



KU LEUVEN
RESEARCH & DEVELOPMENT



Research, technology transfer, spin-off creation

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*ESAT-STADIUS KU Leuven
iMinds Medical IT*





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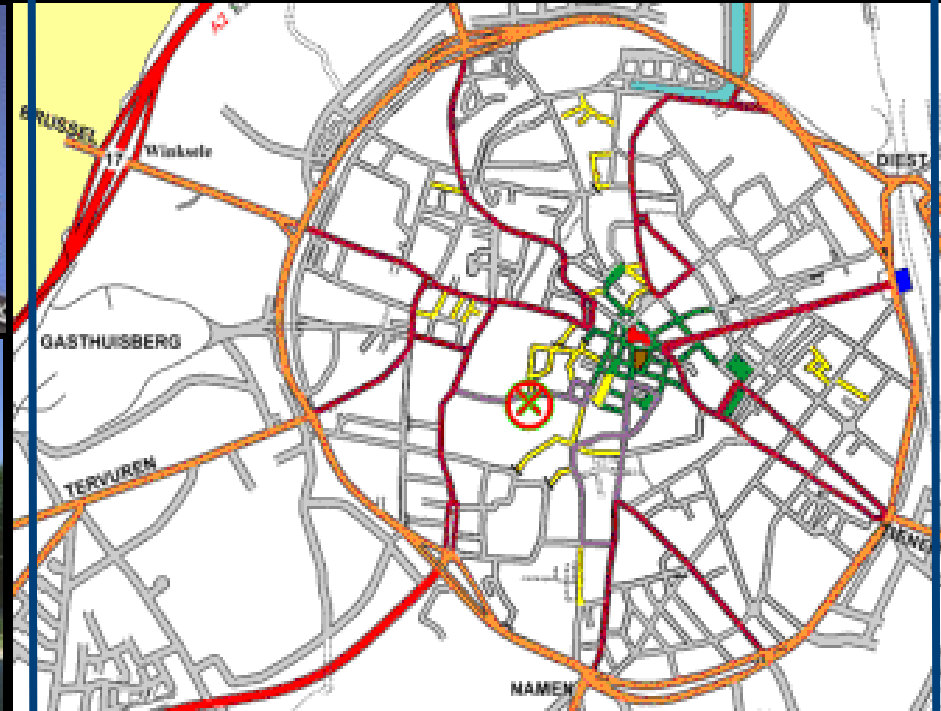


