



# Outline:

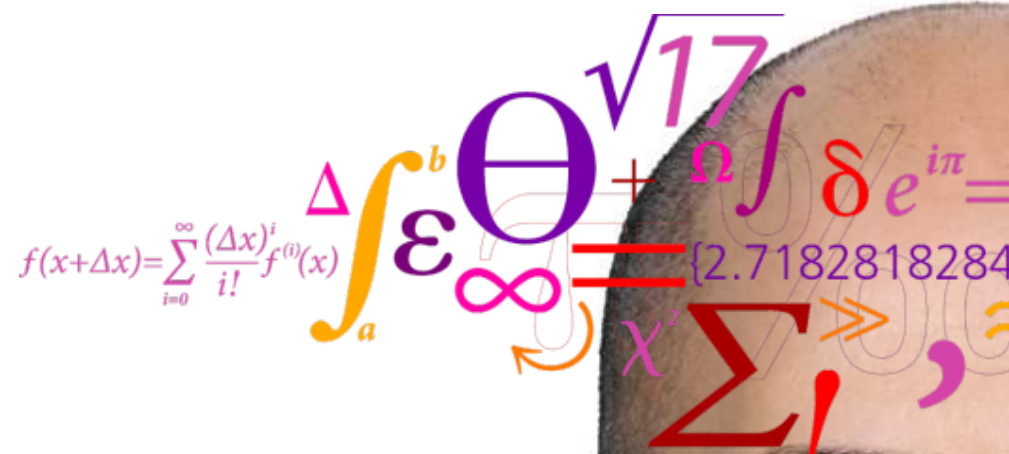
- Welcome
- Introduction to the workshop
- Hands on session
- Sum up and thank you for your participation

## Our question is

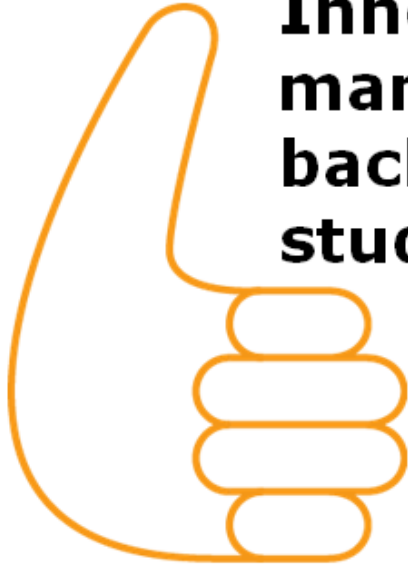
How to enhance innovation skills/competences in a large mandatory course with heavy company involvement and students for many different study programs?



# Background



# Innovation Pilot – a new mandatory course for all bachelor of engineering students at DTU



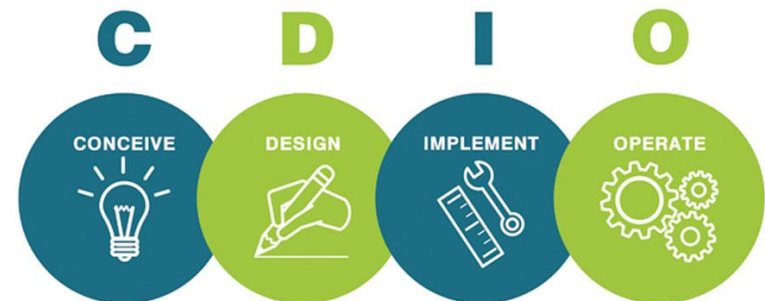
# The history behind the course

In September 2014 the first version of the new developed CDIO-based diploma (B.Eng) programs were launched at DTU.

The programs are the result of a comprehensive merger process of former diploma programs, namely the programs at Engineering College of Copenhagen (now DTU Diploma) and the Technical University of Denmark.

The most significant new activity in the programs was the introduction of a common 10 ECTS compulsory course in Innovation in the later part of the programs.

