FINAL PROGRAM

ESM ®

24-26 October 2018

NH GENT BELFORT HOTEL

Ghent, Belgium

Organized by

eti
European Technology Institute

Sponsored by

eurosis

GHENT UNIVERSITY

GODAN
Global Open Data
for Agriculture & Nutrition

UNIVERSITY OF SKÖVDE

Contents

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General Information

1. Conference Location

The **ESM'2018 Conference** is being held at

NH Gent Belfort
Hoogpoort 63
9000 Gent
Tel:+32.9 233 33 31
Email:c.meulemeester@nh-hotels.com
c/o Charlotte Meulemeester
You can book a room at the NH Belfort Gent Hotel using **the linked hotel booking form**

The registration desk will be placed in the hallway downstairs from Wednesday morning October the 24th onwards, where registration will start at 08.15 a.m. and will end at 3.30 p.m. On Thursday October 25th registration will be from 8.30 a.m. - 5.00 p.m. with Friday registration only from 9.00 a.m.- 9.30. a.m. The way to the conference and desk will be signposted.

ALL MAJOR MAPS ARE AT THE BACK OF THIS PROGRAMME

How to reach the conference location in Ghent:

By Plane

Ghent lies some 40 km to the west of the airport of Brussels and some 70 kms from Charleroi-(Brussels South Airport) if you fly **Ryanair**. See below how to get reach Ghent from these different airports.

On arrival at **Brussels Airport**, probably with **Brussels Airlines** take a train towards Brussels, where you can change trains for Ghent at either Brussels North, Central or South (Midi). At each of these stations you can take the IC-Train either to Ostend, Knokke-Blankenberge or De Panne and exit in **Ghent St.Pieters station**. First stop after Brussels. (travel time approx. 35 mins) From Brussels Airport for Gent St Pieters Station: A shuttle bus departs every 30 minutes and is €15,50 per person per trip. Taxi: It's a 55 minutes trip and will cost around €90.

From **Charleroi airport** you can take a bus to Charleroi Station. From there you take the train to Brussels South and change trains there for Ghent. At this station you can take the IC-Train either to Ostend, Knokke-Blankenberge or De Panne and exit in **Ghent St.Pieters station**. First stop after Brussels. (travel time approx 35 mins)

General Information

By Road

By car the city is accessible via two motorways:
The E40 connects Ghent with Bruges and Ostend to the west, and with Brussels, Leuven and Liège to the east.
The E17 connects Ghent with Sint-Niklaas and Antwerp to the north, and with Kortrijk and Lille to the south.
In addition Ghent also has two ringways:
The R4 connects the outskirts of Ghent with each other and the surrounding villages, and also leads to the E40 and E17 roads.
The R40 connects the different downtown quarters with each other and provides access to the main avenues.
Please note that the hotel is located in an area restricted to traffic and needs to be accessed via the Ring Road as the city center does not admit through traffic. For more information click here. Parking: Onsite, Paid Service. Parking cannot be reserved in advance. A permit is needed for access. contact the hotel in advance to request one. There's also an Offsite option, located 0.4 km from the hotel and is also with charge. Parking cannot be reserved in advance. Click **here** to get directions

By Train

From Germany see the **German Railway Information Site** and also check the information on the ICE train from Cologne to Brussels.
From London see the **EUROSTAR Information Site** for information on trains between London and Brussels.
From Paris see the **THALYS Information Site** for information on trains between Paris and Brussels.
From Amsterdam see the **THALYS Information Site** for information on trains between Amsterdam (Shiphol Airport) and Brussels. If you take this train then you can also change trains in Antwerp and take the Ostend or Lille bound trains to reach Ghent St.Pieters station.
More information about timetables of **trains in Belgium**.
The municipality of Ghent comprises five railway stations, however these are the two most important:
Gent-Sint-Pieters Station: an international railway station with connections to Bruges, Brussels, Antwerp, Kortrijk, other Belgian towns and Lille. The station also offers a direct connection to Brussels Airport.
Gent-Dampoort Station: an intercity railway station with connections to Sint-Niklaas, Antwerp, Kortrijk and Eeklo.

