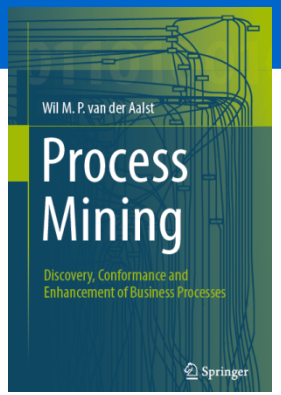
Towards a Process Scientist

prof.dr.ir. Wil van der Aalst
www.processmining.org



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Technische Universiteit **Eindhoven** University of Technology

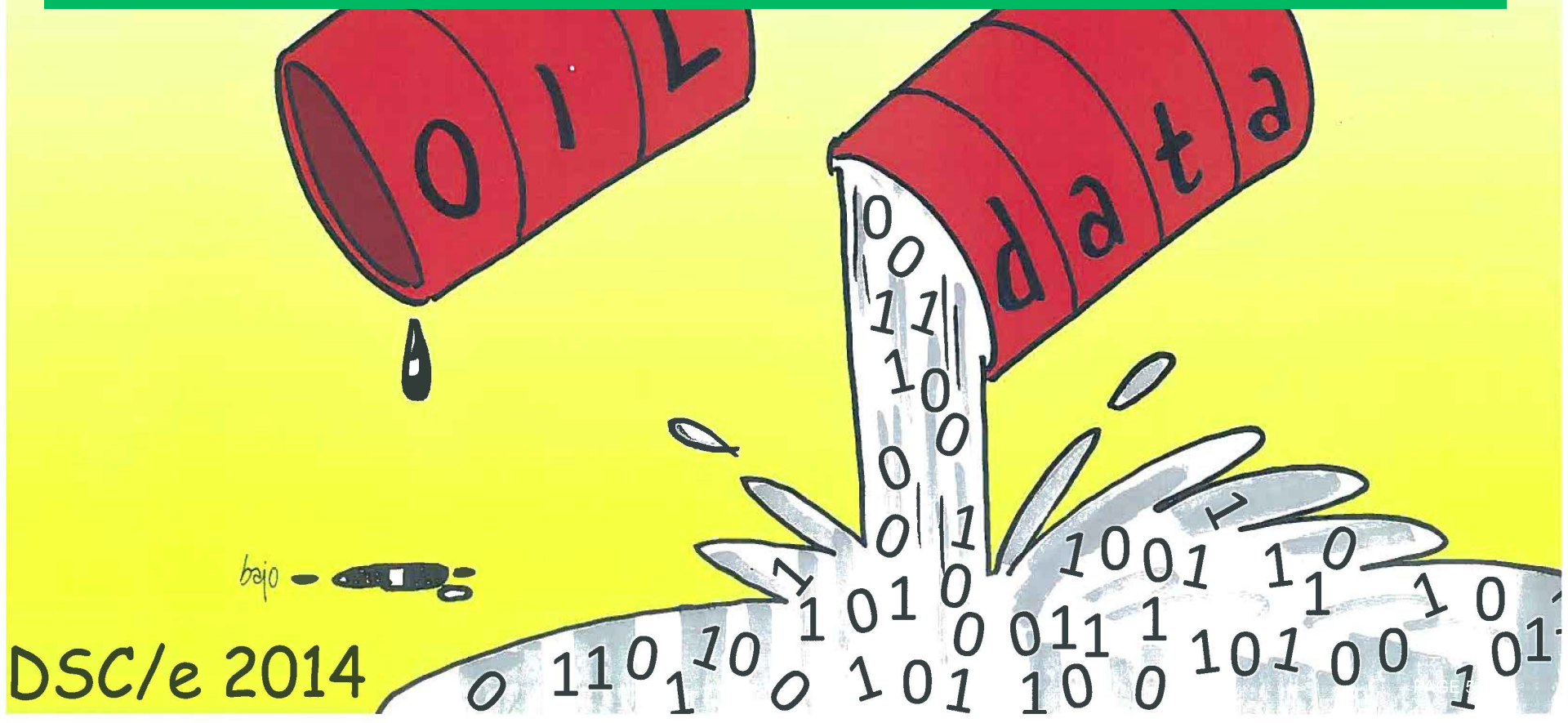
Where innovation starts

DSC/e
http://www.tue.nl/dsce/

Protocols: LOS in Hospitals

21st Century

In the last 10 minutes we generated more data than from prehistoric times until 2003!



Internet of Events

4 sources of event data

Internet of Events

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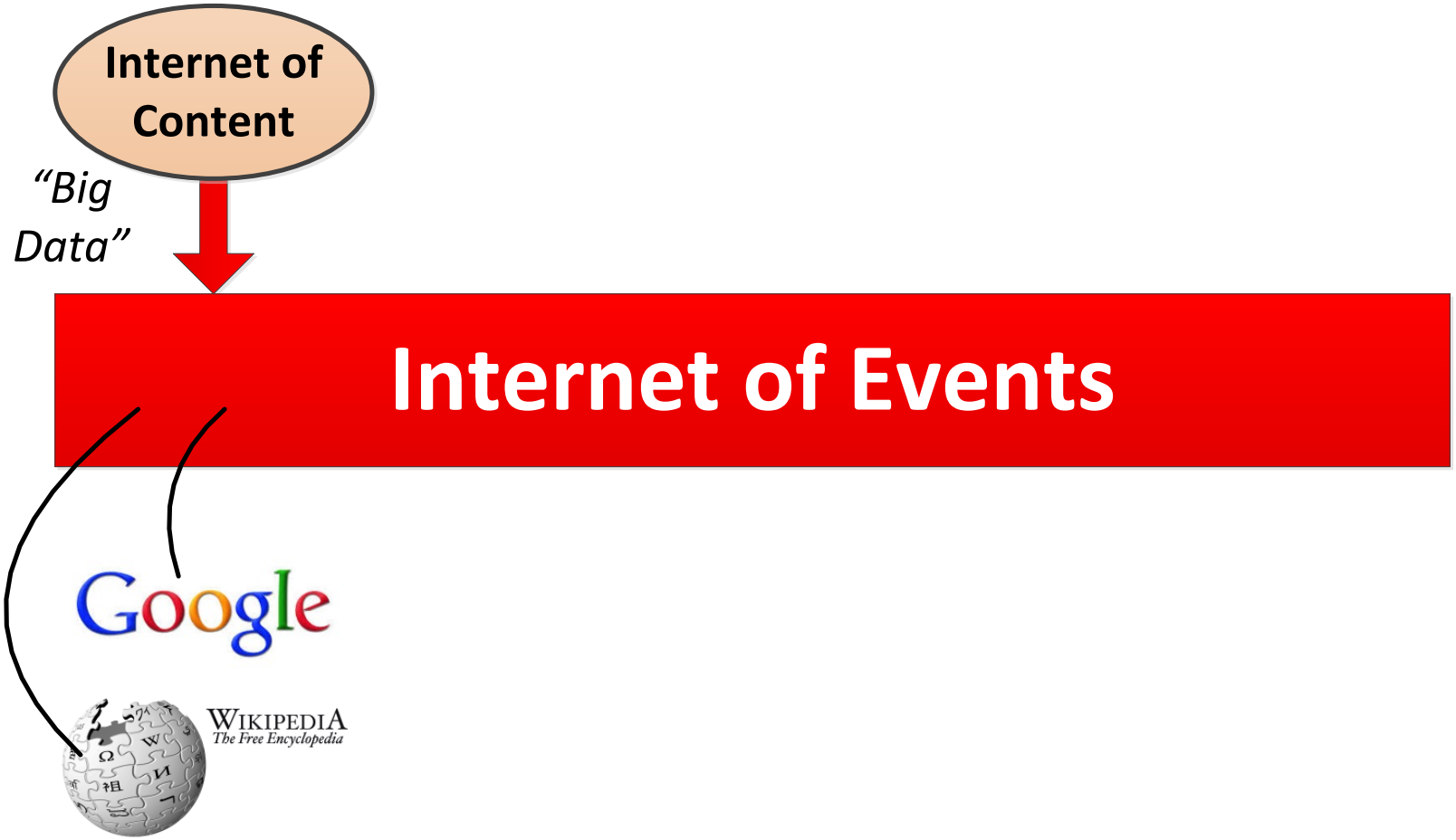
Internet of Events