Excellent Research

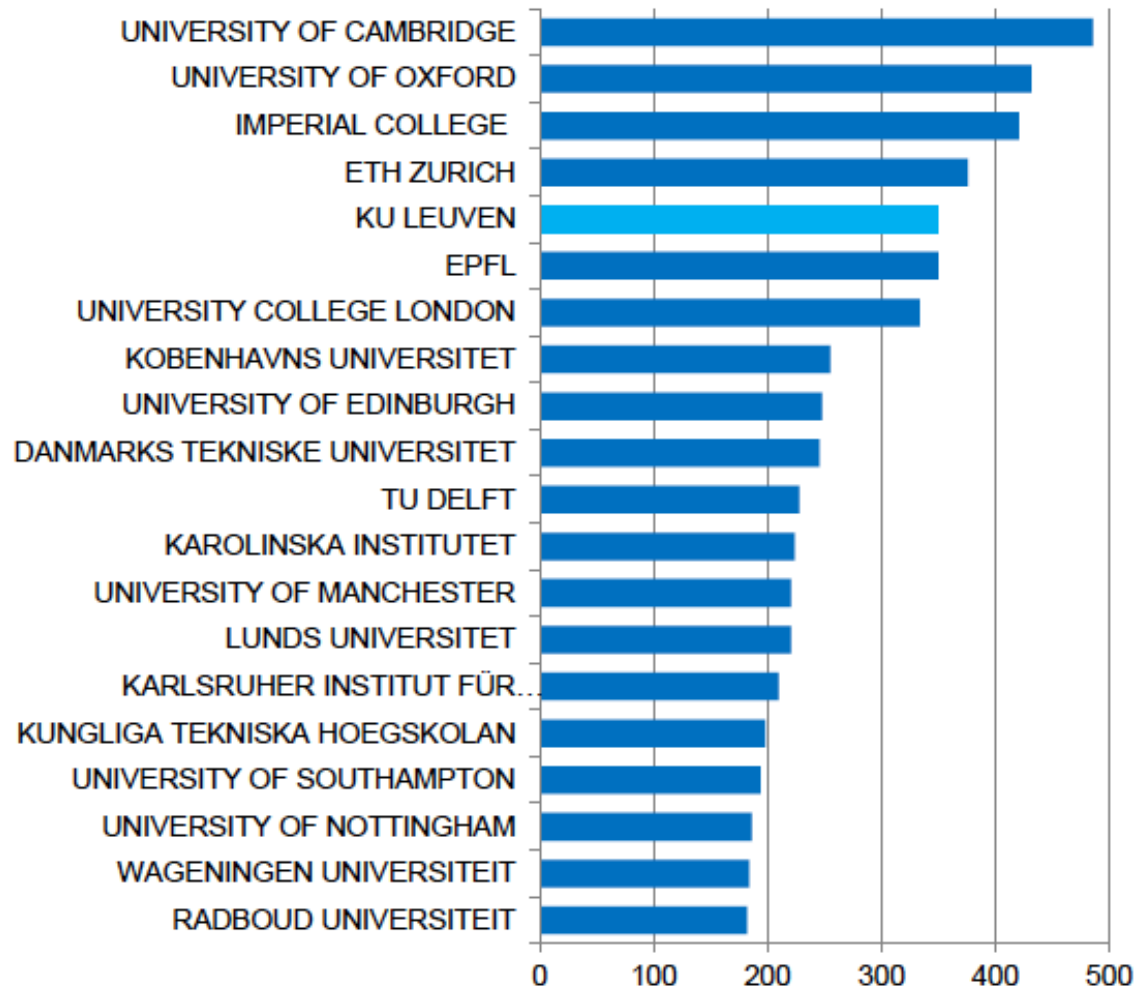
Technology Transfer Office

Creative environment





- K.U.Leuven - **4000** researchers & **1500** faculty, **800 MEUR**
- Gasthuisberg – **1300** researchers, **800 MEUR**
- LERU (League of 22 European Research Intensive Universities)
– coordination centre

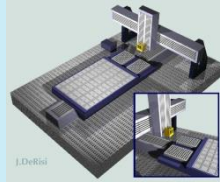
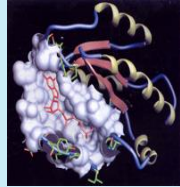
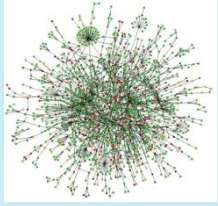


STADIUS research topics

Bioinformatics/Computational Biology

Computational Biology

- Genomic data fusion
- NGS data analysis
- Graphical models & kernels



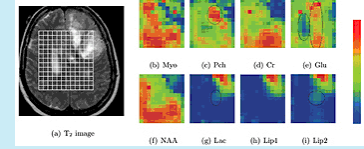
Applications

- Diagnosis of genetic disorders
- Disease gene discovery
- Disease management

Biomedical Data Processing

Methodology

- Matrix/tensor algebra
- Classification and survival
- Multimodal Signal Processing & Analysis

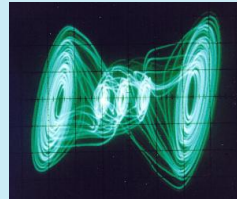
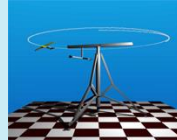


Applications

- Magnetic Resonance Spectroscopy
- EEG & Neonatal signal analysis
- Cancer diagnosis & prognosis

Systems, Models & Control

- Complex networks & nonlinear systems
- Numerical linear algebra
- Optimization in engineering
- Support vector machines & kernel methods
- Advanced process control
- Datamining, information retrieval & knowledge discovery



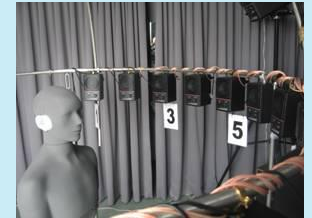
Digital Signal Processing for Audio & Telecom




























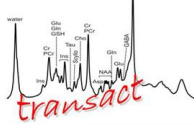
Audio Speech processing

- Speech Communications
- Public Address Systems
- Hearing Aids/Cochlear Implants

Digital Communications

- Wireline ADSL/VDSL
- Wireless



Research	Fundamental	Strategic	Demand-driven
 	BOF Projects 8: GOA: 2; PF: 2; BIL: 2; VES:1  Fellowships: DBOF PDM   	IOF Projects: 2: 2KP Hercules collaborations: 3 KU Leuven topfacilities Genomics Core SyBioMA KU Leuven centra LICT, LMTC LBioSCENTER 	<i>software</i> Industry: 1 http://homes.esat.kuleuven.be/~biomed/software.php http://www.esat.kuleuven.be/bioinformatics/software.php
	Projects: 13 Fellowships: PhD: 4; Postdoc: 6	N.A.	N.A.
 	N.A.	FL. Care Demo Project: 1 IWT Projects: SBO: 2; Proeftuin:1 VSC: TIER1:2 IWT Fellowships phd: 10 IMEC: fellowships: 1 	IWT Projects: TBM: 4; O&O: 2; Eurostars: 1 IWT Baekeland: 1 IWT innovation postdoc: 1
  	VLK: 1 Vlaamse Liga tegen Kanker <small>De organisatie achter 'Kom op tegen Kanker'</small> FOD Kankerplan: 1 BELSPO IUAP: 2 ; VLIR: 2  	N.A.	N.A.
	N.A.	iMinds Medical IT 2014 SBO: 1	iMinds Medical IT ICON: 3; Fallrisk , Nxt Sleep, b-SLIM
	 EDUCATION & TRAINING Projects: EU:5; ERC:3 ; MC ITN:3 ; EFRO Interreg:1 ; COST: 2; ERASMUS:1	   <small>Biomedical Data Fusion using Tensor based Blind Source Separation</small>   	 <small>Initial Training Network Sensitivity Analysis for Deterministic Controller Design</small>  