**The idea behind this course is to give students the opportunity to collaborate on inter-disciplinary real-life projects. This course strengthens not only innovation skills but personal and interpersonal skills as well.**



# Facts about Innovation Pilot



## Course duration:

- 13 weeks spring/autumn and summer (July-August)
- 10 ECTS points (1/3 semester)
- App. 400 students per semester
- Mandatory course

## Teaching way and -material:

- Teaching material (video's + documents) are placed at CampusNet with links to the videos (you tube channel)
- The teaching form is based on blended learning with e-learning as preparation before each Wednesday and workshops/group work as work way on Wednesdays.
- The course runs each Wednesday from 8-17 (semester)

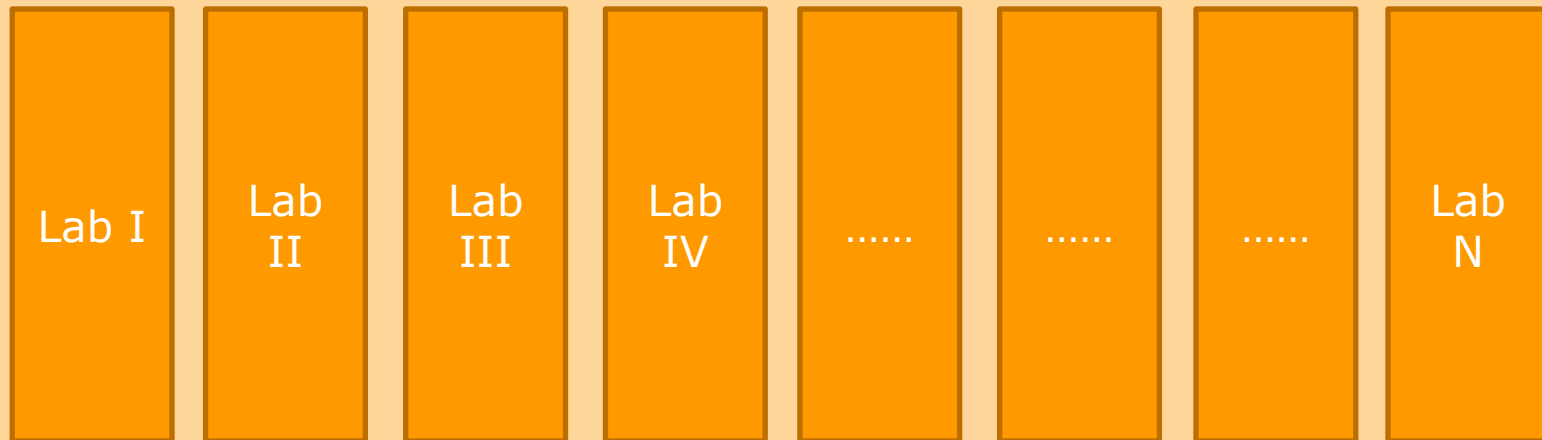
## Type of assessment:

- 7 step scale, internal examiner
- All aid
- Evaluation of reports
- Evaluation is based on e-learning exam, process report, innovation presentation. The final grade is an overall assessment of the mentioned elements

# Organization of the course (semester structure)

First week: Kick Off with introduction to the course, team-making and innovation exercise

Week 2-12: Teamwork in labs, company presentations, pitches and feedback. Labs run by two facilitators



