

# Final Program



**11-13 June 2014**

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## General Information

### 1.1 Conference Location

The Conference itself is held at



University of Skövde  
Building Portalen  
Kanikegränd 3A  
SE-54143 Skövde  
Sweden  
**(GPS coordinates)**  
**58.393636,13.8580224**

**Google Maps Link:**

<https://www.google.com/maps/place/Kanikegr%C3%A4nd+3/@58.393636,13.8580224,17z/data=!3m1!4b1!4m2!3m1!1s0x465b0231f385d805:0x1b5935fa6c94013d>

The meeting room is the "Insikten" Room, located on the ground floor of the "Portalen" building. Registration will start on Wednesday at 9.00 a.m. till 10.00 a.m. On Thursday it will be from 9.00 a.m. - 10.00 a.m. with Friday registration only from 9.00 a.m.- 09.30. a.m.

### Getting to Skövde and the University

The best way to reach Skövde is to fly to [Stockholm Arlanda Airport](#) or [Göteborg\(Gothenburg\) Landvetter Airport](#) and take the train from there to Skövde. In Stockholm, the airport train arrives in Stockholm central station, from where you can switch to a train for Skövde. In Gothenburg there is a [shuttle bus](#) every twenty minutes to the train station.

For further information concerning the timetables and ticket reservations, please contact

[SJ \(Swedish Rail\)](#) ☎ Tel: +46 (0)771-75 75 75

or the regional transportation company

[Västtrafik](#). ☎ Tel: +46(0)771-41 43 00

The bus stop for the local buses is just outside the station.

If you want to call for a taxi, the phone numbers are

☎ Tel: 0500-49 49 49 or ☎ Tel:0500-41 65 00

**ALL OTHER MAPS ARE AT THE BACK OF THIS PROGRAMME**

### 1.2 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.

# General Information

## 1.3 Tickets

Extra tickets for the social event and lunches are available from the Registration desk. (**at conference prices**)

Price: (or equivalent in another currency) for extra tickets. All participants will be issued with tickets for lunch and the conference dinner. **Or just the badge will apply.**

conference dinner:	€ 55
lunch	€ 25

## 1.4 Registration

The **ISC'2014** Registration Desk will be open for information and registration:

**Wednesday, June 11.....9.00 a.m. to 10.00 a. m.**

**Thursday, June 12.....9.00 a.m. to 10.00 a. m.**

**Friday, June 13.....9.00 a.m. to 9.30 a.m.**

## 1.5 Conference Proceedings

Each fully paid registrant will be provided with a copy of the Conference Proceedings (printed format). (Extra copies are available on a **cash and carry** basis at special rates during ISC-2014)

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

ISC'2014 Proceedings	€ 50
Other Proceedings –see price list at desk	

Other Proceedings can be ordered using the forms available at the conference.

## 1.6 Meeting Room

The meeting room is the "Insikten" Room Directions to the room will be signposted.

## 1.7 Internet Connection

**There is full free WIFI at the conference site.**

## 1.8 Need Help?

Please see the conference desk for your questions

## General Information

### 1.9 Social Events and Lunches

#### All registrants are invited:

To the **Coffee Breaks** and the **lunches** for 2 days which will be served at



University of Skövde  
Building Portalen  
Kanikegränd 3A  
SE-54143 Skövde  
Sweden

#### To the **Conference Dinner**



The conference dinner will be held on the 12th of June in the evening at the

Ryttmastarbostallet

<http://www.ryttmastarbostallet.nu/>

Transport will leave the University at 18.30.

#### To the **Conference Visit**



The conference visit is scheduled for the 12th of June in the afternoon from 14.30 to 16.30 to the

[Volvo Powertrain Corporation](#)

Östergatan

Skövde, Sweden

More information will be available at the conference

### 1.10 Best Paper Award

During the conference the papers, which were accepted as extended papers will be judged by the committee and participants in order to choose the best paper of the ISC'2014 conference. The best paper candidate receives a certificate signed by the General Conference and Program Chairs and also a free registration to any EUROSIS conference within 2 years of receipt of the prize.