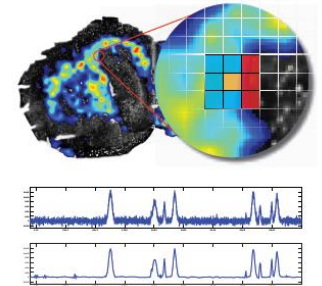
eHealth



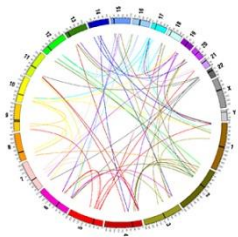
(bio)medical informatics & datamining



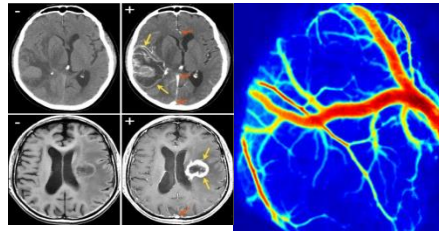
personal genomics



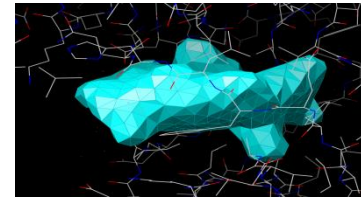
proteomics & metabolomics



visual analytics



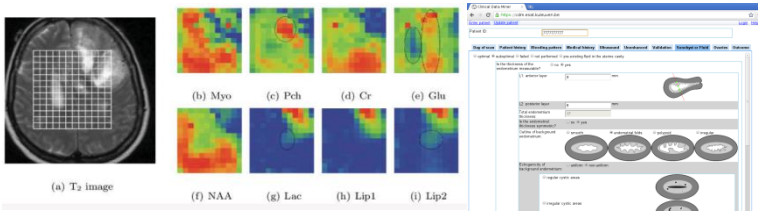
medical imaging



chemoinformatics



biomarker discovery for personalized medicine



biostatistics for improved disease classification



patient (tele) monitoring

Research output bdm

- Publications:
 - 13 books
 - 400 journal papers
 - 450 conference papers



Google scholar

	All	Since 2009
Citations:	57701	30205
h-index:	101	74
i10-index:	714	434



- Fellow IEEE; FWO Excellence Award



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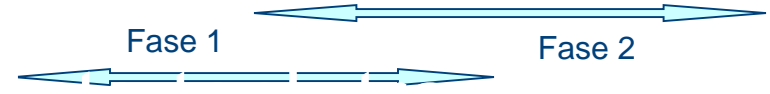
KU Leuven: Mission

- Three core tasks:
 - Academic education
 - Scientific research
 - Service to the community
 - = knowledge and technology transfer
 - to society
 - to industry



Direct Contract Research

K.U. Leuven
Research & Development



FFF

BA/VC

KUL
Research
group

spinoff
NV

founders

employees

Research				
Basic	BOF			erc
Strategic	IOF			FP6/7
Valorisation				SME
Patents				
Licenses				

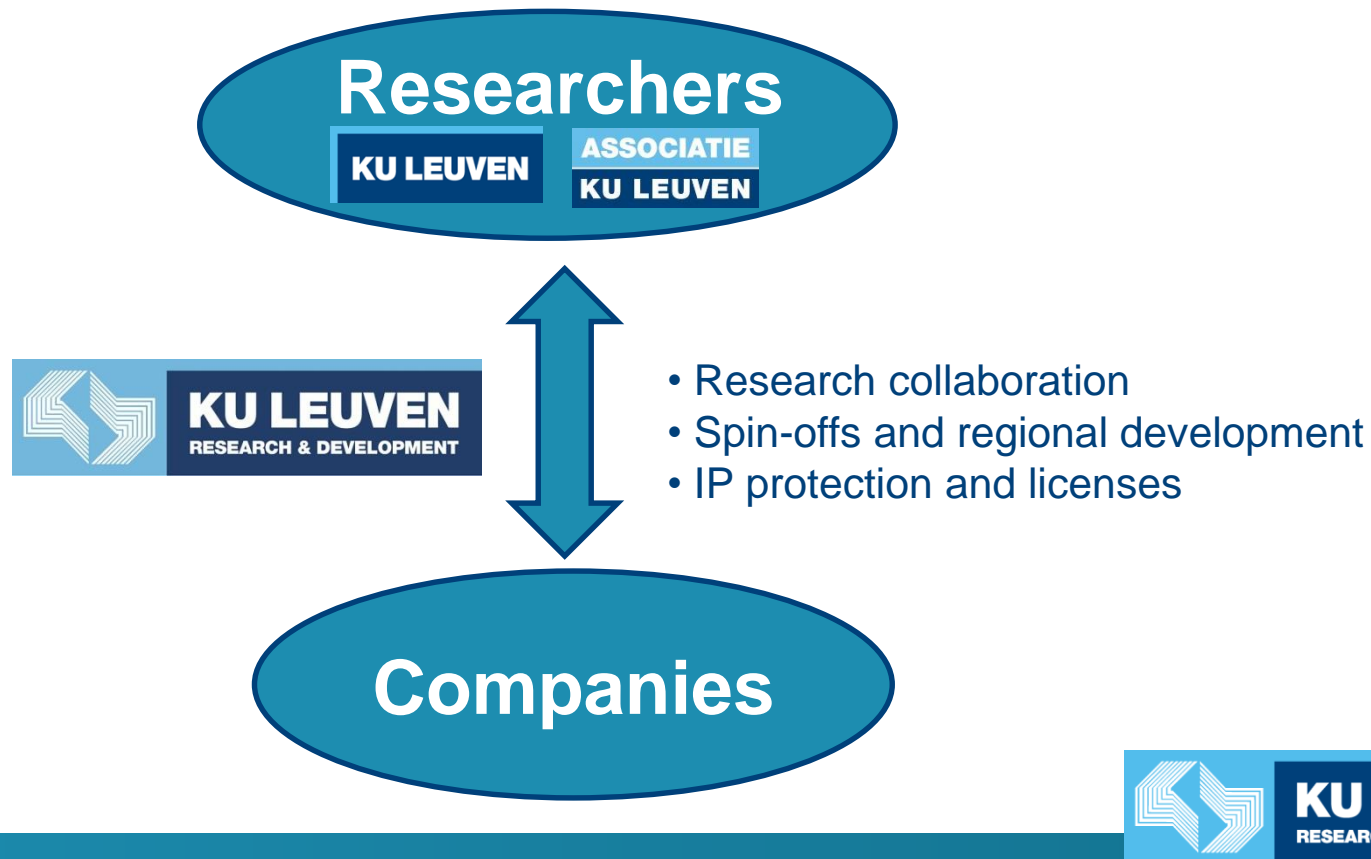
Technology Transfer Office: Leuven Research & Development (LRD)