Week 13: Close down and DEMO-day with pitch for companies

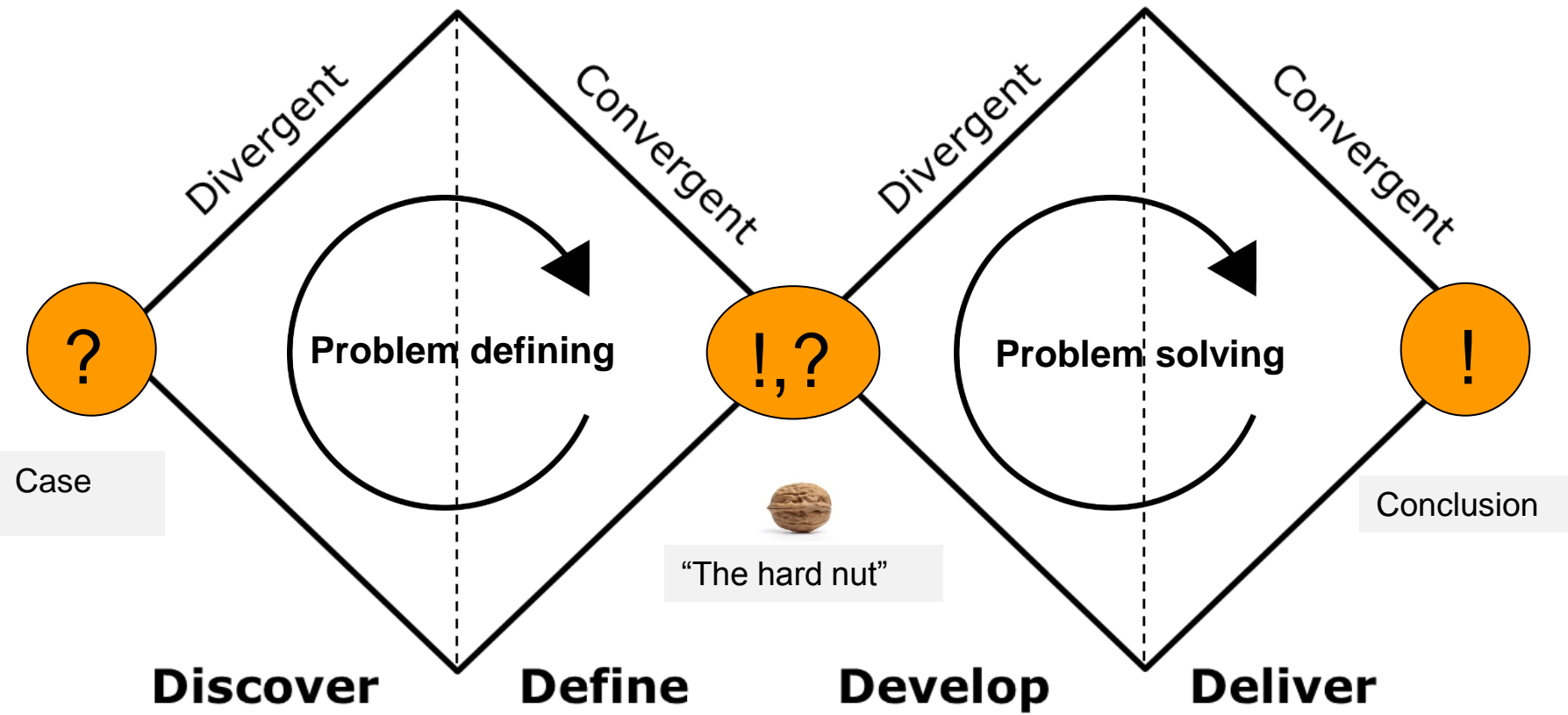


# Facts about the course

<b>Year</b>	<b>Students (no.)</b>	<b>Groups (no.)</b>	<b>Labs (no.)</b>	<b>Facilitators (no.)</b>	<b>Companies (no.)</b>
<b>Spring 2016</b>	<b>42</b>	<b>10</b>	<b>1</b>	<b>2</b>	<b>5</b>
<b>Autumn 2016</b>	<b>233</b>	<b>42</b>	<b>5</b>	<b>10</b>	<b>21</b>
<b>Spring 2017</b>	<b>272</b>	<b>53</b>	<b>6</b>	<b>13</b>	<b>21</b>
<b>Summer 2017</b>	<b>80-100</b>	<b>15-20</b>	<b>1</b>	<b>3</b>	<b>4</b>
<b>Autumn 2017</b>	<b>430?</b>	<b>70-85</b>	<b>5-6</b>	<b>10-12</b>	<b>25</b>

# Double Diamond

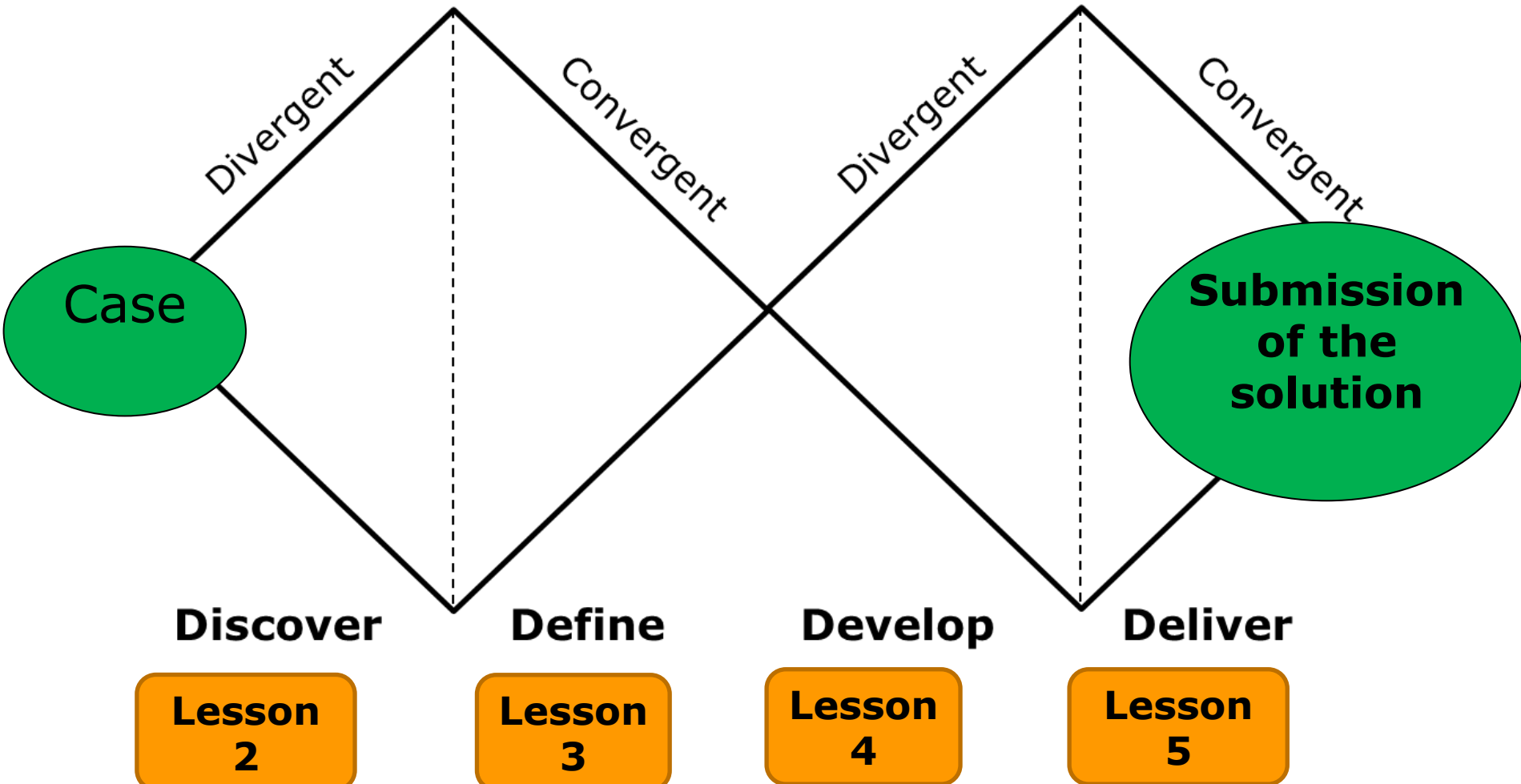
(UK Design Council, 2005)