# General Information

## 1.11 Paper Legend:

Each paper is designated before each paper by its number. This number has to be entered on the form for the best paper award

**The room has an LCD projector and an overhead projector**

### **SESSION CHAIRPERSONS**

**ALL SESSION CHAIRPERSONS IN THIS PROGRAM ARE PROVISIONAL. 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 responsibility to chair**

**Sessions with extended papers:** If you are a session chair in a session with extended papers make sure the session participants have a copy of the best paper award form and ask them to return them to you at the end of the session. After the session hand over the collected forms to Philippe Geril

**THE NUMBERS NEXT TO THE PRESENTATIONS DENOTE THE PAGE-NUMBERS IN THE PROCEEDINGS. IF NO NUMBERS ARE MENTIONED THEN THIS PAPER IS NOT PUBLISHED IN THE PROCEEDINGS**

**THE AUTHORS WHO ARE UNDERLINED ARE NORMALLY THE PRESENTERS**

**ONLY PAPERS IN GREY BOXES ARE THE EXTENDED PAPERS ELIGIBLE FOR THE BEST PAPER AWARD**

**WEDNESDAY, 11<sup>th</sup> JUNE 2014**

09.00-10.00	REGISTRATION
10.00-10.15	OPENING SESSION
10.15-11.00	KEYNOTE ADDRESS BY JUERGEN BRANCKE IN MEETING ROOM INSIKTEN
11.00-11.30	COFFEE BREAK
11.30-13.00	SESSION
	MEETING ROOM INSIKTEN
	BUSINESS SIMULATION
13.00-13.30	LUNCH BREAK
13.30-14.30	SESSION
	MEETING ROOM INSIKTEN
	GENETIC ALGORITHMS
14.30-15.00	COFFEE BREAK
15.30-17.00	SESSION
	MEETING ROOM INSIKTEN
	MANUFACTURING OPTIMIZATION AND EVALUATION
FREE EVENING	



<b>THURSDAY, 12<sup>th</sup> JUNE 2014</b>	
<b>09.00-10.00</b>	<b>REGISTRATION</b>
<b>10.00-11.00</b>	<b>INVITED SPEAKER RIKARD SÖDERBERG IN MEETING ROOM INSIKTEN</b>
<b>11.00-11.30</b>	<b>COFFEE BREAK</b>
<b>11.30-13.00</b>	<b>SESSION</b>
	<b>MEETING ROOM INSIKTEN</b>
	<b>SIMULATION TOOLS</b>
<b>13.00-13.30</b>	<b>LUNCH BREAK</b>
<b>13.30-14.30</b>	<b>INVITED SPEAKER PETER FRITZON IN MEETING ROOM INSIKTEN</b>
<b>14.30-16.30</b>	<b>VISIT TO VOLVO</b>
<b>16.30-17.00</b>	<b>COFFEE BREAK</b>
<b>17.00-18.00</b>	<b>TUTORIAL PETER FRITZON IN MEETING ROOM INSIKTEN</b>
<b>19.00-22.30</b>	<b>CONFERENCE DINNER.</b>

**FRIDAY, 13<sup>th</sup> JUNE 2014**

<b>09.00-10.00</b>	<b>REGISTRATION</b>
<b>10.00-11.00</b>	<b>TUTORIAL AMOS NG IN MEETING ROOM INSIKTEN</b>
<b>11.00-11.30</b>	<b>COFFEE BREAK</b>
<b>11.30 13.00</b>	<b>SESSION</b>
	<b>MEETING ROOM INSIKTEN</b>
	<b>SIMULATION TOOLS AND DECISION SUPPORT SYSTEMS</b>
<b>13.00-13.15</b>	<b>CLOSING SESSION AND BEST PAPER AWARD IN MEETING ROOM INSIKTEN</b>

