



Topical Workshop on Electronics for Particle Physics
17 – 21 September, 2018 — Antwerp, Belgium

TWEPP-18

WELCOME

Prof. Paul Leroux
KU Leuven

KU LEUVEN

KU Leuven in short



KU Leuven - history

- KU Leuven founded in 1425
- Oldest Catholic University in the world



History

1425

Foundation by Papal Bull

1816

Refoundation as a state university
under Dutch rule

1911

First lectures in Dutch

1970

Division of the university into
KU Leuven and U.C.Louvain

2013

KU Leuven expands to include academic
degree programmes hosted at university
colleges within KU Leuven Association

1797

Abolition by the French authorities

1834

Restoration as a Catholic university

1965

Foundation of Kulak

2008

6 university colleges of the KU Leuven
Association sign an agreement to join their
educational programmes in the Associated
Faculty of Engineering Technology and
Bioscience Engineering

Eminent scholars and scientists



Pope Adrianus VI
(1459-1523)



Desiderius Erasmus
(1466-1536)



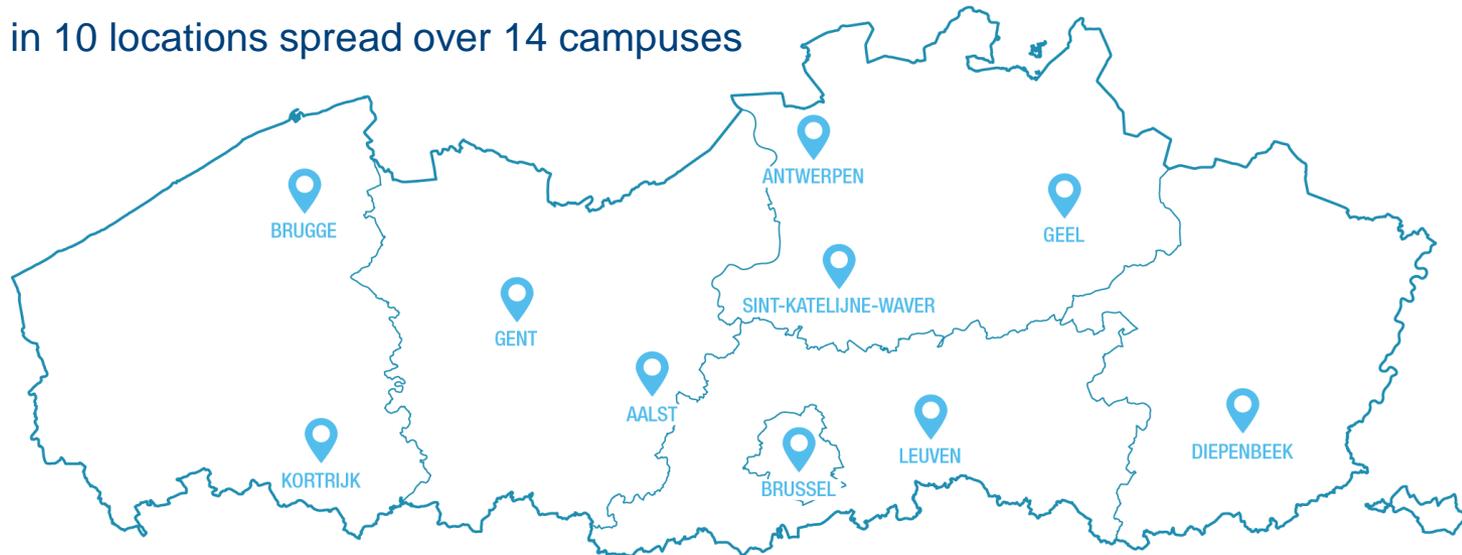
Andreas Vesalius
(1514-1564)



Gerardus Mercator
(1512-1594)

KU Leuven expands across Flanders

KU Leuven in 10 locations spread over 14 campuses



Leuven

Group T Campus, Leuven

De Nayer Campus, Sint-Katelijne Waver

Geel Campus

Carolus Campus, Antwerp

Sint-Andries Campus, Antwerp

Aalst Campus

Sint-Lucas Campus, Ghent

Sint-Lucas Campus, Brussels

Brussels Campus

Ghent, Technology Campus

Bruges Campus

Kulak Campus, Kortrijk

Diepenbeek Campus*

* The degree programme in Diepenbeek is jointly offered by Hasselt University and KU Leuven.

Mission

Excellence in academic education



Excellence in research

Distinguished service to society



Programmes

78 Bachelors's programmes

205 Master's programmes

44 advanced Master's programmes

Characteristics

Distinctive vision of education and learning

Culture of quality

Innovative learning environment

Flexibility

Internationalisation

Extensive range of education facilities

Figures: 2017-2018 academic year



Enrolment statistics

Total number of students: 56,842

| | |
|---------------------------|-------|
| Bachelor | 44.5% |
| Initial Master | 31.8% |
| Advanced Master | 4.8% |
| Doctoral Programme | 10,3% |
| Academic Teacher Training | 0.6% |
| Other | 8.0% |

Largest student populations:

Business & Economics
Medicine
Engineering Technology
Law
Arts

14% first-time students
49% female students



Figures: June 2018

International students

OVER 150 NATIONALITIES

10,239 international students

18% international students

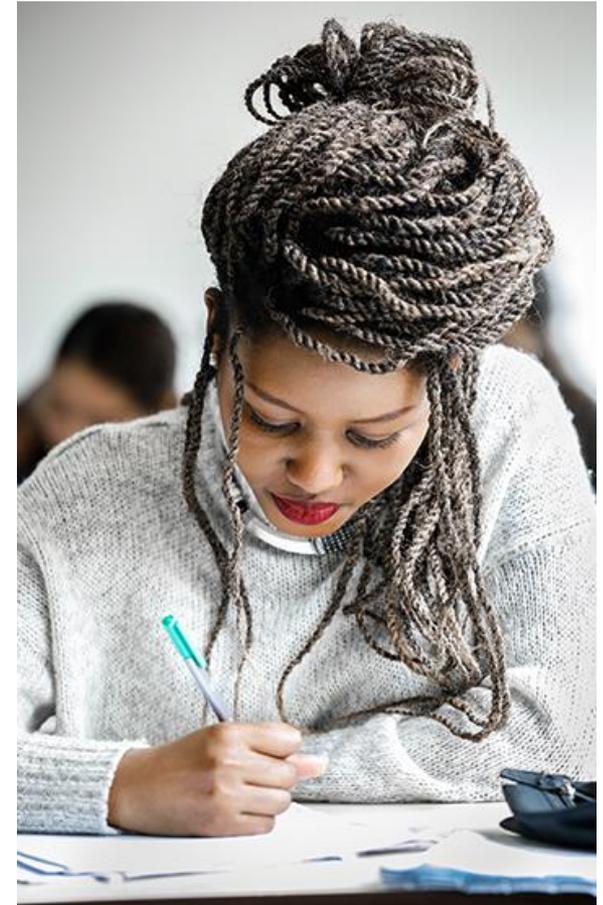
Top 5: EU

| | |
|-------------|-------|
| Netherlands | 1,926 |
| Italy | 728 |
| Spain | 568 |
| Germany | 479 |
| Greece | 266 |

