

ACM/IFIP/USENIX 5th International Middleware
Conference

MIDDLEWARE 2004

October 18th - 22nd, 2004
Renaissance Toronto Hotel at SkyDome
Toronto, Ontario, Canada
www.eecg.toronto.edu/middleware2004/



TABLE OF CONTENTS

Table of Contents 1
 Welcome Message from the Program Chair..... 3
 Toronto Guide 4
 Conference Venue10
 Program at a Glance13
 Conference Program15
 Special Events23
 Conference Co-Located Workshops and Tutorials25
 Conference Officers27
 My Notes28
 Sponsors35

Brochure Editor:

Cristiana Amza
University of Toronto, Canada

WELCOME MESSAGE FROM THE PROGRAM CHAIR

The international conference series on Middleware was launched in 1998 in the Lake District in England. Ever since, Middleware has been the premier conference on middleware research and technology. The first conference in the series was a synthesis of the major conferences and workshops in this emerging area into a single international event. This included the ICODP (International Conference on Open Distributed Processing), the ICDP (International Conference on Distributed Platforms) and the SDNE (Services in Distributed and Networked Environments) conferences. Just prior to the first Middleware event in England, in 1997, the Joint International Conference on Open Distributed Processing & Distributed Platforms took place in May, 1997 in Toronto.

Now, the *5th International Middleware Conference* is “back” in Toronto, where, as it has been reported to us, some of its foundations may have been built back in 1997.

The scope of Middleware'04 is the design, implementation, deployment and evaluation of distributed systems platforms and architectures for future networked environments. Highlights of the conference include a high-quality technical program, tutorials, invited speakers (Werner Vogels of Amazon.com, Thorsten von Eicken of Citrix Online, and Gregor Kiczales from the University of British Columbia) and poster presentations, all held in a very sporty and entertaining spot of Toronto. The hotel is close to Toronto's entertainment and theater districts and right next to the CN Tower and almost inside the SkyDome.

As Program Chair, I would like to take this opportunity to thank the large number of people who have contributed to the planning and organization of this conference. The various committees have worked extremely hard in creating this event, especially given the large number of submissions (i.e., papers, posters, workshops, and tutorials) we received.

I am especially grateful for the support offered by ACM, USENIX, and IFIP TC6 WG6.1 and to our considerable industrial sponsorship. Without their support, many aspects of the event would not have been possible. Their support has also made it possible to fund a large number of students from around the world to participate in this conference.

Welcome to Toronto and to Middleware'04. We sincerely hope that you not only enjoy the technical aspects of this conference, but also the varied attractions Toronto has to offer.

Hans-Arno Jacobsen,
Program Chair

Toronto Guide

Periklis Andritsos
University of Toronto
periklis@cs.toronto.edu

Abstract

In this paper, we present interesting issues related to the city of Toronto. The guide is intended for researchers and presents an overview of the attractions of the city of Toronto, eating places and getting around guidelines. Preliminary experimental results obtained by visiting some of the places listed and by obtaining recommendations from the community, suggest that the material presented herein is a promising direction for a memorable stay in the city of Toronto.

1. A Toronto Primer

Welcome to Toronto, the city whose name means “**the meeting place**” in one of the native dialects. In 1996 *Fortune* chose Toronto as the number one city outside the US for work and raising a family. Since then, the city has developed with restaurants and cafes offering all kinds of ethnic food, reflective of the multicultural background of the citizens. Statistics show that the city of Toronto represents more than 80 different ethnic groups speaking more than 100 languages []. Toronto is a safe and vibrant city. You can walk safely to many locations of the downtown area and the places mentioned in this guide. Transportation is very well organized and if you come by car it is more practical to park it and enjoy a walk or a ride with the subway, buses or streetcars. At the end of this paper, there is a map of downtown Toronto. Finally, the climate of Toronto for the end of summer is rather mild. Toronto is on the same latitude as Cannes on the sunny Riviera and Milan. Lake Ontario serves to moderate Toronto's weather to the point that its climate is one of the mildest in Canada. Generally speaking, end of summer temperatures range from 15°C (60°F) to 25°C (80°F).

2. Useful Tips

- **TTC []** (DW) The Toronto Transit Commission (TTC) operates a network of subways, buses and streetcars that provide convenient transportation throughout Toronto. There are two major subway lines. The **Yonge/University/Spadina** is a U-shaped loop that runs under Yonge Street and University Avenue in the downtown area. There are subway stations where major cross streets intersect Yonge St. and University Ave. The subway stations closest to downtown hotels are in Union Station, at King and University, at King and Yonge, at Queen and University and at Queen and Yonge. The **Bloor/Danforth** runs east/west underneath Bloor Street. There are free interchanges between these two subway lines at the Yonge/Bloor station and at the St. George station and the Spadina station. Street car or bus lines run east and west on major streets.

There are two TTC streetcar lines that start in Union Station. The Harborfront 509 line runs through the Harbor Front area along Queens Quay to the CNE grounds. The Spadina 510 line runs along Queens Quay and then north along Spadina Ave to Bloor St. The Bay bus that runs north and south on Bay St is a convenient way to reach many of the places described in this guide.

The stops for surface (bus and streetcar) routes are marked with a vertical red and white TTC sign. Current TTC fares are \$2.25 cash (bus and streetcar drivers do NOT carry change) or tokens/tickets at 5 for \$9.00. There is also a day pass (\$7.50) good for unlimited rides. Tickets and passes may be purchased at subway stations or from small shops that display the TTC Tickets sign. For TTC information call 416-393-4636.

FROM THE AIRPORT TO ROYAL YORK HOTEL: Take the 192 Airport Rocket bus at Terminal 1, 2 or 3 to Kipling Station. At Kipling, take the Bloor-Danforth subway, change at Yonge/Bloor Station and take the Yonge-University-Spadina Line (southbound trains). Exit at Union Station. The 192 Airport Rocket bus operates every 25 minutes.

- **Federal and Provincial Taxes**

The **Goods and Services Tax (GST)** is a 7% tax that is charged on most goods and services sold or provided in Canada. And as Toronto is part of Ontario, purchases made in Toronto are also subject to the 8% **Provincial Sales Tax (PST)**. In brief, add a 15% tax on top of the price tags you see.

- **Tax refund program for visitors** []

Foreign visitors to Canada can apply for a rebate on the GST that is paid on accommodation (up to 30 nights per visit), and goods purchased in Canada and exported within 60 days of the purchase. Keep your receipts and read carefully the instructions given in the above website. You will need to download the corresponding form as well from <http://www.ccradrc.gc.ca/E/pbg/gf/gst176/>.

- **Toronto City Guides** []

A list of the most comprehensive and useful online guides are:

- <http://www.toronto.com>
- <http://www.city.toronto.on.ca>
- <http://www.math.toronto.edu/toronto>
- <http://www.torontotourism.com>

- **Emergency** []

(DW) The telephone number for fire department, police and ambulance service is 911. *TeleHealth Ontario* operates a 24-hour free medical advice service staffed by registered nurses at 1-866-797-0000. There are several major hospitals with Emergency Rooms on University Ave. between Dundas and College St.

- **Yellow Pages**

The Yellow pages contain a comprehensive list of services. They can be accessed online at www.yellowpages.ca. The hard copies (that can hopefully be found in the Toronto hotels) also contain useful maps.

3. Major Attractions

3.1 Near the Conference Hotel

- **The CN Tower** []: (DW) The ride from the airport downtown offers a view of the world's tallest building and freestanding structure (553+ m, 1815+ ft). On a clear day the public observation tower offers views over Toronto and as far away as Niagara Falls. The revolving restaurant at the top of the tower offers a panoramic view of the city. [entry through the CN Tower walkway at the west end of Union Station.]

- **The Sky Dome** []: (DW) Toronto's largest stadium with a retractable roof. Home to the Toronto Blue Jays. [entry from Front St. West.]

- **The Air Canada Center** []: Named after Canada's main airline, ACC is the main athletic facility for indoors sports, home of the NBA Toronto Raptors team and the NHL Toronto Maple Leafs team. During the summer it is used as a concert hall and there are stores that sell a variety of sports memorabilia. [entry from York Str and Lakeshore Blvd.]

- **Toronto Islands** []: (DW) A very large park on an island offshore. Includes restaurants, a children's amusement area and some long pleasant walking areas. Bicycles, roller blades, canoes and paddle boats can be rented in season. [Access via the Toronto Island Ferry at Bay Str and Queens Quay.]

- **Nathan Phillips Square** [1]: A large public square featuring seasonal entertainment and nice ambience. The large building in the middle of the square is Toronto's City Hall. From 10am to 2pm every Wednesday the square hosts a *Farmer's Market*, where products from all over Ontario are being sold. [located on Queen Str West between Bay and University Ave.]

- **Harbour Front** [11]: (DW) Toronto's waterfront park. Very pleasant waterfront atmosphere. [Queens Quay, between Bay St. and Spadina Ave.]

- **Entertainment District** [12]: (DW) The main theater district in Toronto. Also home to **many** clubs and restaurants. [between King St and Queen Street, west of University Avenue.]

- **St. Lawrence Market** [13]: (DW) Toronto's traditional old style market. Butchers, bakers and fruit and vegetable vendors. Several interesting foodstuffs shops. On Saturdays the market doubles in size when local farmers come in to sell their produce [Front Street at Jarvis St.

- **The Distillery** [14]: The Distillery Historic District is a Canadian heritage site and Toronto's newest arts and entertainment cultural community. Throughout the year, it hosts celebrations and special events such as the Distillery Jazz Festival [located near the corner of Parliament and Front Str East.]

3.2 Downtown

- **Royal Ontario Museum** [15]: (DW) The ROM is Ontario's largest traditional museum. [On University Avenue just south of Bloor Street. TTC Museum Station on the University subway line.]

- **Art Gallery of Ontario** [16]: (DW) Home to a large collection of Canadian and World Art. [Dundas Street between University Avenue and Spadina.]

- **The Eaton's Center** [17]: One of Toronto's largest indoor shopping mall of all varieties and tastes [on Yonge Street between Dundas and Queen.]

- **University of Toronto** [18]: (DW) Canada's largest University. The St. George campus is north of College St, (mostly) west of University Avenue. [TTC Queens Park Station on the University subway.]

- **Gay Town** [19]: (DW) Toronto has one of the largest gay/lesbian communities in North America. Gay Town on Church Street between Carleton St. and Bloor St. is one focal point for this community. [TTC College St or Wellesley St stations on the Yonge subway.]

3.3 Elsewhere

- **Ontario Science Center** [20]: (DW) A science museum featuring exhibits of interest to all ages. [770 Don Mills Road ; TTC east on Bloor Subway to Pape station then north on the Don Mills 25 bus or north on the Yonge subway to Eglinton station then east on the Eglinton East bus to Don Mills Road; (416) 696-3127.]

- **The Toronto Zoo** [21]: (DW) On of the top ten zoos in North America and the 3rd largest in terms of area (comfortable walking shoes are recommended). On Meadowvale Road north of Highway 401 in the north east corner of Toronto. [TTC Take the Bloor/Danforth/ Scarborough LRT east to Kennedy Station. Take the 86A bus from Kennedy station to the Zoo. GO TRAIN: take a GO train from Union Station to Rouge Hill station in Scarborough, TTC buses connect this station directly to the Zoo.; (416) 392-5900.]

- **The Casa Loma** [22]: Casa Loma is the former home of Canadian financier Sir Henry Pellatt. It is a castle with decorated suites, secret passages, an 800-foot tunnel, towers, stables, and beautiful 5-acre estate gardens. [TTC: go to Spadina station and take the Davenport 127 bus to Davenport & Spadina. Get off the bus and climb the

Baldwin steps (110 steps), or take the bus one stop further to Davenport and Walmer and walk up the hill on the west side of the castle.]

- **Paramount Canada Wonderland** [23]: (DW) A major amusement park featuring rides and shows. On Highway 400 about 15 Km north of Toronto. [Express GO buses run from Yorkdale and York Mills subway stations. An alternative is to take the GO train from Union Station north to at

8

Proposition 1: The City of Toronto provides a **CityPass** [24], which provides entrance to 6 famous Toronto attractions for one-low-price. Includes tickets to the Art Gallery of Ontario, Casa Loma, CN Tower, Ontario Science Centre, Royal Ontario Museum, and Toronto Zoo. The cost is \$46.00 CAD (almost half the price) and tickets can be purchased online as well as in any of the 6 attractions.

Proposition 2 The Toronto theatre community has introduced T.O.TIX [25], which offers performing arts lovers the opportunity to purchase half-price tickets to a wide variety of theatre, dance, comedy, opera and music events **on the day of performance**.

Proposition 3: This year, the 29th International Toronto Film Festival, runs from September 9 to 18. Check under <http://www.e.bell.ca/filmfest/2003/> for more information on location, hours and tickets.

4. Eating in Toronto

(DW) Toronto has over 2,000 restaurants. The Toronto Health Department has instituted a mandatory restaurant inspection program. Restaurants that have passed this inspection display a large green PASS sign.

4.1 Near the Conference Hotel

- **Mövenpick Marché** [26]: A unique open cafeteria restaurant in BCE place. An experience! Open for breakfast, lunch and dinner. Warning: unlike all other Toronto restaurants, Marché automatically adds a service charge to your bill so tipping is not appropriate. [East end of the street level in BCE place; (416) 366-8986.]

- **Marché Lino:** A smaller take out version of Marché in the PATH underground in BCE place.
- **C'est What** [27]: A bistro offering "ethno-eclectic" menu serving multi-cultural food. It also offers 45 craft brewed beers on tap, fine whiskies from the world over, and a select all Ontario wine list [67 Front Street East; (416)-867-9499.]
- **Young Thailand** [28]: A small chain of very good Thai restaurants. Two locations nearby: 81 Church St (between King and Queen; (416) 368-1368) and 165 John St (north of Queen St.; (416) 593-9291).
- **Avalon** [29]: An excellent (expensive) high end restaurant. One of the best restaurants in the city. Open for lunch only on Thursdays. [270 Adelaide St. West (at John St.); (416) 979-9918.]
- **Barberian's Steak House** [30]: Carnivore's delight. One of Toronto's top steak restaurants. Expensive. [Elm Street between Yonge St and Bay St. a couple of block north of Dundas; (416) 597-0335.]
- **Bombay Palace** [31]: A good Indian restaurant with a buffet lunch. [71 Jarvis St. north of Front St.; (416) 368-8048.]
- **Sangam Restaurant:** An Indian restaurant with a good selection of vegetarian dishes. [788 Bay St at College St.; TTC Bay bus north to College St. ; (416) 591-7090.]
- **St. Lawrence Market:** There are several bakeries/cafes in the St. Lawrence market that sell sandwiches and other light snacks. Try a peameal bacon (real Candian bacon) sandwich or from Canada's north try an Arctic Char sandwich. [Front Street at Jarvis St.]
- **Lai Wah Heen** [32]: Very good Chinese restaurant with inventive (and expensive) dim sum. In the Chestnut Hotel [108 Chestnut St. one block east of University Ave, one block south of Dundas. (416) 977-9899.]
- **Gallery Grill** [33]: An excellent lunch-only restaurant in the Hart House student union on the University of Toronto Campus; (416) 978-2445 ; TTC north on University line to Queens Park or Museum stations. NOTE: It will be open starting September 1st.
- **Dundas Street China Town:** The area on Dundas Street between Bay and University has many other interesting Chinese restaurants.
- **Front Street:** There is a good selection of inexpensive to moderate priced restaurants

on Front Street, west of University Avenue. These are mostly mass market restaurants catering to the crowds attending events at the Sky Dome.

- **Entertainment District:** There are many good restaurants and pubs in the Entertainment district.
- **PATH food courts:** For something fast and simple, there are a number of fast food lunch places (as well as some serious restaurants) in the PATH complex underneath the downtown area.
- **Harbour Front:** There are a number of restaurants with a pleasant waterfront ambience in the Harborfront area. The restaurants tend to have better ambience than food. