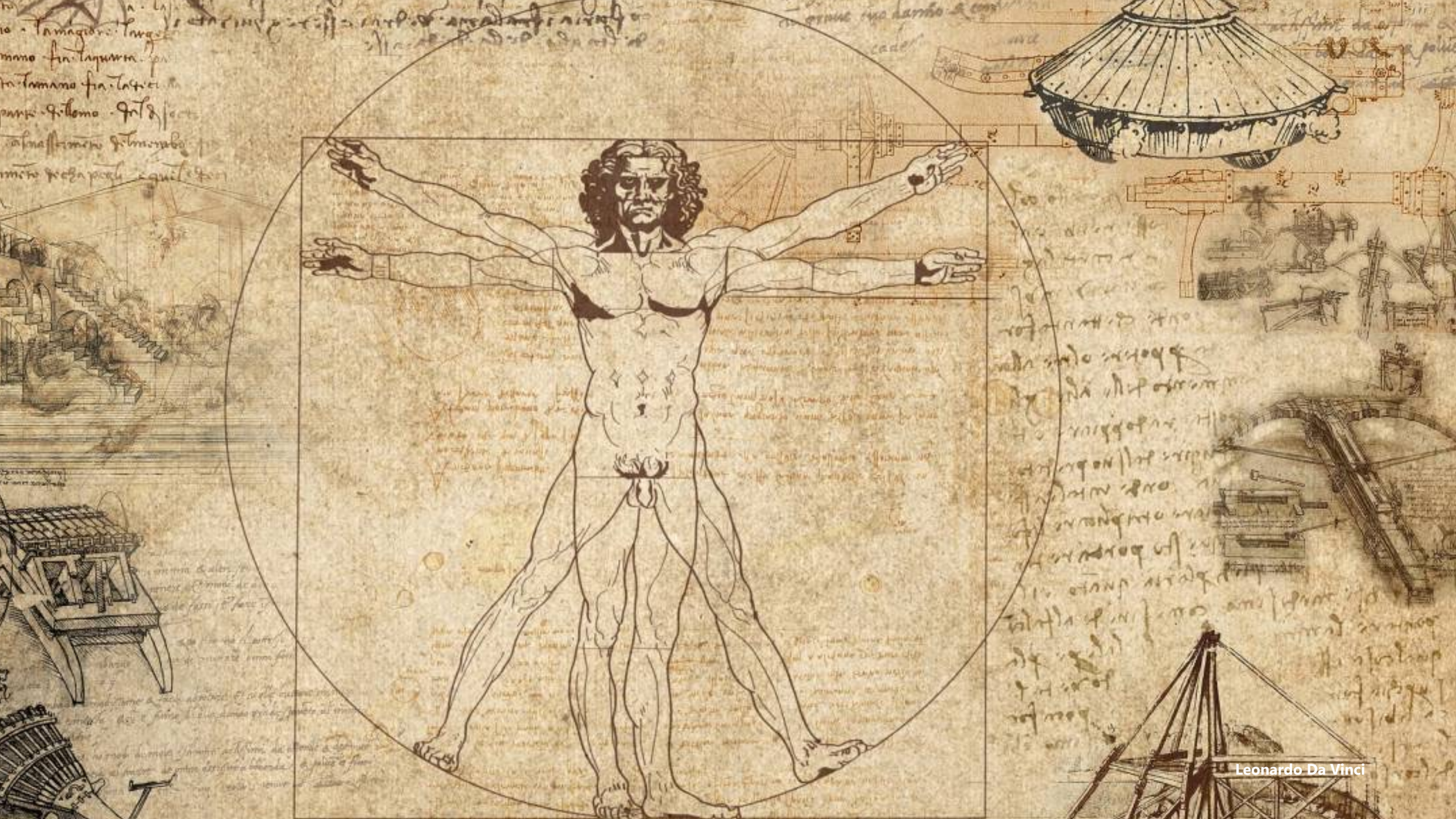
Source: www.c

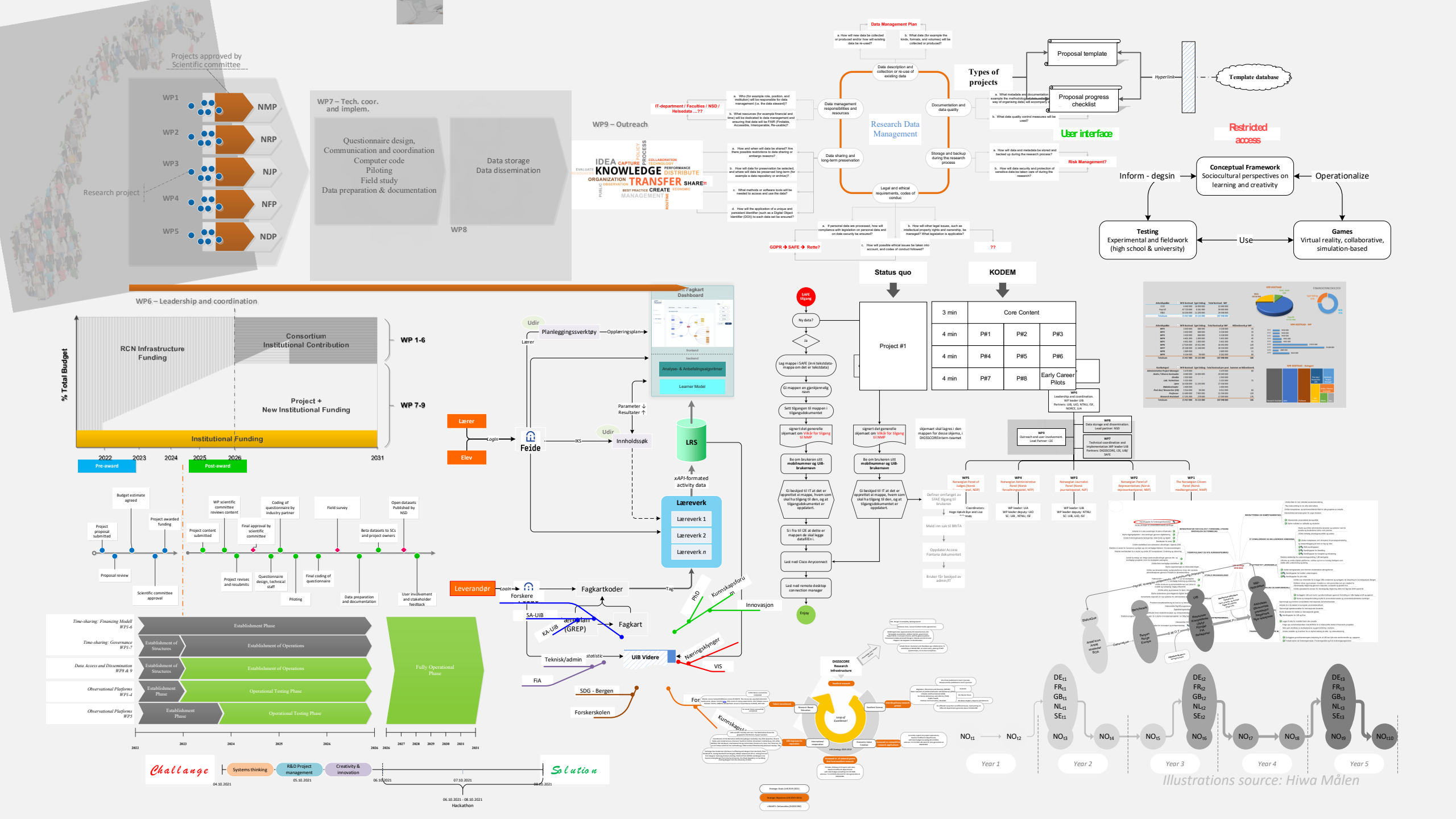
CORDIS – EU research results

The Community Research and Development Information Service (CORDIS)



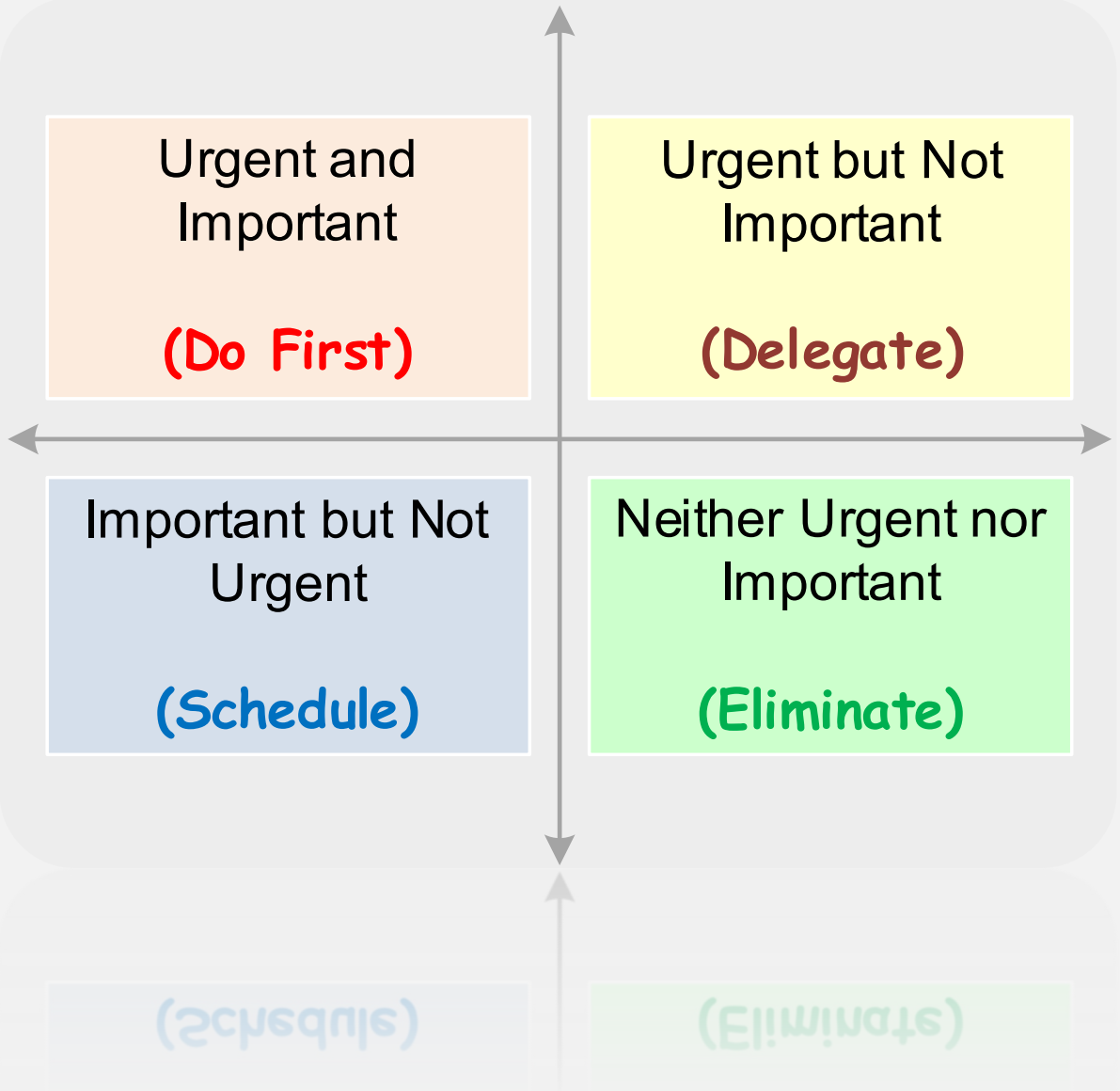
CORDIS | European Commission (europa.eu)


Leonardo Da Vinci

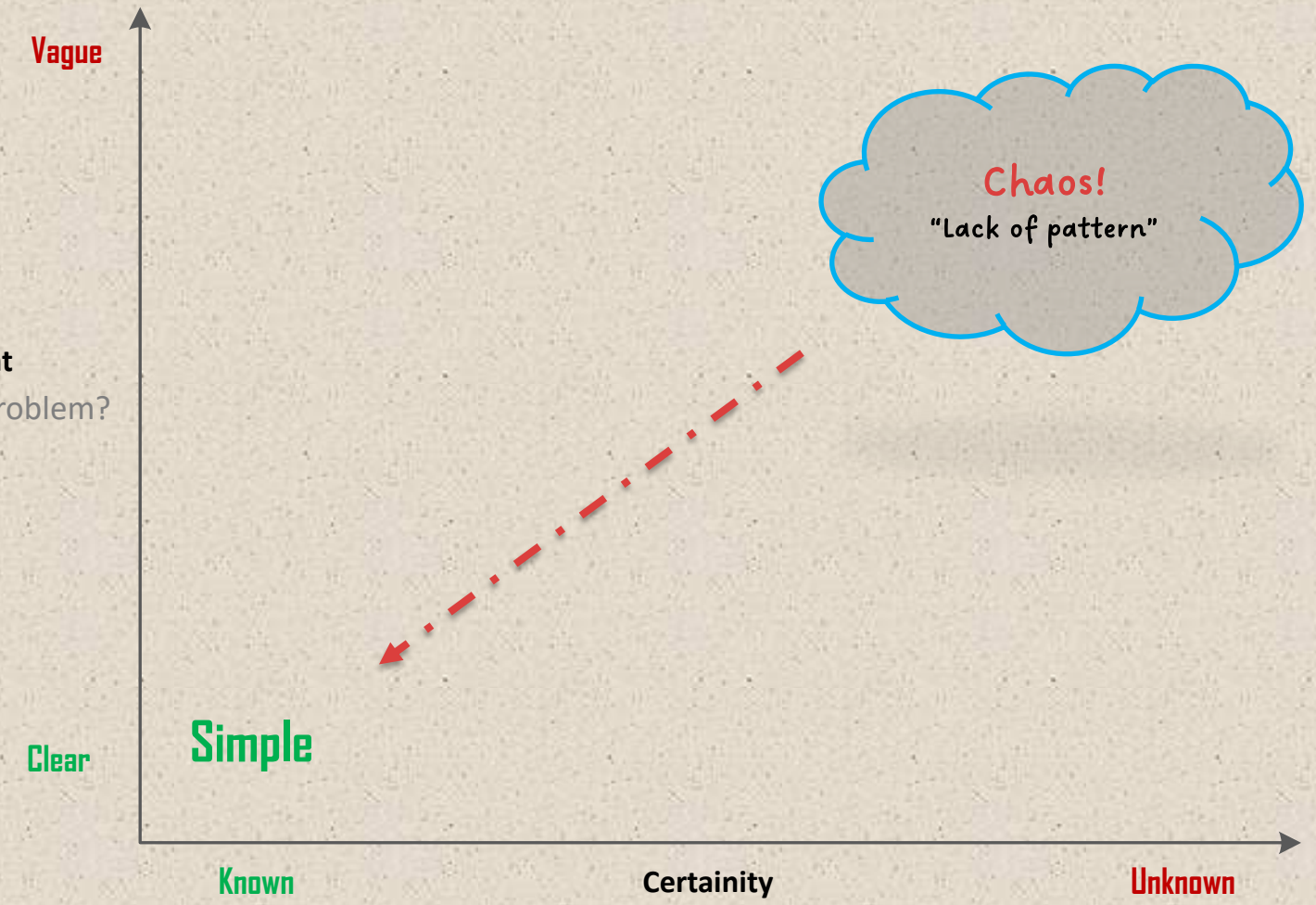

Projects approved by Scientific committee
WP1
WP2
WP3
WP4
WP5
NMP
NRP
NJP
NFP
NDP
Research project
WP7 – Tech. coor. and implem.
Questionnaire design, Communication and coordination
Computer code
Piloting
Field study
Data preparation & documentation
Data storage
Data dissemination
WP8
WP9 – Outreach
Data Management Plan
Research Data Management
Data description and collection or re-use of existing data
Data management responsibilities and resources
Data sharing and long-term preservation
Legal and ethical requirements, codes of conduc
Documentation and data quality
Storage and backup during the research process
Types of projects
Proposal template
Proposal progress checklist
Hyperlink
Template database
User interface
Restricted access
Risk Management?
GDPR → SAFE → Rette?
??
Inform - degsin
Conceptual Framework
Sociocultural perspectives on learning and creativity
Operationalize
Testing
Experimental and fieldwork (high school & university)
Use
Games
Virtual reality, collaborative, simulation-based
WP6 – Leadership and coordination
% Total Budget
RCN Infrastructure Funding
Consortium Institutional Contribution
Project + New Institutional Funding
Institutional Funding
WP 1-6
WP 7-9
2022
2023
2024
2025
2026
2031
Pre-award
Post-award
Budget estimate agreed
Project proposal submitted
Project awarded funding
Proposal review
Scientific committee approval
Project content submitted
WP scientific committee reviews content
Final approval by scientific committee
Project revises and resubmits
Questionnaire design, technical staff
Coding of questionnaire by industry partner
Piloting
Field survey
Final coding of questionnaire
Data preparation and documentation
Beta datasets to SCs and project owners
Open datasets Published by NSD
User involvement and stakeholder feedback
Time-sharing: Financing Modell WP1-6
Time-sharing: Governance WP1-7
Data Access and Dissemination WP8 & 9
Observational Platforms WP1-4
Observational Platforms WP5
Establishment Phase
Establishment of Structures
Establishment of Operations
Operational Testing Phase
Fully Operational Phase
Challange
Systems thinking
R&D Project management
Creativity & innovation
Solution
04.10.2021
05.10.2021
06.10.2021
07.10.2021
08.10.2021
06.10.2021 - 08.10.2021 Hackathon
Udir
Planleggingssverktøy
Opplæringsplan
Lærer
Fagkart Dashboard
Analyse- & Anbefalingsalgoritmer
Learner Model
Parameter
Resultater
Lærer
Elev
Login
Feide
IKS
Udir
Innholdssøk
LRS
