# Transformation of Doctoral Training in Poland

*Andrzej Krasniewski*

**Conference of Rectors of Academic Schools in Poland**
**&**
**Faculty of Electronics and Information Technology**
**Warsaw University of Technology**

# Transformation of doctoral training

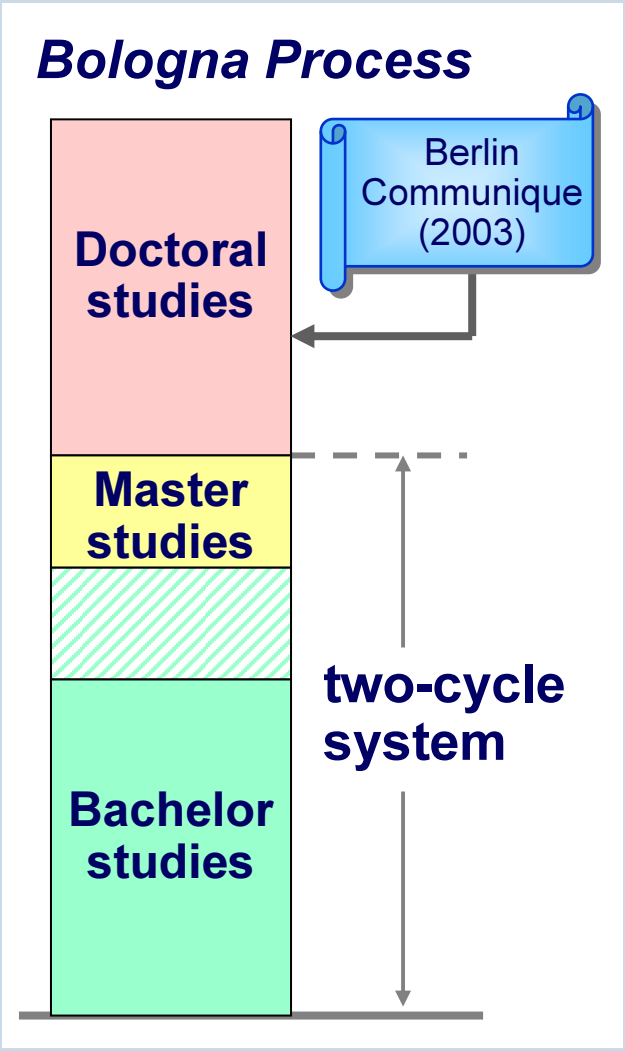
**unstructured training**

⇩

**structured training**

***Communication of CESAER and SEFI on the Bologna Declaration***
**(Helsinki, Feb. 2003)**

**strong support for the idea of the EHEA, but**
***„... the doctoral level as such should not be brought into the Bologna process."***



# Transformation of doctoral training

Bergen Communique (2005)

**structured doctoral programmes as a means to increase the numbers of doctoral candidates taking up research careers within the EHEA**

- core component - advancement of knowledge through original research
- doctoral qualifications - aligned with the Bologna QF (outcomes-based approach)
- transparent supervision and assessment
- normal workload: 3-4 years full time
- interdisciplinary training
- development of transferable skills
- participants considered as both students and early stage researchers
- no overregulation

# OUTLINE

- **Doctoral training in Poland**
- New PhD programme at the Faculty of Electronics & Information Technology
  - characteristics (with emphasis on curriculum)
  - experiences
- Conclusion

# Two paths to doctoral degree

**Doctoral degrees awarded by eligible:**

- **HEIs - individual faculties**
- **research institutes of Polish Academy of Sciences and 'branch' R&D institutes**

❑ **unstructured training**

***take position of a teaching or research assistant at a university or research institute***

- ***routine teaching and administrative duties***
- ***supervised research work***

dominating until early 1990's

❑ **structured training**

***pursue a PhD programme offered by a university (faculty) or research institute***

- ***coursework***
- ***supervised research work***
- ***limited teaching duties***

# Doctoral studies vs. doctoral degree

*Act on Scientific Title and Degrees (2003)*

PhD thesis ... should present an original solution to a scientific problem and demonstrate candidate's deep knowledge of the discipline and his/her ability to carry out research.

## procedure leading to a doctoral degree

- initiation of PhD track (>50% of work done)
  - thesis title
  - supervisor
- submission of thesis approved by the supervisor
- thesis review (two reviewers)
- 'internal' examinations
  - in 'basic' field (e.g. *computer engineering*)
  - in any other field, unrelated to the thesis topic (e.g. *philosophy* for engineers)
  - in foreign language
- public defence of thesis
- decision by Faculty Council (Council of the Institute)

# Doctoral studies vs. doctoral degree

**formally unrelated to doctoral studies**

**procedure leading to a doctoral degree**

- initiation of PhD track (>50% of work done)
  - thesis title
  - supervisor
- submission of thesis approved by the supervisor
- thesis review (two reviewers)
- 'internal' examinations
  - in 'basic' field (e.g. *computer engineering*)
  - in any other field, unrelated to the thesis topic (e.g. *philosophy* for engineers)
  - in foreign language
- public defence of thesis
- decision by Faculty Council (Council of the Institute)

# Doctoral studies - rapid growth after 1990

## GROWING DEMAND

- social and economic changes
  - *recognition of the impact of PhD on well-being and position in society*
  - *unattractive job offers for graduates from MSc programmes (in some areas)*

*Act on Higher Education (1990)*

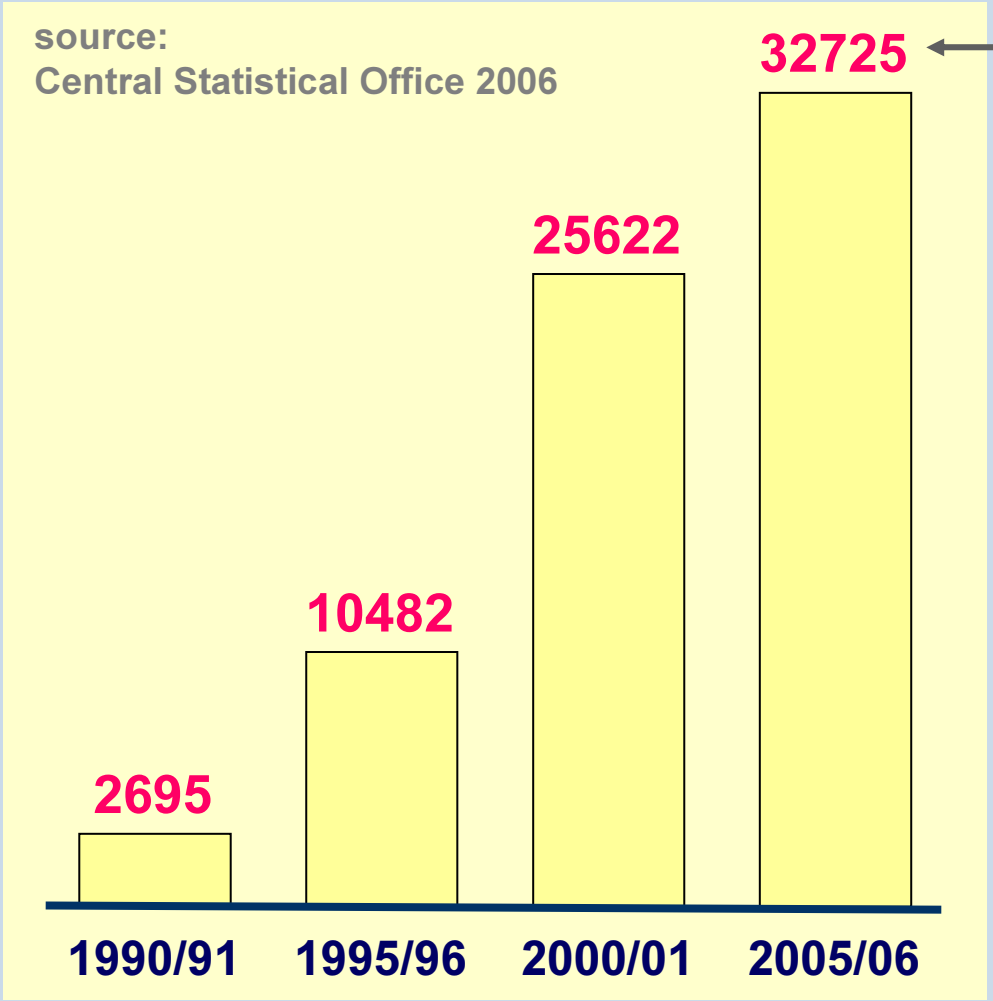
## GROWING SUPPLY

- higher admission limits to non-paid studies

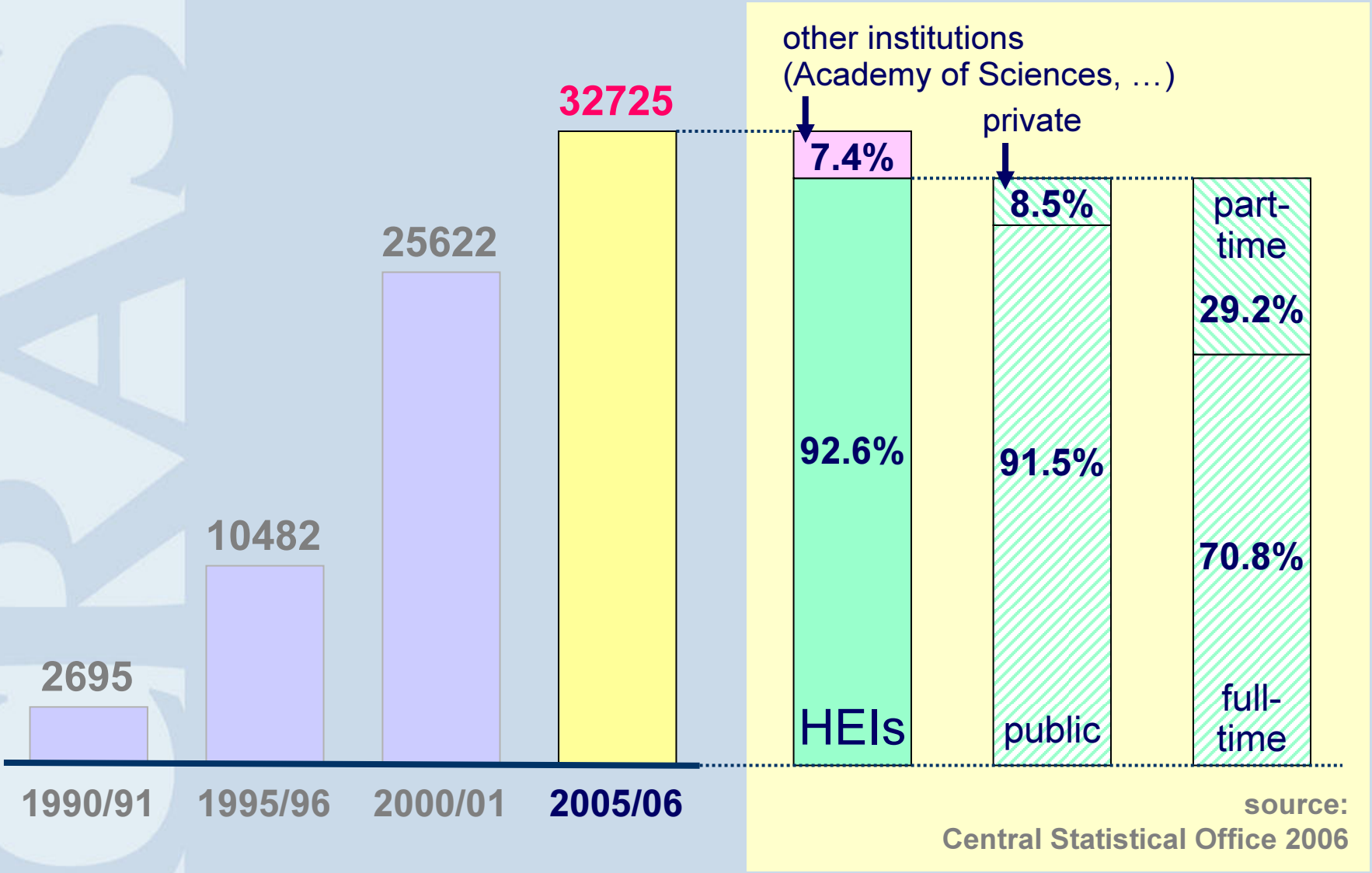
  *new rules for financing HEIs: no. PhD students strongly affects the allocation of public funds*

- paid studies

# Doctoral studies - rapid growth after 1990



# PhD students




source:
Central Statistical Office 2006

# PhD studies - current state

**Diversity within and between HEIs**

**but**

**Common problems and challenges**

# Problems and challenges (1)

## Traditional separation of MSc and PhD programmes

*until 2005: Doctoral studies regulated by the Act on Scientific Title and Degrees (not by the Act on Higher Education)*

→ *Doctoral studies supervised by vice-rector/vice-dean responsible for research (not for education)*

- **special course offer for PhD**

  low number of courses – for economic reasons

  → low flexibility and attractiveness of the curriculum

- **PhD research frequently unrelated to work done at Master's level**

  → long time to degree

*Law on Higher Education (2005):*
*doctoral studies (third-cycle studies) – part of higher education system*

# Problems and challenges (2)

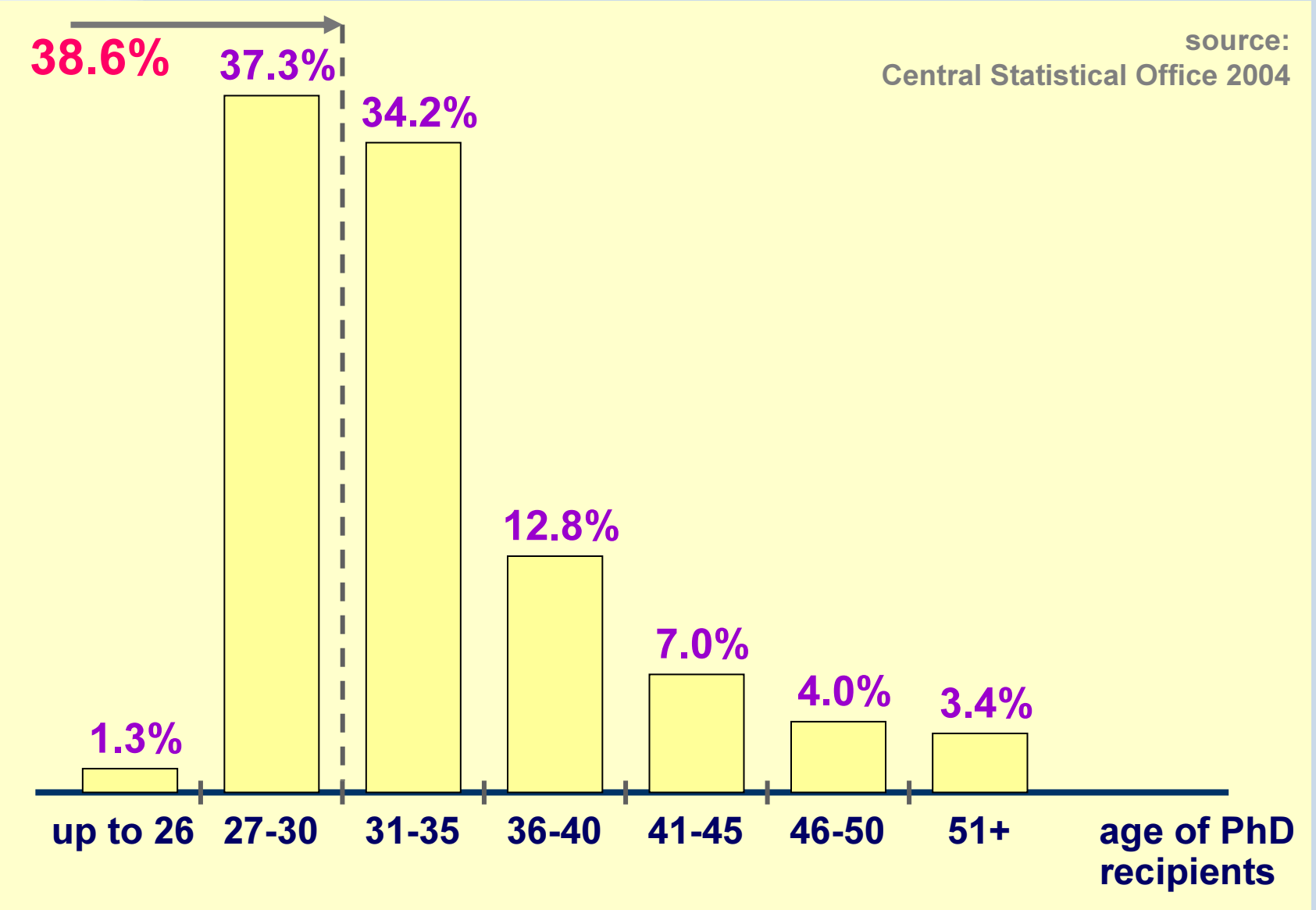
## Unattractive financial status of students

- *only 40% of doctoral students receive scholarships (from university or faculty budget)*
- *scholarships are low (200-350 euro/months)*
- *new forms of financial aid (from university or faculty budget) available since 2006 – insufficient*
- *limited opportunities for extra support from research grants*

- **little attractiveness of PhD studies for potentially best candidates**
- **part-time or full-time employment outside university**

→ large number of dismissals
slow progress in research (long time to degree)

# Age of PhD recipients



# Problems and challenges (3)

## Mismatch of training goals with needs of labour market

- *ca. 5500 PhD degrees awarded each year*
- *limited opportunities for hiring at HEIs (saturation or decrease in the number of students predicted)*

→ *professional careers outside of academia*

## At most HEIs, no serious attempts to adapt

→ doctoral training still, in principle, oriented towards future university employees

# OUTLINE

- Doctoral training in Poland
- **New PhD programme at the Faculty of Electronics & Information Technology**
  - **characteristics (with emphasis on curriculum)**
  - experiences
- Conclusion

# Who we are

***Warsaw University of Technology***

- **31000 students**
- **19 faculties**

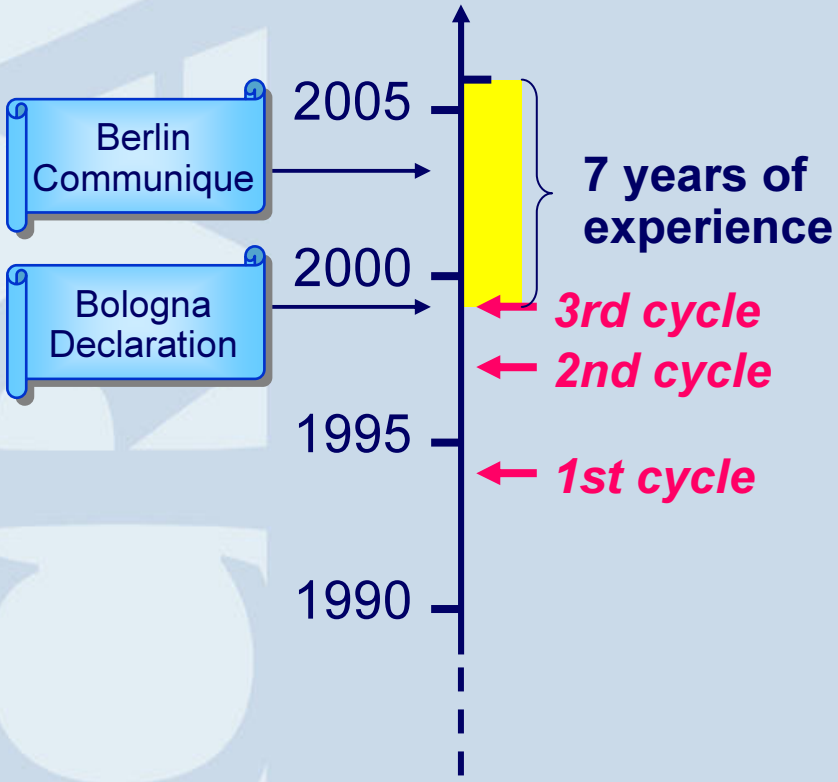
***Faculty***
***of Electronics and Information Technology***

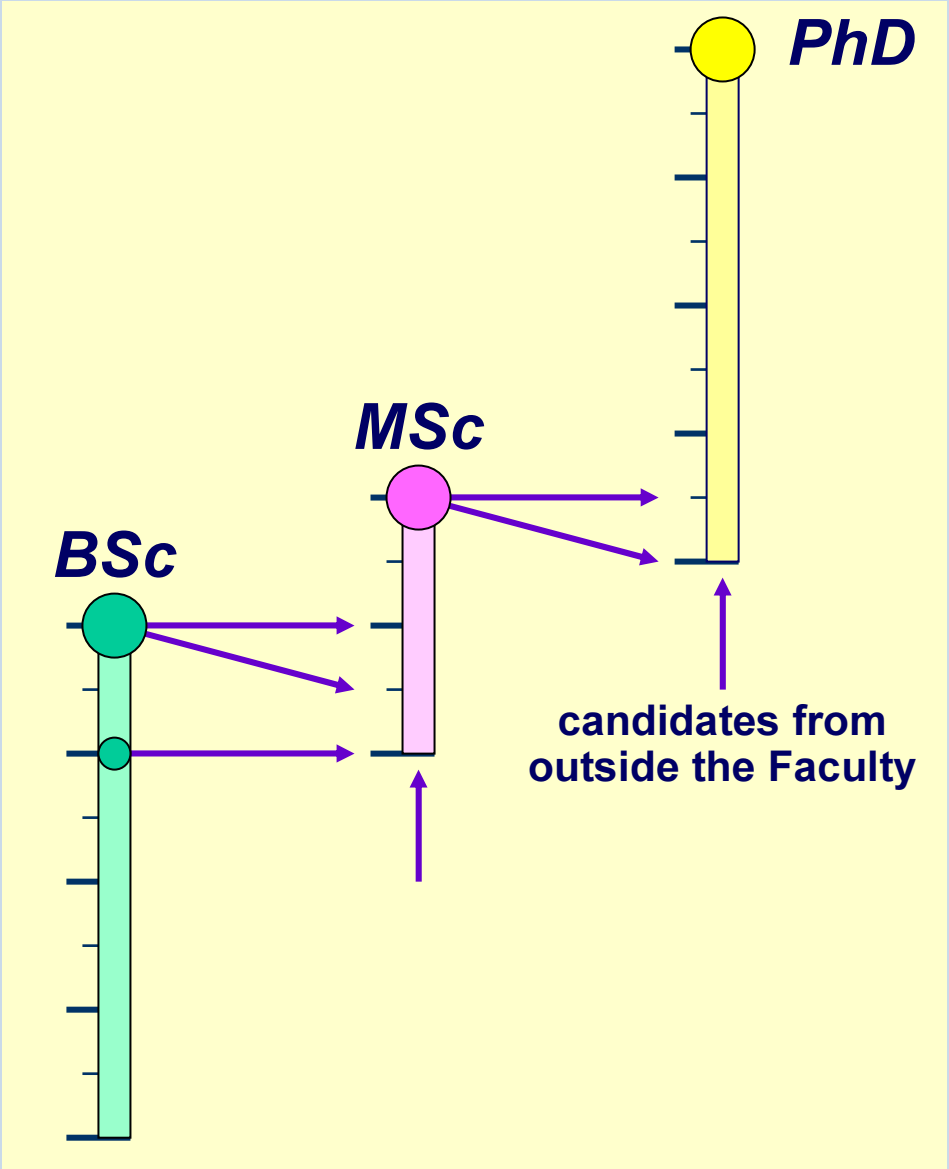
- **3600 first- and second-cycle students**
- **270 full-time academic staff**