4 sources of event data



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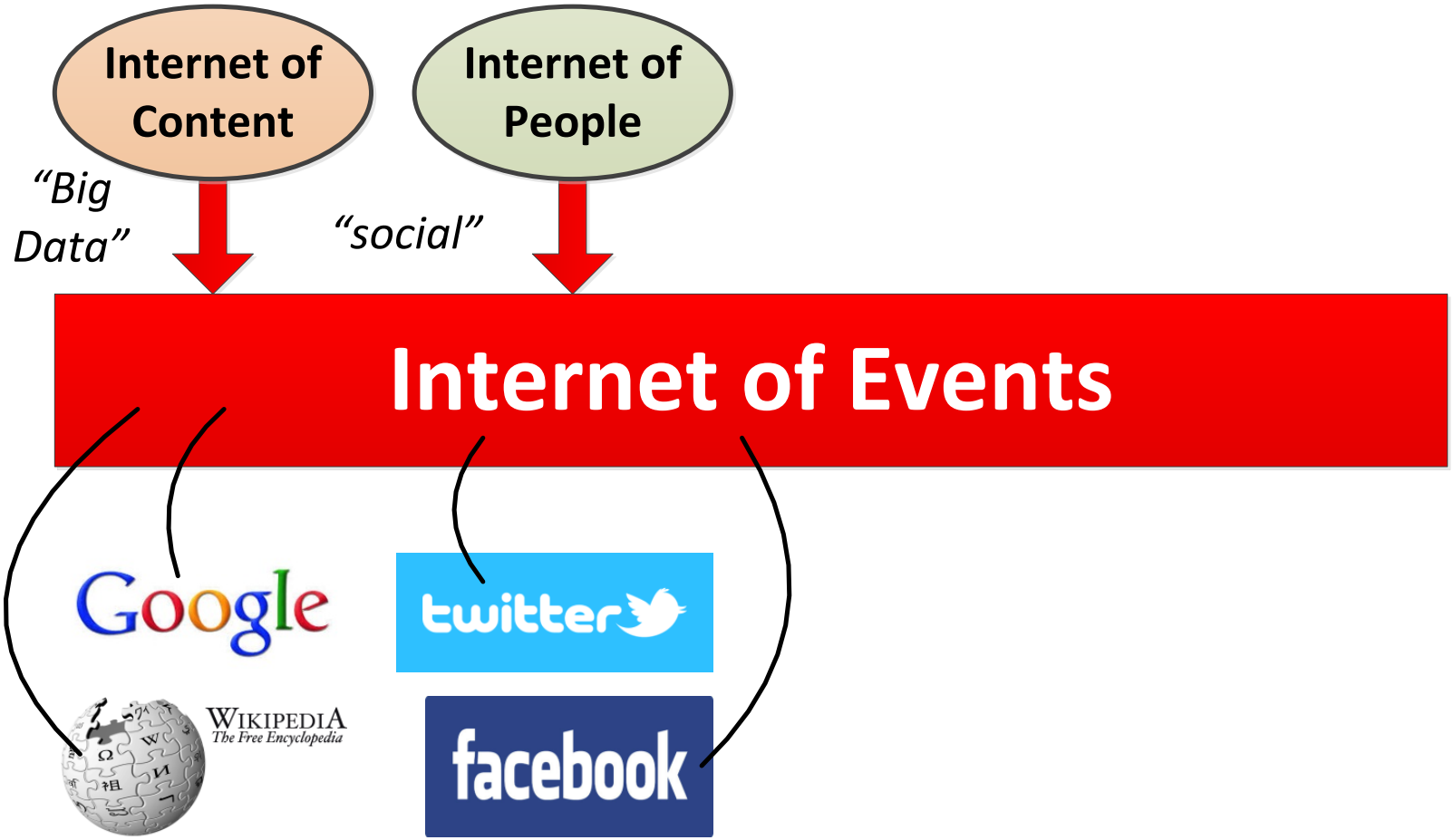
Internet of Events

