

LAST WEEK OF WAT COURSE!

Introduction to Synthesis Week and its Tasks

Marko, 17.10.2022

FEEW! Six intensive weeks behind, one ahead!

**What is your feeling right now,
with 1-5 words?**



SYNTHESIS WEEK?

Jee! This is the 7th and last week of our WAT Course: well done!

→ Aim is to reflect and synthesise what we have learned during the past six weeks, put it into a broader context + give feedback to your group

This all from Monday afternoon until Wednesday lunch: intensive work, but allows us to finish by Wednesday lunch time

→ Rest of the week for finalizing your assignments, planning your studies & portfolio and possible mentor meetings – and simply for some re-covering (or for Akva's excursion) 😊

SYNTHESIS WEEK: SCHEDULE

INTRO + CONTEXT

- **Monday afternoon:** Introduction to the week + Context Session on Science & Governance (to put the course into a broader context)
- Monday evening: orientation to your individual work

SYNTHESIS & REFLECTION

- **Tuesday morning:** individual & group work: your Main Learning Points
- **Tuesday afternoon:** group work + presentations

FEEDBACK & WAY FORWARD

- **Wednesday morning:** Feedback Session, to your group and to us
→ Using Satu Rekonen's *I Like, I wish* (<https://ilikeiwish.org>)
- **Way forward: advanced courses + WAT career + small survey**

Then for lunch: you all are invited!

MENTOR MEETINGS

Each group received a mentor during the WAT Orientation Days: mentor is for all our WAT degree students.

Has they already agreed with you on mentor meetings for this week or next week?

→ If not, tell us and also write them an email and remind about the meeting! 😊

*Group 1: Harri
Group 2: Marko
Group 3: Olli*

*Group 4: Teemu
Group 5: Anna
Group 6: Riku*

Remember: you can also ask other WAT staff members on the three study themes and their courses

WEEKLY TASK: synthesising WAT Course

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Your final Thematic Task will synthesise the past 6 weeks through:

1) Personal Task: Go through all six weeks and their themes, methods and contexts, and write down **your Personal Learning Points for each week** by TOMORROW by 10am

→ *Instructions and Template to do this, see MyCourses*

→ *Tuesday's version just for you (bring to the session):
submit final version after Tue to MyCourses (DL Fri 21.10.)*

2) Group Task: to be done during Tuesday's session

→ *More information below + during the session*

THE TASKS WILL NOT
BE GRADED, AS IT'S
ABOUT SYNTHESISING
YOUR LEARNING

GROUP TASK: synthesis presentation

Every group presents one week of the Course,
based on your combined Learning Points

- Group 1's presentation = 1st week, Group 2 = 2nd week etc.
- Hence, pay particular attention to your group's week already when putting together your Personal Learning Points!

Prepare a 10-12 min group presentation on Tuesday

- Agree on tasks between group members: all should present
- Use the powerpoint template available in MyCourses, with following four elements:
weekly theme, weekly method, general notes, link to WAT
(Groups 1 and 4 also have a weekly context)

WEEKLY THEMES + METHODS

WEEKLY THEMES

- 1) Global natural resources MATTI & OLLI
- 2) Water resources management & hydrology HARRI
- 3) Environmental hydraulics JUHA
- 4) Water & wastewater engineering ANNA
- 5) Environmental mgt and sustainability MEERI
- 6) Water and environmental quality RIKU
- 7) Synthesis MARKO

WEEKLY METHODS

- 1) Statistical analysis
- 2) Simulation modelling
- 3) Hydraulic flume: measurement & uncertainty
- 4) Spatial analysis
- 5) Life Cycle Assessment LCA
- 6) Laboratory analysis