- Founded in 1972
- Technology & knowledge transfer office of KU Leuven
- Bridge between university, industry and society
 - Supports researchers
 - Offers technologies to industry
- High level of budgetary and HR autonomy
- 'Business unit'



LRD: Mission

“Promoting and supporting knowledge and technology transfer between university and industry”



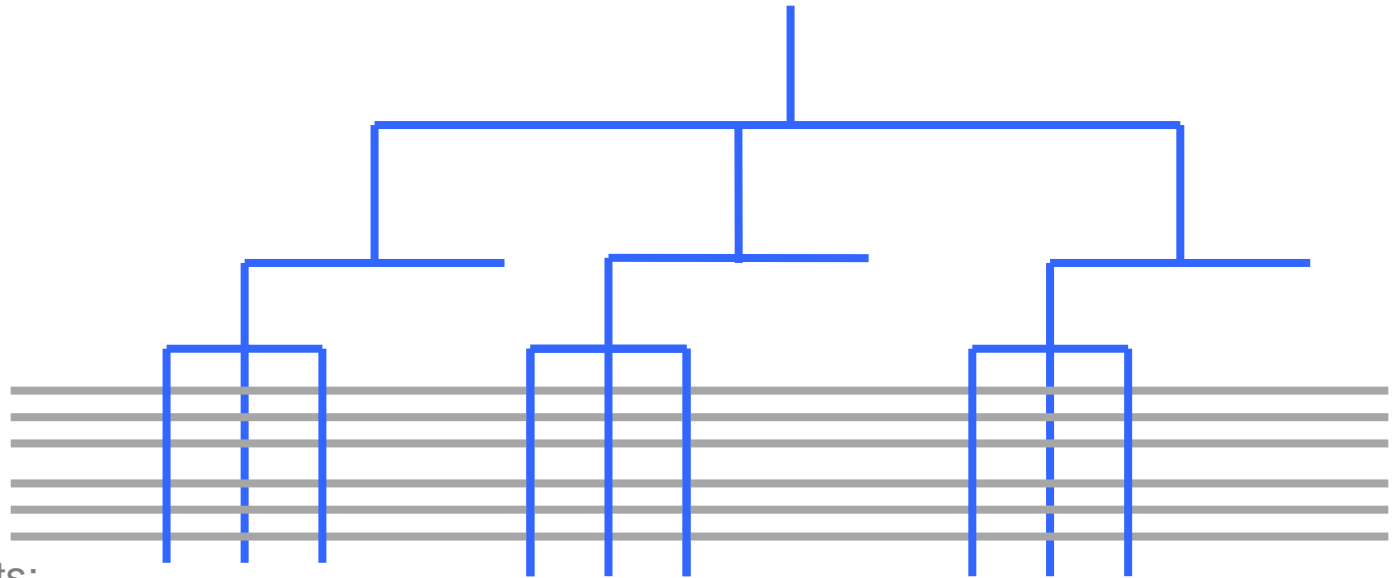
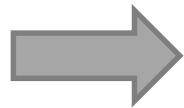
What is LRD?

- LRD consists of:
 - Central multidisciplinary staff
 - Supports researchers in knowledge and technology transfer
 - Research divisions
 - 1,810 researchers & 438 supporting
 - Embedded in university via matrix structure
 - Virtual organisations in which (groups of) researchers (from different faculties or departments) can group their applied research, commercial-industrial and exploitation activities.



LRD research divisions

Faculties, departments, research groups:
quality in research and educational activities

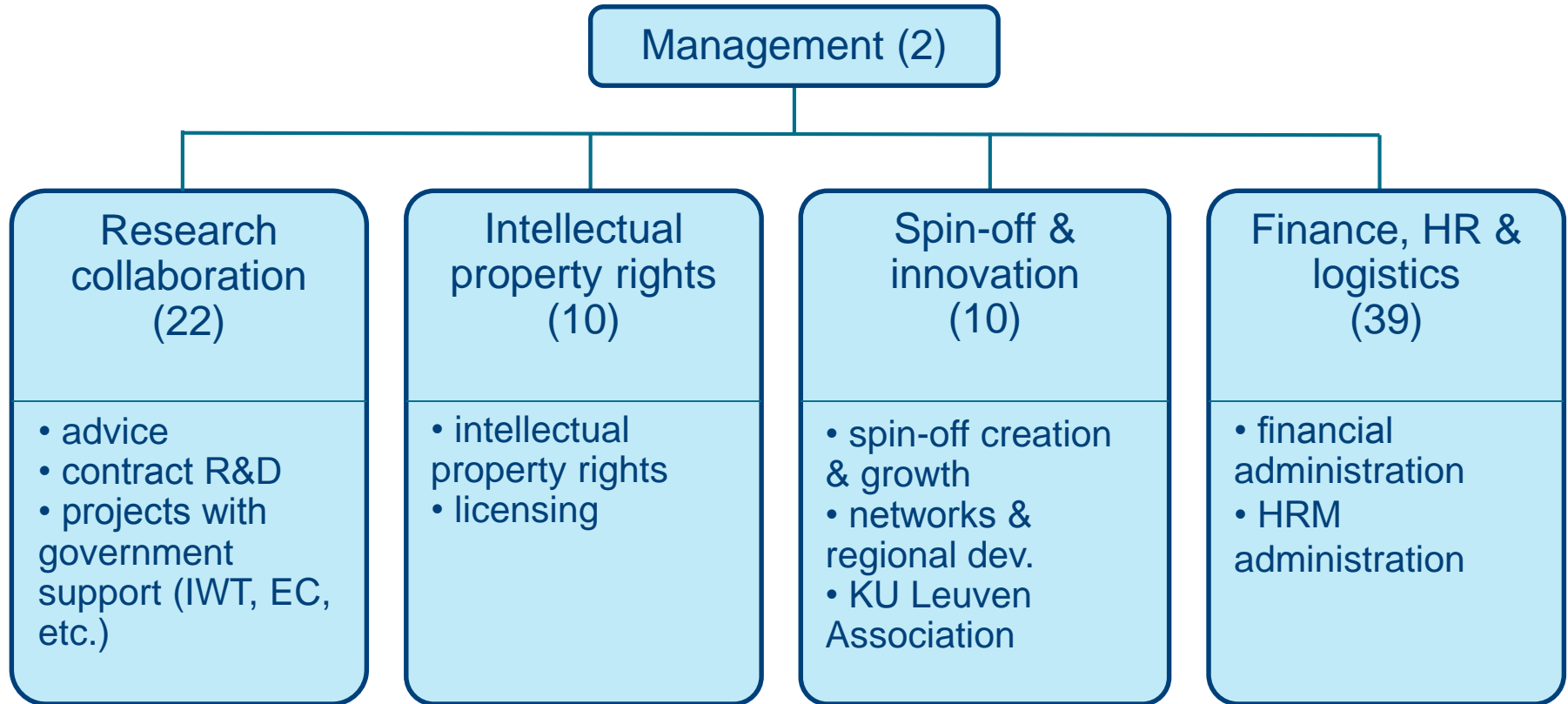


LRD divisions/projects:
Contract and budgetary
autonomy and flexibility
incentives



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Organisation



- Close interaction and collaboration between different units
- Regional and international networking

LRD Objectives

- Research collaboration
- Protection and exploitation of intellectual property
- Spin-off creation & innovation
- Support of regional development
- Stimulation of entrepreneurship through network initiatives



Research collaboration

- Oldest activity of LRD
- Performing research & services for companies or governments
- What do we do?
 - Creating awareness and transferring knowledge
 - Providing advice
 - Negotiating contracts
 - Following up on contracts
 - Managing research files financially
 - Offering administrative support
 - Preparing legal documents



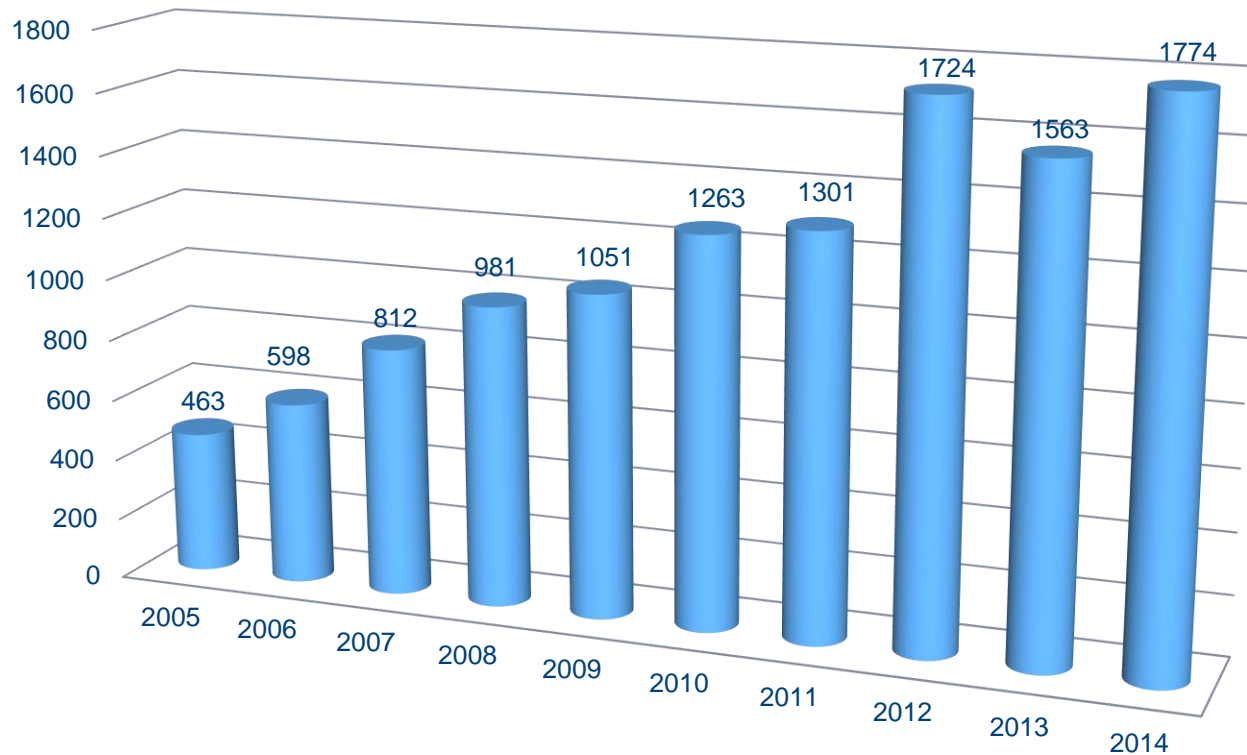
Research collaboration

- Incentives for researches:
 - Who gets what (after payment of costs)?
 - 8.5% LRD and 8.5% KU Leuven
 - Remaining (and largest) part of net profit flows back to research division
 - Incentive: 50% of net profit can go to individuals (rarely used)
 - What to do with built up reserves?
 - Expand research group
 - Invest in patents
 - Invest in spin-offs



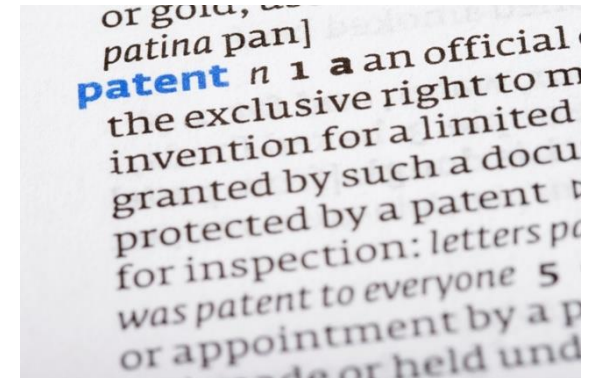
Research collaboration

- 114 million euro income from research collaboration
- 1,774 new agreements (2014)



Intellectual property

- What do we do?
 - Creating awareness and transferring knowledge
 - Assessing the feasibility, patentability and market potential of an invention
 - Determining a protection strategy
 - Drafting and filing a patent application
 - Following up on patent procedures and costs
 - Negotiating and drafting NDAs, MTAs and license agreements
 - Finding industrial partners



Intellectual property

- 129 patent applications in 2014
 - 586 active patent families
 - 42 PCTs

In numbers	2014
Reported findings	177
Priority submissions	129
New patents	52

- 87 million euro license-income
- Granted patent is often the basis for setting up a spin-off company

	Naam	2011 Licentie-inkomsten USD
1	Northwestern University	191.541.162
2	University of California System	182.049.620
3	Columbia University	146.319.455
4	New York University	142.202.157
5	Princeton University	115.206.000
6	Massachusetts Inst. Of Technology (MIT)	76.120.000
7	University of Washington/Wash.Res.Fdn	67.362.185
8	Stanford University	66.797.246
9	University of Texas System	65.359.377
10	UW-Madison/WARF	57.730.000