# Study system at the Faculty

## PhD programme

*part of three-cycle study system*



# www.elka.pw.edu.pl


**third-cycle studies**

- Introduction
- General regulations
- Curriculum requirements
- Academic regulations
- Admissions

**Appendices**

# Duration of PhD programme

*likely to change in near future*

**regulations by State law**

- **duration: max. 4 years**
- **in individual cases - extension by one more year possible**
- **requirements to complete the programme – not defined**

**regulations at Warsaw University of Technology**

- **duration: 4 years (extension to 5 years possible)**
- **requirements to complete the programme**
  - **fulfilment of course requirements**
  - **submission of thesis approved by the supervisor**

**if not satisfied within 4 (5) years**

→ **dismissal**
opportunity to continue research on less formal basis

# Curriculum requirements

- **core component - original research**
- **flexibility (in designing individual study programme)**

| | ECTS points | |
|---|---|---|
| non-engineering courses | 6 | < 25% |
| courses in engineering | 8 | |
| advanced math and science courses | 12 | |
| advanced specialization-oriented courses | 12 | |
| advanced courses (free electives) | 18 | |
| PhD seminar (7 semesters) | 14 | |
| PhD research (7 semesters) | 140 | |
| editing PhD thesis | 30 | |
| **total** | **240** | |

# PhD research

- starts in the 1st semester
- outcomes documented each semester with a report
- special requirements on publishing

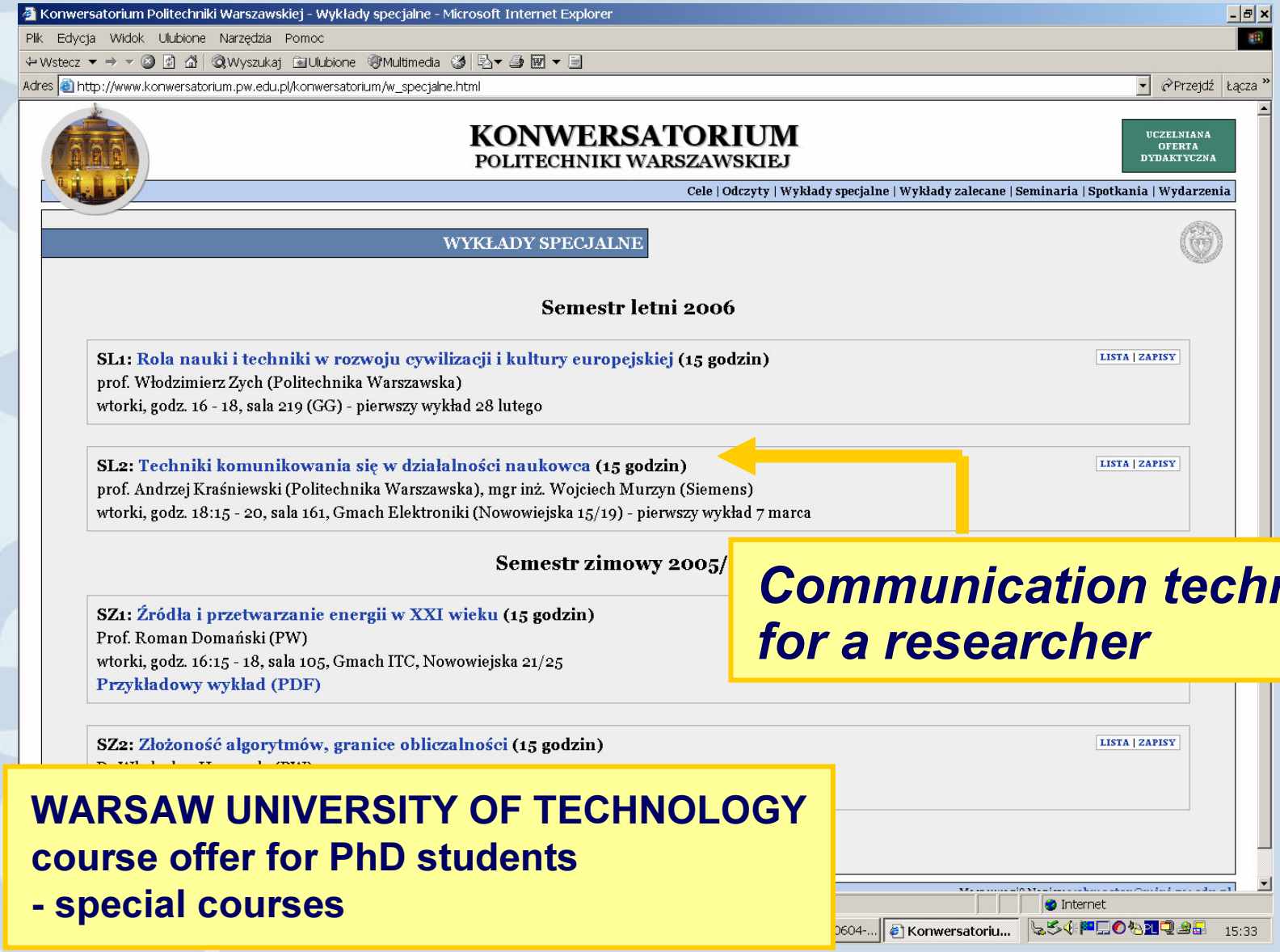
# Coursework requirements

- **advanced math & science and engineering courses**
  - **courses offered at the Faculty**
  - **courses offered by other HEIs (in Poland or abroad)**
  - **summer schools etc.**

  **at least two courses taught in English**

- **courses intended to develop transferable skills**
  - **non-engineering courses intended for all students (in business, management, law, …)**
  - **special courses for PhD students, e.g.**

    ***- Communication techniques for a researcher***
    ***- Ethics in engineering research***




***Communication techniques for a researcher***

**WARSAW UNIVERSITY OF TECHNOLOGY**
**course offer for PhD students**
**- special courses**

## *Communication techniques for a researcher*

instructors: A. Krasniewski (WUT), W. Murzyn (Siemens)

contents:

- writing technical papers
  incl. legal and ethical aspects of publishing
- designing visuals and delivering technical presentations
- special topics
  - Publishing on www
  - How to write a PhD thesis?
  - How to review scientific publications?

# Integration with MSc programme

***uncommon in Poland !!!***

- **common course offer for both MSc and PhD students**

  > 80 advanced courses
  (in math & science and electronics & computer engineering)

  *solution to 'unsolvable' problem of providing PhD students with rich course offer*

- **partial credit transfer MSc → PhD**

- **administrative procedures** (registration for courses, …)
  **– same as for the second-cycle studies**

| | ECTS points | max transfer from 2nd cycle |
|---|---|---|
| non-engineering courses | 6 | 4 |
| courses in engineering | 8 | 8 |
| advanced math and science courses | 12 | 6 |
| advanced specialization-oriented courses | 12 | 6 |
| advanced courses (free electives) | 18 | 6 |
| PhD seminar (7 semesters) | 14 | |
| PhD research (7 semesters) | 140 | |
| editing PhD thesis | 30 | |
| **total** | **240** | **30** |

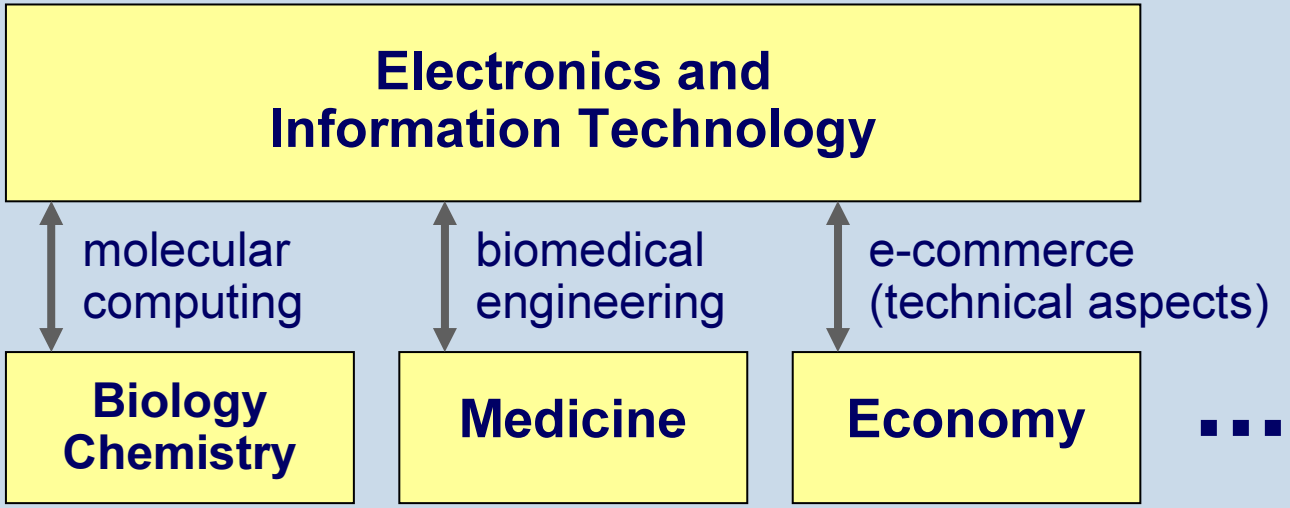
***equivalent to one semester***

# Support for interdisciplinary training

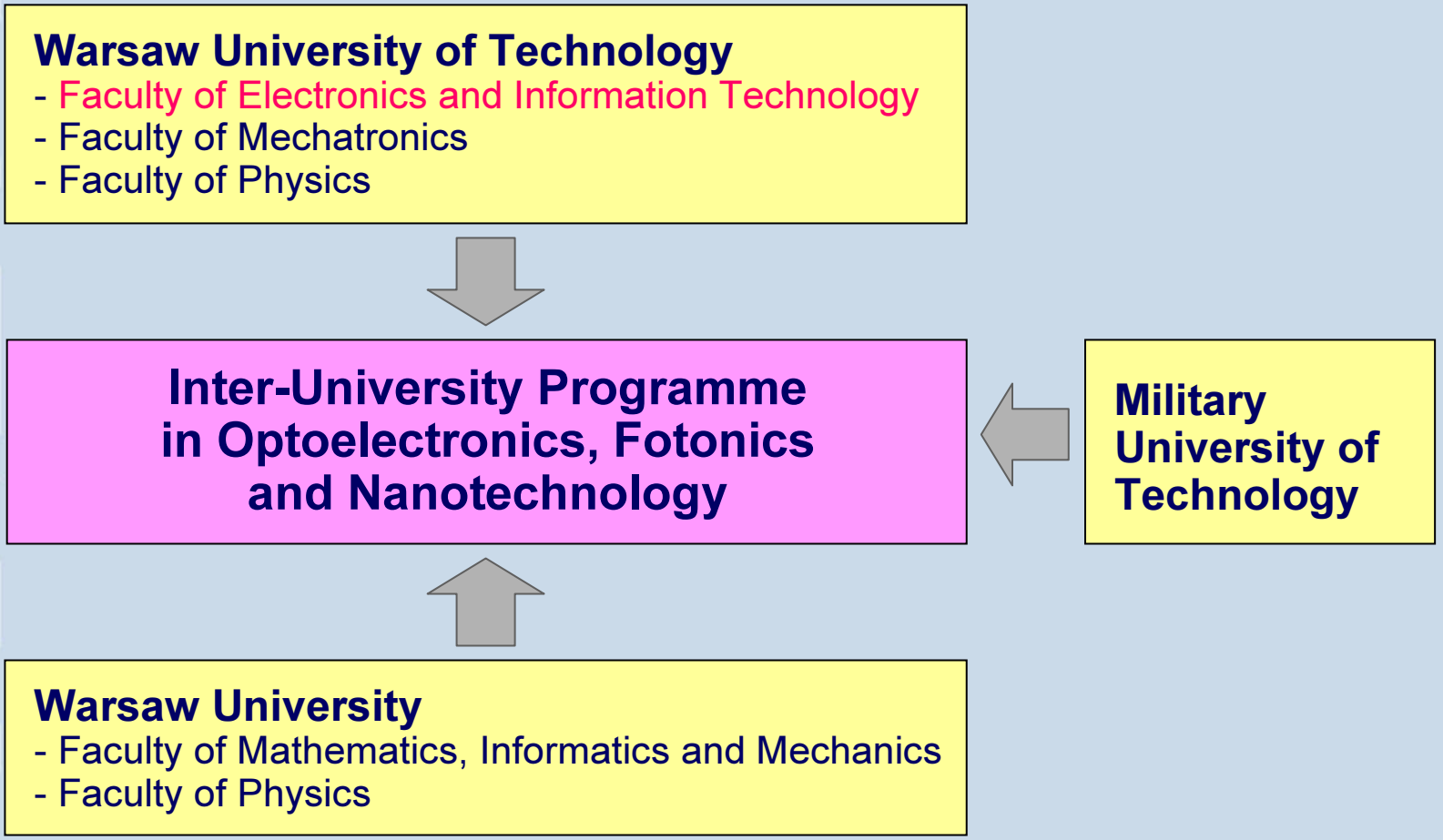
*uncommon in Poland !!!*

- PhD programme open to candidates with non-engineering background
- flexibility of curriculum requirements (courses can be taken at other engineering and non-engineering HEIs)