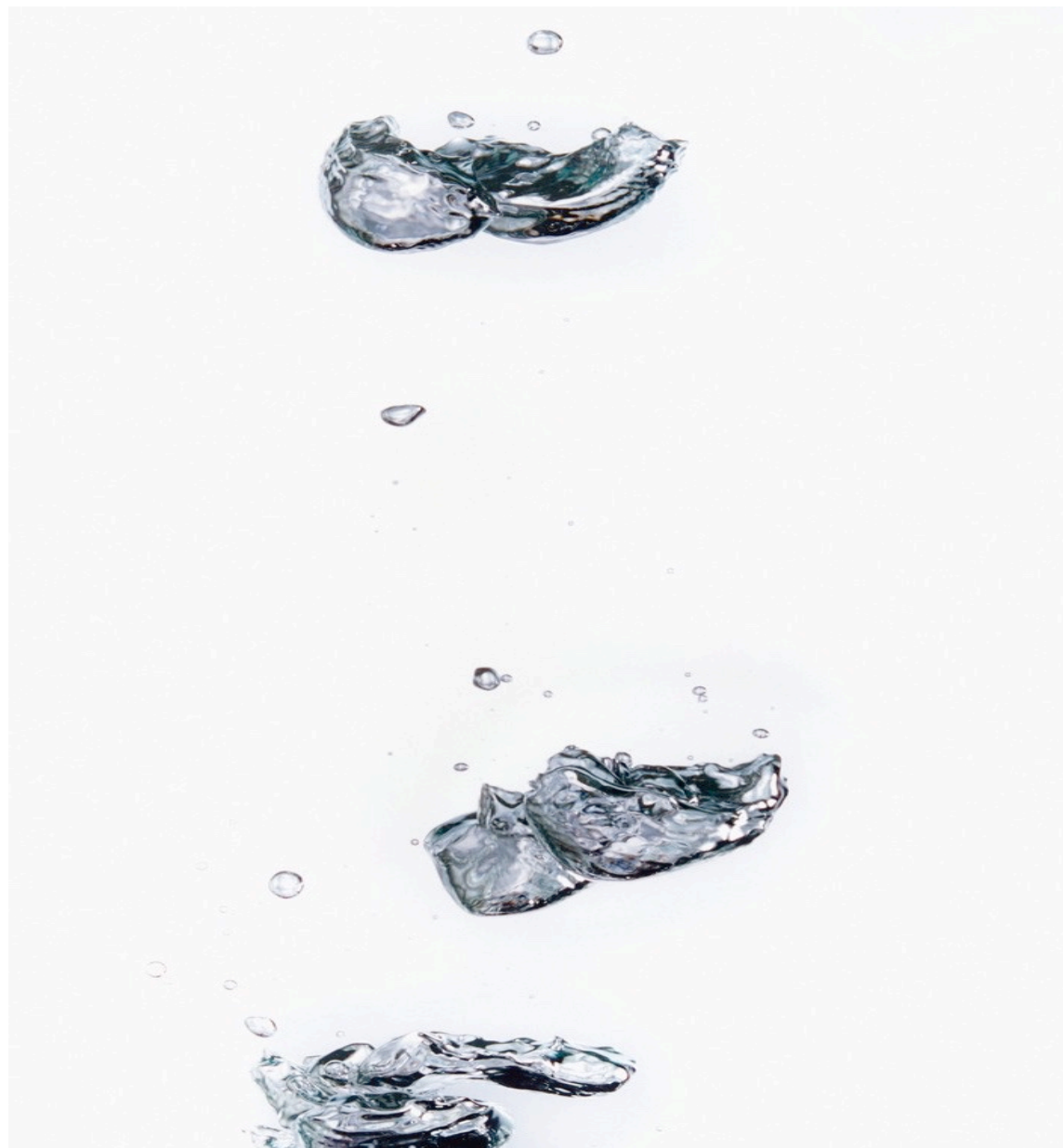
WAT CONTEXTS

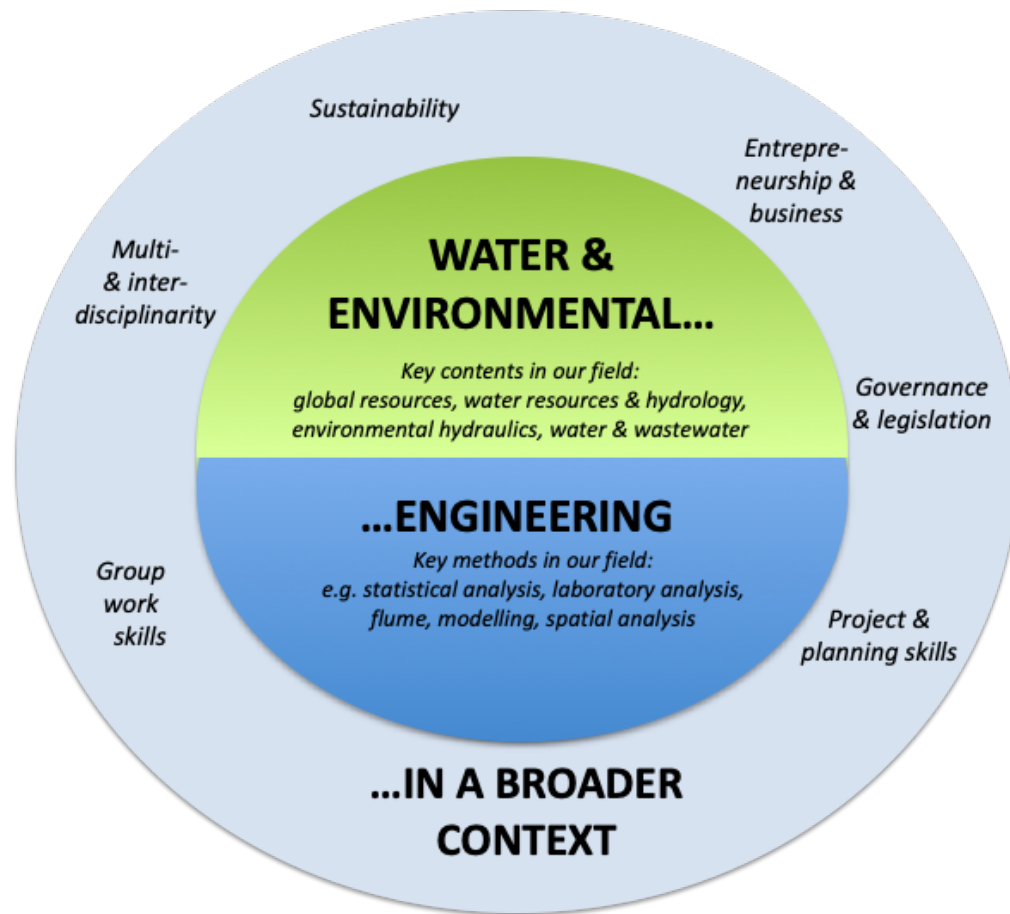
- Team roles & group work (Week 1)
- Entrepreneurship & business (Week 4)
- Governance & legislation
+ science (Week 7)

TASK: DELIVERABLES

- **Your Personal Learning Points: first DL Tue 18.10 at 10am**
 - Bring them with you on Tuesday (but no need to submit yet)
 - You can revise your Personal Learning Point during Tuesday's presentations: submit final ones to MyCourses latest on Friday 21.10
- **Group presentation: DL Tue 18.10**
 - Presentation must be ready by Tue 18.10 at 2pm
 - You can do small fine-tuning after that (based on comments you get), but submit the presentation during Tuesday still

Questions,
comments?





