

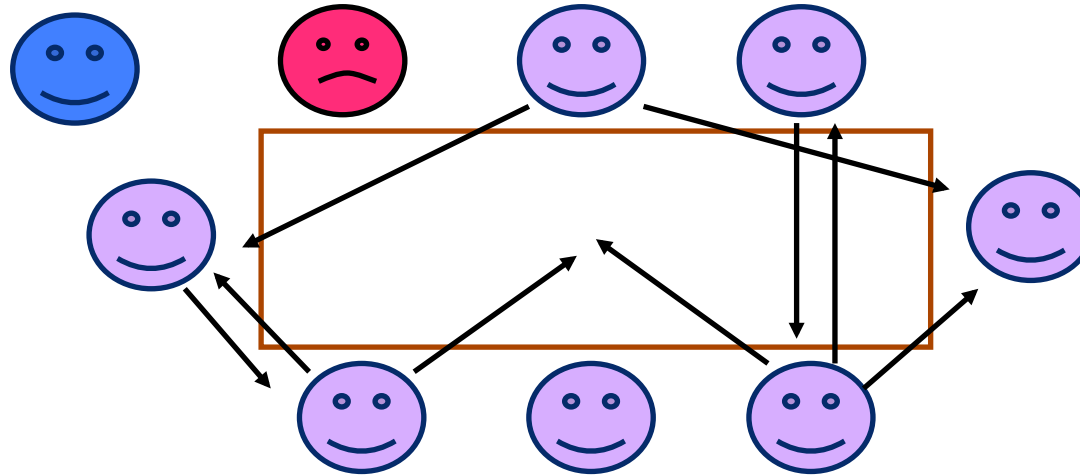
# Team learning in Engineering Education

It is important to motivate the team



**Erik de Graaff**

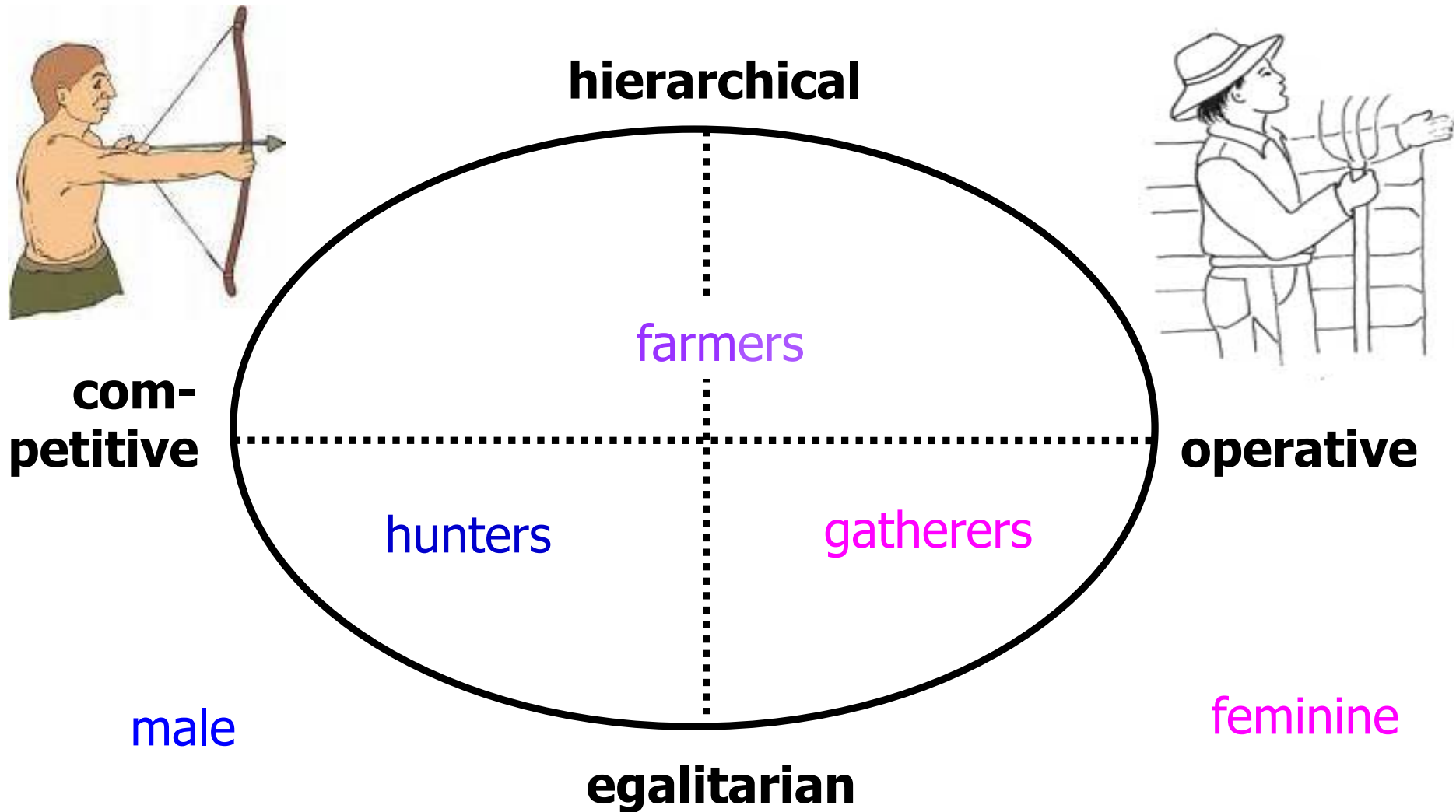
# Topics



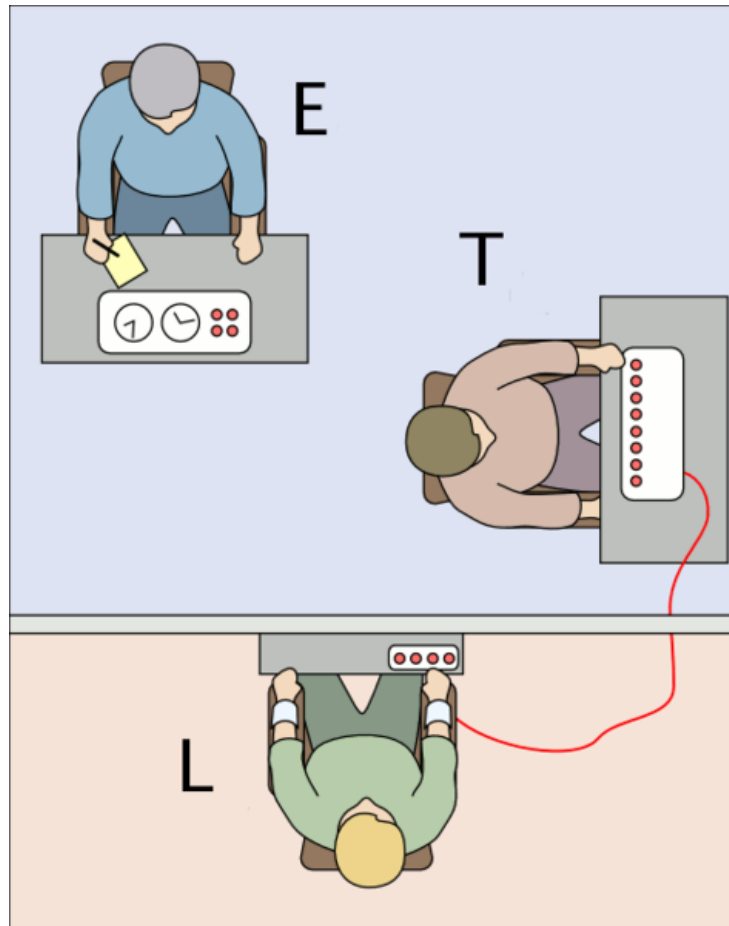
Who are you ?  
And what do you contribute to the team ?

- Psychological theories
- Intercultural communication
- Team roles
- The online team

# Different types of teams



# Milgram's experiments with obedience and authority (1963)



Stanley Milgram, a psychologist at Yale University, conducted a study focusing on the conflict between obedience to authority and personal conscience. He examined justifications for acts of genocide offered by those accused at the World War II, Nuremberg War Criminal trials. Their defense often was based on "obedience" - they were just following orders of their superiors. In the experiment sixty percent of the "teachers" obeyed orders to punish the learner to the very end of the 450-volt scale! No subject stopped before reaching 300 volts!



# The Stanford Prison Experiment (1971)

Psychologist Philip Zimbardo divided his participants into two groups labeled "prisoners" and "guards." It was conducted in a mock-up prison in a Stanford University basement. The prisoners were subjected to arrest, strip search, de-lousing, head shaving and other abuses. The guards were given clubs.



The prisoners rebelled on the second day, and the reaction of the guards was swift and brutal. Before long, they subdued the prisoners until they were behaving meekly and with blind obedience, while the guards fully embraced their roles by taunting and abusing their charges. The planned 14-day experiment was halted after only 6 days due to increasing levels of abuse.

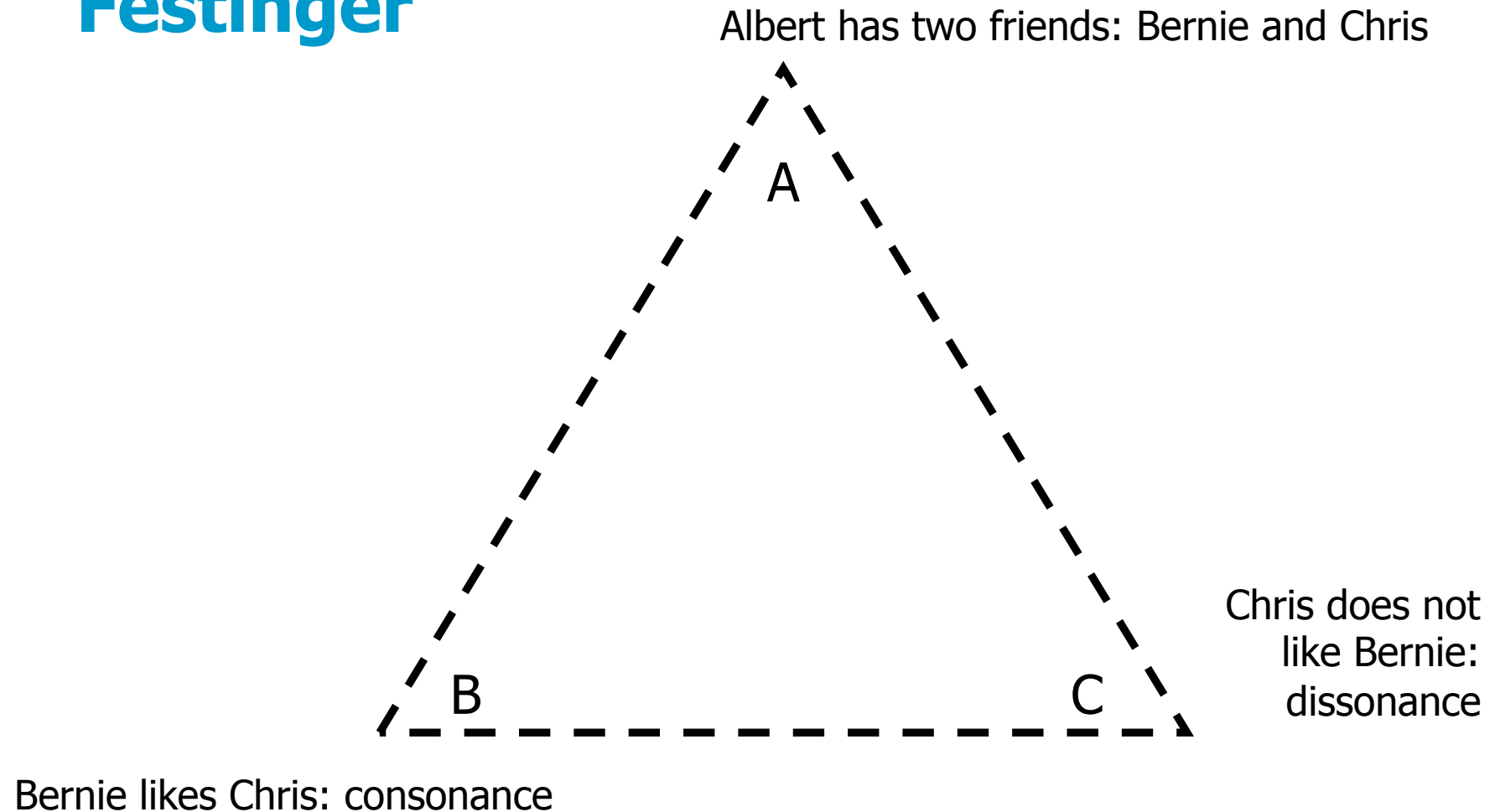
# Theory of reasoned action, Izak Ajzen and Martin Fishbein

- Personal beliefs and values



- Social norms are values shared by a group

# Cognitive dissonance Festinger



# Visual illusion 1

Look at the chart and say the COLOUR not the word

YELLOW	BLUE	ORANGE
BLACK	RED	GREEN
PURPLE	YELLOW	RED
ORANGE	GREEN	BLACK
BLUE	RED	PURPLE
GREEN	BLUE	ORANGE

**Left – Right Conflict**

Your right brain tries to say the colour but  
your left brain insists on reading the word.

# Visual illusion 2

**Left - Right Conflict**  
Your right brain tries to say the colour but  
your left brain insists on reading the word.

GREEN	BLUE	GREEN
BLUE	RED	PURPLE
ORANGE	GREEN	BLACK
PURPLE	YELLOW	RED
BLACK	RED	GREEN
YELLOW	BLUE	ORANGE

Look at the chart and say the COLOUR not the word

# Team roles: Meredith Belbin

## Task roles and personality traits

- The test measures preferences, not competencies
- Nine different team roles
- Most people have 2 or 3 roles -> flexible team member
- Not every team includes all roles, but:
- Variation helps!