Wednesday, 11<sup>th</sup> June 2014

**HALLWAY**

Registration

09.00 - 10.00

**MEETING ROOM INSIKTEN**

10.00 – 10.15

**KEYNOTE**

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**Opening ISC2014 and Welcome**

**Welcome Address**

Amos Ng, University of Skövde, Skövde, Sweden  
ISC'2014, General Conference Chair

Anna Syberfeldt, University of Skövde, Skövde, Sweden  
ISC'2014, General Program Chair

10.15 – 11.00

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**KEYNOTE SPEECH**

Chair: Amos Ng, University of Skövde, Skövde, Sweden



**[Evolutionary Simulation Optimisation](#)**

Professor Juergen Branke, Warwick Business School  
University of Warwick, United Kingdom

Welcome

## Wednesday, 11<sup>th</sup> June 2014

**11.00 - 11.30**  
**COFFEE BREAK**

**11.30 – 13.00**

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**MEETING ROOM INSIKTEN-11.30-13.00** **BUS**  
**BUSINESS SIMULATION**

**Chair:** Anna Syberfeldt, University of Skövde, Skövde, Sweden

**METH\_03**

**Modelling customer preference heterogeneity to iPad attributes using a Finite Mixture procedure**

Liberato Camilleri and Keith Lia ..... 56

**OPT\_01**

**Evolutionary Simulation Optimization of Personnel Scheduling**

Martin Andersson, Anna Syberfeldt, Amos Ng and Victor Bengtsson ..... 61

**ENERG\_01**

**Interactive Simulation for Discovering Investment Scenarios in Energy Systems**

N.B. Szirbik, G.B. Huitema, R.H. van der Burg and J.C. Wortmann ..... 53

**13.00 - 13.30**  
**LUNCH BREAK**

**MEETING ROOM INSIKTEN** **AI**

**13.30 – 14.30**

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**GENETIC ALGORITHMS**

**Chair:** Tehseen Aslam, University of Skövde, Skövde, Sweden

**ELEC\_01**

**Some Algorithms supporting the Water Network Management by use of Simulation of Network Hydraulic Model**

Jan Studzinski and Marek Kurowski ..... 33

# Wednesday, 11<sup>th</sup> June 2014

## METH\_05

### Optimization of Water Supply Network Rehabilitation using Genetic Algorithms

Bartłomiej Fajdek, Marcin Stachura and Jan Studziński..... 38

14.30 - 15.00

COFFEE BREAK

15.00 – 17.00

MEETING ROOM INSIKTEN- 15.00-17.00

MANUF

MANUFACTURING OPTIMIZATION AND EVALUATION

Chair: Magnus Holm, University of Skövde, Skövde, Sweden

## OPT\_04

### Aggregated Discrete Event Modelling for Simulation and Optimisation of Manufacturing Systems

Leif Pehrsson, Simon Lidberg, Marcus Frantzén, Tehseen Aslam and Amos Ng..... 83

## OPT\_08

### A Case Study of Evolutionary Simulation Based Optimization in Aircraft Engine Manufacturing

Anna Syberfeldt, Patrik Gustavsson, Joakim Svantesson and Torgny Almgren ..... 91

## OPT\_06

### Practical Production Systems Optimization using Multiple-Choice Sets and Manhattan Distance Based Constraints Handling

Jacob Bernedixen and Amos H.C. Ng ..... 97

## MANUF\_01

### Study of the Impact of Production Quantity Loaded to a Production Line on Apparel Production System Performance using Simulation

Lottie L.C. Mak, W.K. Wong and S.Y.S. Leung ..... 104

FREE EVENING

Sessions - Wednesday

Thursday, 12<sup>th</sup> June 2014

**HALLWAY**

Registration

09.00 - 10.00

**MEETING ROOM INSIKTEN**

**INVITED**

10.00 – 11.00

**INVITED SPEECH**

Chair: Amos Ng, University of Skövde, Skövde, Sweden



[Virtual Geometry Assurance for High Quality and Reduced Lead Time](#)