} 83.339.955 KU Leuven

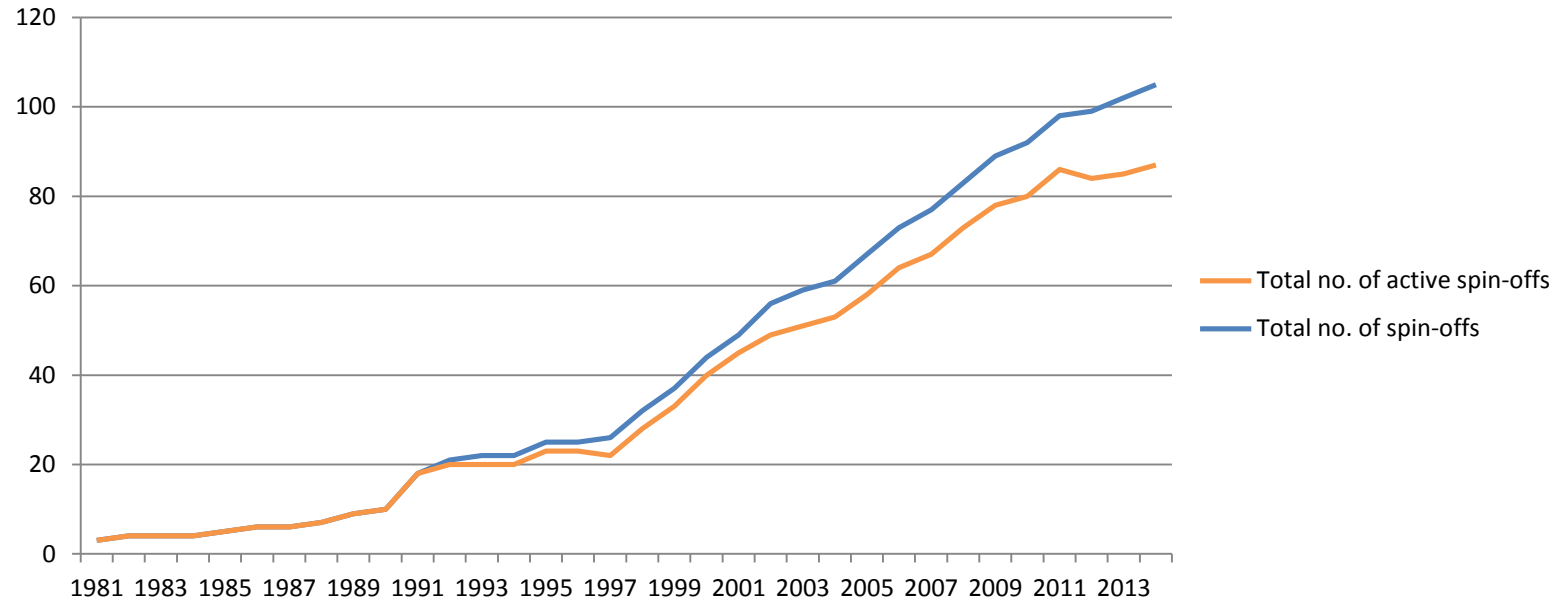
Spin-offs & innovation

- What do we do?
 - Developing business plans
 - Validating business models and the market
 - Offering legal support
 - Putting together a competent team
 - Finding investors
 - Finding infrastructure
 - Managing growth of spin-offs
 - Promoting valorisation and entrepreneurship
 - Stimulating regional development, networks and clusters



Spin-off companies

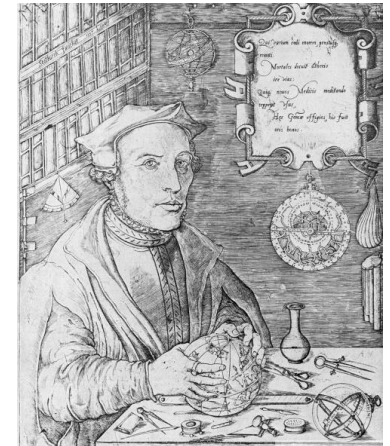
Cumulative number of spin-offs created



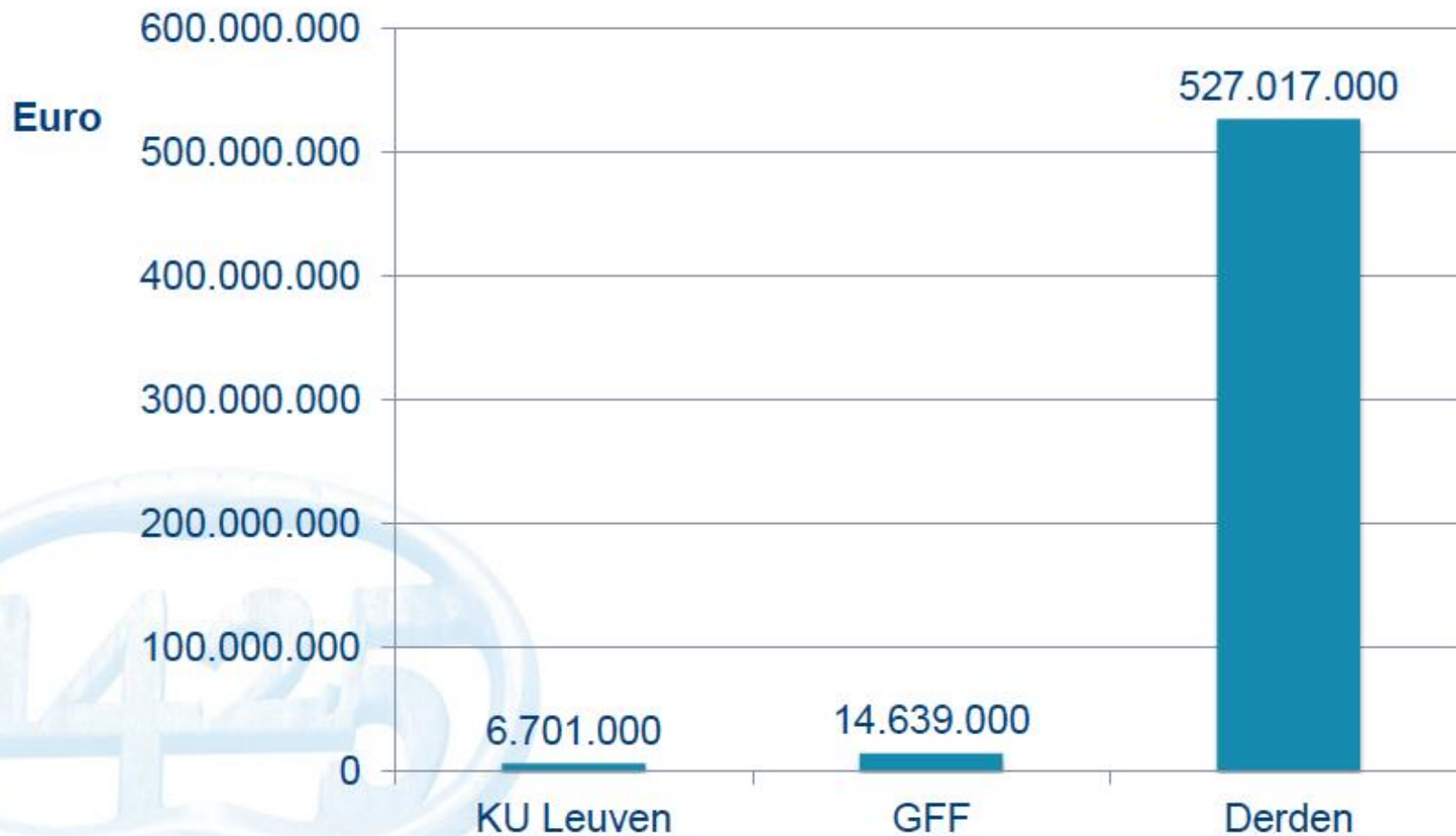
- 105 spin-off companies started, 87 still active; together +/- 4,100 employees (numbers 2014)
- 760 million euro external capital (2005-2014 only)
- 7 successful flotations (IPOs)

