

# MOOCs welke kansen levert het op?

Bert Blocken

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**TU** / **e**





Technische Universiteit  
**Eindhoven**  
University of Technology

**Where innovation starts**

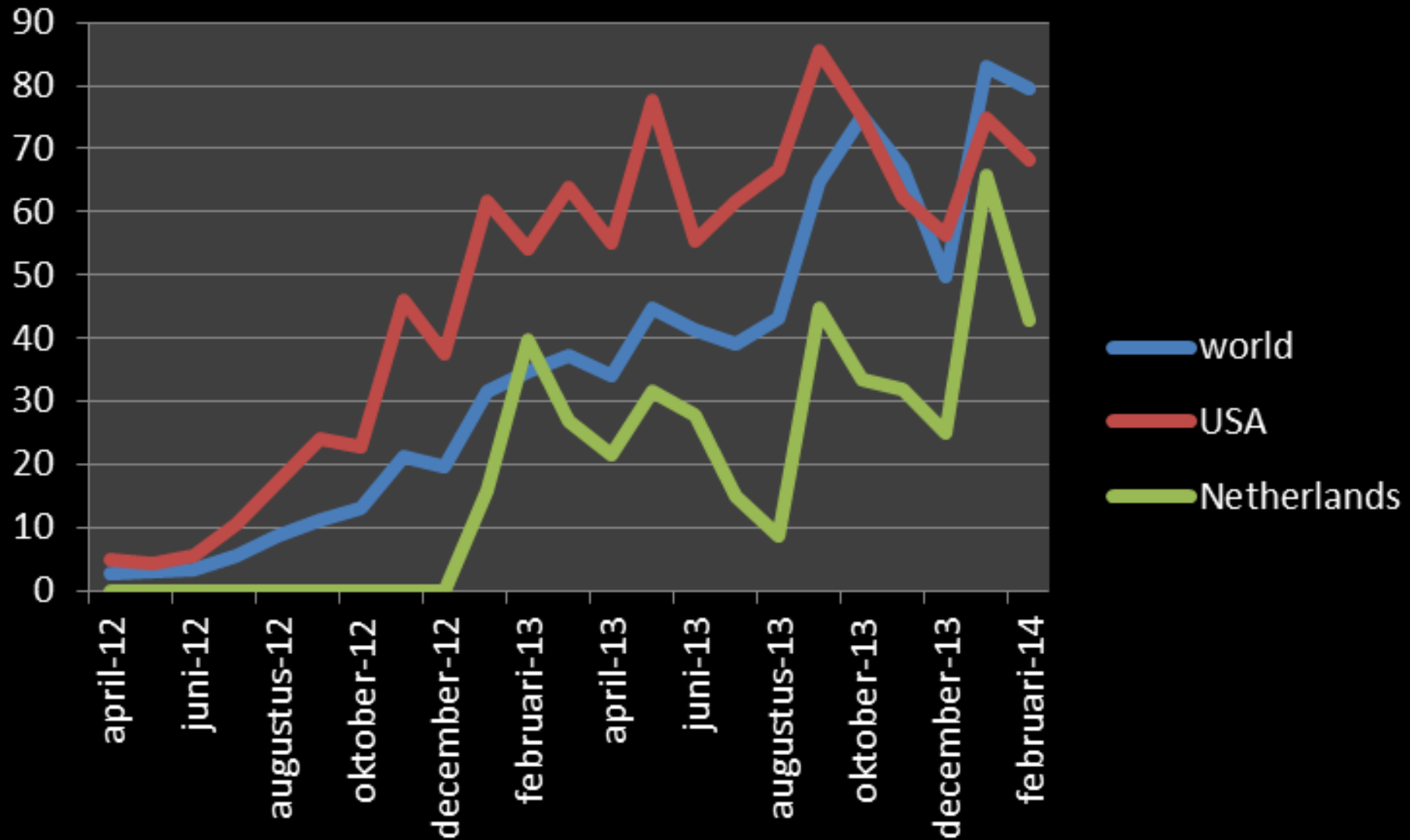
# Introduction

- **What is a MOOC**
- **Challenges and visions**
- **Use cases in higher education**
- **Platforms**
- **The first MOOC of TU/e**
- **MOOCs and TU/e**

# WHAT IS A MOOC?

- M** **assive** .....  **A lot of students.** These online classes are typically not capped—some have over 100,000 enrolled.
- O** **pen** .....  **Taking the classes are free.** However, if you want a certification of completion, some programs require fees.
- O** **nline** .....  **No attendance necessary—it's all online.** It's a combination of streaming video, forums and written and interactive online material.
- C** **ourses** .....  **MOOCs emphasize key features of a class** such as engagement with the material, ideation and networking with other students.

# Google search trends on „MOOC“



# Beyond MOOCS

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- **Use a MOOC in your class**
- .....



# MOOC Platform @TUE

**coursera**

**108 partners**  
**~ 6.4 Mio. participants**  
**609 courses**

**coursera** Courses Specializations **New** Institutions About | Sign In Sign Up

## Take the world's best courses, online, for free.

What would you like to learn about?

Join 6,351,804 Courserians.  
Learn from 598 courses, from our 108 partners.