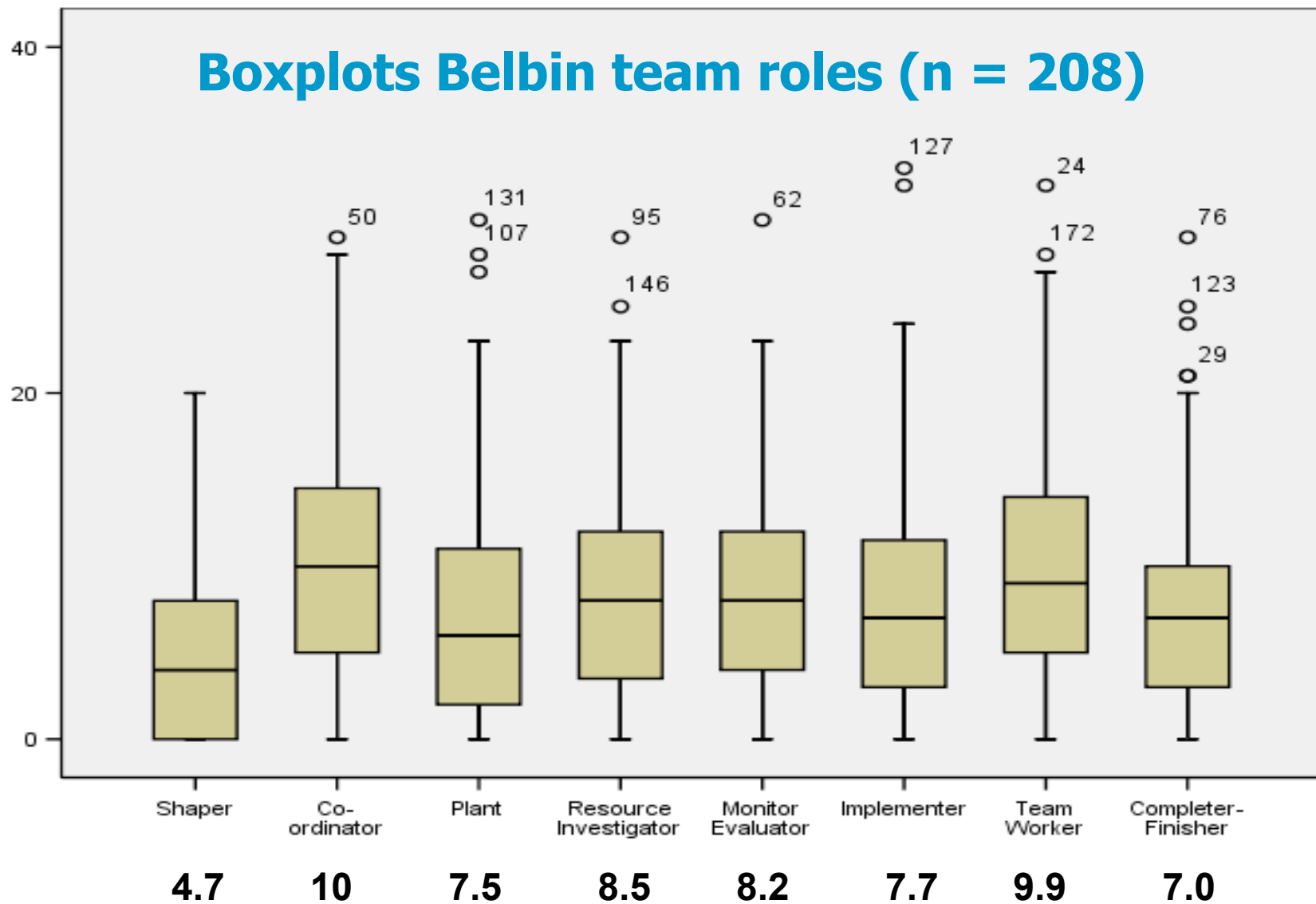


# Teamroles van Meredith Belbin

- SH Shaper
- PL Plant
- CO Coordinator
- ME Monitor Evaluator
- RI Resource investigator
- IMP Implementer
- TW Team Worker
- CF Completer Finisher
- Specialist

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[http://en.wikipedia.org/wiki/Belbin\\_Team\\_Inventory](http://en.wikipedia.org/wiki/Belbin_Team_Inventory)

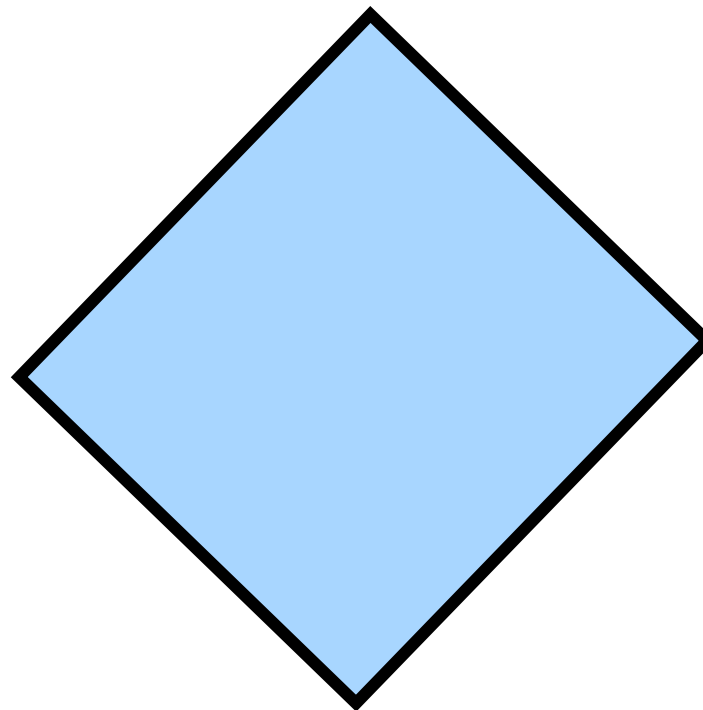


# Four player system (Kantor)

Action possibilities

*Move*

*Stand  
aside*



*Follow*

*Oppose*

## Well functioning teams

- Engage in all four behavior types
- Allow and encourage individual flexibility
- Have an active enabled bystander function
- Have clear identified and accepted movers

# Characteristics of Movers

## Qualities

- Direction
- Discipline
- Commitment
- Perfection
- Clarity

## Impacts

- Omnipotent
- Impatient
- Indecisive
- Scattered
- Dictatorial

# Characteristics of Followers

## Qualities

- Completion
- Compassion
- Loyalty
- Service
- Continuity

## Impacts

- Placating
- Indecisive
- Pliant
- Wishy-washy
- Over-accommodating



# Characteristics of Bystanders

## Qualities

- Perspective
- Patience
- Preservation
- Moderation
- Self-reflection

## Impacts

- Disengaged
- Judgmental
- Deserting
- Withdrawn
- Silent

# Characteristics of Opponents

- Qualities
  - Correction
  - Courage
  - Protection
  - Integrity
  - Survival
- Impacts
  - Critical
  - Competitive
  - Blaming
  - Attacking
  - Contrary

# Four player system (Kantor)

## Without Movers

- there is no direction

## Without Followers

- there is no completion

## Without Bystanders

- there is no perspective

## Without Opponents

- there is no correction

# Definition of Core qualities

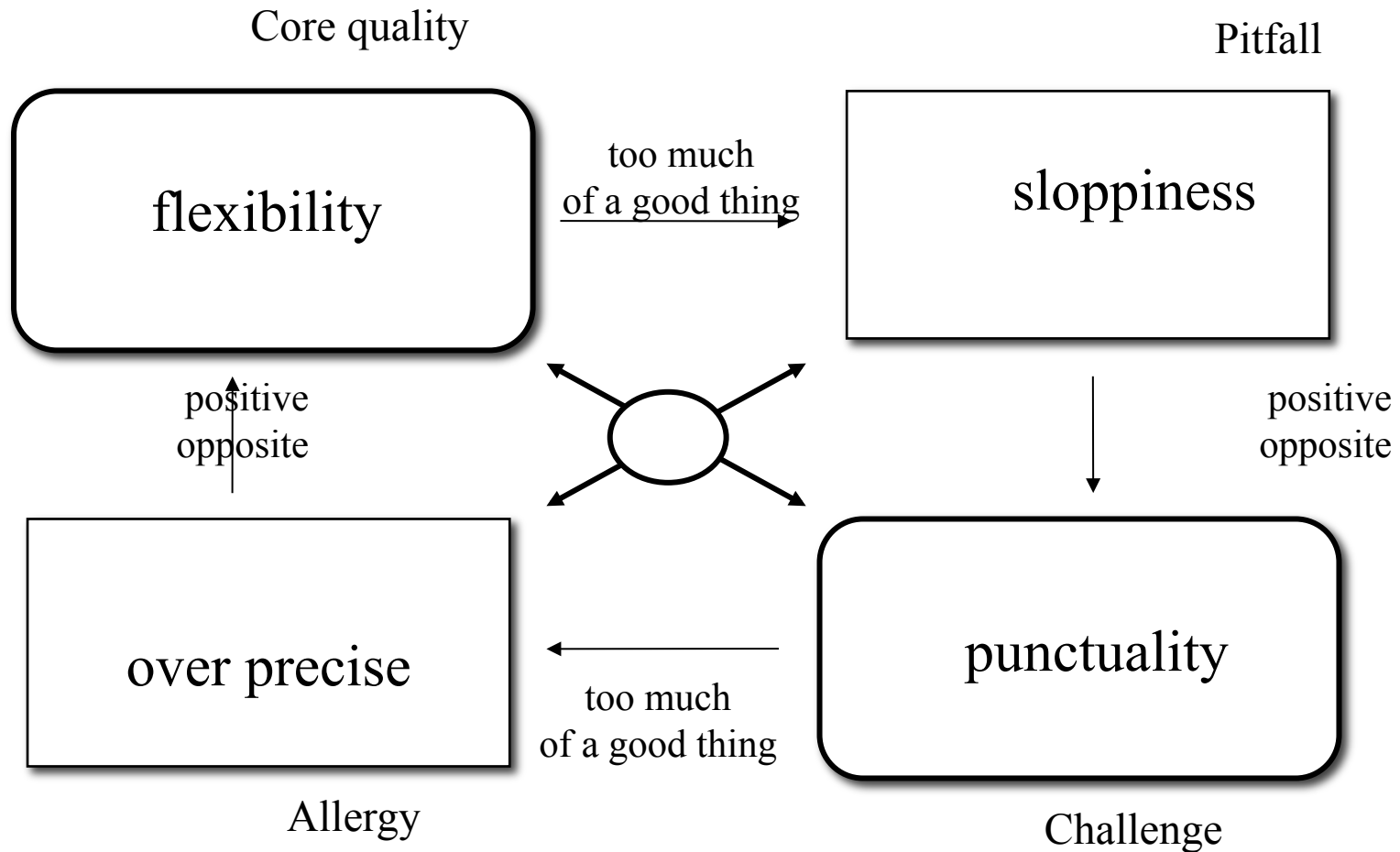
**(Daniel Ofman)** <http://www.corequality.nl/>

Core qualities are those qualities that mark the essence of a person's character. It is a specific attribute that we immediately recognize in a person. Examples include: decisiveness, flexibility, capability to empathize, and so on. Core qualities are expressions of Self from which passion arises.

## Definition of Core qualities (2)

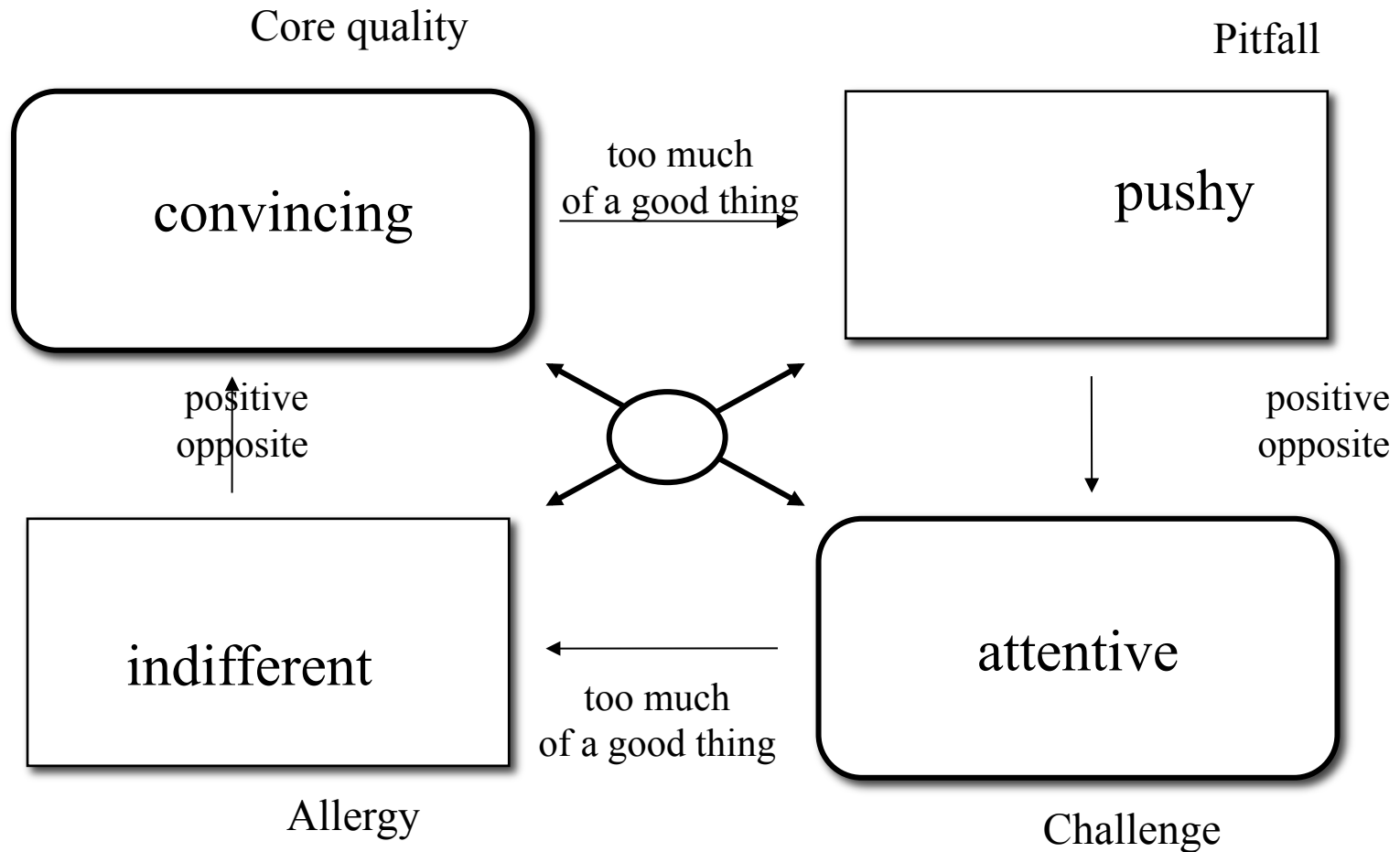
- You can recognize a core quality from someone's special attribute, about which a person says: everyone can do that! If you would take away this attribute, you would not be able to recognize this person!
- The core quality permeates all other qualities and is always potentially present. The difference between core qualities and skills is that skills are always taught, qualities come from inside. You can learn skills, you can develop qualities.
- The stronger our perspective on our core qualities, the more we can make use of it in our work.

# Core Quality Quadrant

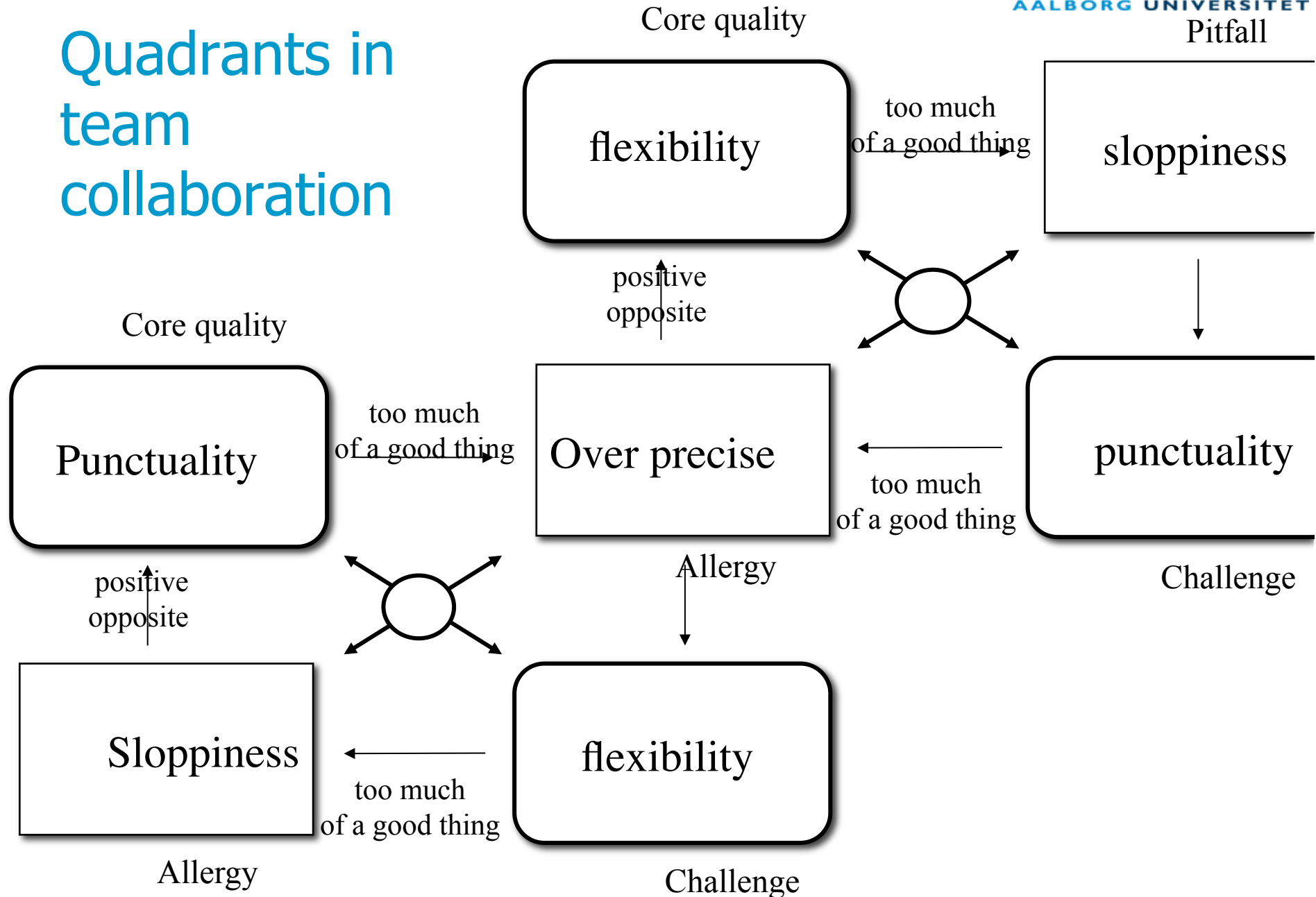




# Core Quality Quadrant



# Quadrants in team collaboration



## On line teams

- Great opportunity for learning in intercultural teams without the burden of traveling
- Many success stories from interdisciplinary multicultural teams all around the world
- Still for some things you need to be in the same room at the same time:
  - to punish failure
  - to celebrate success
  - To enjoy the time after the task is completed



# MOOC's are no better than BOOK's

**What you get depends on the author!**

## Massive Online Open Courseware

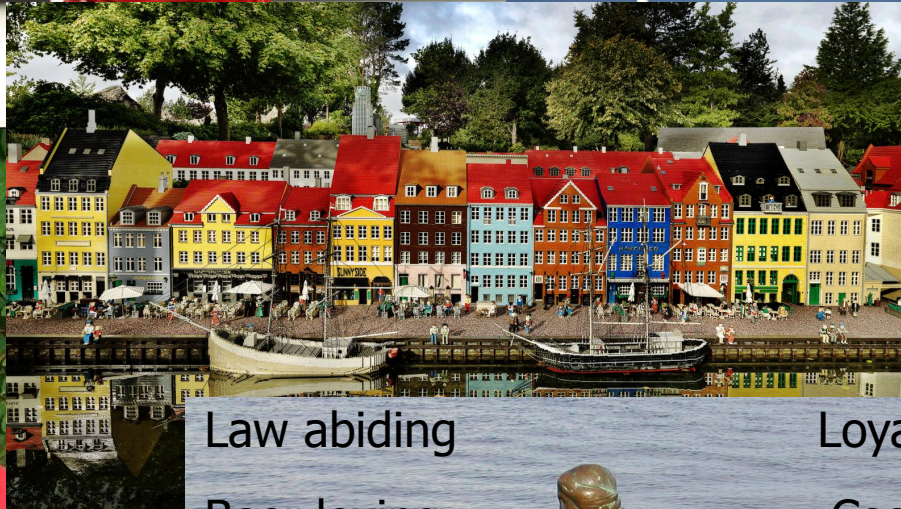
- Risk of one way transfer of information
- Hard to retain participants
- Certification and recognition of performance

## Massive Multiplayer Online Role Play Games

- Engagement, excitement, building partnerships



# Greetings from Danmark



Law abiding  
Beer loving

Loyal  
Cosy



A small hub in  
the digital world



CSEDU 2014 Barcelona

# San Sebastian Spain – July 6-10

Three conferences in a collaboration between three organisations

- ALE
- Active learning in Engineering



- PAEE
- Project Approaches in Engineering Education



- IRSPBL
- International Research Symposium on Problem Based Learning





# Three conferences – one location

## San Sebastian - Spain

### July 6-10 2015



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CSEDU 2014 Barcelona

# Student Learning for Sustainable Engineering Education San Sebastian 2015





- Active Learning in Engineering Education
- First ALE workshop in 2000 in Caracas, Venezuela
- Since then alternating between Europe and the Americas about every one and a half year:
- Caracas- 2000, Copenhagen/Gothenburg 2002; Boston - 2003; Nantes - 2004; Amsterdam/Delft - 2005; Monterey- 2006; Toulouse - 2008, Barcelona – 2009  
Santiago de Chili - 2010; Copenhagen- 2012; Caxias do Sul - 2014



# PAEE – Project Approaches on Engineering Education (<http://paee.dps.uminho.pt>)

- Who are We?
  - We are an association, from University of Minho, Portugal, that aims to study and disseminate projects and other forms of active learning in Engineering Education
- Where does the idea come from?
  - PAEE was created in 2009 in Guimarães as a space to analyze, discuss, reflect and listen on research on and practice of project approaches.



IRSPBL is an initiative of the UNESCO Chair on PBL (UCPBL) at Aalborg University, aiming to establish a worldwide community of PBL researchers. UCPBL collaborates with institutes in different countries around the world hosting the bi-annual symposia.

- The first IRSPBL symposium was held at Aalborg University in June 2008 a year after the establishment of the UNESCO Chair in Problem Based Learning
- The second research symposium was held in Melbourne, hosted by Victoria University in December 2009. At the time Victoria University was going through a process of organisational change introducing PBL in her curricula.
- The third International Research Symposium on Problem-Based Learning hosted by Coventry University, 28-29 November 2011 focused on collecting best practices across the disciplines.
- The fourth IRSPBL symposium was held at Universiti Teknologi Malaysia (UTM) in Kuala Lumpur, July 2-3 2013





**See you in San Sebastian in 2015**  
**Mark the dates July 6-10 in your**  
**calendar**