4 sources of event data



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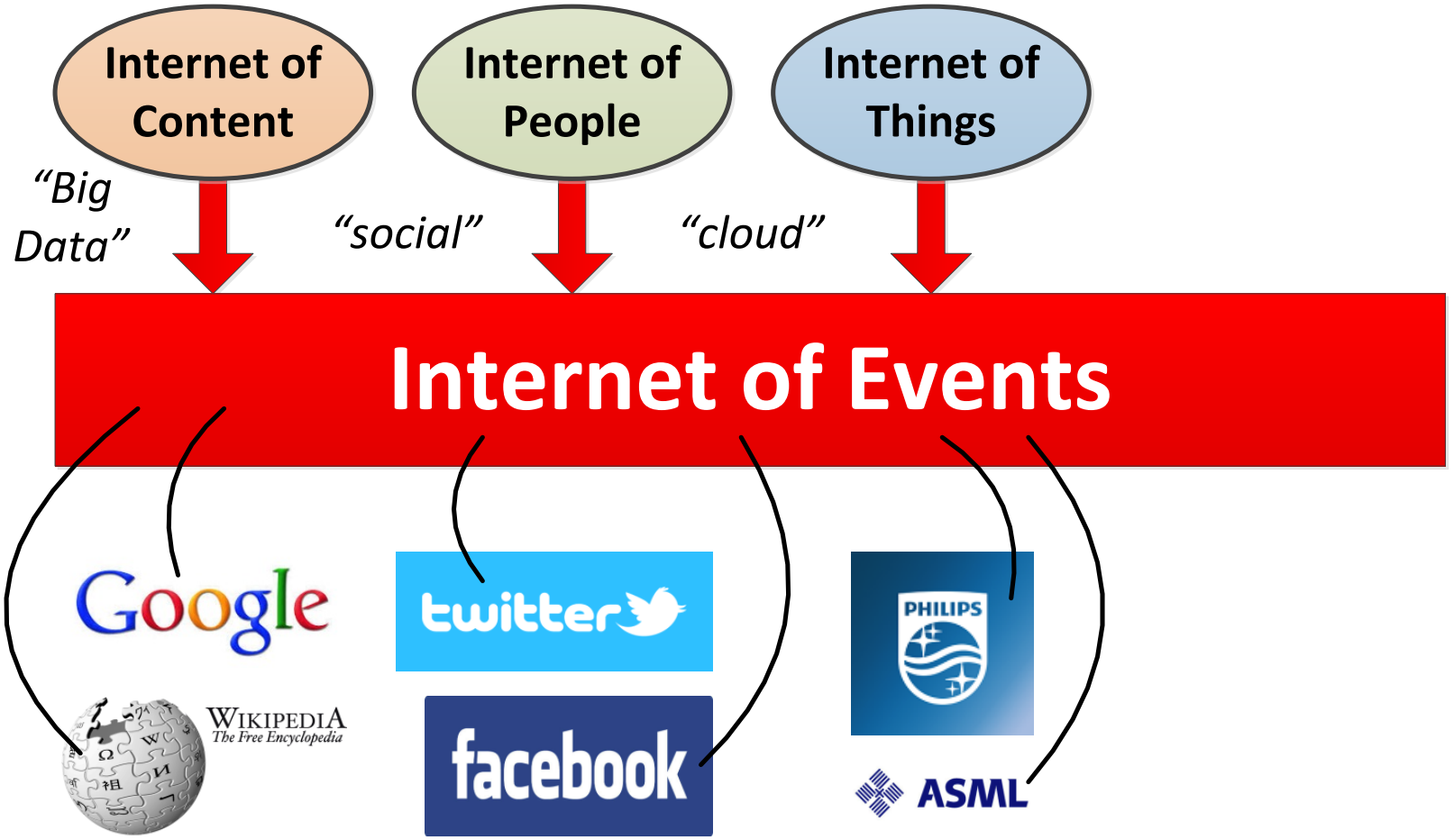
Internet of Events

4 sources of event data



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Internet of Events

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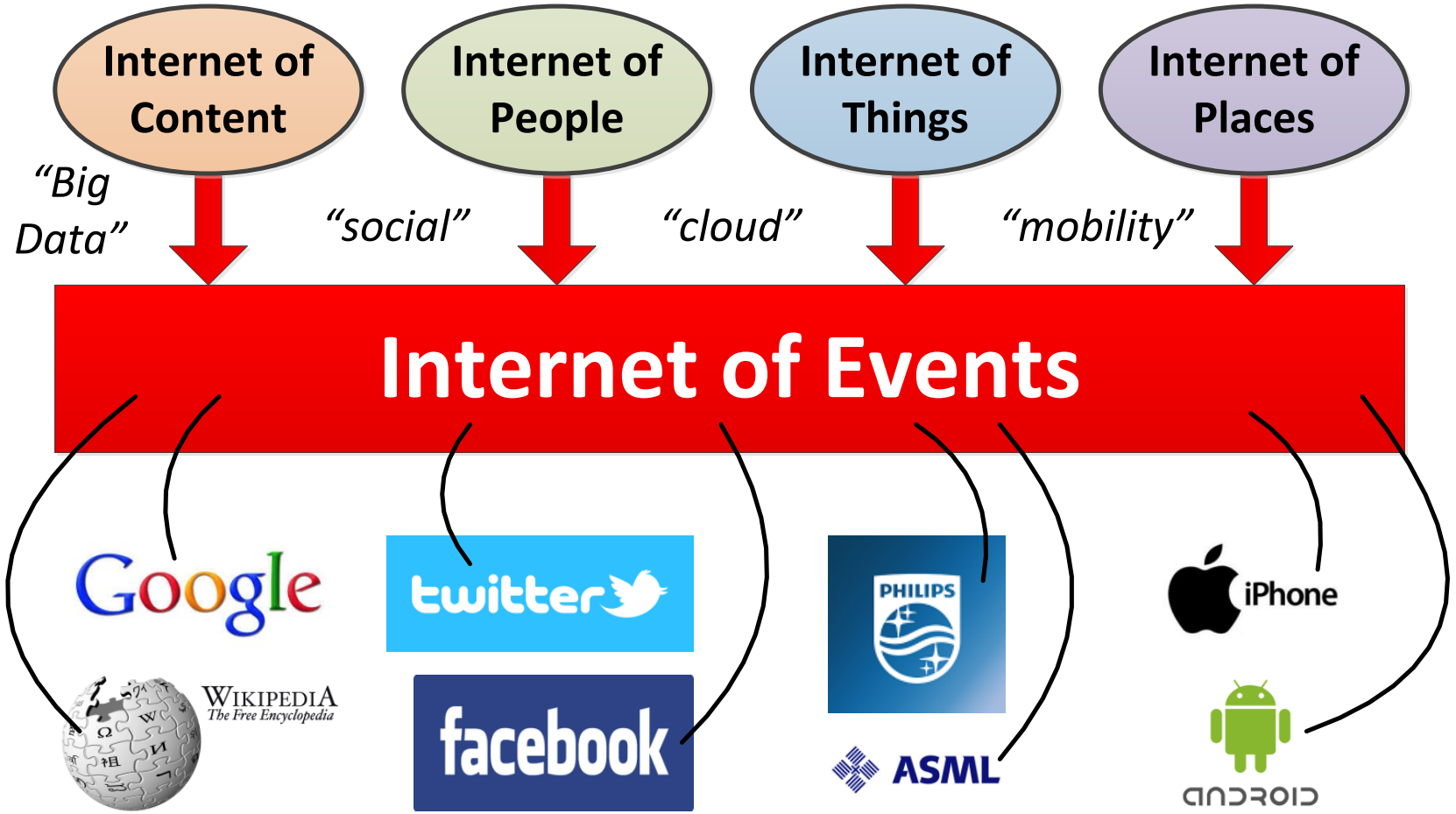