WAT COURSE RECAP

THE CONTENT OF WAT COURSE

- The WAT Course had three specific layers that form the basics of WAT:

‘WATER & ENVIRONMENTAL...’ (our key themes)

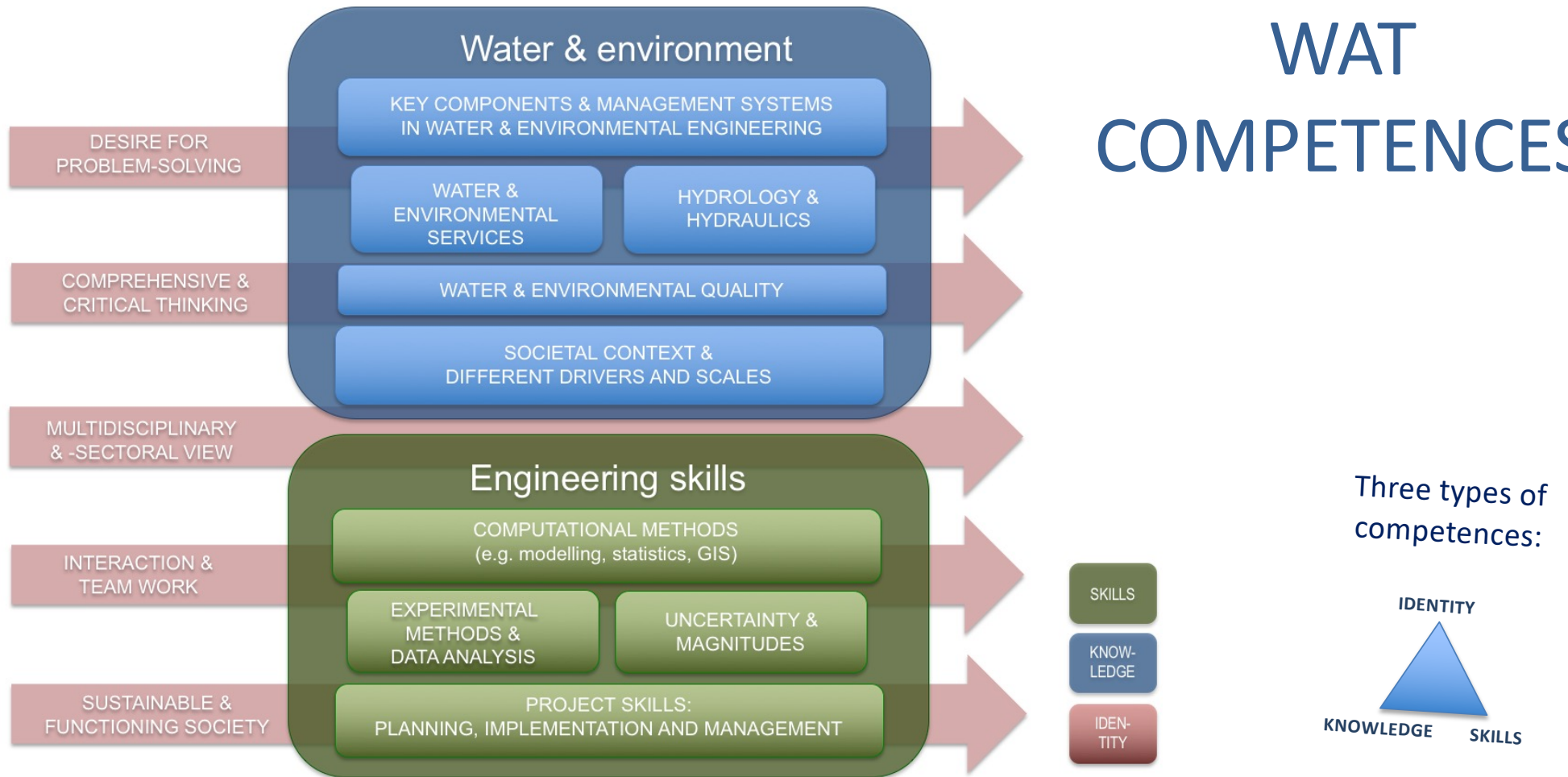
‘...ENGINEERING’ (our key methods)

‘...IN A BROADER CONTEXT’ (our context)

You will reflect on the connections between different WAT themes in your Personal Learning Points and Group Presentation

- You have to get our themes and methods right to be a successful water & environmental engineer
 - But to be able to do your work well, you need also to understand the broader context
 - Our advanced courses focus on our themes and methods; in-depth expertise on most contexts you have to get elsewhere (e.g. electives courses)

WAT COMPETENCES



WAT Course aimed to provide you a glimpse on all of these: advanced courses provide then more in-depth expertise on your preferred themes and methods

WAT COMMON + ADVANCED COURSES

15
ECTS

WAT Course (WAT-E1100)

Provides you wide view on our field, not so much depth: general introduction

45
ECTS

WATER
RESOURCES
MANAGEMENT
& ENV.
HYDRAULICS

WATER
&
DEVELOPMENT

WATER
&
WASTE WATER
ENGINEERING

Advanced courses are organised according to three study themes / paths:
provide you with a more detailed expertise on your selected themes and methods

Note: while the three study themes differ, the methods and tools taught in different courses are useful across all three themes!

Three themes but also two general advanced courses:

- WAT Project Course
- WAT Special Course

WATER RESOURCES

- Groundwater hydrology
- Environmental hydraulics
 - Hydrological modelling
- Surface water resources

WATER & DEVELOPMENT

- Sustainable built environment
 - Sustainable Global Technologies SGT Studio (10 ECTS)
- Water and governance
- Water and people in a changing world

- WAT Project Course
- WAT Special Course

WATER & WASTEWATER

- Urban water systems
- Design and management of water and wastewater networks
- Physical and chemical treatment of water and waste
 - Modelling and control of treatment processes
- Biological treatment of water and waste

COMMON COURSE
15 ECTS

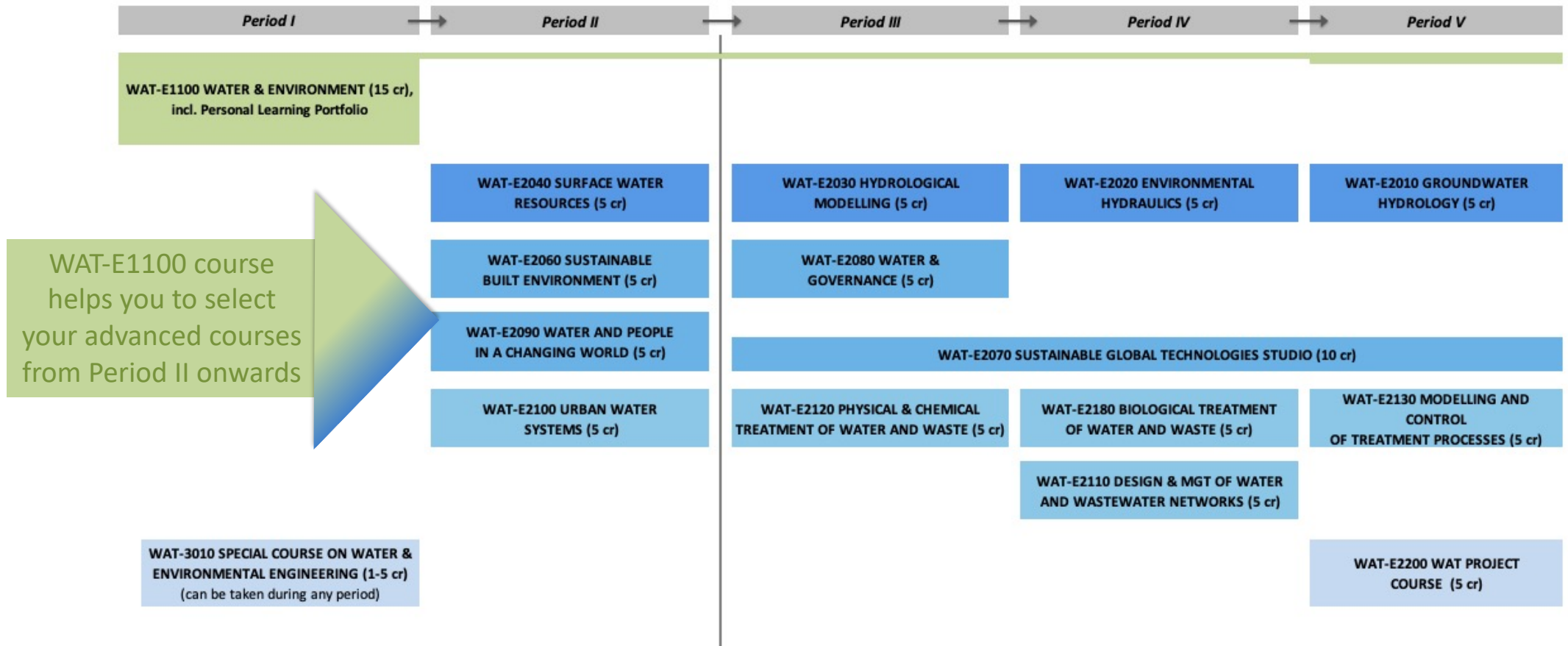
ADVANCED COURSES
45 ECTS

MAJOR 60 ECTS

Water & environmental engineering (15 cr.)

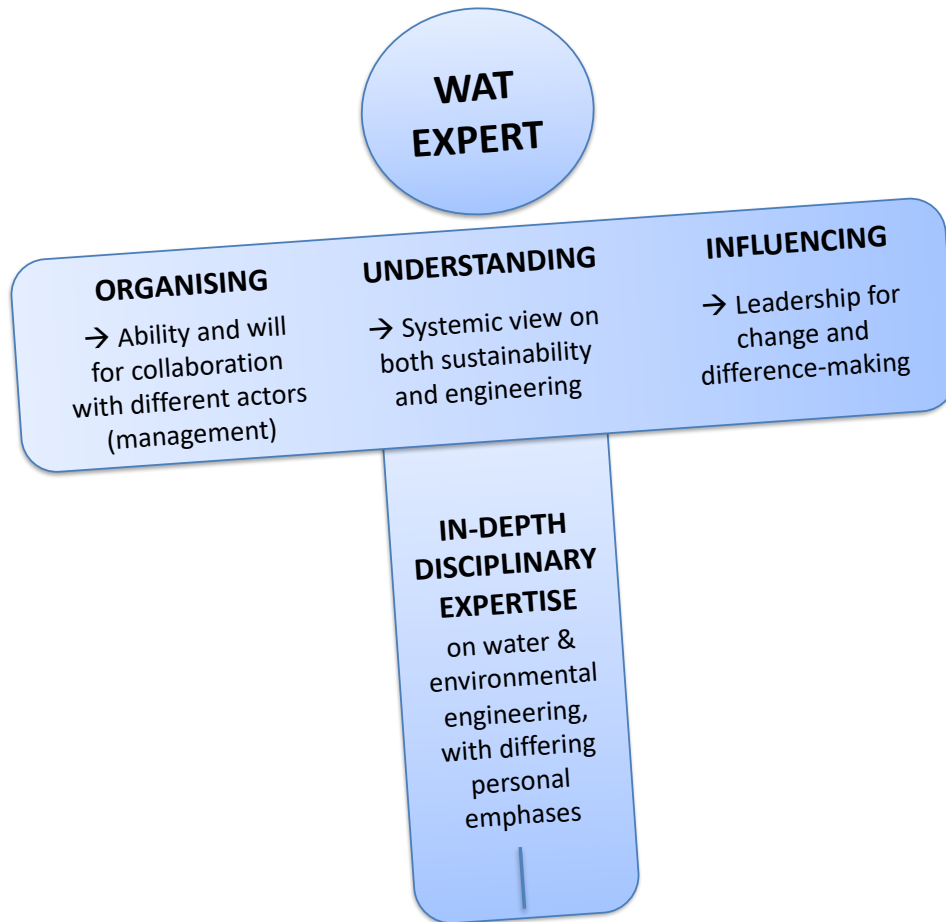
In-depth introduction to the key themes and problem-solving methods in our field, through variety of group work and individual tasks.

WAT COMMON & ADVANCED COURSES



T-SHAPED LEARNING PROFILE

What was this?

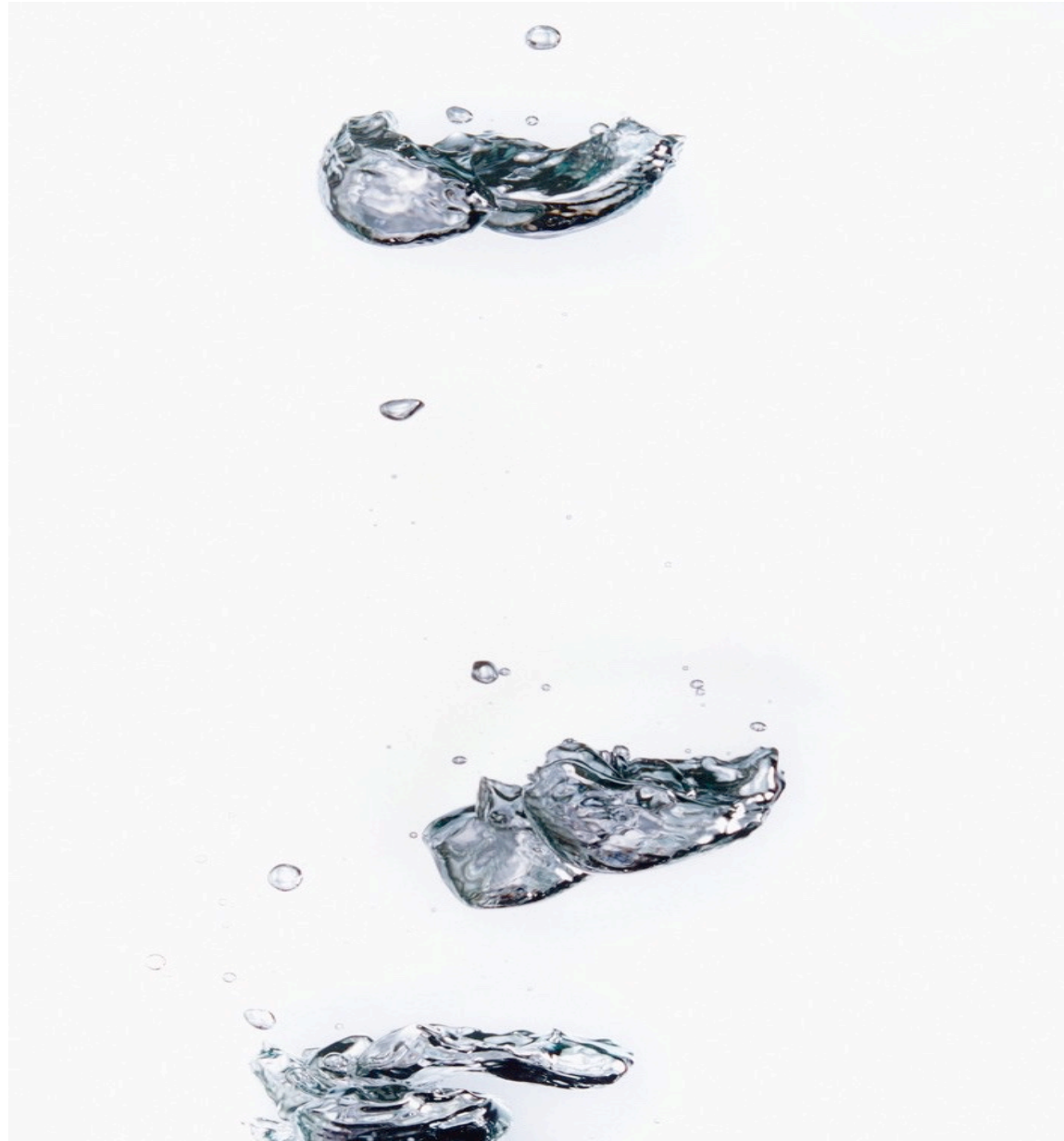


- WAT aims to provide you with both legs (in-depth WAT expertise) and arms (capacity for collaboration & broader view of our field)
- But you decide how strong and long they will be (use your portfolio and mentor meetings for thinking about this!)

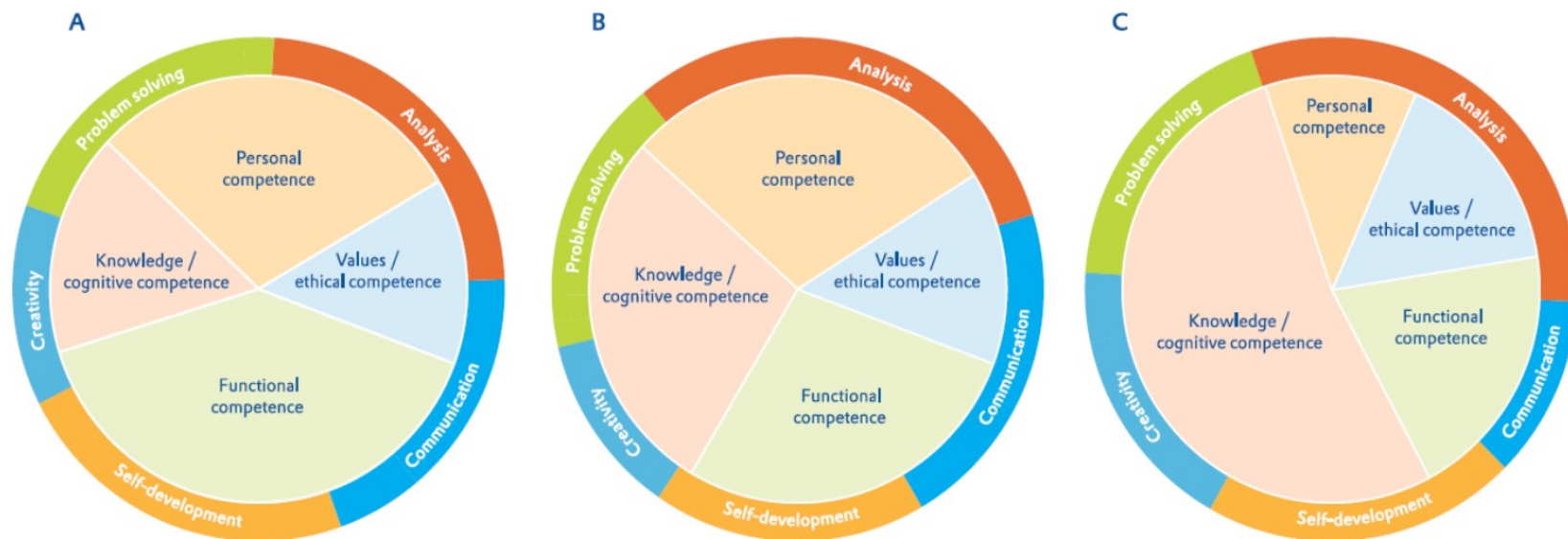
Questions,
comments?

BREAK!

After the break:
context sessions on
i) governance and
ii) science



T-SHAPED LEARNING PROFILE?



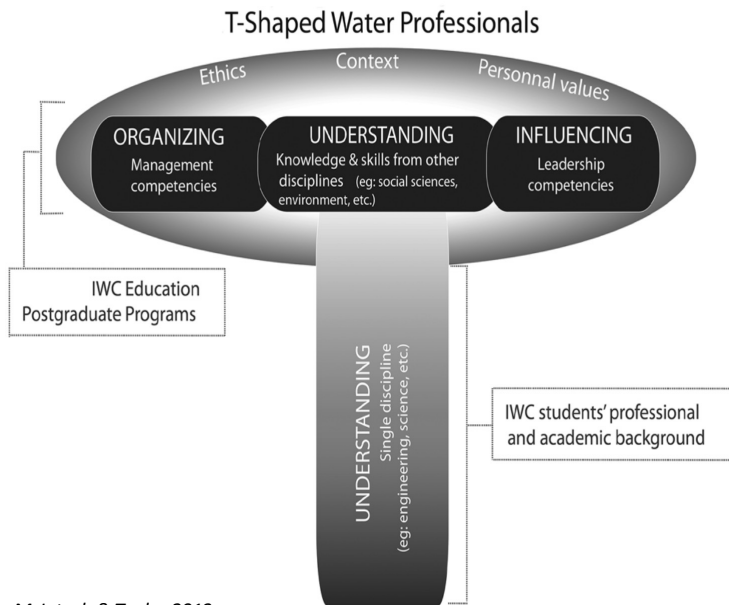
Uhlenbrook & de Jong 2012

Fig. 1. Comparison of possible occupational competence mixes of different water professionals: (A) director of a catchment agency interacting with various stakeholders and managing various resources (human resources, finances, facilities and infrastructure etc.), (B) water engineering consultant who specialized in hydraulic structures, and (C) research water chemist specialist in processes related to transport of micro-pollutants.

Sources: McIntosh & Taylor 2013 + Uhlenbrook & de Jong 2012: <https://www.hydrol-earth-syst-sci.net/16/3475/2012/>

Uhlenbrook & de Jong 2012:

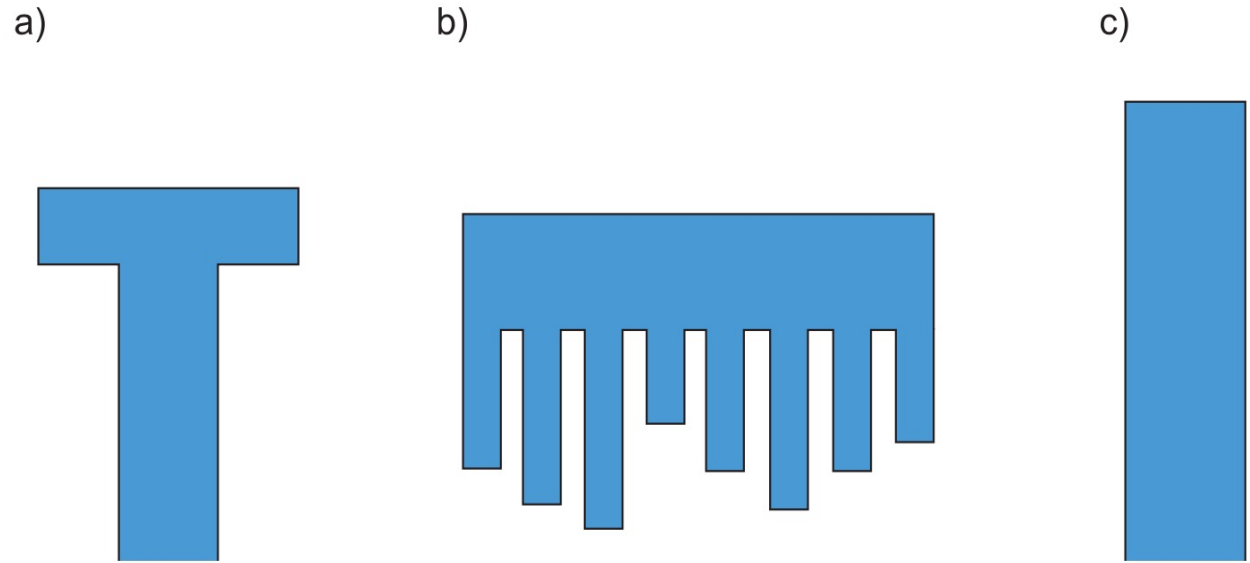
It is not enough to be trained as a generalist, somebody who knows a little bit of everything. To tackle the global changes, a T-shaped competencies profile is required for the graduates of future (Fig. 1a). The vertical leg of the T stands for the solid knowledge in one discipline such as hydraulic engineering, hydrology, aquatic ecology, economics, (water) chemistry, microbiology, informatics, sanitary engineering, environmental policy and law, agronomy etc (mainly knowledge and cognitive competence, cf. Sect. 2). However, this is not enough for an effective professional. The horizontal bar of the T stands, on the one hand, for knowledge and cognitive competence outside the own discipline, on the other



McIntosh & Taylor 2013

Figure 2. Conceptual model of a T-shaped water professional (used with permission from the International WaterCentre).

T-SHAPED LEARNING PROFILE?



Uhlenbrook & de Jong 2012

Fig. 2. Schematic sketch of the competency profiles of (a) T-shaped professionals, (b) generalists, and (c) I-shaped professionals (adapted from Oskam, 2009, modified).

Sources: McIntosh & Taylor 2013 + Uhlenbrook & de Jong 2012: <https://www.hydrol-earth-syst-sci.net/16/3475/2012/>

OUR RESEARCH ON WAT

We also carry own research on the competences required in our field + their link to our teaching

- *WAT Feedback Surveys*
- *WAT Teacher Surveys*
- *WAT Alumni Survey in 2017*
- *WAT Stakeholder Survey in 2019-20*

Anu Vehmaa's Master's Thesis:

<https://aaltodoc.aalto.fi/handle/123456789/31604>

→ Scientific articles:

<https://www.mdpi.com/2071-1050/10/8/2605>

<https://lehti.yliopistopedagogiikka.fi/yliopistopedagogiikka-1-2019>

→ Summary slides in Portfolio page:

<https://mycourses.aalto.fi/course/view.php?id=30189>

Report: <https://aaltodoc.aalto.fi/handle/123456789/97440>

One conclusion: T-shaped learning profile works!