xAPI-formated activity data
Læreverk
Læreverk 1
Læreverk 2
Læreverk n
Leverandør
Login
Forskere
Fagkartkoder
Tag
SA-UiB
KA-UiB
Fagkart
(GREP)
PhD
Kunnskapsforu m
Innovasjon
Teknisk/admin
statistic
UiB Videre
Næringskhyger
VIS
FiA
SDG - Bergen
Forskerskolen
Kunnskapsl...
SAFE tilgang
Ny data?
Ja
Lag mappe i SAFE (evt tekstdata-mappa om det er tekstdata)
Gi mappen en gjenkjennelig navn
Sett tilgangen til mappen i tilgangsdokumentet
signert det generelle skjemaet om Vilkår for tilgang til NMP
Be om brukeren sitt mobilnummer og UiB-brukernavn
Gi beskjed til IT at det er opprettet ei mappe, hvem som skal ha tilgang til den, og at tilgangsdokumentet er oppdatert.
Si i fra til I2E at dette er mappen de skal legge data/filer i.
Last ned Cisco Anyconnect
Last ned remote desktop connection manager
Enjoy
Status quo
KODEM
Project #1
3 min
Core Content
4 min
P#1
P#2
P#3
4 min
P#4
P#5
P#6
4 min
P#7
P#8
Early Career Pilots
signert det generelle skjemaet om Vilkår for tilgang til NMP
skjemaet skal lagres i den mappen for desse skjema, i DIGSSCORE\intern-teamet
Be om brukeren sitt mobilnummer og UiB-brukernavn
Gi beskjed til IT at det er opprettet ei mappe, hvem som skal ha tilgang til den, og at tilgangsdokumentet er oppdatert.
Definer omfanget av SAE tilgang til brukeren
Coordinators: Hege Hjelvik Bye and Lise ***mann
Meld inn sak til BRITA
Oppdater Access Fontana dok.umentet
Bruker får beskjed av admin/IT
WP6 Leadership and coordination. WP leader UiB Partners: UiB, UiO, NTNU, ISF, NORCE, UiA
WP8 Data storage and dissemination. Lead partner: NSD
WP7 Technical coordination and implementation.WP leader UiB Partners: DIGSSCORE, I2E, UiN/ SAFE
WP9 Outreach and user involvement. Lead Partner: I2E
WP5 Norwegian Panel of Judges (Norsk ...panel, NDP)
WP4 Norwegian Administrative Panel (Norsk forvaltningspanel, NFP)
WP3 Norwegian Journalist Panel (Norsk journalistpanel, NJP)
WP2 Norwegian Panel of Representatives (Norsk representantpanel, NRP)
WP1 The Norwegian Citizen Panel (Norsk medborgerpanel, NMP)
WP leader: UiA WP leader deputy: UiO SC: UiB , NTNU, ISF
WP leader: UiB WP leader deputy: NTNU SC: UiB, UiO, ISF
DIGSSCORE Research Infrastructure
Loop of Excellence!
DE$_{t1}$ FR$_{t1}$ GB$_{t1}$ NL$_{t1}$ SE$_{t1}$
NO$_{t1}$ NO$_{t2}$ NO$_{t3}$ NO$_{t4}$ NO$_{t5}$ NO$_{t6}$ NO$_{t7}$ NO$_{t8}$ NO$_{t9}$ NO$_{t10}$
DE$_{t2}$ FR$_{t2}$ GB$_{t2}$ NL$_{t2}$ SE$_{t2}$
DE$_{t3}$ FR$_{t3}$ GB$_{t3}$ NL$_{t3}$ SE$_{t3}$
Year 1
Year 2
Year 3
Year 4
Year 5
Illustrations source: Hiwa Målen