Top 5: non-EU

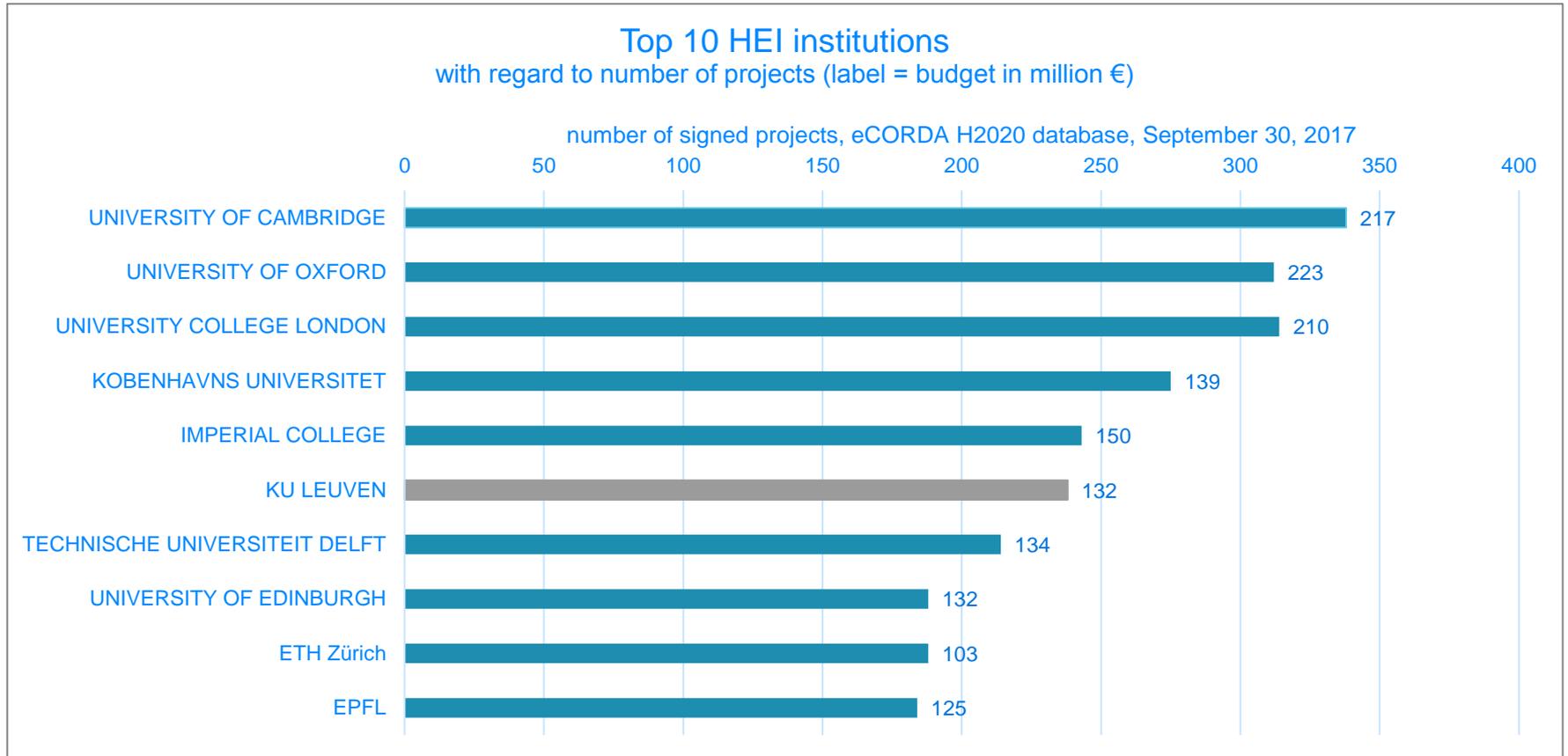
| | |
|---------------|-----|
| China | 927 |
| India | 511 |
| United States | 366 |
| Turkey | 235 |
| Iran | 196 |

Figures: June 2018



Research excellence

KU LEUVEN: A LEADING EUROPEAN RESEARCH UNIVERSITY



Total EC Contribution: €132 million

Number of projects: 238

Source: signed grants, eCORDA H2020 database, February 2018

Europe's most innovative university

KU Leuven is named Europe's most innovative university by Reuters. In this study, Reuters aims to identify which institutions contribute the most to science and technology, and have the greatest impact on the global economy.

Reuters top 100: Europe's Most Innovative Universities

1. **KU Leuven**
2. Imperial College London
3. University of Cambridge
4. École Polytechnique Fédérale de Lausanne
5. Technical University of Munich
6. University of Erlangen-Nuremberg
7. Delft University of Technology
8. University of Oxford
9. University of Munich
10. University of Zurich

Reuters' study is based on:

- » Number of publications
- » Patent application (number of applications, patents granted, ...)
- » Number of citations of patents and publications (in other patents and publications)
- » Number of industrial cooperations
- »...

A highly ranked university

#5

in the **Reuters** World Ranking of Most Innovative Universities (2017);
the highest-ranked European university

#47

in the **Times Higher Education** World University Ranking (2018)

#81

in the **QS** World University Ranking (2019)

#6 The sixth university in the European Commission **Horizon 2020** programme

#11 The 11th university in the **ERC** grants programme with 72 projects (as host institution)

Spin-off companies

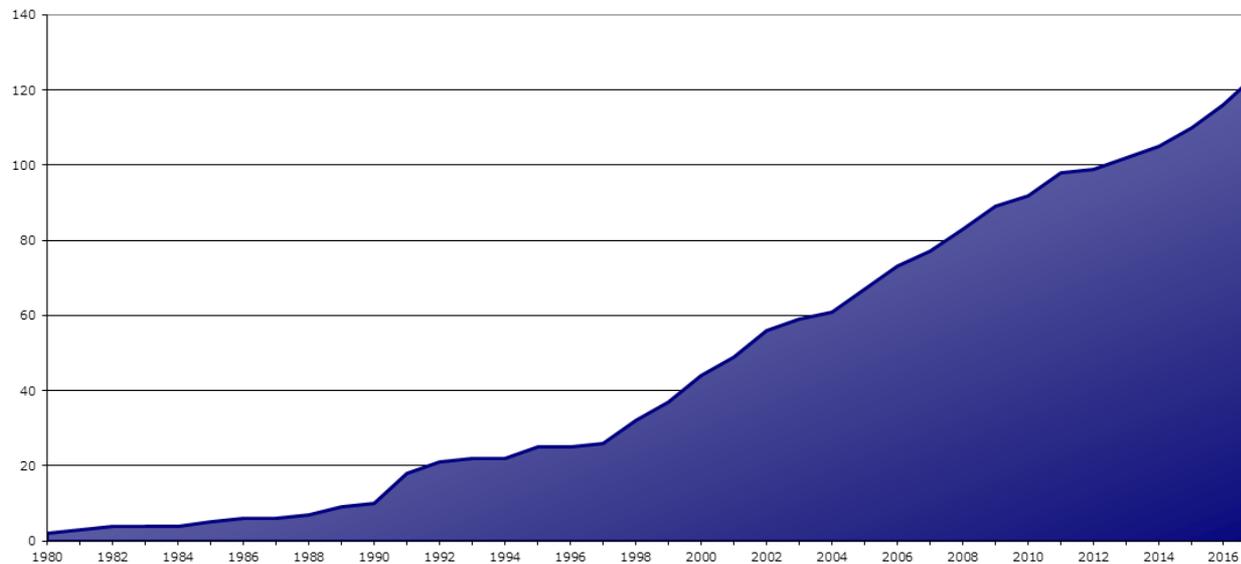
As of late 2017

124 spin-off companies

6,700 direct jobs

7 IPO's (Initial Public Offering)

Cummulative number of spin-offs created



Figures: 2017

Advanced Integrated Sensing Lab (ADVISE)



ADVISE at KU Leuven, Geel Campus



ADVISE - people



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✉ paul.leroux@kuleuven.be

☎ +32 (0) 14 72 13 06



[Prof. dr. ing. Peter Karsmakers](#)

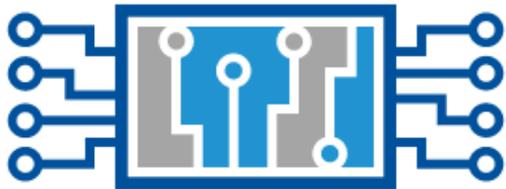
✉ peter.karsmakers@kuleuven.be

☎ +32 (0) 14 72 13 58

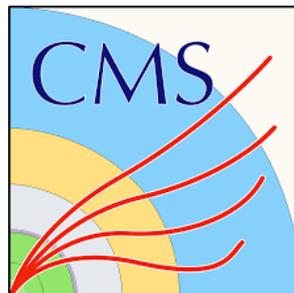
- 3 professors
- 3 full-time lecturers
- 3 post-doctoral researchers
- > 20 PhD students

Advanced Integrated Sensing

ADVISE



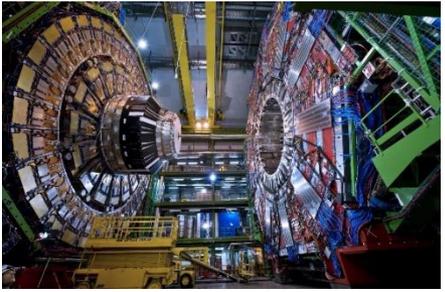
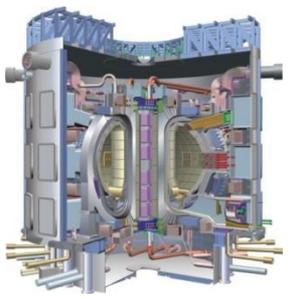
Radiation tolerant
integrated circuits



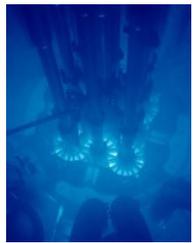
Machine learning
and statistics

Harsh radiation environment electronics

Application fields



ITER: Nuclear fusion CERN: CMS experiment

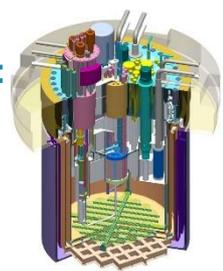


Reactor safety

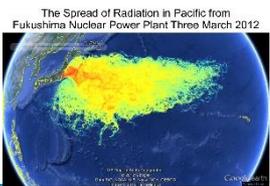


Space missions

SCK-CEN: MYRRHA



Robotic decommissioning

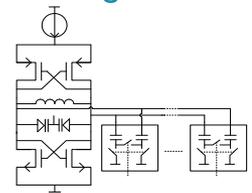
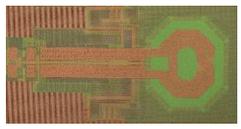


The Spread of Radiation in Pacific from Fukushima Nuclear Power Plant Three March 2012

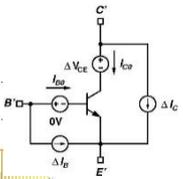
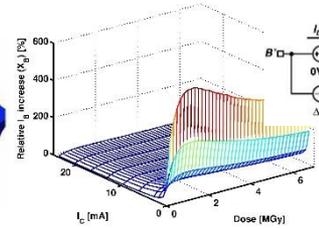
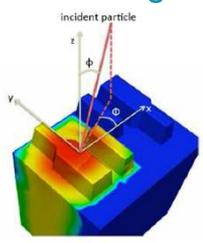
Accident intervention

Expertise

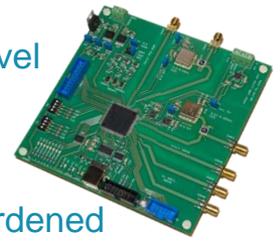
- RF, analog and mixed-signal radhard IC design



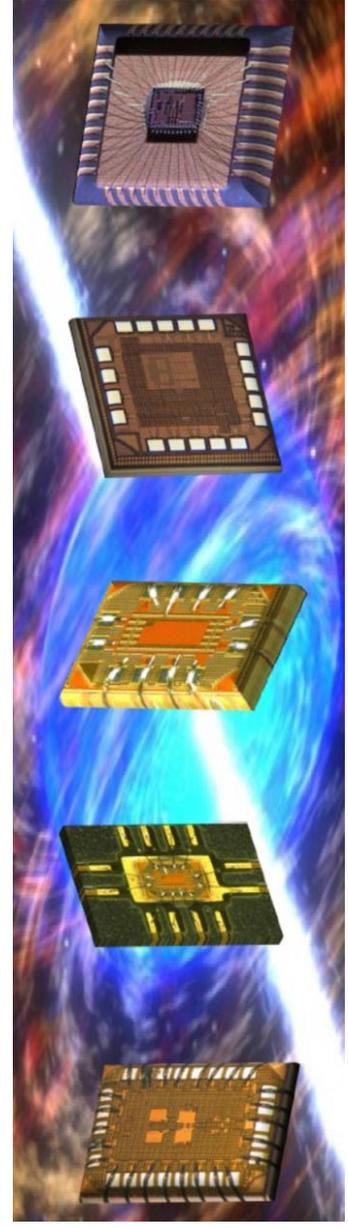
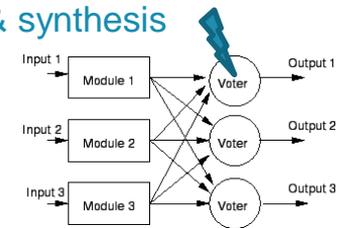
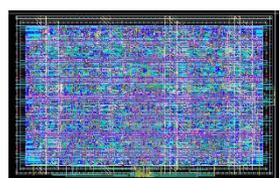
- Modelling radiation effects



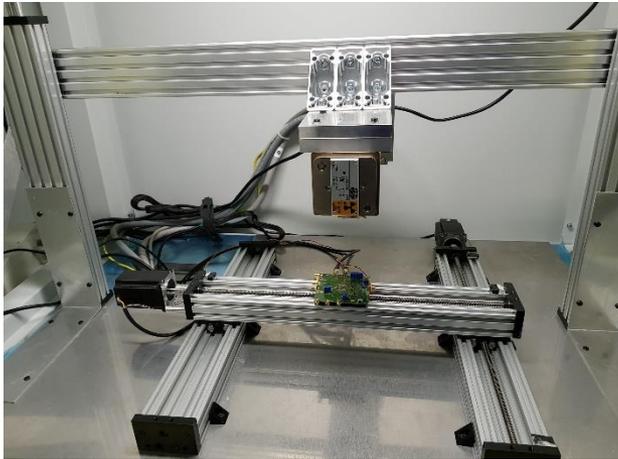
- FPGA and board level prototyping



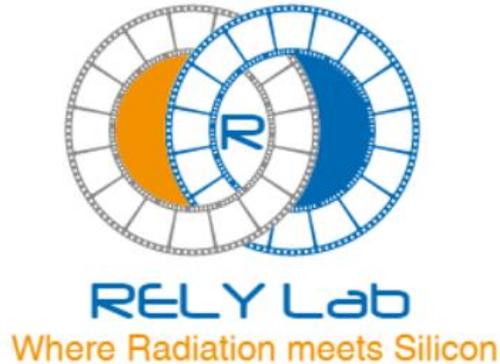
- Radiation hardened digital IC design & synthesis



ADVISE RELY LAB facilities



X-ray total dose testing



Climate chamber



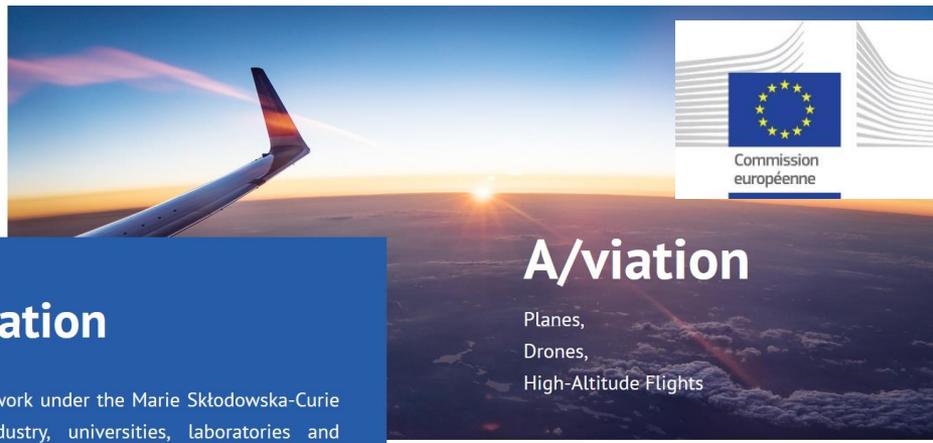
Two-photon absorption laser radiation test system

H2020 ITN RADSAGA project (2017-2021)



S/pace

Satellites,
Space Station,
Missions



A/viation

Planes,
Drones,
High-Altitude Flights

Rad/iation

RADSAGA is an Innovative Training Network under the Marie Skłodowska-Curie Actions. We will bring together industry, universities, laboratories and test-facilities in order to innovate and train young scientists and engineers in all aspects related to electronics exposed to radiation.

[Open Positions](#) [Learn more](#)

G/round

Cars,
Trains,
Communication



A/ccelerators

Medical,
Industrial,
Research



<http://radsaga.web.cern.ch/>

KU LEUVEN

Research team: ADVISE

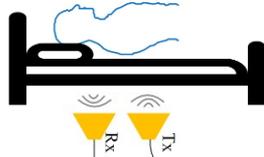
Machine learning

Monitoring applications

Epileptic seizure detection



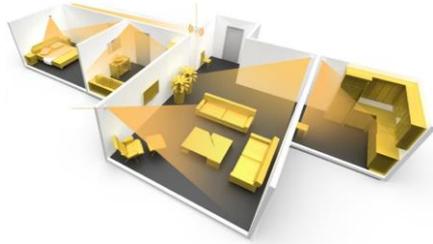
Radar-based life-sign monitoring



Structural health monitoring



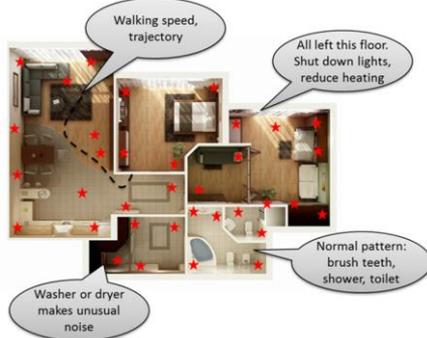
Radar-based fall detection



Anomaly detection in nuclear waste barrels



Domestic activity monitoring

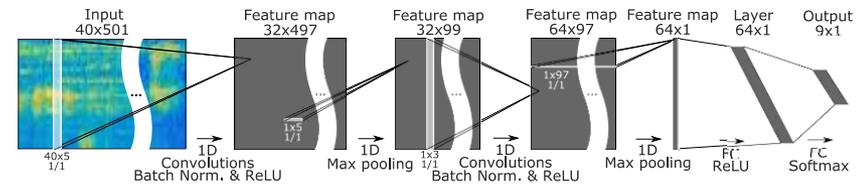


Expertise

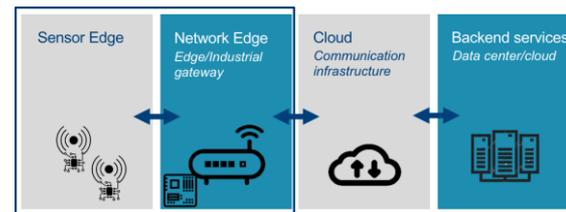
Data set generation (acquisition sys. development)



Modelling complex signals using semi- and unsupervised (deep) machine learning strategies



Distributed machine learning under limiting circumstances



TWEPP 2018 - practically



Conference venue – Mon 17/09 until Fri 21/09



Timing:

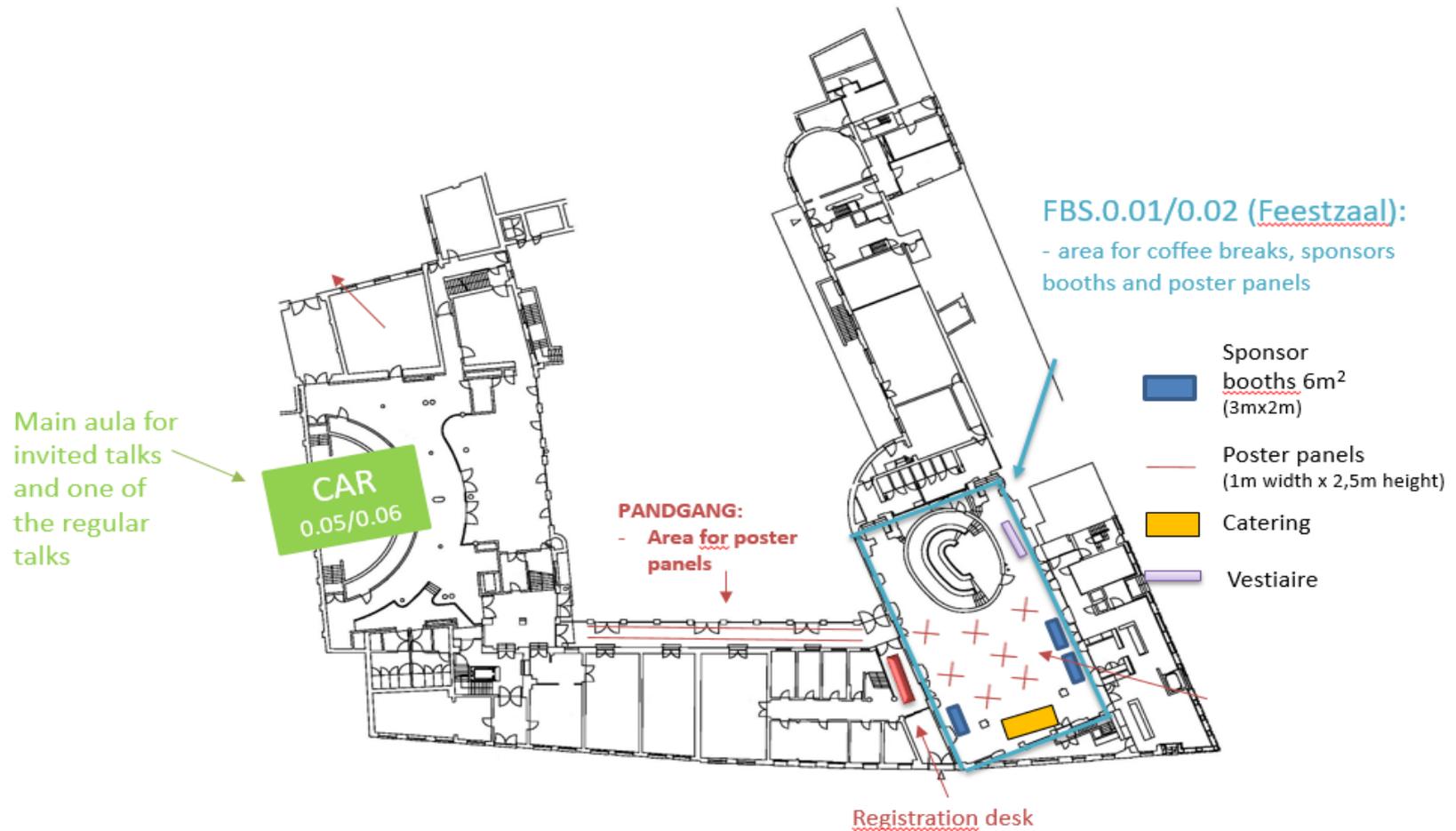
- Mon 17/09: 14.00-17.05 ++
- Tue 18/09: 09.00-18.50
- Wed 19/09: 09.00-17.55 ++
- Thu 20/09: 09.00-18.30
- Fri 21/09: 09.00-12.20

Tutorial on Friday 21st : 13.00 – 16.10

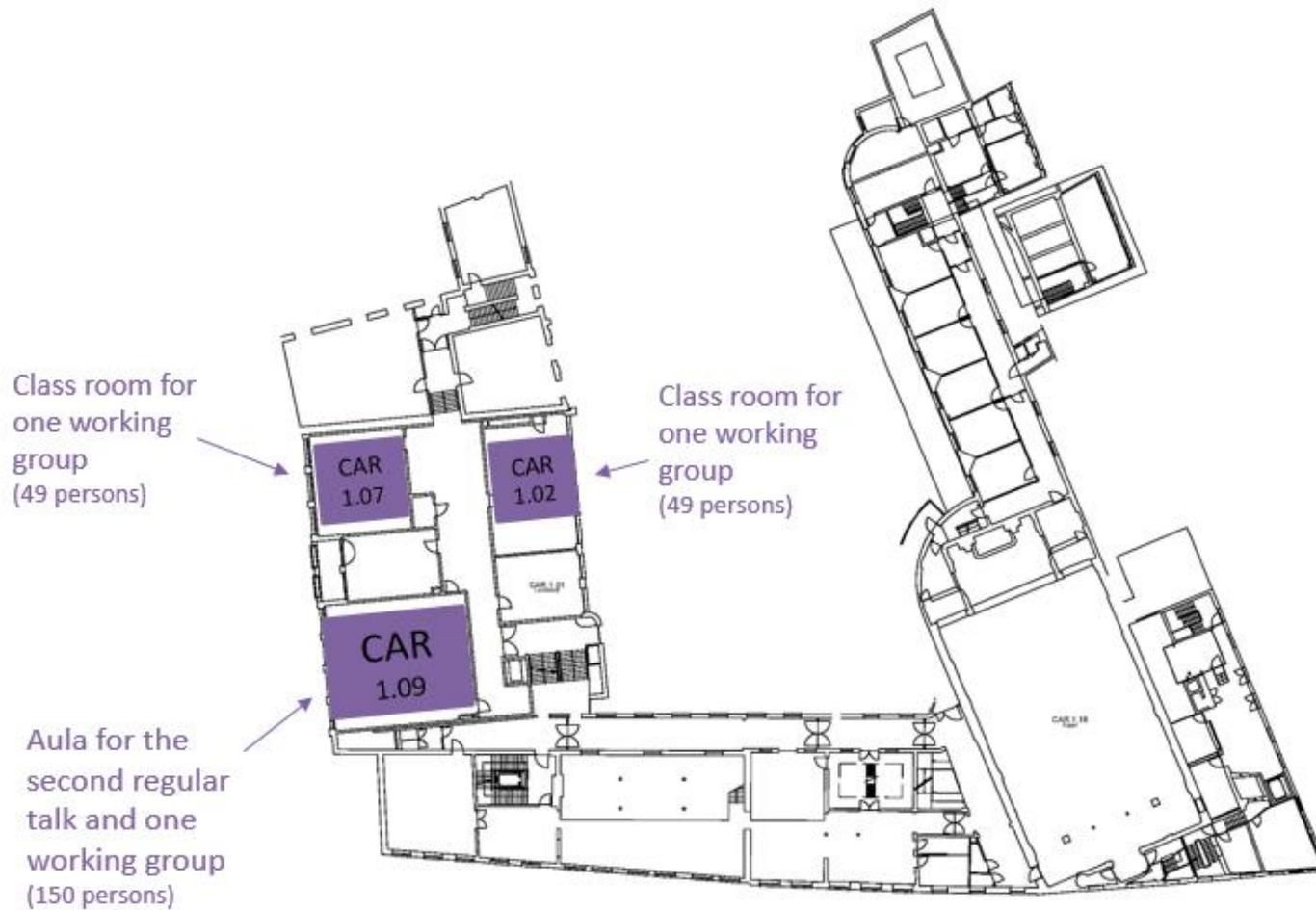
Location: **KU Leuven Campus Carolus**,
Korte Nieuwstraat 33, 2000 Antwerp



Conference venue – ground floor



Conference venue – first floor



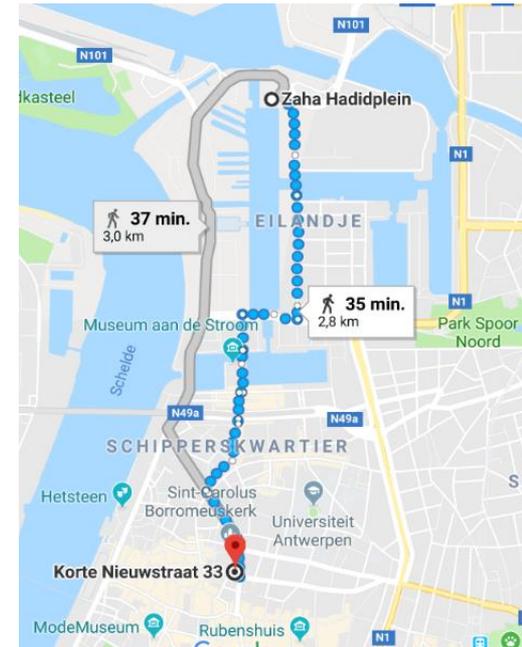
Guidelines - general

- Questions on local matters:
 - **contact registration & information desk**
 - **KU Leuven T-shirts**
- Wear your **badge** on all conference occasions
- **Free Wi-Fi:** “campusroam” (login on your badge)
- Conference program online:
<https://indico.cern.ch/event/697988/>
- **Oral presentations:**
 - Please keep to your timing
 - Upload your ppt on Indico the night before at the latest
 - Be present in the conference room 15 minutes prior to the session

Guidelines - general

- **Poster presentations:**
 - Be present at your poster during coffee breaks and poster session
 - Remove your poster on Friday before 14.00
- **Food & beverages:**
 - Coffee breaks in “Feestzaal”
 - Lunches are not included
 - Welcome Reception and Conference Dinner: only if you have registered
- **Sponsor booths:**
 - Visit our sponsors in “Feestzaal”

Welcome Reception – Mon 17/09



Timing: Monday evening, **18.30 - 20.30**

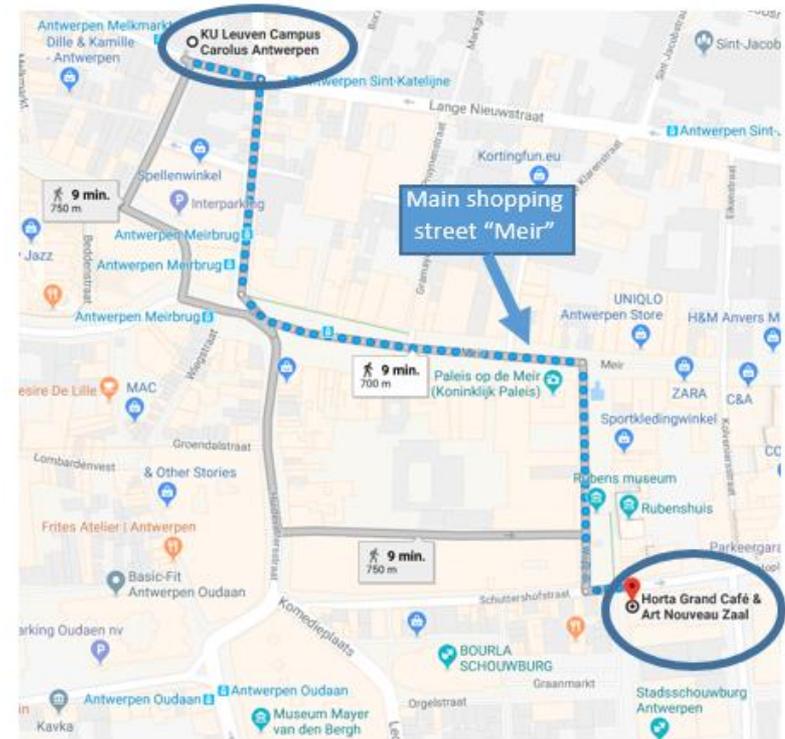
Location: **Port House / Havenhuis**, Zaha Hadidplein 1, 2030 Antwerp

Badges: needed, only for people who have registered

Transport:

- **Guided walk: 17.30 until 18.30**
- **Back to the city centre: by foot (walk of 35 min) or by taxi**

Conference dinner – Wed 19/09



Timing: Wednesday evening, **19.00 - 23.00**

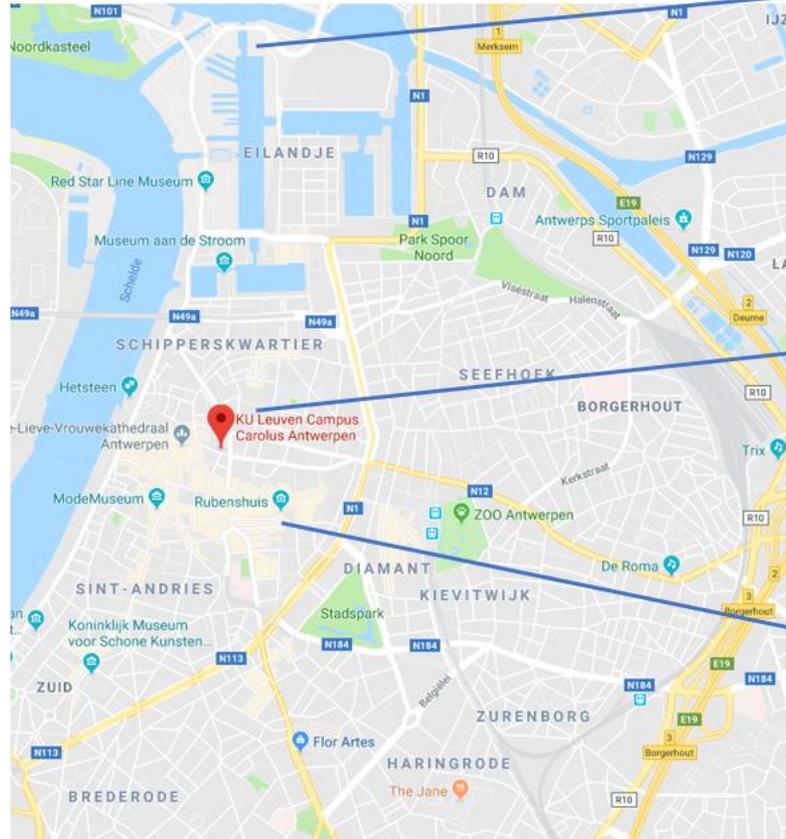
Location: **Art Nouveau Room**, Hopland 2, 2000 Antwerp

Badges: needed, only for people who have registered

Transport: by foot, located in the **heart of Antwerp**, near the main shopping street “Meir”

Invited talk by Prof. Willy Sansen (KU Leuven), “Analog design and me”

City map Antwerp



Venue Welcome Reception : Port House/Havenhuis
Zaha Hadidplein 1, 2030 Antwerp



Venue conference : KU Leuven Campus Carolus
Korte Nieuwstraat 33, 2000 Antwerp



Venue Conference Dinner : Art Nouveau Room
Hopland 2, 2000 Antwerp

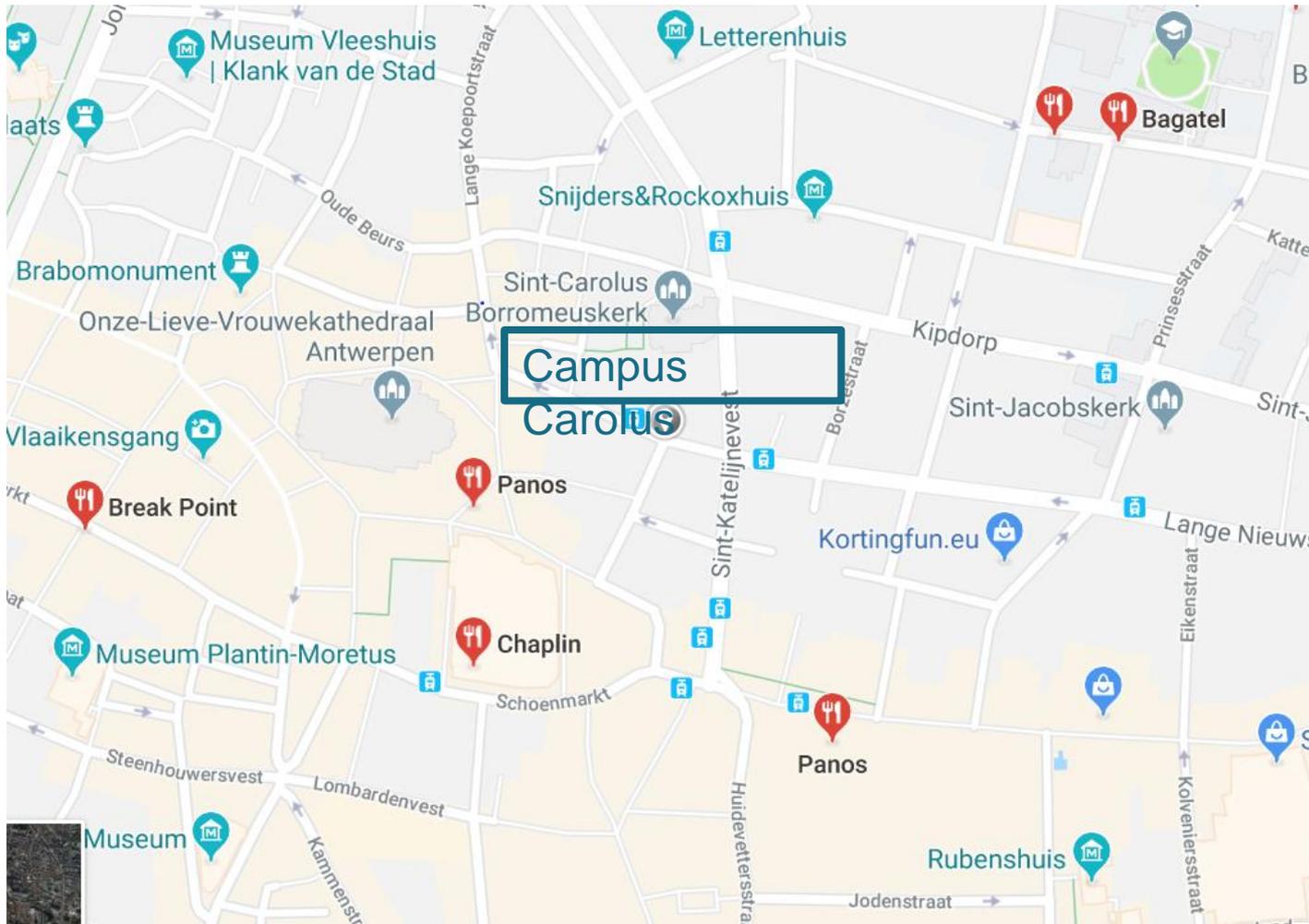


How about lunch?

- No lunch at the conference
- Plenty of nearby lunch locations
- <https://www.visitantwerpen.be/en/food-drinks>



Sandwich bars nearby



Top 10 restaurants



Fish a'gogo

Handschoenmarkt 1
2000 Antwerp

Based on 488 reviews



Senzelle

Vlaamsekaai 10
2000 Antwerp

Based on 146 reviews



Caffe Mundi

Oude Beurs 24
2000 Antwerp

Based on 168 reviews



The Jane

Paradeplein 1
2018 Antwerp

Based on 1332 reviews



Sombat Thai Cuisine

Desguinlei 196
2018 Antwerp

Based on 377 reviews



Het Gerecht

Amerikalei 20
2000 Antwerp

Based on 210 reviews



Eetkamer a l'Infintiste

Kasteelpleinstraat 6
2000 Antwerp

Based on 194 reviews



Meat Factory

Grote Markt 28
2000 Antwerp

Based on 694 reviews



Satay

Wijngaardbrug 8
2000 Antwerp

Based on 96 reviews



Bolivar

Jan Van Beersstraat 54
2018 Antwerp

Based on 230 reviews

Top 10 bars



Caffe Mundi

Oude Beurs 24
2000 Antwerp

Based on 168 reviews



Het Oud Arsenal

Maria Pijpelincxstraat 4
2000 Antwerp

Based on 87 reviews



Cafematic

Vleminckveld 4
2000 Antwerp

Based on 60 reviews



Bites and Wines

Oude Beurs 60
2000 Antwerp

Based on 60 reviews



Cuperus

Sint-Katelijnevest 51
2000 Antwerp

Based on 55 reviews



Nata Lisboa

Nationalestraat 6
2000 Antwerp

Based on 220 reviews



Elfde Gebod

Torfbrog 10
2000 Antwerp

Based on 755 reviews



No Worries

Kribbestraat 20
2000 Antwerp

Based on 44 reviews



Chickpea Restaurant

Melkmarkt 25
2000 Antwerp

Based on 80 reviews



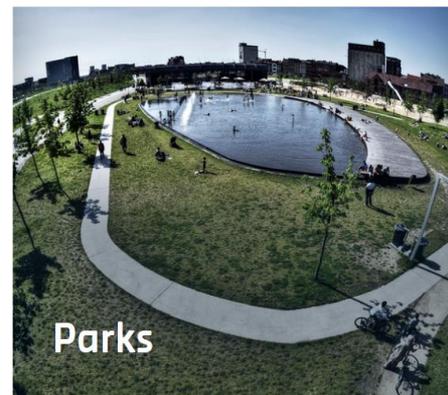
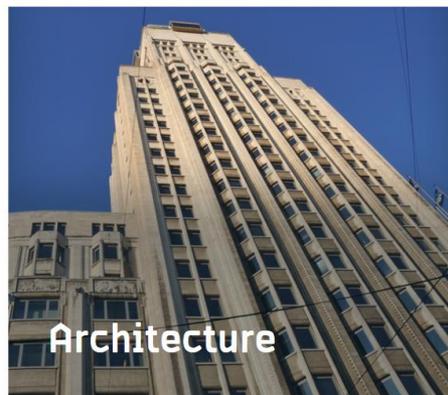
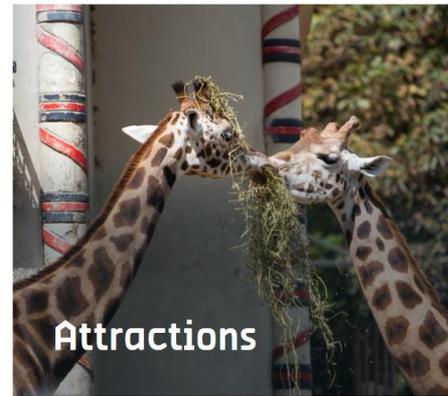
Heilig Huisken

Kloosterstraat 155
2000 Antwerp

Based on 43 reviews

What to see in Antwerp?

<https://www.visitantwerpen.be/en/sightseeing>



Special thanks



We want to thank our sponsors



Invited talks

- ***Prof. dr. Riccardo Raabe (KU Leuven)***

Nuclear structure research and applications with Radioactive Ion Beams at ISOLDE/CERN

Invited talks

- ***David Merodio Codinachs (ESA)***

The BRAVE FPGAs: overview and status of the European radiation-hardened FPGAs for space