The collage features three main research outputs:

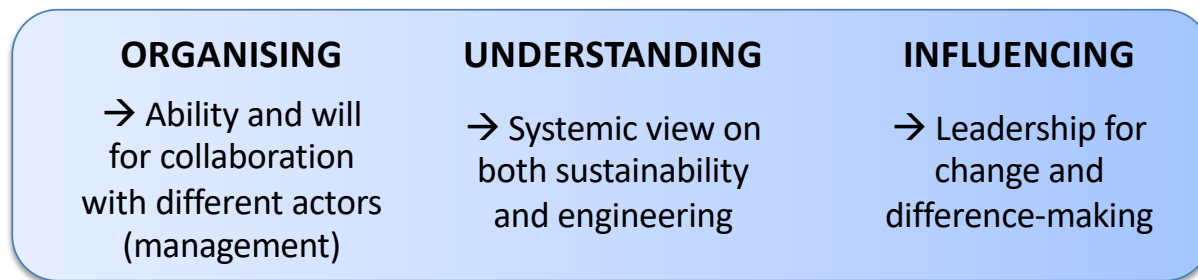
- MDPI Article:** "Building a More Sustainable Society? A Case Study on the Role of Sustainable Development in the Education and Early Career of Water and Environmental Engineers" by Anu Vehmaa, Meeri Karvinen, and Marko Keskinen. Published in *Sustainability* journal.
- Master's Thesis:** "Working life of water and environmental engineers: a case study of career paths, core competencies and the role of sustainable development" by Anu Vehmaa, submitted for the degree of Master of Science (Technology).
- Stakeholder Survey Report:** "Stakeholder survey results 2020 Aalto University's Master's Programme in Water and environmental engineering" by Julia Renko, Anni Kaikko, and Meeri Karvinen. The report discusses digitalization and sustainability challenges in the field.

A red callout box in the center reads: "More on these on Wednesday".



Through all your studies and other experience, incl. Master's Thesis

WAT T-PROFILE?



Through your WAT studies + other experience

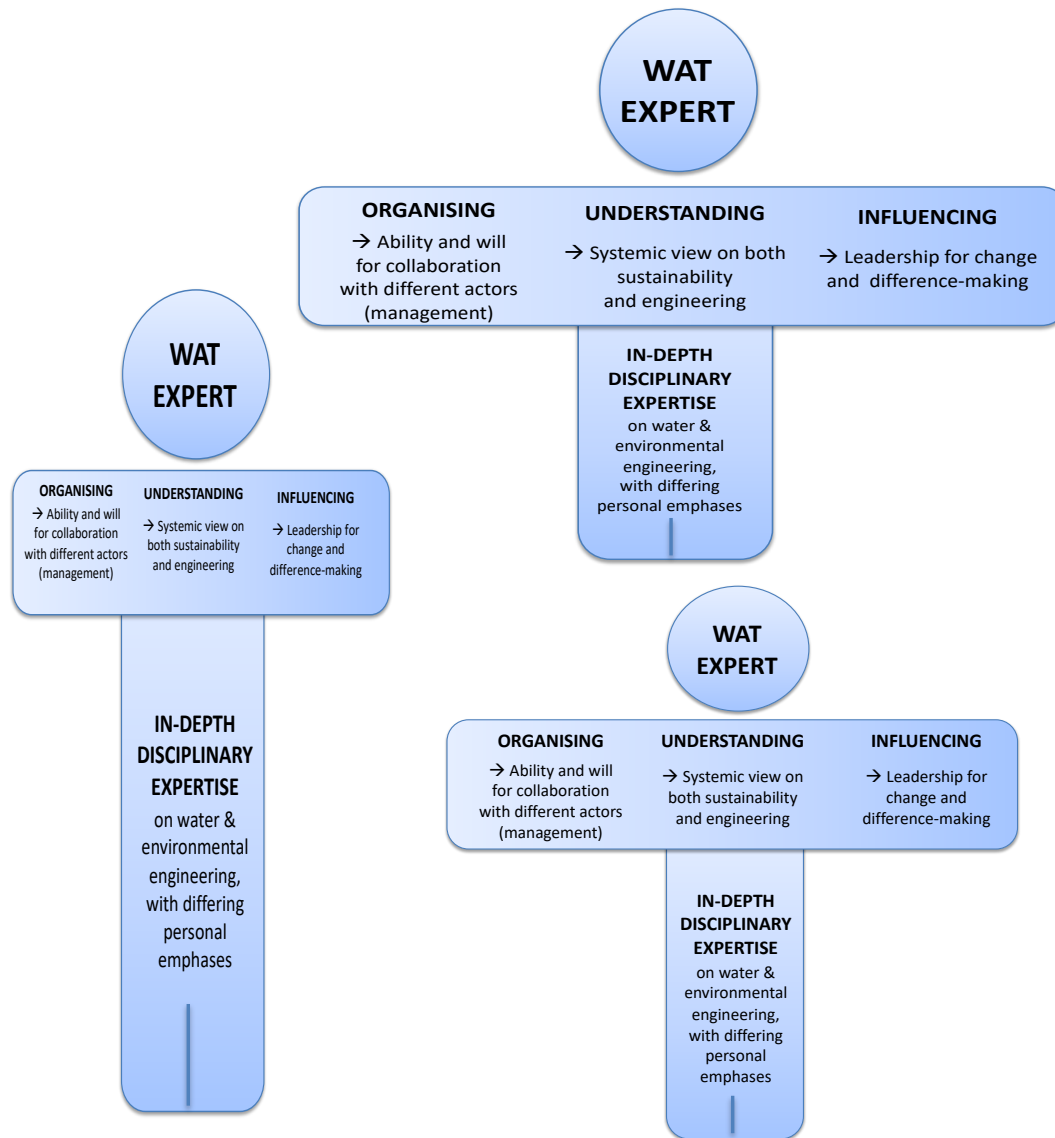


Portfolio tries to help you to think all this!

Through your WAT major (common & advanced studies), possibly also elective studies

WAT

T-PROFILE?



You will all still be different:
others will have longer legs,
others longer arms – it is ok!

→ Main point: everyone should
have both legs and arms...

Your Personal Learning Portfolio
is one way to think what you
want to become: make use of it!