



## A bird's-eye view of CWI

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Check the weather forecast, search with Google, navigate with TomTom, buy online – whatever you do, you rely on results from mathematics and computer science that **help making complexity manageable**.

The results are often **invisible**, hidden in society's engine compartment.

And they are **universal**, valid always and everywhere. Yesterday's research for designing train tables allows us to determine DNA profiles today.



## Mathematisch Centrum

1946

- ❖ pioneering research
- ❖ transfer to society

Birthplace of Dutch

- ❖ statistics and operations research
  - ❖ computer science
- 
- dike heights for Delta works
  - wing of Fokker Friendship
  - graveyard of medical dissertations
  - ARRA, X1
  - ALGOL60, ALGOL68



## Centrum voor Wiskunde en Informatica

1983

- ❖ mission unchanged
- ❖ unique positioning  
in between academia and applied labs
  
- connecting Europe to the internet
- Python
- SMIL multimedia language
- Dutch train timetables
- RSA factorization records



## Centrum Wiskunde & Informatica

2011

- ❖ 10 Veni, 8 Vidi, 3 Vici, Spinoza Prize, ERC SIG
- ❖ long history of involvement in FES and EU projects
- ❖ >30,000 downloads a year of open source software
  
- cracking the MD5 hash function
- digital forensics
- smart grids for energy distribution
- dike integrity
- MonetDB database system
- scalable data management for astronomy



## Disciplines

- mathematics → models and algorithms
- computer science → software and data technology

## Methodologies

- computational science
- data driven research

## New topics

- ❖ cryptology
- ❖ algorithmic game theory
- ❖ machine learning
- ❖ multiscale modeling
- ❖ biomath/informatics
- ❖ energy
- ❖ visual software analysis



# Thematic positioning

PRIORITY AREAS  
MINISTRY OF EA&I

STRATEGIC THEMES  
NWO

SOCIETAL THEMES  
CWI

life sciences

healthy living

life sciences

water

water and climate

food

cultural and societal dynamics

horticulture

earth sciences, energy

energy

sustainable energy

logistics

connecting sustainable cities

societal logistics

high tech

data explosion, learning

creative industry

software as service

chemistry

materials: solutions for scarcity

# CWI

## Staff

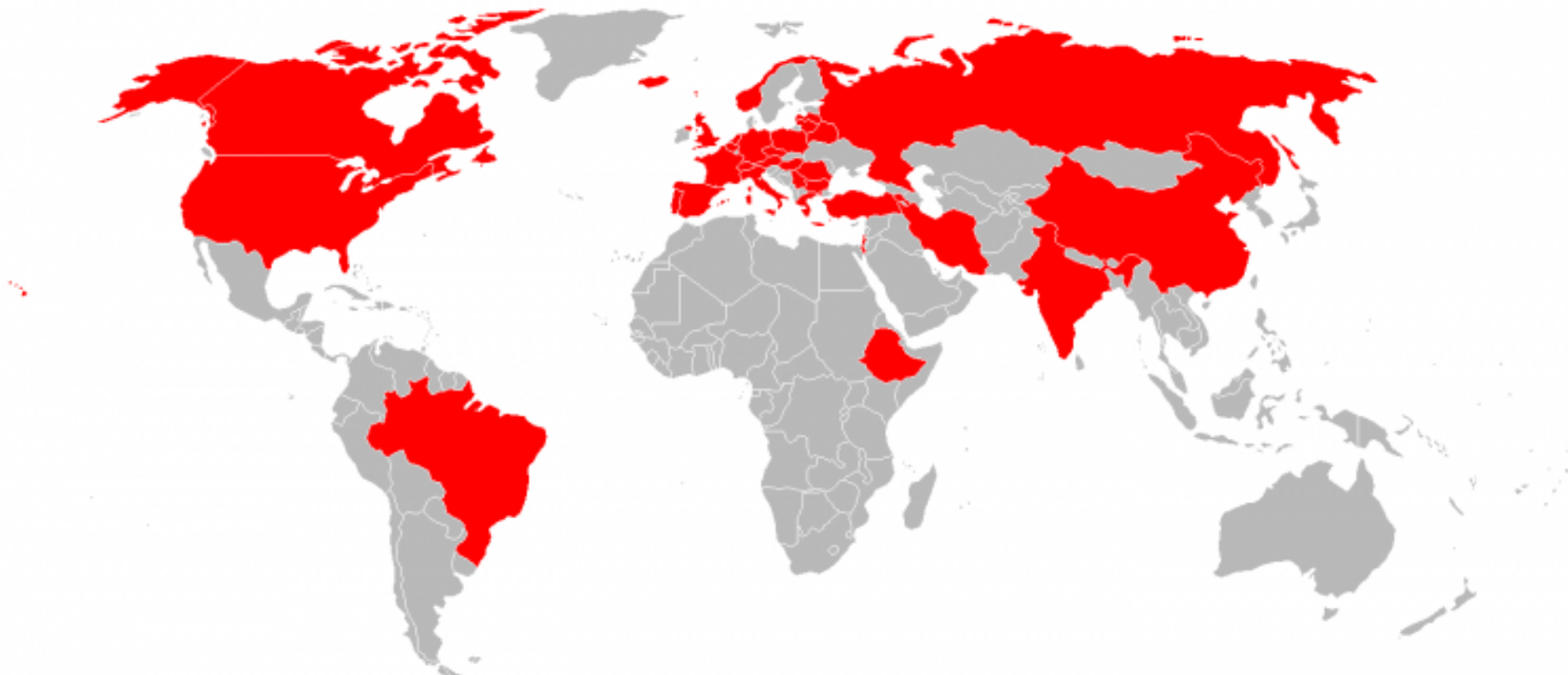
- 50 senior researchers & tenure trackers
  - ❖ 33 part-time chairs at universities
- 40 postdocs  
65 PhD students
- 45 support staff





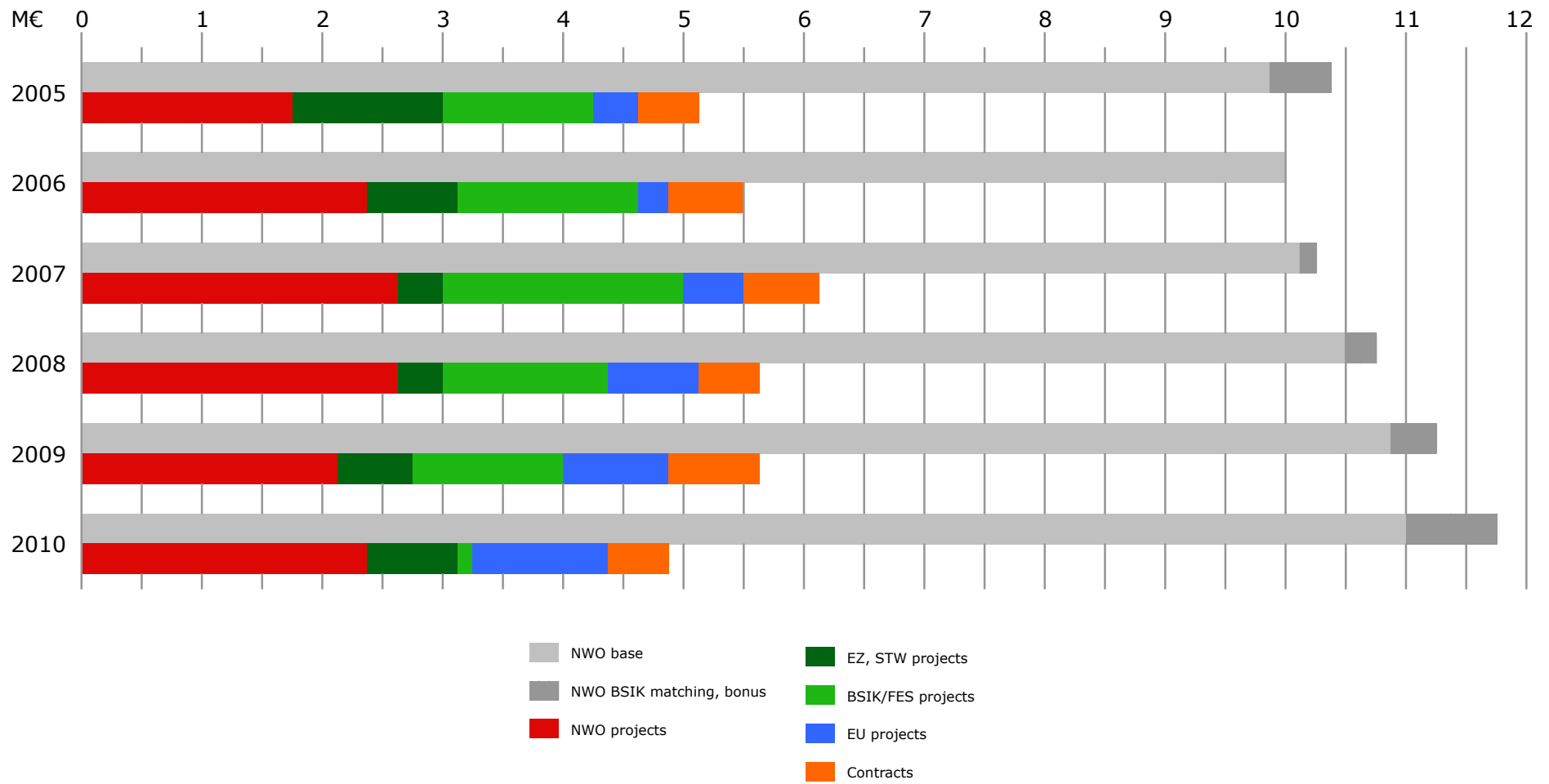
**CWI**

33 Nationalities



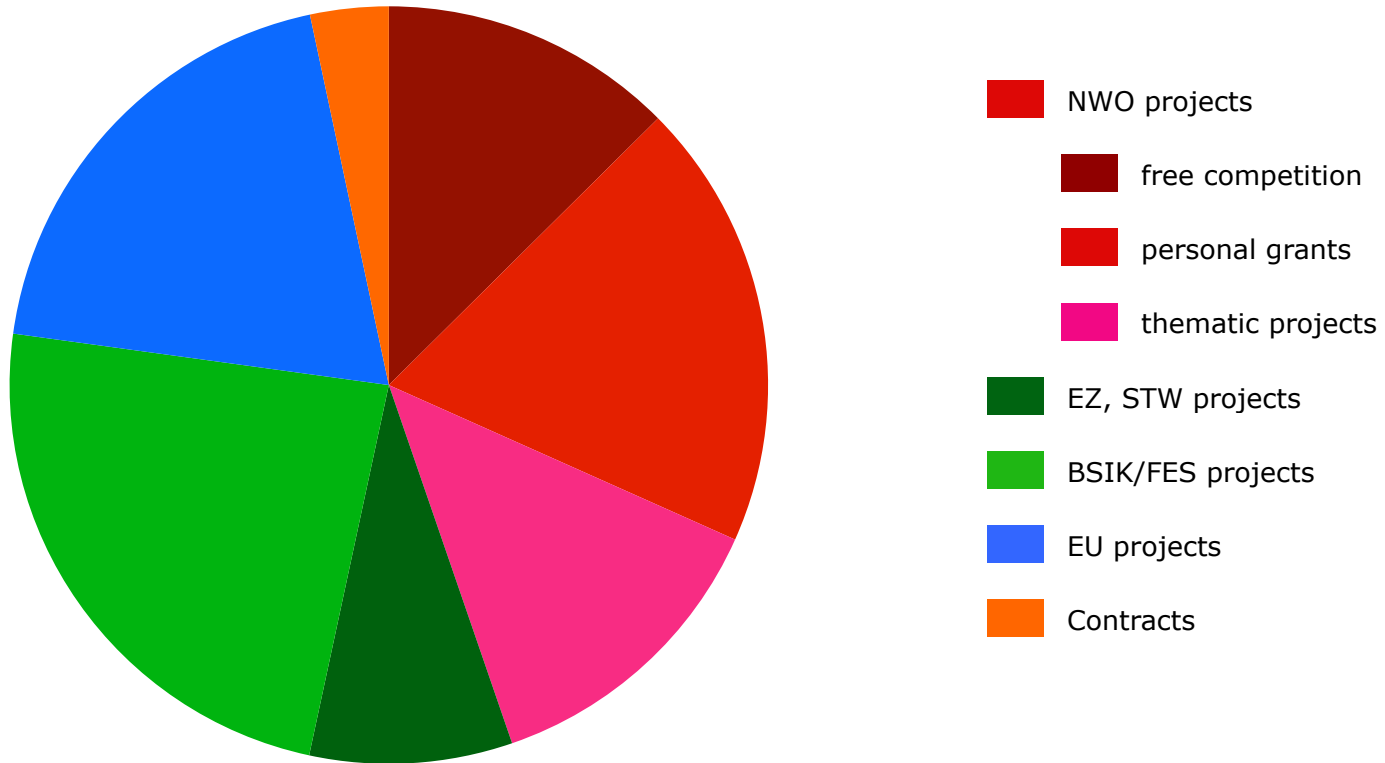


# Funding, earning capacity





# Project acquisition 2005–2010





## Combining forces

### Links with academia