- Einführung in Computer Vision**  
Technische Universität München (TUM), Jan 13th  
Taught in German
- Drugs and the Brain**  
California Institute of Technology, Jan 4th
- Cryptography I**  
Stanford University, Jan 6th

```
dens <- density(data,  
dx <- dens$x  
dy <- dens$y  
$ecdd == TRUE)
```

33 64 84 9487438 8 453

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- **International networking**
- **“By 2020, America will once again have the highest proportion of college graduates in the world.” (US-President Obama, „National Education Technology Plan“)**



# Challenges

**Data Protection**

**Copyright**

**Audience(s)**

**Business Model**

**Sustainability**

**Credentialing, Accreditation, ...**

- **Great:**

**We are talking about applying and adapting new technologies and services to enhance teaching!**

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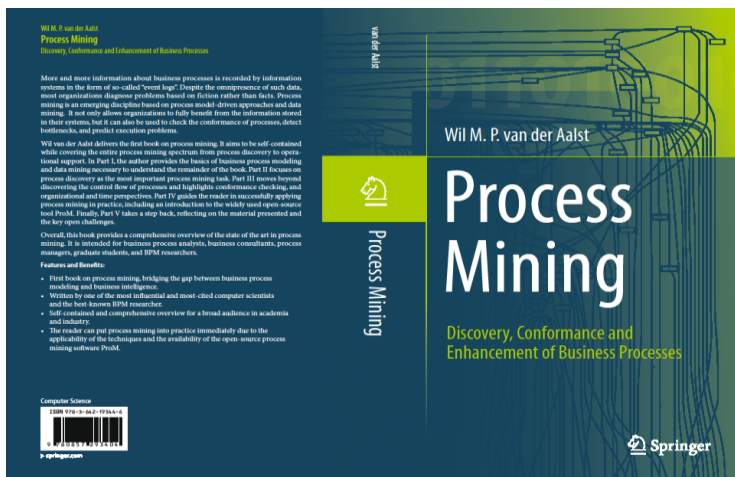
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- **Textbook of the future**
- **Visibility**



# TU/e and MOOCs



- 28th of April 2014: Sports and Building Aerodynamics
- Prof. dr. ir. Bert Blocken



- Fall 2014: Process Mining
- Prof. dr. ir. Wil van der Aalst

# Anatomy of a MOOC

- **Video Lectures**
- **Communication**
- **Assessment & Quizzes**

# Sports and Building Aerodynamics Prof. dr. ir. Bert Blocken



# Effort

- **Workload for producing and running the MOOC**

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# Typical structure of a MOOC

## Example:

### Week 1: Basic aspects of fluid flow

1. Fluid properties - part 1 (velocity, pressure, temperature)
2. Fluid properties - part 2 (density)
3. Fluid properties - part 3 (viscosity)
4. Flow properties - part 1
5. Flow properties - part 2
6. Fluid statics, kinematics, dynamics
7. Boundary layers - part 1
8. Boundary layers - part 2
9. Boundary layers - part 3
10. The atmospheric boundary layer

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## Example:

### Week 6: Cycling aerodynamics

1. Why study cycling aerodynamics?
2. Wind-tunnel testing for a single cyclist – Part 1
3. Wind-tunnel testing for a single cyclist – Part 2
4. CFD simulations for a single cyclist
5. Aerodynamics of two drafting cyclists
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- **A lot of new material**



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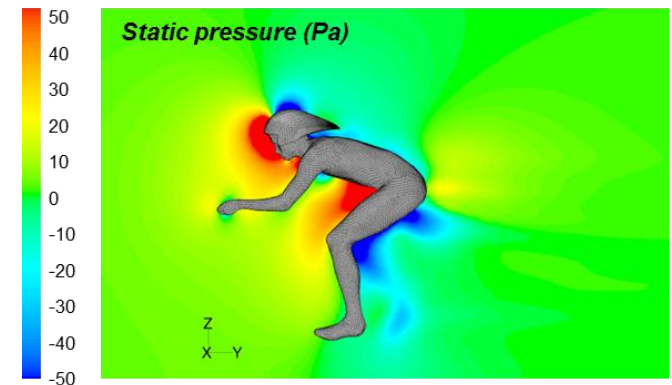
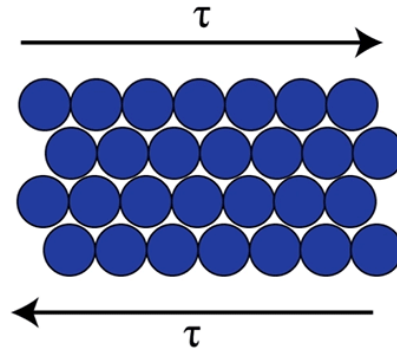
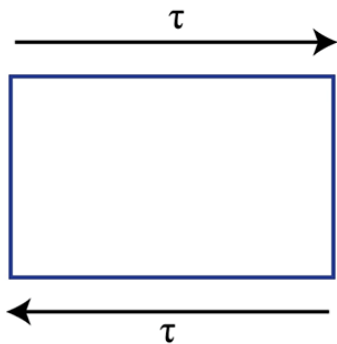
- **Attractive introduction movie**

# Workload

- **Copyright issues...**

# Workload

- Copyright issues...
- → make most animations and figures yourself (or ask member of MOOC team)



# Workload



# Support

- **MOOC team:**
  - **Arjeh Cohen**
  - **Hanneke Duisterwinkel**
  - **Maurice Megens**
  - **Stef Louwers (student assistant)**
  - **Alessandro Pizzoferrato (PhD student)**
  - **John Heijligers (director – “regisseur”)**
  - **Leon Osinski (copyright)**
  - **Rikie Deurenberg (copyright)**
  - **Carreen Shannon (copyright)**
  - **Andy van Eggelen (copyright)**
  - **10 PhD students & postdocs (fora)**

# Gains

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**Is it worthwhile?**

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**→ YES!**

**→ There are many gains / benefits**



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- **Impact: big audience, dissemination of scientific results**
- **Accessibility of knowledge**
- **Demonstrating past performance and expertise in your area**
  - Original/novel insights, your contribution of the field...



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- International networking

# Discussion

- **What can I as TU/e Teacher with MOOCs?**
- **Use of MOOC's in my own classroom?**
- **Making a MOOC?**