Professor Rikard Söderberg, Chalmers University of Technology, Sweden

11.00 - 11.30

**COFFEE BREAK**

11.30 – 13.00

**MEETING ROOM INSIKTEN- 11.30-13.00**

**TOOLS**

**SIMULATION TOOLS**

Chair: W.K. Wong, The Hong Kong Polytechnic University, Hong Kong

**TOOLS\_01**

**Comparison of SIMIO and ARENA Simulation Tools**

António Vieira, Luís Dias, Guilherme Pereira and José Oliveira..... 5

**CHEM\_01**

**Initial Bubble and Dew Point Temperature Estimations for Flash Calculations of Hydrocarbon mixtures**

Serdar Çelebi, Gizem Kuşoğlu, Ümmühan Canan, Mehmet Ş. Kaya, Şerife Baş Hekimoğlu and Mustafa Bakır ..... 14

Thursday, 12<sup>th</sup> June 2014

**METH\_01**

**Buffer Overflow Simulation in Self-Similar Queuing Networks with Finite Buffer Capacity**

Izabella Lokshina and Evan Schiele ..... 17

**13.00 - 13.30  
LUNCH BREAK**

**MEETING ROOM INSIKTEN  
13.30 – 14.30**

**INVITED**

**INVITED SPEECH**

**Chair:** Amos Ng, University of Skövde, Skövde, Sweden



**[Modelica - A Cyber-Physical Modeling Language for Systems Engineering and the OpenModelica Environment](#)**

Prof. Peter Fritzson, Linköpings Universitet, Linköping, Sweden

**CONFERENCE VISIT – 14.30-16.30**



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[Volvo Powertrain Corporation](#)

Östergatan

Skövde, Sweden

More information will be available at the conference

Sessions - Thursday

## Thursday, 12<sup>th</sup> June 2014

16.30 - 17.00  
COFFEE BREAK

17.00 - 18.00

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**MEETING ROOM INSIKTEN - 17.00-18.00  
TUTORIAL**

**TUT**

Chair: Anna Syberfeldt, University of Skövde, Skövde, Sweden



**[Introduction to Modeling, Simulation, Debugging, and Optimization with Modelica using OpenModelica](#)**

Prof. Peter Fritzson, Linköpings Universitet, Linköping, Sweden

Hands-on exercises using OpenModelica—Bring Laptop  
Short intro to Debugging and Dynamic Optimization

**CONFERENCE DINNER – 19.00-22.30**



The conference dinner will be held on the 12th of June in the evening at the Ryttmastarbostallet  
<http://www.ryttmastarbostallet.nu/>

Transport will leave the University at 18.30



Friday, 13<sup>th</sup> June 2014

**HALLWAY**

**Registration**

**09.00 - 10.00**

**10.00 - 11.00**

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**MEETING ROOM INSIKTEN - 10.00-11.00**

**TUT**

**TUTORIAL**

**Chair:** Anna Syberfeldt, University of Skövde, Skövde, Sweden



**Production Systems Analysis and Optimization using  
FACTS Analyzer**

Prof. Amos Ng, University of Skövde, Skövde, Sweden

**11.00 - 11.30**

**COFFEE BREAK**

**11.30 - 13.00**

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**MEETING ROOM INSIKTEN - 11.30-13.00**

**TOOLS**

**SIMULATION TOOLS AND DECISION SUPPORT SYSTEMS**

**Chair:** Marcus Frantzén, University of Skövde, Skövde, Sweden

**ROB\_01**

**A Virtual Testbed for Underwater Robotics – Application to Control Design  
for AUVS**

Linus Atorf, Martin Krehel, Juergen Rossmann and Gaurav S. Sukhatme ..... **24**

Sessions - Friday

## Friday, 13<sup>th</sup> June 2014

### OPT\_02

**Interactive and Intelligent Decision Support in Manufacturing using Simulation Based Innovization and Cloud Computing**