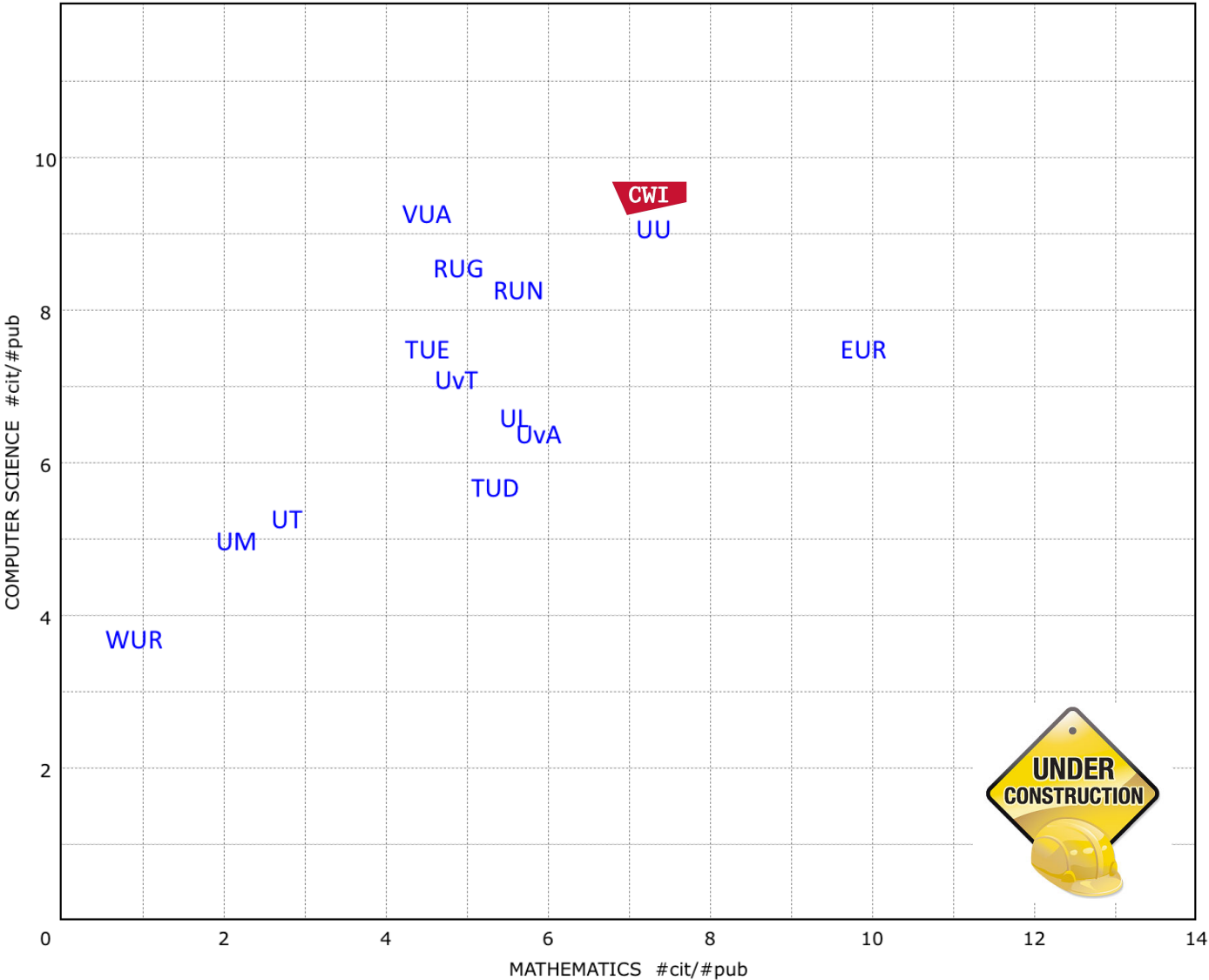
- strong ties with research schools and institutes
- training center for academic faculty
- independence and generosity
- leadership in science policy in math and CS

### Other partnerships

- national cooperation:  
BSIK/FES, SPA, NISB, NKI, NFI, NWO institutes
- international cooperation:  
ERCIM, W3C, ERCOM, Digiteo, LZI Dagstuhl, EIT ICT Labs
- joint project team with INRIA
- >100 project partners within industry