Incubation & seed financing

- Gemma Frisius Fund KU Leuven (GFF)
 - Seed capital for spin-off companies
 - GFF founded in 1997 & GFF II in 2002
 - At the end of 2009 GFF and GFF II merged into one single fund
 - Partners:
 - KU Leuven (20% of capital)
 - Two banks: KBC Private Equity (40%) and BNP Paribas Fortis Private Equity (40%)
 - Combination between:
 - Knowledge and technology transfer expertise (university)
 - Financial expertise (financial partners)
 - Not restricted to one technology domain
 - 27 million euro invested in 42 spin-off companies



Investerings in spin-offs 2005 - 2011

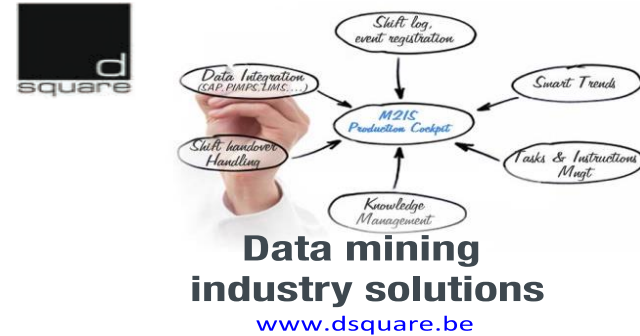


STADIUS - SPIN-OFFS “Going beyond research”

www.esat.kuleuven.be/stadius/spinoffs.php



Transport & Mobility research
www.tmleuven.be



Data mining industry solutions
www.dsquare.be



Data handling & mining for clinical genetics
www.cartagenia.com



Automated PCR analysis
www.ugentec.com



Financial compliance
www.baesystems.com



Automation & Optimization
www.ipcos.be



KU LEUVEN
STADIUS
Center for Dynamical Systems,
Signal Processing and Data Analytics

www.esat.kuleuven.be/stadius/



iMinds
Medical Information
Technologies Department

www.kuleuven.be/iminds/medicalit



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Contact bart.demoor@esat.kuleuven.be



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KU Leuven entities



Student organisations



LCIE daughter initiatives



ArtStart (XYZStart?)



External partners



Sponsors



KU Leuven zet licht op groen voor student-ondernemers



De KU Leuven maakt werk van de ondernemende student. © kuleuven

Leuvense studenten kunnen binnenkort een gloednieuw ondernemersstatuut aanvragen. De KU Leuven volgt zo de trend om fors in te zetten op het stimuleren van de ondernemersgeest bij studenten.

De Academische Raad van de KU Leuven, het hoogste bestuursorgaan, zette deze week het licht op groen voor een **gloednieuw studentenstatuut**: dat van de **student-ondernemer**. Studenten die een bedrijf willen oprichten, kunnen daarbij in bepaalde gevallen aanspraak maken op enkele **voorrechten**, zoals het spreiden van examens. Het statuut ligt een beetje in de lijn van het topsportstatuut.

De Leuvense alma mater is niet de eerste die met zo'n statuut op de proppen komt. Aan de **UGent** bestaat het statuut al sinds 2011 en daar is het een schot in de roos. In het academiejaar 2011-2012 waren er nog maar 37 aanvragen. Dit jaar gaven evenwel al **85 studenten** te kennen dat ze wilden ondernemen binnen het speciale kader. Ook aan een reeks hogescholen, zoals bij de Hogeschool Gent, de Artevelde Hogeschool en de Limburgse PXL Hogeschool bestaat er een statuut.

Triple Helix @ Leuven

university



industry



government



Regional development

- Partners:

- City of Leuven
- Province of Flemish Brabant
- Vinnof
- CREA - European Commission
- KBC Private Equity
- BNP Paribas Fortis Private Equity
- imec
- VIB



- ELAt: Eindhoven - Leuven - Aachen triangle

- Cross-border and interregional network
- Stimulation of knowledge economy



Networks

- Horizontal networks:

- Leuven.Inc
- Flanders Smart Hub



- Vertical networks: technology clusters

- DSP Valley
- LSEC
- KU Leuven research centres:
 - CD3
 - LMRC
 - LMTC
 - LICT
 - PharmAbs
 - NERF
 - LFoRCe



Science parks and incubators

- Arenberg Science Park
- Haasrode Science Park
- Leuven Noord Science Park
- Leuven Bio-Incubator
- KU Leuven Innovation & Incubation Centre (I&I)





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