By Tram

Line 1: Flanders Expo – Sint-Pieters-Station – Korenmarkt (city centre) – Wondelgem - Evergem

General Information

Line 2: Zwijnaarde Bibliotheek - Sint-Pieters-Station - Zonnestraat (city centre) - Brabantdam - Zuid - Melle Leeuw (fuse of line 21 and 22 as of May 2017)

Line 4: UZ - Sint-Pieters-Station – Muide – Korenmarkt (city centre) – Zuid – Moscou

Line 21: Zwijnaarde Bibliotheek - Sint-Pieters-Station – Zonnestraat (city centre) – Zuid – Melle Leeuw (fused into line 2)

Line 22: Kouter - Bijlokehof - Sint-Pieters-Station – Zonnestraat (city centre) – Zuid – Gentbrugge (fused into line 2)

By International Bus

International buses connecting Ghent to other European destinations are usually found at the Dampoort Station. A couple of private bus companies such as **Eurolines** and **Flixbus** operate from the Dampoort bus hub.

Buses to and from Belgium's second airport - Brussels South Airport Charleroi - are operated by **Flibco**, and can be found at the rear exit of the Sint-Pieters Station.

2. Badges

Each registrant will receive a name badge upon registration. **The badge must be worn, in order to be admitted to the technical sessions, lunches and social event.**

3. Tickets

Extra tickets for the social event and lunches are available from the registration desk. Price: (or equivalent in another currency) for extra tickets

Extra conference dinner	**€ 80**
Extra lunch ticket	**€ 25**

4. Registration

The ESM'2018 Registration Desk will be open for information and registration:

> **Wednesday, October 24**....... 8.15 a.m. to 3.30 p. m.
> **Thursday, October 25**........... 8.30 a.m. to 5.00 p. m.
> **Friday, October 26** .... 9.00 a.m. to 9.30 a.m.

The location of the registration desk will be signposted

5. Conference Proceedings

Each fully paid registrant will be provided with a copy of the Conference Proceedings (printed format). **This is NOT applicable to students who are not authors and who have not fully registered.**
(Extra copies are available on a cash and carry basis at special rates during **ESM'2018**)

Price: (or equivalent in another currency) for an extra copy

ESM'2018 Proceedings CASH AND CARRY	€ 50

6. Meeting Rooms and WIFI

The ESM'2018 conference will be held in **rooms designated A (BOURDON) , B (WOLFERS)** in this programme.

The way to the rooms will be signposted. WIFI-Internet is available and login information will be available at the conference.

7. Need Help?

Please see the conference desk for your questions

8. Social Events and Lunches

All registrants are invited to

All **Coffee Breaks** are served in the hotel hallway in front of the meeting rooms

Lunches are served at **the restauranf of the NH Gent Belfort** Hoogpoort 63 9000 Gent

The Conference Dinner
All participants are invited to the conference dinner on **THURSDAY** the 25th of October. As we need to give an exact number of participants we would appreciate **your confirmation at the desk before Wednesday lunchtime**.

General Information

The dinner will be held at:

[De Acht Zaligheden](#)
Oudburg 4
9000 Gent
Tel:+32.9.224.31.97
Email:[info@deachtzaligheden.be](#)

Social Event

The **Conference visit on October 24th in the afternoon** from 5.00 to 6.00 p.m. to the University of Leuven Research Centre in Ghent, to see their beer brewing installation and to enjoy some beer tasting.

[KU Leuven Technologiecampus Gent](#)
Gebroeders de Smetstraat 1
9000 Gent
Tel:+32.9 265 86 10
Email: [iiw.gent@kuleuven.be](#)
See the [Campus map](#) for more info

9. Room Legend

The parallel meeting rooms will be designated **ROOM A (BOURDON) and B. (WOLFERS)** Signposts will indicate the room number above each door.

10. Best Paper Award

During the conference the papers, which were accepted as **extended** papers will be judged by the committee and conference participants in order to choose the best paper of the ESM'2018 conference.
The best paper author of the conference receives a certificate and a free registration to any EUROSIS event held within 2 years **after receiving the best paper award. This** registration waiver **is only** VALID FOR 2 YEARS AFTER RECEIPT AND FOR 1 (ONE) PERSON. **In case of multiple authors, one (1) author only can use the registration waiver.**

Session Chairs information

Session Chairs are chosen on a voluntary basis by proposals by either authors or local committee members or are appointed by the Track Chairs, General Program Chair or General Conference Chair. They are responsible for their assigned session. They make sure their speakers are available, take care of the timing within the session, chair the discussion after each presentation and introduce each speaker based on the CV's given to them by the authors. **If a session chair is not available then the first author takes on the responsiblity to chair** In case they chair a session featuring **extended papers**, then they are required to distribute and collect the reviews of that or those papers at the beginning and end of the session. If they have time they should also indicate in their papers the number of session participants.

WEDNESDAY, 24th OCTOBER 2018	
08.15-15.30	**REGISTRATION IN THE HALLWAY**
09.00-09.15	**WELCOME BY VERONIQUE LIMÈRE – ESM'2018 CONFERENCE CHAIR - ROOM A – BOURDON**
09.15-10.00	**INVITED SPEECH BY LEON ROTHKRANTZ - ROOM A - BOURDON**
10.00-10.30	**COFFEE BREAK**
10.30-12.30	**PARALLEL SESSIONS**

	ROOM A BOURDON	ROOM B WOLFERS
	PRODUCTION PLANNING	**MACHINE LEARNING AND AI**

12.30-14.00	**LUNCH BREAK**
14.00-15.00	**PARALLEL SESSIONS**

	ROOM A BOURDON	ROOM B WOLFERS
	SIMULATION DRIVEN ENGINEERING	**ENVIRONMENTAL SIMULATION**

15.00-15.30	**COFFEE BREAK**
15.30-16.30	**PARALLEL SESSIONS**

	ROOM A BOURDON	ROOM B WOLFERS
	ELECTRONIC NETWORK SIMULATION	**EUROSIS UPDATE MEETING**

16.30-17.00	**Walk to the Leuven University Research Centre (15 mins)**
17.00-18.00	**Visit of the Leuven University Research Centre Brewery and Beer Tasting**
18.00-.......	**Walk back to the city centre and FREE EVENING**

THURSDAY, 25th OCTOBER 2018		
08.30-17.00	**REGISTRATION**	
09.00-10.00	**KEYNOTE ADDRESS BY IVO ADAN ROOM A - BOURDON**	
10.00-10.30	**COFFEE BREAK**	
10.30-12.30	**PARALLEL SESSIONS**	
	ROOM A BOURDON	**ROOM B WOLFERS**
	ASSEMBLY LINE OPTIMIZATION	**SIMULATION IN ENERGY**
12.30-14.00	**LUNCH BREAK**	
14.00-15.00	**INVITED SPEECH BY JACOB A.KEGERREIS ROOM A - BOURDON**	
15.00-15.30	**COFFEE BREAK**	
15.30-17.00	**PARALLEL SESSIONS**	
	ROOM A BOURDON	**ROOM B WOLFERS**
	SIMULATION IN ECONOMICS AND FINANCE	**OPTIMIZATION METHODOLOGY**
19.30 – 22.30	**CONFERENCE DINNER**	

FRIDAY, 26th OCTOBER 2018	
09.00-09.30	**REGISTRATION**
09.00-10.00	**INVITED SPEECH BY JAN VAN IMPE ROOM A - BOURDON**
10.00-10.30	**COFFEE BREAK**
10.30 12.30	**SESSION**

	ROOM A BOURDON	ROOM B
	SUPPLY CHAIN ANALYSIS AND VEHICLE SCHEDULING	

12.30-12.45	**CLOSING SESSION AND BEST PAPER AWARD ROOM A - BOURDON**

NOTES

Notes

Wednesday, 24th October 2018

HALLWAY
Registration
08.00 - 15.30

ROOM A –
09.00 – 09.15
Opening ESM'2018 and Welcome

Welcome Address

Veronique Limère, Ghent University, Belgium

ESM'2018 General Conference Chair

ROOM A – BOURDON - 09.15-10.00   **KEY**
INVITED SPEAKER
Chair: Veronique Limère, Ghent University, Ghent; Belgium

INV_02
Simulation and Modelling of a Flooding Disaster at Prague
Leon Rothkrantz, Czech Technical University, Faculty of Transportation Sciences, Prague, Czech Republic

Wednesday, 24th October 2018

10.00 - 10.30
COFFEE BREAK

10.30 – 12.30

ROOM A – BOURDON - 10.30-12.30   **PROD**
PRODUCTION PLANNING
Chair: Veronique Limère, Ghent University, Ghent; Belgium

METH_03
Coupling of Rigid Body Dynamics with Structural Mechanics to include Elastic Deformations in a Real-Time Capable Holistic Simulation for Digital Twins

METH_05
Process-based Ship Production System Modeling for Supporting Decision Processes

ENGIN_01
Development, Implementation and Evaluation of a Complexity Measure for the Work of Assembly Teams in One-Piece-Flow Assembly Systems Employing Simulation Studies

OPT_14
Integrated EPQ and Periodic Condition-Based Maintenance

ROOM B – WOLFERS - 10.30-12.30   **AI**
MACHINE LEARNING AND AI
Chair: Leon Rothkrantz, Czech Technical University, Czech Republic

AI_06
Application of Machine Learning to model a Biological Reactor in a Wastewater Treatment Plant

Wednesday, 24th October 2018

12.30 - 14.00
LUNCH BREAK

14.00 – 15.00

ROOM A – BOURDON - 14.00-15.00   **ENGIN**
SIMULATION DRIVEN ENGINEERING
Chair: Anton Ivaschenko, Samara National Research University, Russia

ROOM B – WOLFERS - 14.00-15.00   **ENV**
ENVIRONMENTAL SIMULATION
Chair: Dieter Claeys, Ghent University, Ghent; Belgium

Wednesday, 24th October 2018

HPC_01
Temporospatial Epidemic Simulations using Heterogeneous Computing

15.00 - 15.30
COFFEE BREAK

ROOM A - BOURDON - 15.30-16.30   **ELEC**
ELECTRONIC NETWORK SIMULATION
Chair: Ivo Adan, Technical University of Eindhoven, The Netherlands

METH_01
New Scheduling Mechanism in Multi-Channel Reconfigurable WSN
under QoS and Energy Constraints

AGENT_03
Multi-Agent Model of Infrastructural Return for an Intermediary Service
Provider

ROOM B- WOLFERS - 15.30-16.00   **EUROSIS**
FUTURE EVENTS AND PROJECTS
Chair: Philippe Geril, EUROSIS-ETI, Ostend; Belgium

Overview of future events and projects from EUROSIS
Philippe Geril, EUROSIS-ETI, Ostend, Belgium

16.30-17.00

We walk to the research centre of Leuven University for a visit to the Beer brewing facility and beer tasting.

Wednesday, 24th October 2018

17.00 - 18.00

CONFERENCE VISIT

KU Leuven Technologiecampus Gent
Gebroeders de Smetstraat 1
9000 Gent
Tel:+32.9 265 86 10
Email: iiw.gent@kuleuven.be
See the Campus map for more info

18.00 - ……
Walk back to the city centre and FREE EVENING

Thursday, 25th October 2018

HALLWAY

Registration

08.30 - 17.00

09.00 – 10.00

ROOM A- BOURDON- 09.00-10.00   **KEY**
KEYNOTE
Chair: Dieter Claeys, Ghent University, Ghent; Belgium

KEY_01
Multi-class queueing Applications in Automated Warehousing Systems
Ivo Adan, Technical University of Eindhoven, Department of Industrial Engineering & Innovation Sciences, Eindhoven, The Netherlands

10.00 - 10.30
COFFEE BREAK

10.30 - 12.30

ROOM A- BOURDON - 10.30-12.00   **PROD**
ASSEMBLY LINE OPTIMIZATION
Chair: Dieter Claeys, Ghent University, Ghent; Belgium

OPT_06
Optimization of a Supply Chain Game Orders with Order Cost
Florian Boyrie, Nicolas Pech-Gourg and Thibaud Serieye.....................................103

OPT_08
The Influence of Line Balancing on Line Feeding for Mixed-Model Assembly Lines
Hendrik Wijnant, Nico André Schmid and Veronique Limère................................106

Thursday, 25th October 2018

ROOM B- WOLFERS - 10.30-12.30   **ENERG**
SIMULATION IN ENERGY
Chair: Jan Studziński, IBS-PAN, Warsaw, Poland

12.30 – 14.00
LUNCH BREAK

Thursday, 25th October 2018

14.00 - 15.00

ROOM A - BOURDON - 14.00-15.00   INV
INVITED SPEAKER
Chair: Dieter Claeys, Ghent University, Ghent; Belgium

INV_01
Giant Impacts: Understanding Uranus' Spin (and More) with SPH Simulations
Jacob A. Kegerreis, Durham University, Department of Physics, Institute for Computational Cosmology, Durham, United Kingdom

15.00 - 15.30
COFFEE BREAK

15.30 - 17.00

ROOM A – BOURDON - 15.30-16.30   ECON
SIMULATION IN ECONOMICS AND FINANCE
Chair: Joseph Kehoe, Institute of Technology Carlow, Ireland

ANMT_01
Volatility Regime Analysis of Bitcoin Price Dynamics using Markov Switching Garch Models
Anna Bonello and David Suda.. 213

HUM_01
Models as Part of the Welfare System as Part of the Economic Measures for the State of Crisis in Building Resilience
Jozef Ristvej, Roman Ondrejka, Ladislav Šimák, Michal Titko and Michaela Jánošíková 219

Thursday, 25ᵗʰ October 2018

ROOM B – WOLFERS - 15.30-17.00   **METH**
OPTIMIZATION METHODOLOGY
Chair: Jan Van Impe, University of Leuven Research Centre, Ghent,
Belgium

CONFERENCE DINNER – 19.30 -22.30

**All registered participants are invited to the conference dinner, which will be
held from 19.30 to 22.30 at the**

De Acht Zaligheden
Oudburg 4
9000 Gent
Tel:+32.9.224.31.97
Email:info@deachtzaligheden.be

HALLWAY

Registration

09.00 - 09.30

09.00 – 10.00

ROOM A – BOURDON - 09.00-10.00   **KEY**
KEYNOTE SPEAKER
Chair: Veronique Limère, Ghent University, Ghent; Belgium

KEY_02
Advanced Dynamic Optimization of (Bio)chemical Processes under Parametric Uncertainty
Jan Van Impe, University of Leuven Research Centre, Ghent, Belgium

10.00 - 10.30
COFFEE BREAK

10.30 – 12.30

ROOM A – BOURDON - 10.30-12.30   **PROD**
SUPPLY CHAIN ANALYSIS AND VEHICLE SCHEDULING
Chair: Veronique Limère, Ghent University, Ghent; Belgium

QUEUE_01
Variable and Class-Dependent Service Capacity with a Multi-Class Arrival Process
Jens Baetens, Bart Steyaert, Herwig Bruneel and Dieter Claeys **.........................123**

Friday, 26th October 2018

ROOM A – BOURDON - 12.30 - 12.45   **BEST PAPER**
CLOSING SESSION AND BEST PAPER AWARD
Chair: Dieter Claeys, Ghent University, Ghent; Belgium

Dieter Claeys, Ghent University, Ghent; Belgium
Philippe Geril, EUROSIS, Ostend, Belgium

**SEE YOU ALL AT
ESM'2019, October 28-30, 2019**

Palma de Mallorca, Spain

**Track proposals and tutorial proposals can be sent in by
January 30th, 2019
Proposals for future ESM locations can be emailed to
philippe.geril@eurosis.org**

**Other upcoming EUROSIS conferences
SCIFI-IT'2019, April 1-3, 2019, De Krook, Ghent, Belgium
ISC'2019, ISEL, June 5-7, 2019, Lisbon, Portugal
NASTEC'2019, GAMEON-NA'2019, July 2-4, 2019, Universite Laval,
Quebec City, Canada
GAME-ON'2019, September 18-20, 2019, NHTV Breda University of
Applied Sciences, Breda, The Netherlands
MESM'2019-GAME-ON ARABIA'2019, November 2019, Dubai (TBC)
FOODSIM'2020, April 6-9, 2020, University of Leuven Research
Centre, Ghent, Belgium**

ESM'2019 - Palma de Mallorca - Spain

Conference Site Maps

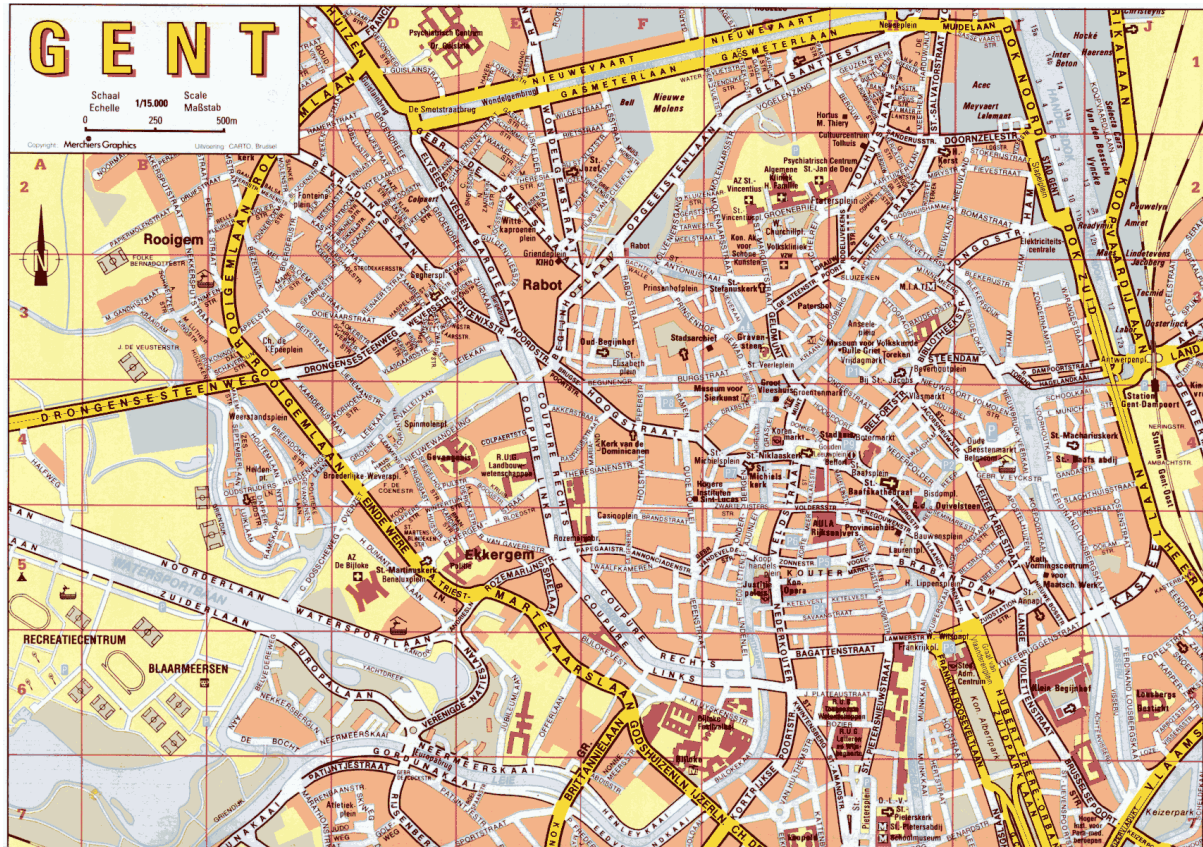## Ghent City Map
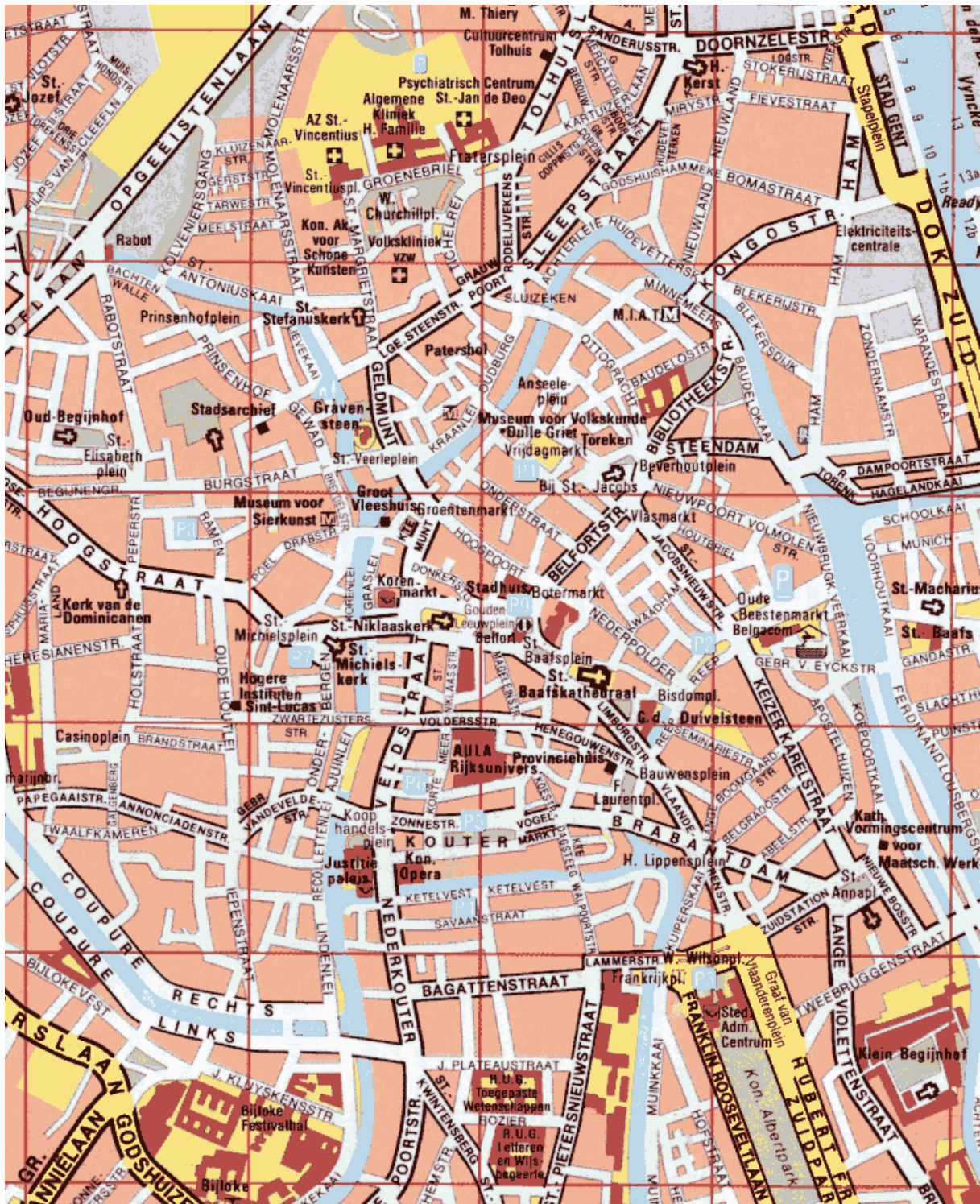
The NH Hotel is located in grid 3-C corner of Hoogstraat and Belfortstraat

Conference Site Maps

Leuven Research Centre

Leuven Research Centre is located grid 3E where you see Rabot

Ghent Tourist Map

eurosis

EUROSIS was borne out of discussions with the European Community to set up a new kind of Society, which would be project-driven instead of driven by pure membership and conferences.

The aim of the Society is to set up and manage topic related Technical Committees which will link directly to European Projects in the field of computer simulation and related areas and to act as a knowledge pool for future European Networks of Excellence, like MOSAIC, HORIZON2020 by seeking out the latest innovations in simulation, modelling and AI research.

If you would like to receive more information about EUROSIS, please contact

Philippe Geril
EUROSIS-ETI
Greenbridge Science Park
Ghent University – Ostend Campus
Wetenschapspark 1, Plassendale 1
B- 8400 Ostend, Belgium
Tel: +32.59.255.330
Fax: +32.59.255.339
Email: Philippe.Geril@eurosis.org

Please send me info on EUROSIS:
Name:...
Address: ....
....
....
Telephone..
Fax: ....
Email: ....

EUROSIS Info

ESM'2018 At-Conference Registration Form

Please legibly print or type and fill out completely. (Check appropriate boxes where necessary)

FIRST NAME	LAST NAME	M.I.
COMPANY OR AFFILIATION		
Mailing address (tick one): [ ] HOME [ ] BUSINESS		
STREET		
CITY		
ZIPCODE	COUNTRY	
TELEPHONE	FAX	
E-MAIL		
DATE	SIGNATURE	

1. [ ] EUROSIS member € 565 **Member Number**:_____	€_____
2. [ ] Members of Sponsor or Affiliate Society € 565	€_____
3. [ ] Non-Member Participant € 595	€_____
4. [ ] Student Participant € 415	€_____
5. [ ] Students, <u>who are not authors</u> but who wish to attend the conference, or **ONE DAY PARTICIPANTS** pay: € 435	€_____
(Above registration fees include, one copy of the PROCEEDINGS, all midday meals, cocktail, refreshments, coffees and social program,) One Day Participants and Non-Author Students cannot participate in the conference dinner.	
6. [ ] Tutorial registration ONLY - €30 (students) Or €80 (non students)/ per tutorial	€_____
7. [ ] Conference Dinner Ticket for Companion € 80 **[] Lunch Ticket** for Companion € 25/day	€_____
8. [ ] Extra Conference Proceedings € 50 **Cash and Carry**	€_____
VAT Number if applicable: _____	
TOTAL AMOUNT DUE	€_____
ADD 21% VAT (Value Added Tax) OBLIGATORY	€_____
TOTAL AMOUNT REMITTED	€_____

[ ] 2)   Pay by **CREDIT CARD** and fill in the information below:

Charge my (tick one): [ ]Visa [ ] Euro/Mastercard [ ] American Express

CARD NO: __ __ __ __ : __ __ __ __ : __ __ __ __ : __ __ __ __ EXP.DATE: __ __ / __ __

Authorizing Signature:

Print Signature in CAPITALS