# First loop

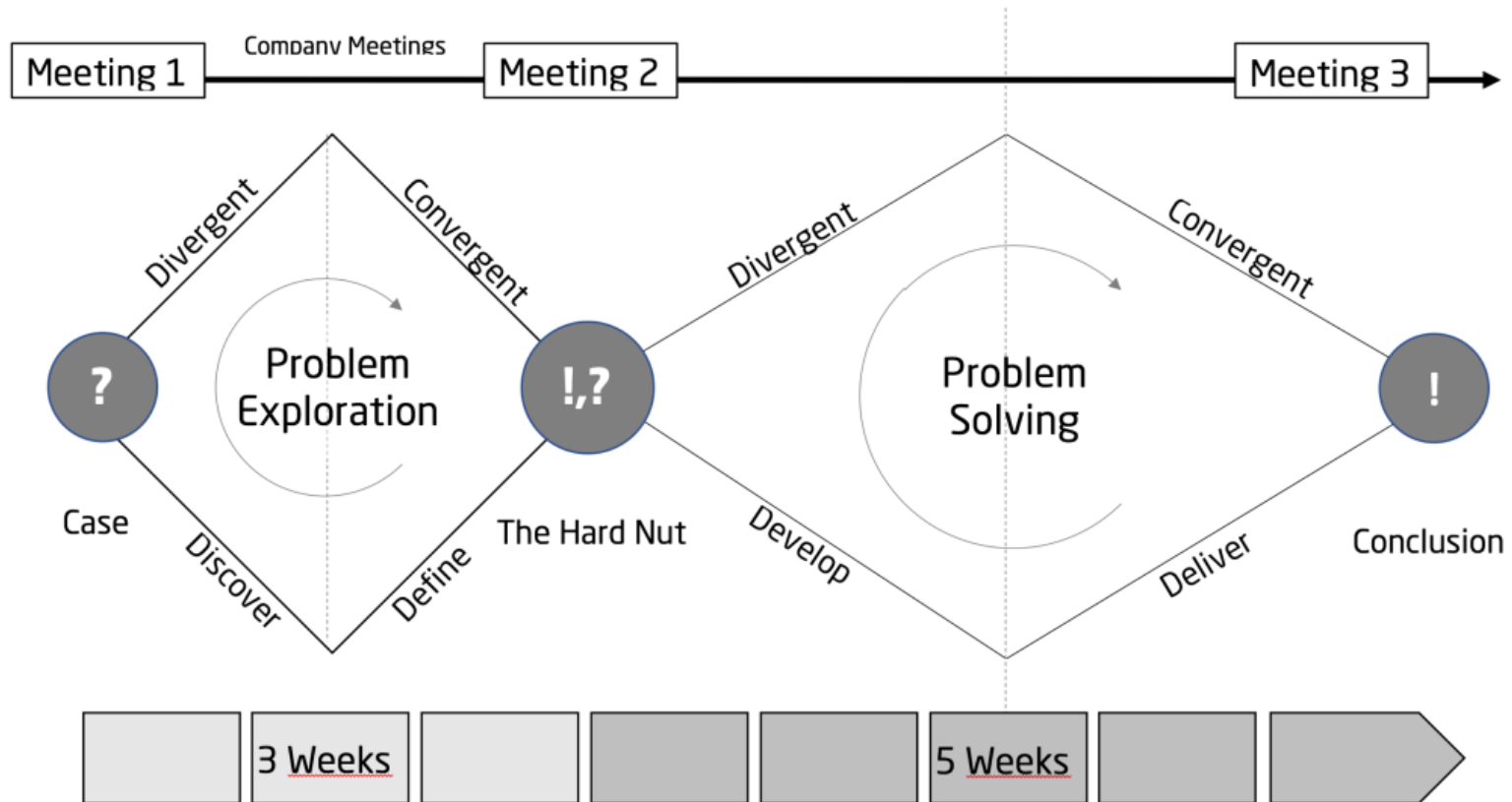
## Double Diamond

(UK Design Council, 2005)



# Second loop

Double Diamond Process Model



From Løje and Grex, 2017 (inspiration from Design Council)

# Double diamond – a process tool to structure an innovation process

- To understand the problem before focusing on the solution
- Involvement of potential users and other stake-holders
- Make prototypes
- Make use of existing knowledge and experts to achieve a better solution

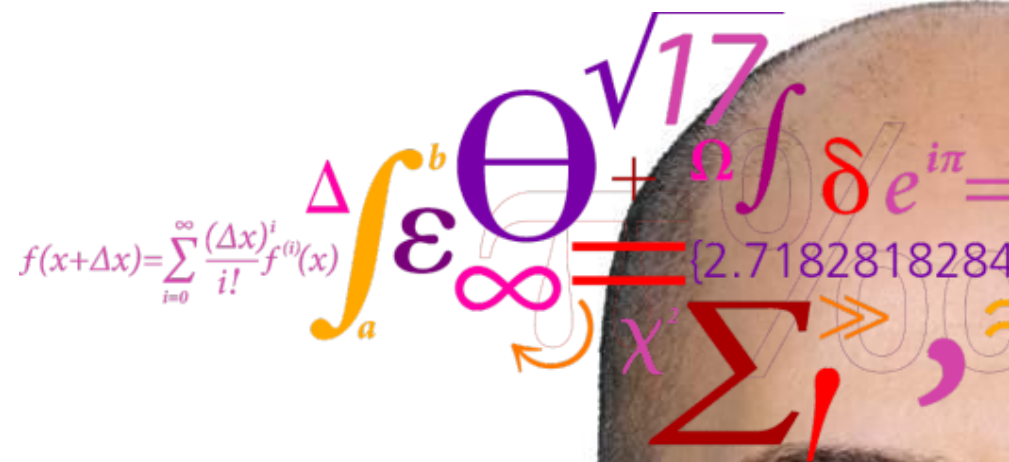




# Outline for hands on activity

- Introduce you self to each other (name, working place and why you are here (conference/workshop))
- Part one:
  - First question “What is your experience with double diamond or what is your impression about double diamond from the short introduction?”
  - Discussion of the first question
- Part two:
  - Second question “Other suitable model than double diamond?”
  - Discussion of the question
- Sum up

# Introduction to part 1



A collage of mathematical symbols and formulas overlaid on a person's head. The symbols include the Taylor series expansion  $f(x+\Delta x) = \sum_{i=0}^{\infty} \frac{(\Delta x)^i}{i!} f^{(i)}(x)$ , the definite integral  $\int_a^b \epsilon \Theta$ , the square root  $\sqrt{17}$ , the Dirac delta function  $\delta e^{i\pi}$ , the number  $2.7182818284$ , the infinity symbol  $\infty$ , the Greek letter  $\chi$ , the summation symbol  $\sum$ , and the greater-than symbol  $>$ .



# **1. What is your experience with double diamond or is it the first time you hear about it?**

# Introduction to part one

In the course innovation pilot we have used the process model double diamond since last summer.

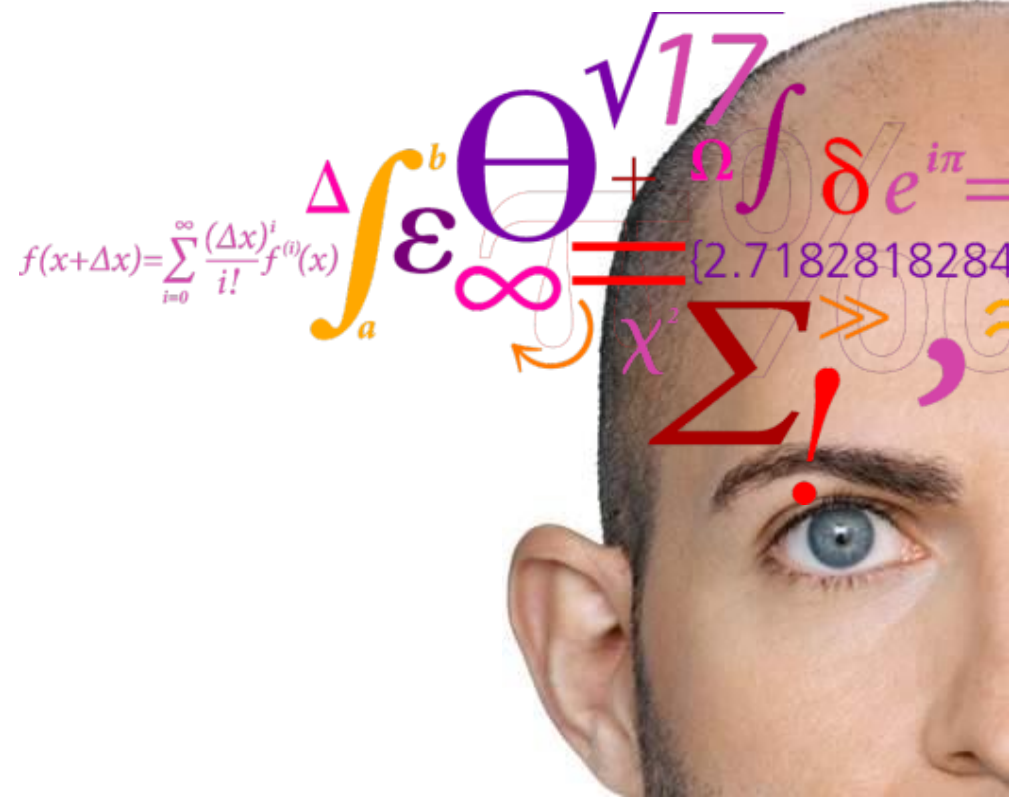
However we are still interesting in further development of the model and to hear your experience with the double diamond model and if it is the first time you hear about the model to hear what you impression of the model is after the short introduction

## Part one - outline

- Each person spent 2 minutes to think about their experience with double diamond and pros/cons and write key words on post it. If you have not worked with the model before – can you see some possibilities in using the model in your work?
- Talk with your neighbor and discuss your experience and also pros/cons highlight 3 things from your discussion to present for the other groups
- Presentation and discussion in plenum



# Introduction to part 2



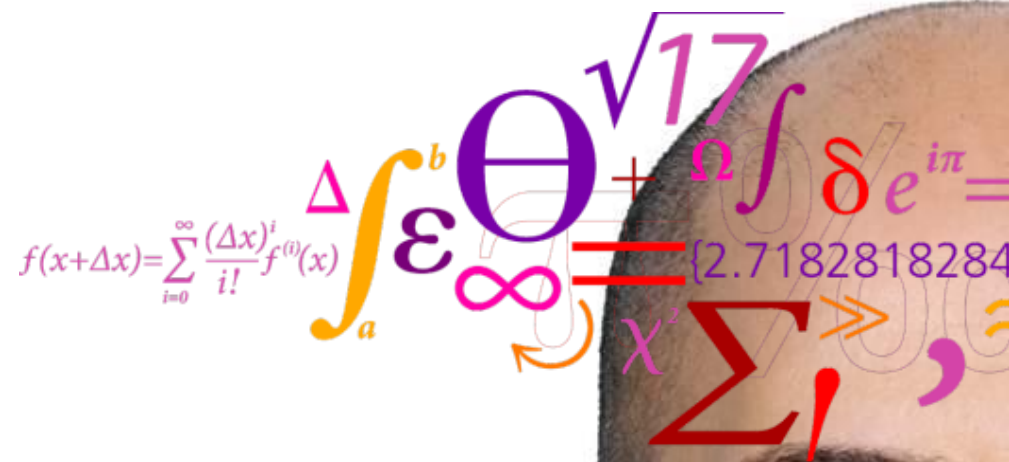


## **2. Which other process model are available and can they be used in teaching?**

## Outline part 2

- Every one find a new group and present them self shortly to each other
- Each person spent 2 minutes to think about other process model and write keywords on post it.
- Talk with your neighbor and discuss your experience with other models and also pros/cons highlight 3 things from your discussion to present for the other groups
- Presentation and discussion in plenum

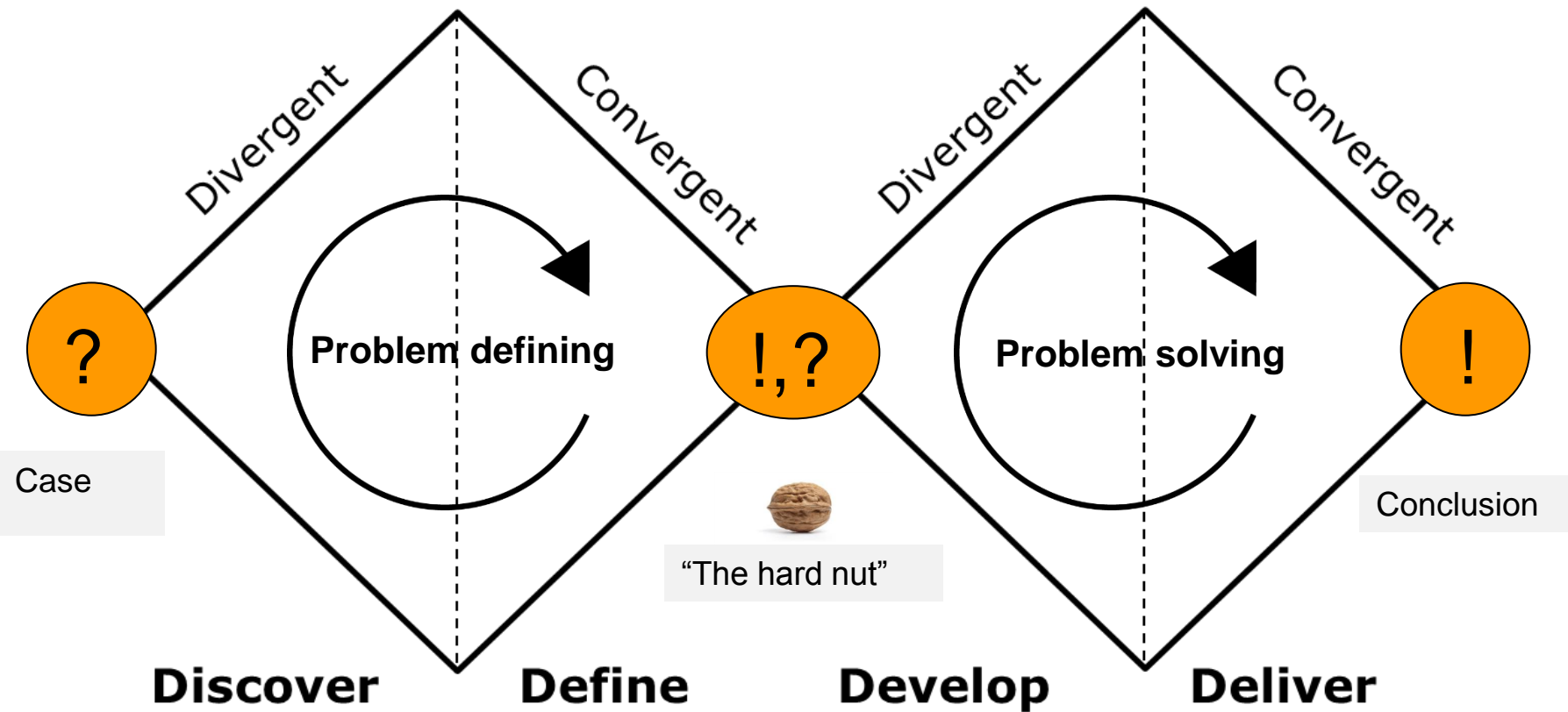
# Sum up





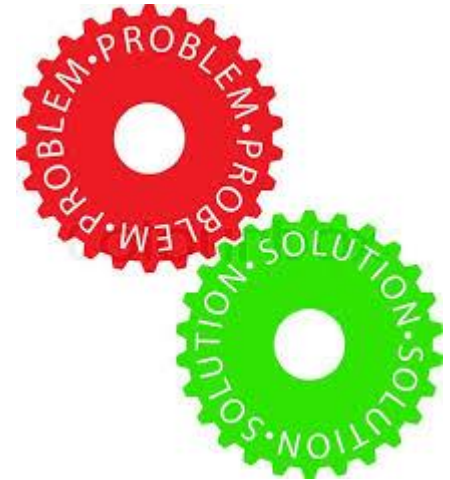
# Double Diamond

(UK Design Council, 2005)



# Double Diamond in Innovation Pilot

- Double Diamond is the process model in the course, which is used to train the students how to structure an innovation process, which includes a problems defining phase and a problem solving phase
- Double diamond is a simple and intuitive model
- Double diamond is a good model to use when there are many students with different backgrounds and difference experiences with innovation and also great difference in motivation and commitment
- Double diamond should be combine with a range of tools and methods which can support the students work during the different phases in the model
- Double diamond is a model, which is used in many companies



# Pros and cons of double diamond model

## Pros:

- Give good structure
- Easy for the students to understand and use

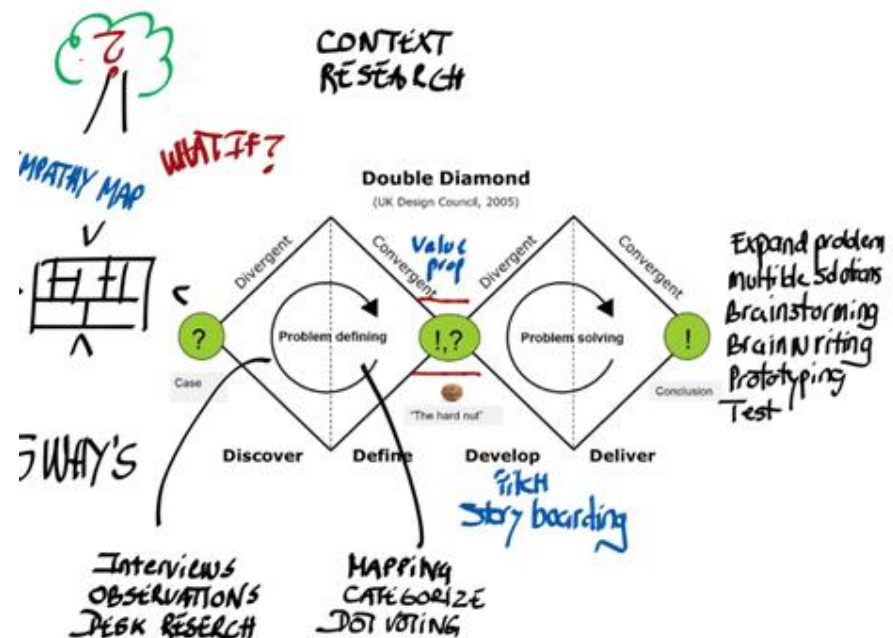
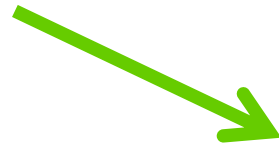
## Cons:

- Can be a challenge to stay in the divergent phase without focusing on solutions



# Statements from students

- They can easily adapt to the model and it gives a good structure
- It is a simple and intuitive model to use when you have never worked with innovation and process models before.
- Different tools can be applied in the different stages



## Next step

- We will use your input for optimization the process model used in Innovation pilot

# Reflection or comments?



**Thank you for your attention**