Ingemar Karlsson, Amos Ng and Anna Syberfeldt ..... 69

### MANUF\_05

**Framework for an Adaptive decision Support System for Industrial Shop Floor Operators**

Magnus Holm, Göran Adamson, Lihui Wang and Philip Moore ..... 75

**13.00 - 13.15**

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**MEETING ROOM INSIKTEN - 13.00-13.15**

**BEST PAPER**

**CLOSING SESSION AND BEST PAPER AWARD**

**Chairs:** Amos Ng and Anna Syberfeldt, University of Skövde, Skövde, Sweden

**ISC'2015**

**SEE YOU ALL  
JUNE 1-3, 2015 FOR ISC'2015  
[UPV](#), Valencia, Spain.**



**Track proposals and tutorial proposals can be sent in  
by August 30<sup>th</sup>, 2014 to [philippe.geril@eurosis.org](mailto:philippe.geril@eurosis.org)**

**Other ISC Conferences from 2015 onwards**

**ISC'2016, June 2016, POLITECHNICA University of Bucharest, Bucharest, Romania**

**If you are interested in hosting an ISC conference, just contact EUROISIS.**

# Conference Site Map

## Conference Site Map



The conference takes place in PORTALEN, number 8 on the map.

# NOTES

# ISC'2014 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): <input type="checkbox"/> HOME <input type="checkbox"/> BUSINESS		
STREET		
CITY		
ZIPCODE	COUNTRY	
TELEPHONE	FAX	
E-MAIL		
DATE	SIGNATURE	
1. <input type="checkbox"/> <b>EUROSIS member € 545 Member Number:</b> _____		€ _____
2. <input type="checkbox"/> <b>Members of Sponsor or Affiliate Society € 545</b>		€ _____
3. <input type="checkbox"/> <b>Non-Member Participant € 555</b>		€ _____
4. <input type="checkbox"/> <b>Students, <u>who are not authors</u> but who wish to attend the conference, or <b>ONE DAY PARTICIPANTS</b> pay: € 435</b>		€ _____
(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.		
5. <input type="checkbox"/> <b>Conference Dinner Ticket for Companion € 55</b> <input type="checkbox"/> <b>Lunch Ticket for Companion € 25/day</b>		€ _____
6. <input type="checkbox"/> <b>Extra Conference Proceedings € 50 Cash and Carry</b>		€ _____
VAT Number if applicable: _____		
<b>TOTAL AMOUNT DUE</b>		€ _____
		€ _____
<b>ADD BANK CHARGE of € 15 in case you pay by BANK or CHEQUE.</b>		€ _____
<b>TOTAL AMOUNT REMITTED</b>		€ _____

- [1] 1) Make payment by **BANK TRANSFER** to account **IBAN CODE: BE03 0014 0814 7784** EUROPEAN TECHNOLOGY INSTITUTE, ETI Bvba, BNP PARIBAS FORTIS BANK, Torhoutsesteenweg 356, B-8400 Ostend, Belgium, **SWIFT CODE: GEBABEBB MENTION YOUR NAME and ISC'2014**
- [1] 2) Or pay by **CHEQUE** and send it to Philippe Geril, EUROSIS-ETI, European Simulation Office, Greenbridge Science Park, Ghent University – Ostend Campus, Wetenschapspark 1, Plassendale 1, B-8400 Ostend, Belgium.
- [1] 3) Or 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

# 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 EUROSIS is to set up 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.

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

**Philippe Geril**  
**EUROSIS-ETI**  
**European Simulation Office**  
**Greenbridge Science Park**  
**Ghent University – Campus Ostend**  
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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:

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Address: .....

.....

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Telephone.....

Fax: .....

Email: .....