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The four V's of Big Data

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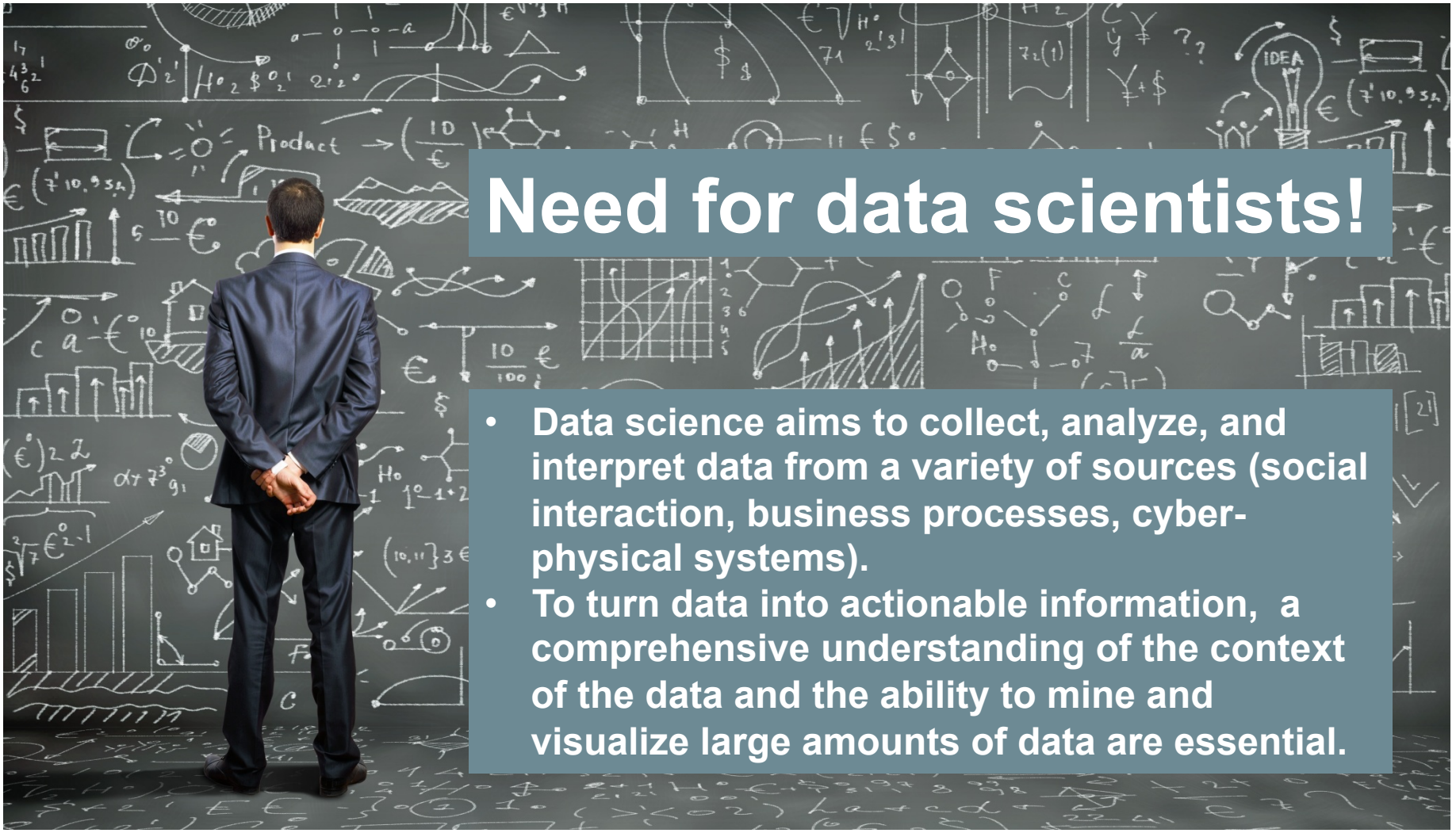
Data does not have to be "Big" to be challenging!



Need for data scientists!

- Data science aims to collect, analyze, and interpret data from a variety of sources (social interaction, business processes, cyber-physical systems).
- To turn data into actionable information, a comprehensive understanding of the context of the data and the ability to mine and visualize large amounts of data are essential.

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generic data science
question 1/4

generic data science
question 2/4

generic data science
question 3/4

generic data science
question 4/4

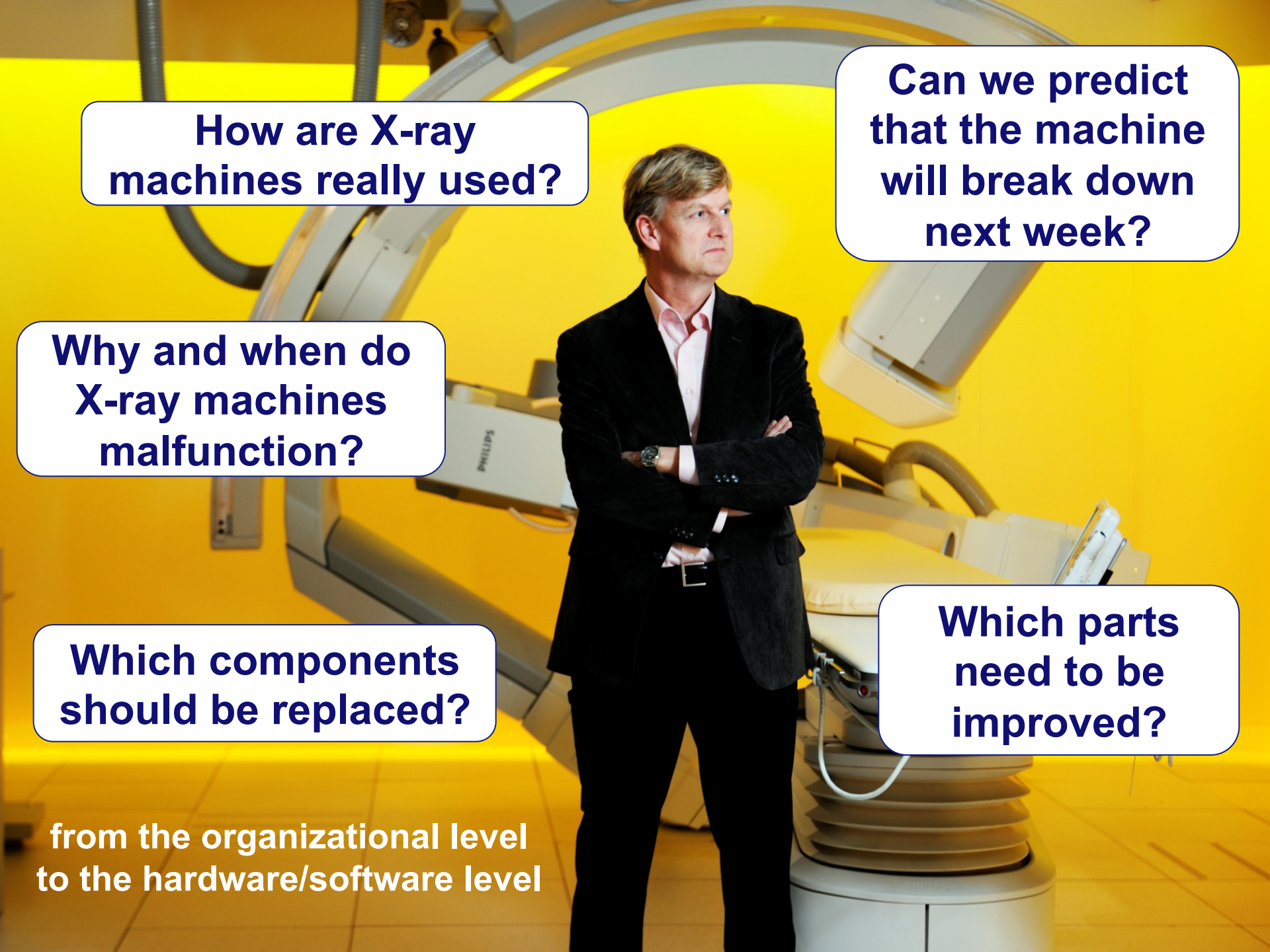
Why do patients have to wait so long?

Do doctors follow the guidelines?

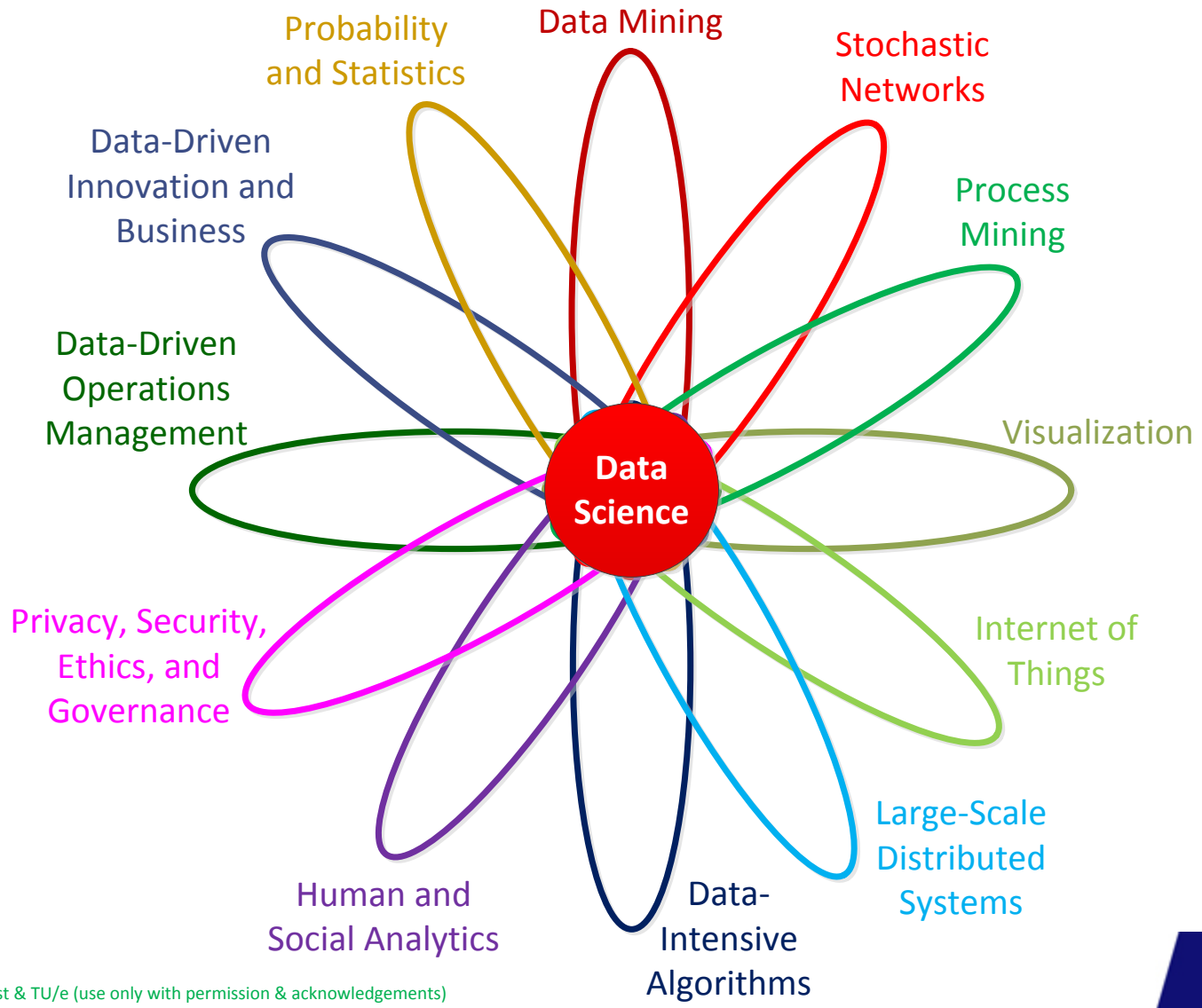
Can we predict waiting times?

How much staff is needed tomorrow?

How can we reduce costs?


How are X-ray machines really used?
Can we predict that the machine will break down next week?
Why and when do X-ray machines malfunction?
Which components should be replaced?
Which parts need to be improved?
from the organizational level to the hardware/software level