Time management

The Eisenhower Matrix

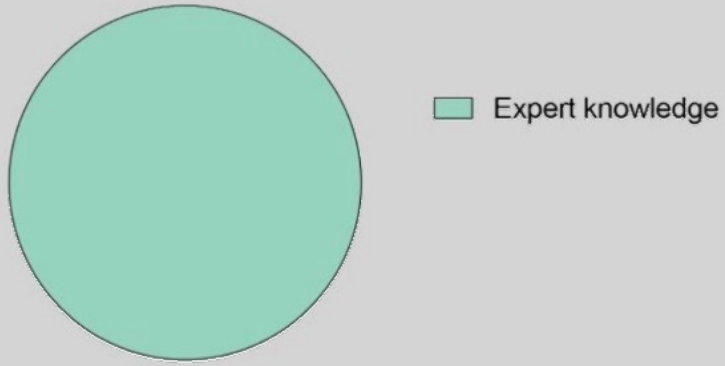


Transferable Skills?

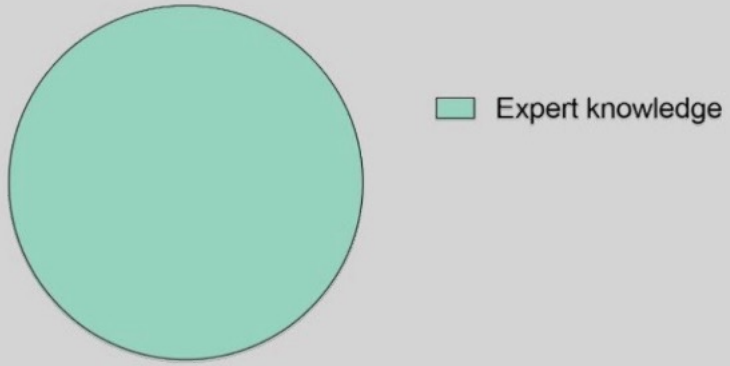
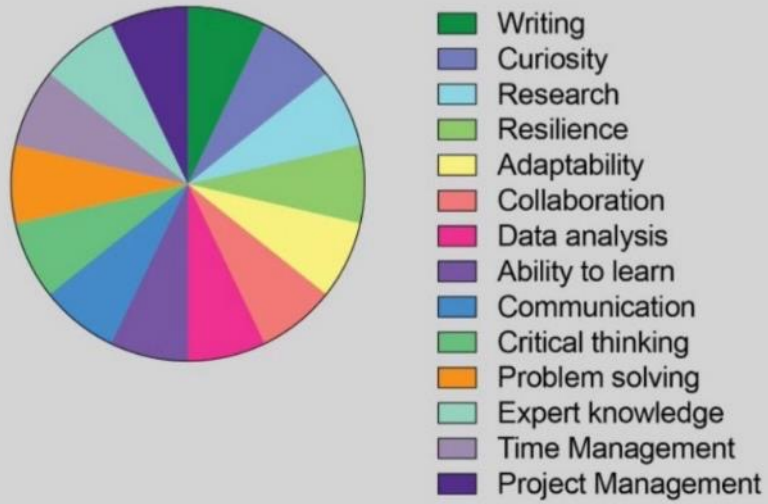


By Chinta Sidharthan, 2022

PhD knowledge



PhD knowledge



What we actually learn...