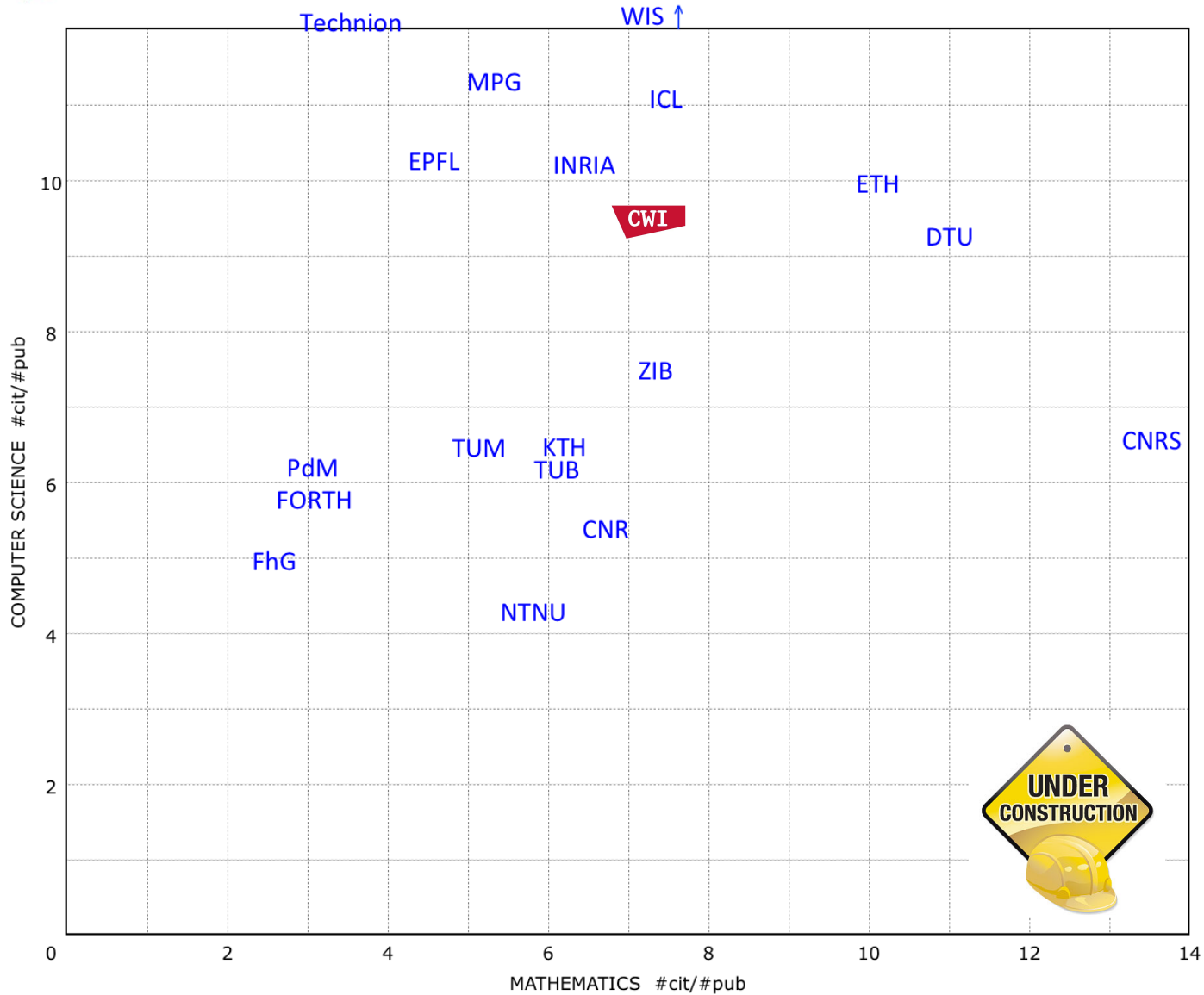


# Microsoft Academic Search – national





# Microsoft Academic Search – European





## SWOT analysis

### Strengths

quality of staff / strong position in research landscape / decentralized and dynamic research organization / small size / facilities and support / location

### Weaknesses

new research trends / temporary vs permanent staff / entrepreneurship / social cohesion / public relations

### Opportunities

universality / emerging themes / strategic alliances / open source / spinoffs / Science Park Amsterdam

### Threats

invisibility / funding / independence

The logo for CWI (Centraal Bureau voor de Statistiek) is a red trapezoidal shape with the letters 'CWI' in white, bold, sans-serif font.

## Internal S & W $\cap$ external O & T

- S→O** flexibility and earning power  
→ capitalize on priority areas of government
- S→W** quality of staff & leadership role  
→ secure independence
- O→W** motivation by themes of societal relevance  
& cooperation with European partners  
→ accentuate unique role of CWI
- T→W** research funding climate  
→ threatens ratio of temporary to permanent staff





Thank you for your attention