Data science skills needed to answer such questions



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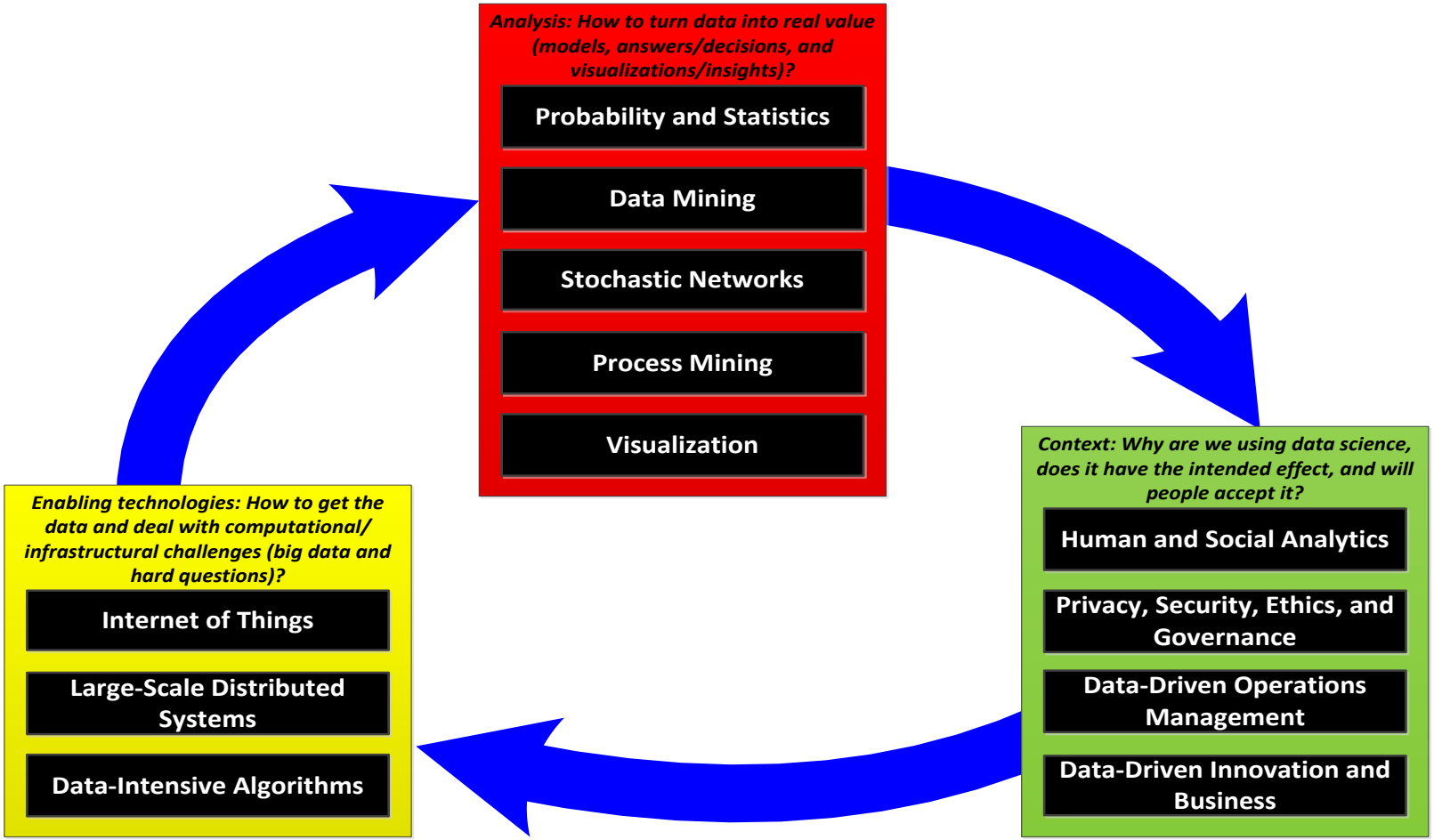
Other view on DSC/e disciplines



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research programs

[RP1] Process Analytics:
Improving Service While Cutting Costs

[RP2] Customer Journey:
Connecting the Dots

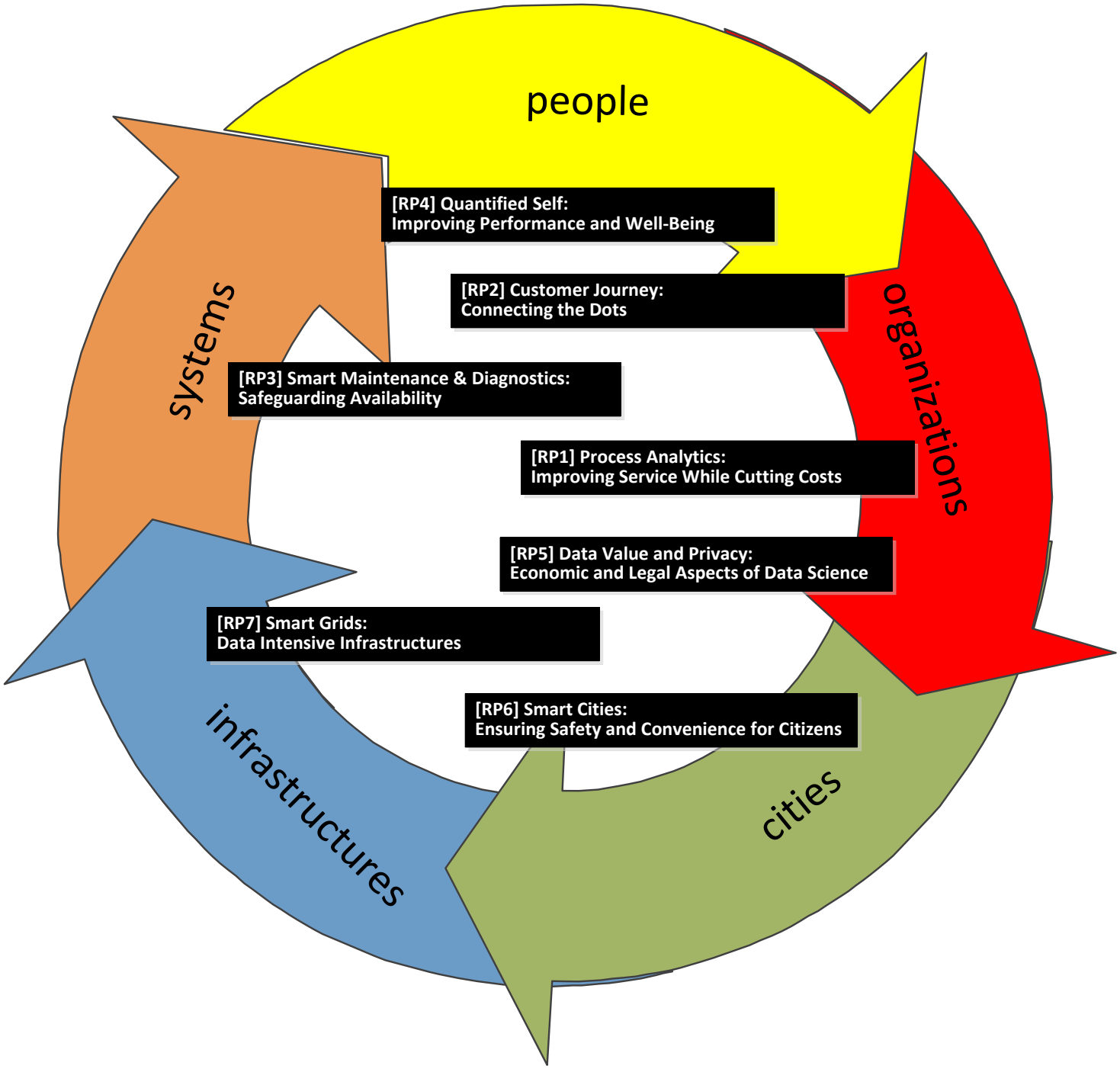
[RP3] Smart Maintenance & Diagnostics:
Safeguarding Availability

[RP4] Quantified Self:
Improving Performance and Well-Being

[RP5] Data Value and Privacy:
Economic and Legal Aspects of Data Science

[RP6] Smart Cities:
Ensuring Safety and Convenience for Citizens

[RP7] Smart Grids:
Data Intensive Infrastructures


people
organizations
cities
infrastructures
systems
[RP4] Quantified Self:
Improving Performance and Well-Being
[RP2] Customer Journey:
Connecting the Dots
[RP3] Smart Maintenance & Diagnostics:
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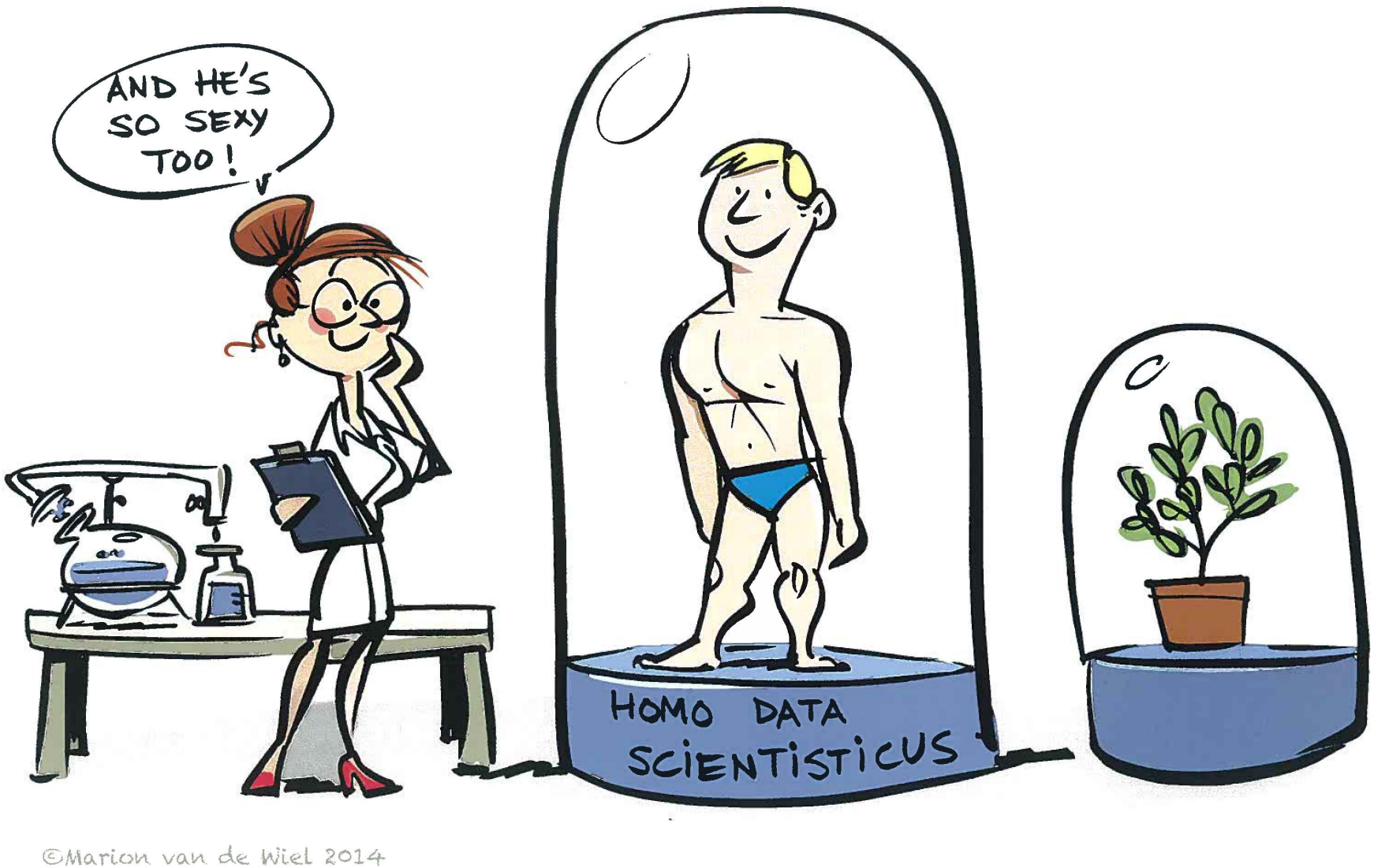
[RP7] Smart Grids:
Data Intensive Infrastructures
[RP6] Smart Cities:
Ensuring Safety and Convenience for Citizens

DSC/e
TU/e
Data Science Center Eindh
DATA SCIENTIST IS A NEW BREED....
AND HE'S SO SEXY TOO!
HOMO DATA SCIENTISTICUS



DSC/e 2014

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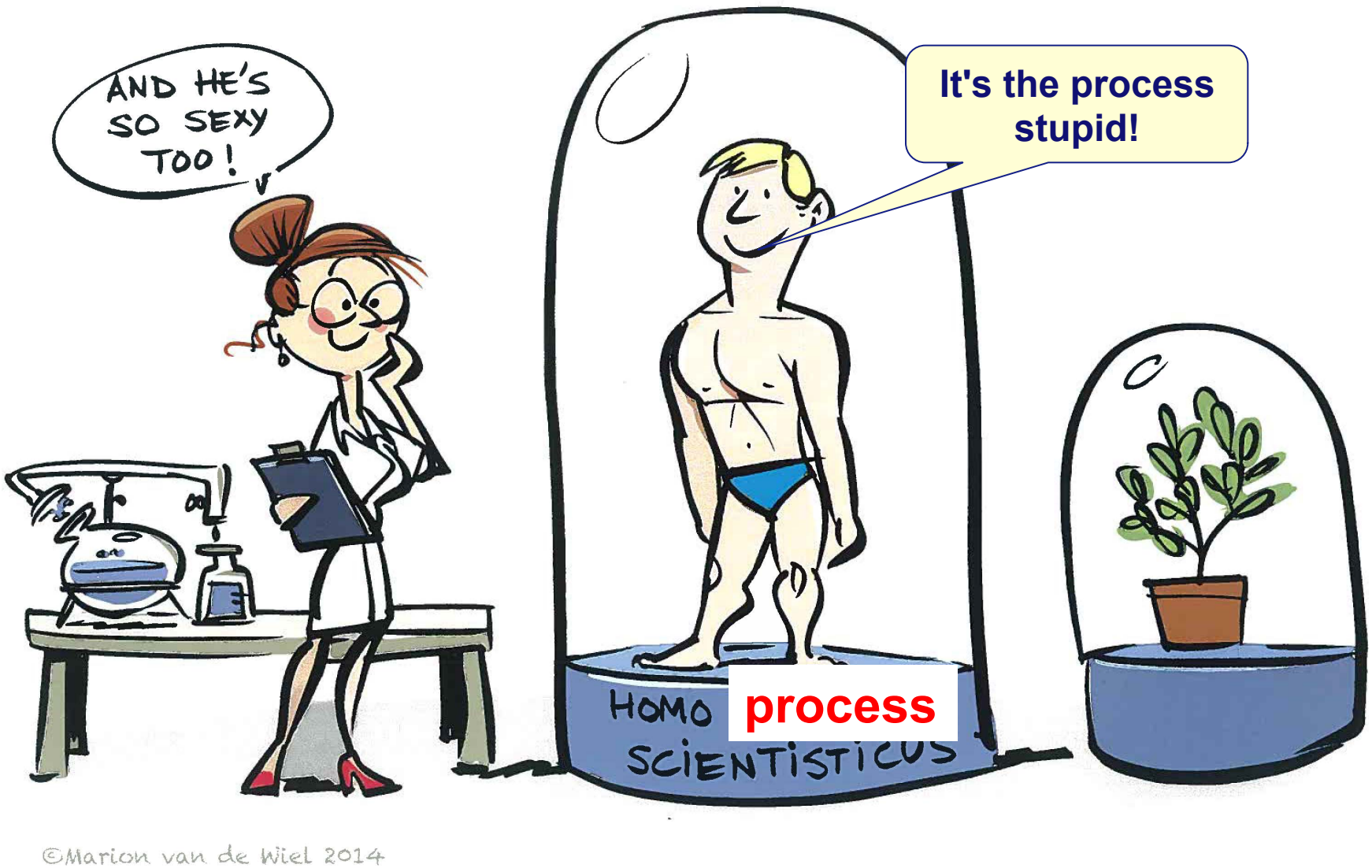

DSC/e 2014

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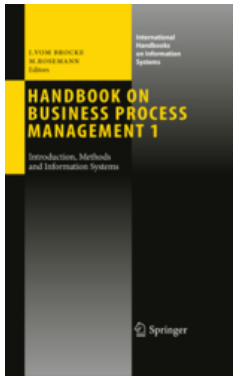
IF I miss one day without Feeding him with data, then I am in trouble...!
More...More... I need more data!

The principles of process management

1. All work is process work.
2. Any process is better than no process.
3. A good process is better than a bad process.
4. One process version is better than many.
5. Even a good process must be performed effectively.
6. Even a good process can be made better.
7. Every good process eventually becomes a bad process.



Michael Hammer. What is Business Process Management? Handbook on Business Process Management 1, Spinger Verlag, 2010

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process scientist
fun and challenging
needs to have the right tools

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DSC/e

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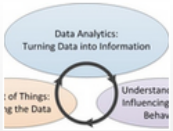
Data Science Center Eindhoven (DSC/e)



Research

Education

Innovation

Find out how to collaborate with the DSC/e

About the DSC/e

Find out how the DSC/e is organized

People, organizations, and systems are generating torrents of data. These growing data volumes provide exciting opportunities but also induce new "big" challenges. To turn data into real value, scientific breakthroughs are needed, e.g., in the area of data analytics. Collaborative efforts of various scientific communities ranging from computer science and mathematics to electrical engineering and social science, end-user organizations, and system developers are needed to realize these breakthroughs. Therefore, TU/e has launched the Data Science Centre Eindhoven.

(DSC/e). The DSC/e strives to be an internationally leading expertise center when it comes to data science research and education. Research focuses on developing new insights (models, theories, tools) to be able to add and extract value from real sets of heterogeneous data. Education focuses on the skills and scientific knowledge most relevant for tomorrow's data scientist. The DSC/e will operate in close collaboration with other stakeholders and will make optimal use of its geographical location in the Brainport region.

News

- **DSC/e Lecture Series starts in September 2014**
  10 June 2014

The DSC/e organizes several interesting lectures about the various aspects of Data Science.
Read more

- **Wil van der Aalst elected as KNAW member**
  21 May 2014

Wil van der Aalst received the highest honor for a scientist by being elected as KNAW member.
Read more

- **Valuable DSC/e workshop**

Calendar

- **DSC/e Lecture Series: September 25, 2014**
  25 September 2014

prof. dr.ir. GJ van Houtum - TU/e Department of Industrial Engineering
Read more

- **DSC/e Lecture Series: October 6, 2014**
  6 October 2014

prof. dr. P. De Bra - TU/e Department of Mathematics and Computer Science
Read more

- **DSC/e Lecture Series: October 21, 2014**
  21 October 2014

- **DSC/e Lecture Series: November 4, 2014**

Directly to:

- Launch Symposium (presentations and posters are now available)
- DSC/e in the media
- DSC/e YouTube
- DSC/e Lecture Series

Contact DSC/e

P.O. Box 513
5600 MB Eindhoven
T: +31 (0)40 247 2902
E: dsce@tue.nl

- Direct contact
- Campus map
- Route description

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'War on talent': Philips gaat promotieplekken TU Eindhoven betalen

Door: Jurriaan Nolles – 04/06/14, 06:54

© RAYMOND RUTTING / DE VOLKSKRANT. Studenten bij de TU Eindhoven.

Philips gaat dertig promotieplekken op de Technische Universiteit (TU) van Eindhoven financieren. Het bedrijf doet dit omdat er in de sector grote behoefte is aan nieuw talent. Topman Henk van Houten noemt het een volgende stap in 'the war on talent'.

Het is niet nieuw dat grote bedrijven als Philips, AkzoNobel of ASML geld in universitair onderwijs steken. Het is echter voor Philips wel de eerste keer dat het zo'n grote groep promovendi in één keer financiert. Philips heeft al promovendi (ongeveer tien) op universiteiten rondlopen, maar dat zijn individuele wetenschappers. Ook zijn werknemers van Philips te vinden op andere posities aan de universiteit: sommigen bekleden er één dag per week een leerstoel.

MEER OVER

Philips | Techniek | Hoger onderwijs | Eindhoven | Onderwijs | Noord-Brabant | Eindhoven | Wetenschap | Bedrijven

Nooit meer zoeken naar de djinten dankzij indoor-gps in supermarkt

Philips werkte jarenlang intensief samen met NSA-spionnen

Philips blijft voorzichtig over wereldeconomie

Philips duikt na HEMA ook in DDR-verleden