***Research (PhD theses) outside traditional disciplines represented at the Faculty***

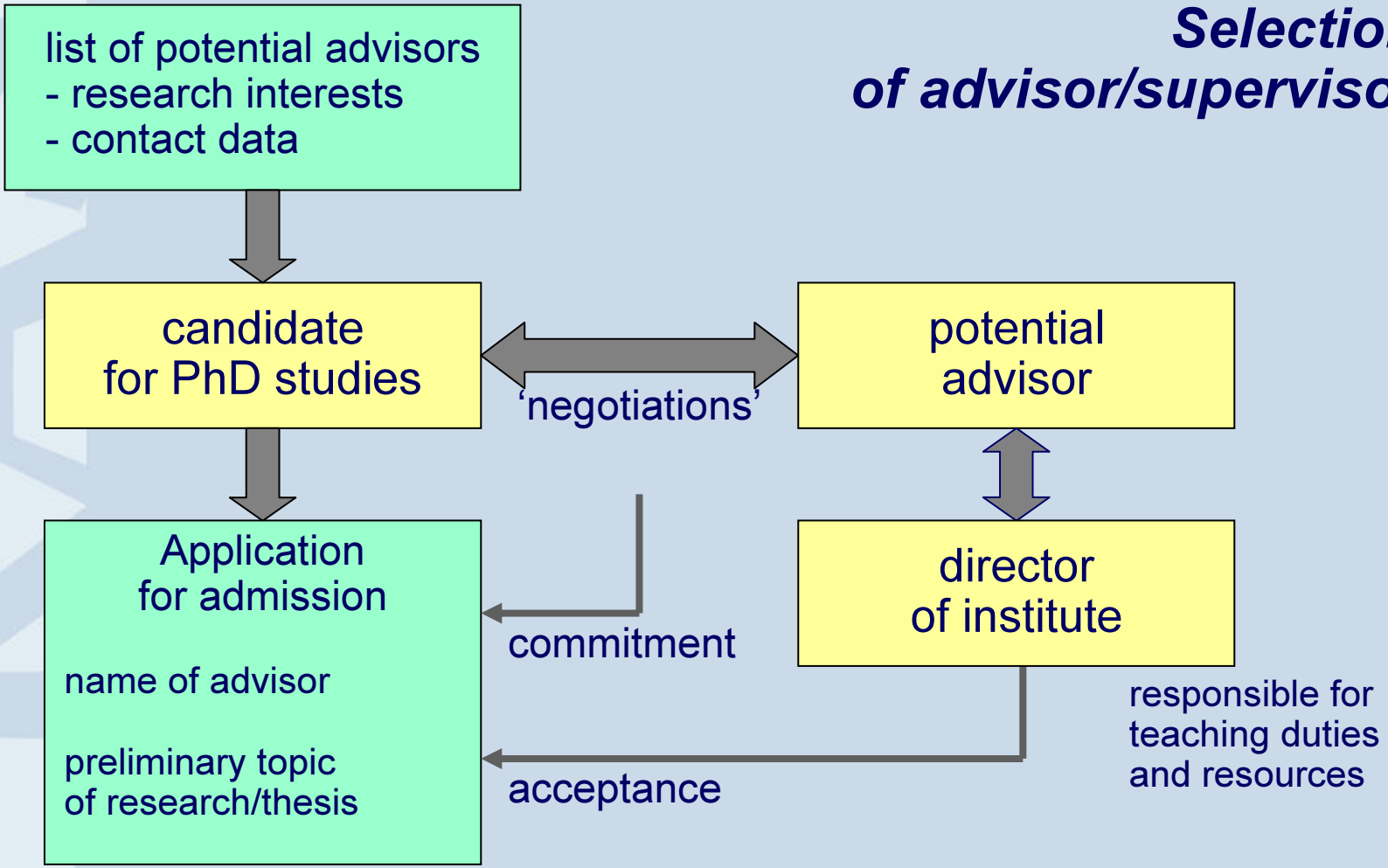


# Joint development of a programme



# Supervision

***Selection of advisor/supervisor***



# Supervision


## *Areas of responsibility and decision making*

- Rector
- Faculty Council
- Dean
- Director of PhD Programme
- Director of Institute
- student's advisor

## *Duties of student's advisor*

# Supervision

## *advisor/supervisor*

- assistance in development of individual study programme (selection of courses)
- assistance in development of research plans
- monitoring of student's progress in research and providing student with feedback
- assessment of student's research report (submitted at the end of each semester), including comments
- assessment of students's seminar presentations (each semester)

## *Director of PhD Programme*

- final assessment of student's research report and advisor's comments
- monitoring of student's progress in coursework
- monitoring of student's performance in teaching

***supervision of advisors***

# Support for international mobility

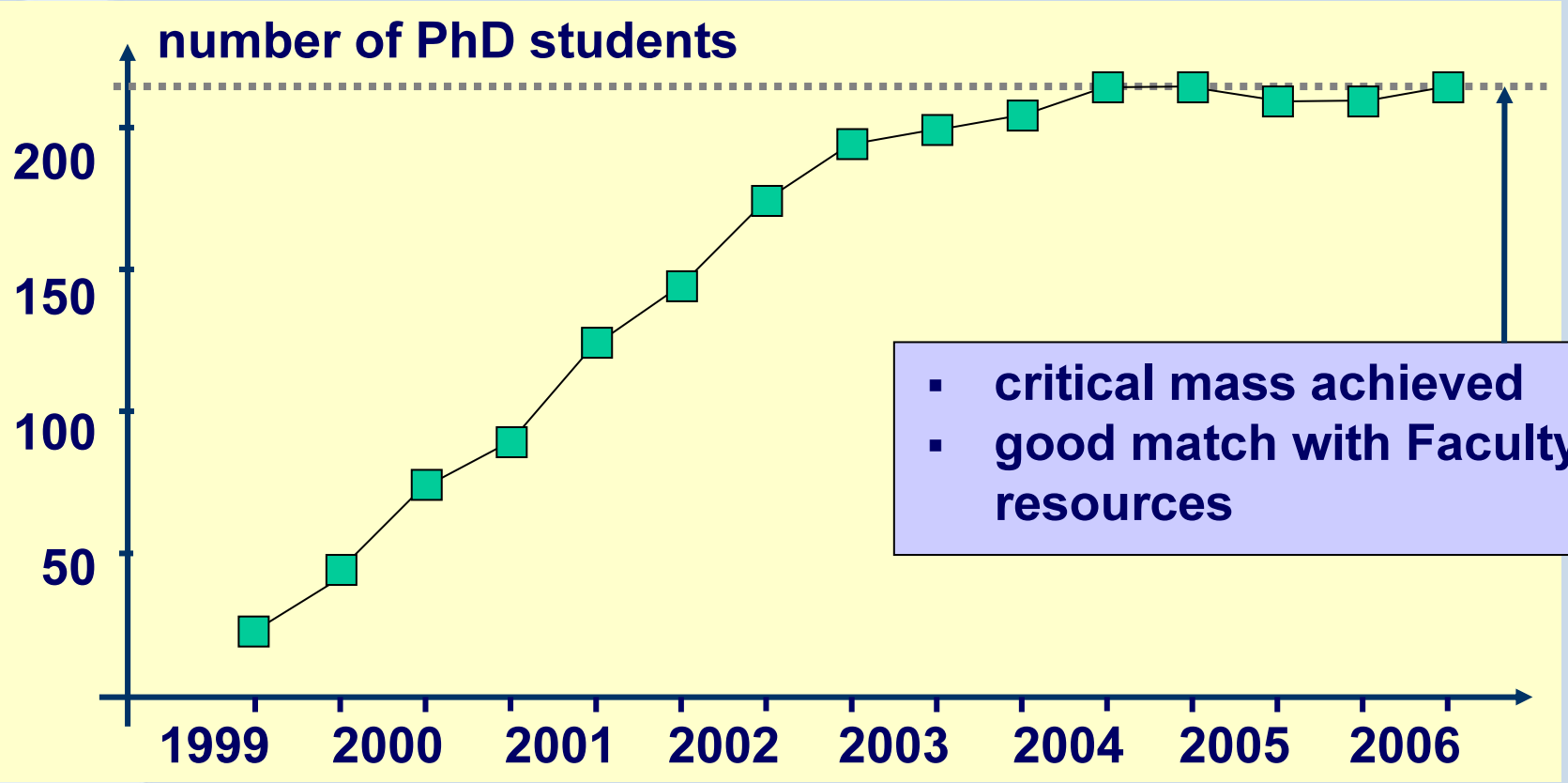
- ECTS for credit transfer and accumulation
- flexible registration requirements – pace of studying adjusted by the student
- special provisions in academic regulations to support international mobility (relaxation of registration requirements)
- links with the PhD programme taught in English, intended mainly for foreign students
- Dean's fund to support the participation of PhD students in international conferences

# OUTLINE

- Doctoral training in Poland
- **New PhD programme at the Faculty of Electronics & Information Technology**
  - characteristics (with emphasis on curriculum)
  - **experiences**
- Conclusion

# After 7 years

- 45-75 candidates admitted each year
- admissions - every semester



# ECTS

## Popular view:
## ECTS - not suitable for doctoral programmes

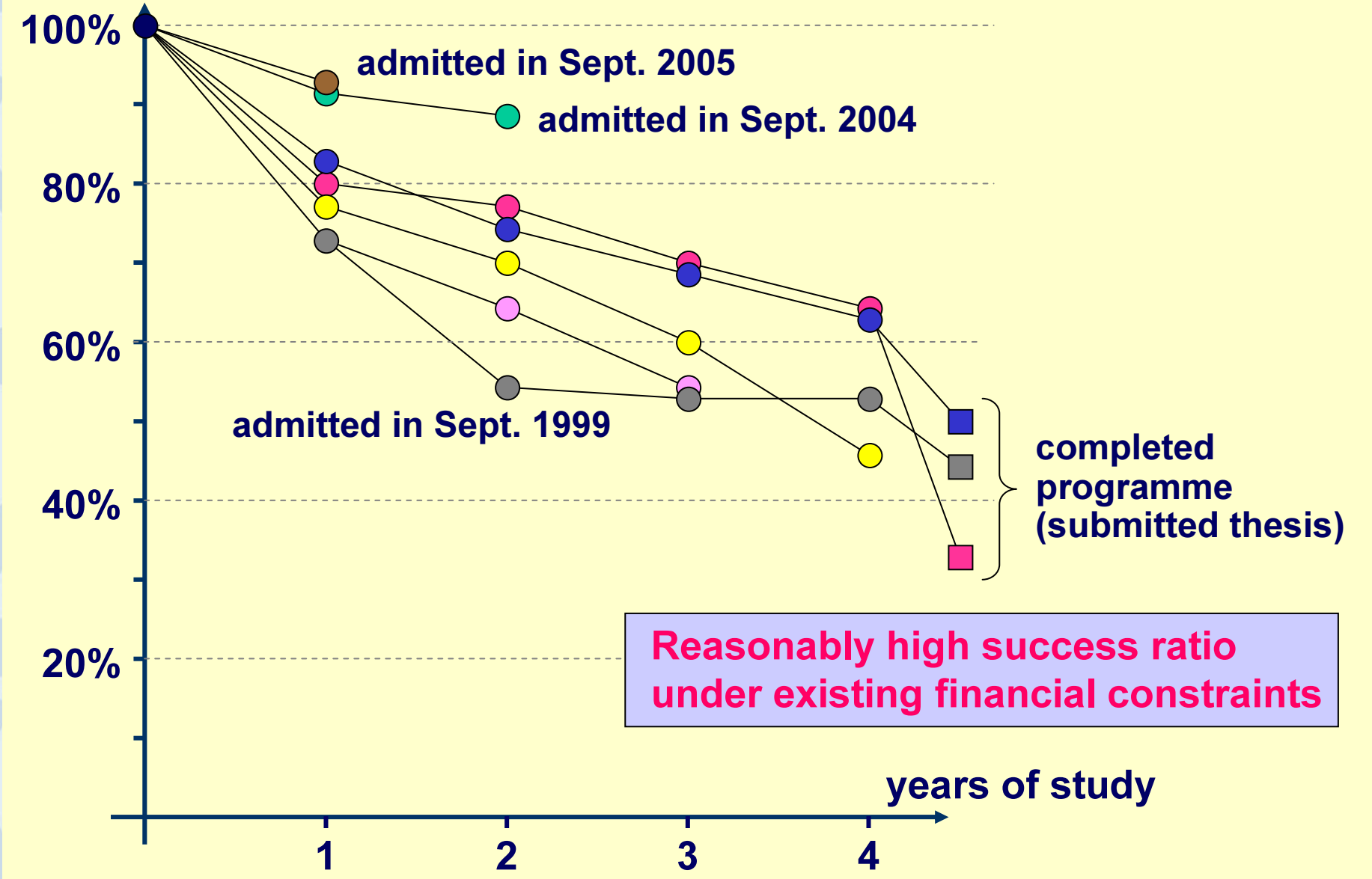
**only 27% of European universities apply ECTS for third-cycle**

D. Crosier: *Trends V – presentation of initial results*, EUA Council meeting, 19 Oct. 2006

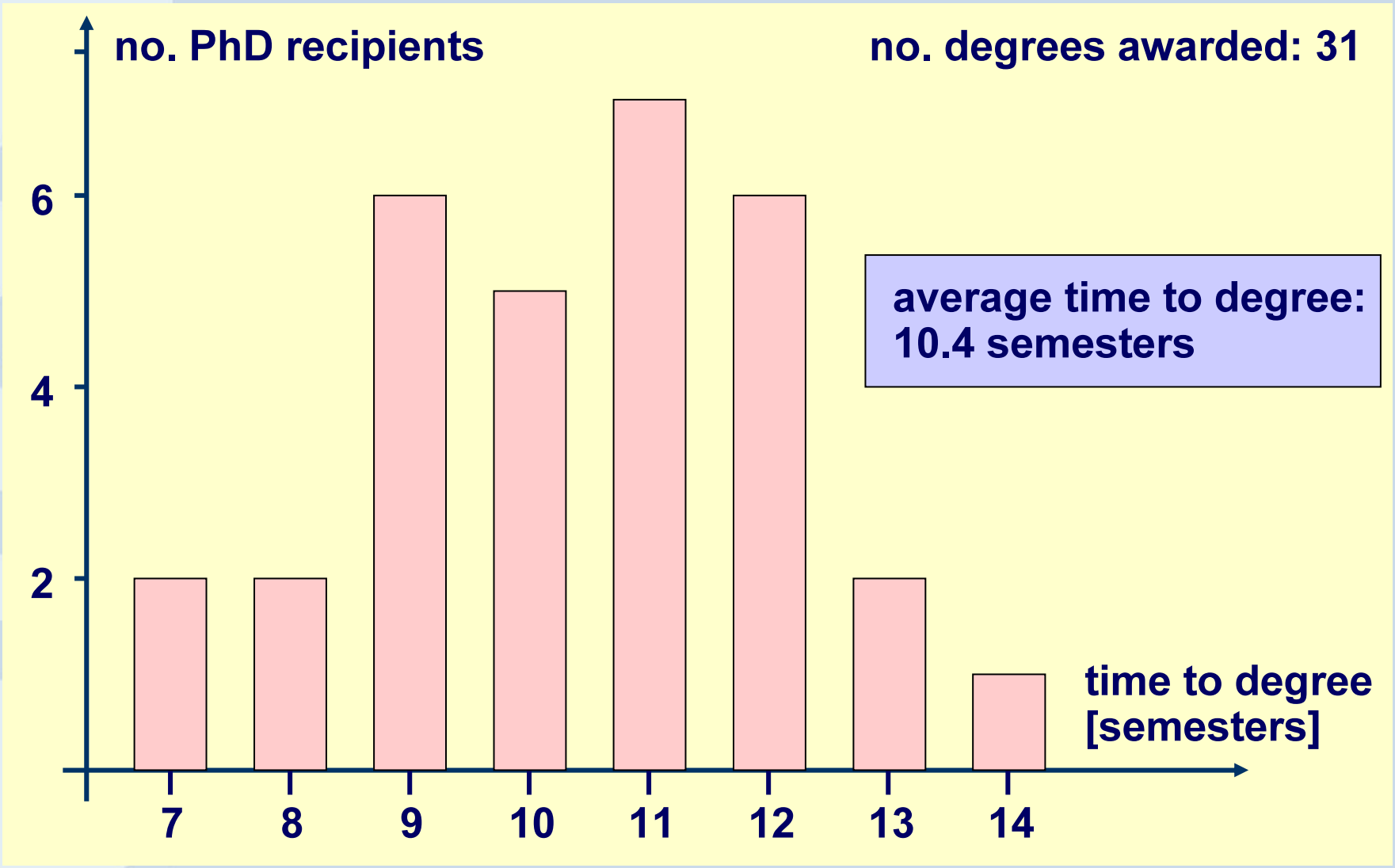
## Positive experience

- **ECTS - useful mechanism for recognition of courses and other forms of formal training offered by different institutions**
- **importance of individual research clearly emphasized by assigning a large number of ECTS points to a course formally called "PhD research".**
- **possibility to use the same procedures and the same information system for all 3 cycles in the Bologna structure**

# Attrition



# Time to degree



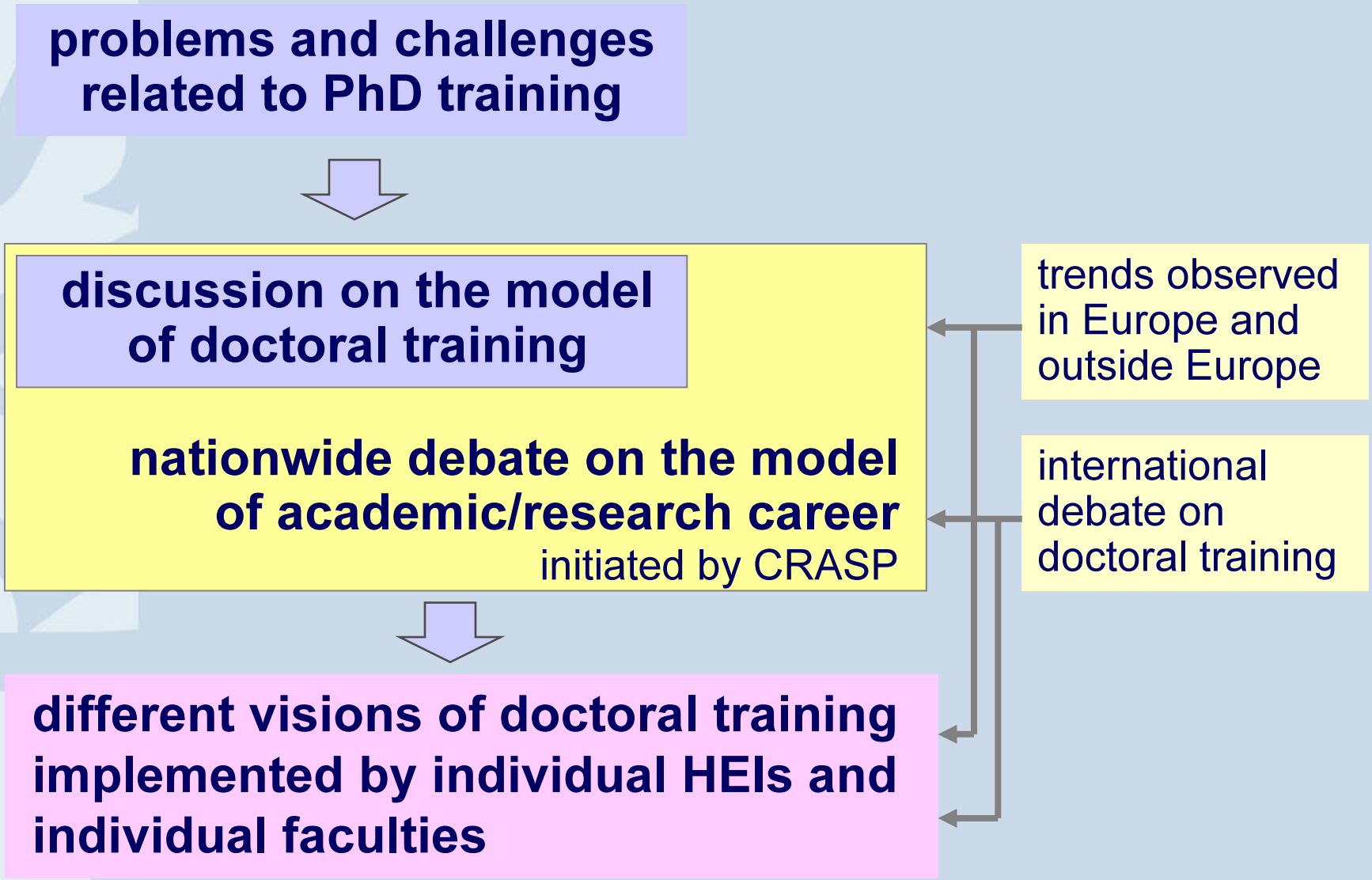
# Growing diversification

- **Growing diversification of candidates**
  - ***among students admitted in Sept. 2006***
  - ***> 25% graduates from other HEIs***
    - ***eng. and non-eng. schools***
- **Growing diversification of research topics**
  - ***more interdisciplinary theses***
- **Candidates from other HEIs perform – on average – better than our MSc graduates**

# OUTLINE

- Doctoral training in Poland
- New PhD programme at the Faculty of Electronics & Information Technology
  - characteristics (with emphasis on curriculum)
  - experiences
- **Conclusion**

# Looking to the future



# Looking to the future - example

**PhD programme**
**at Faculty of Electronics and Information Technology**

- **part of 3-cycle Bologna structure**
  **integrated with MSc programme**
- **ECTS-based curriculum requirements and academic regulations**
- **support for interdisciplinary education**

**Our answer to**
**„a need for a transparent, readable and comparable third degree”**
**- one of the main goals of the Bologna Process**

[*Bologna Process between Prague and Berlin – Report to the Ministers of Signatory Countries*, Sept. 2003]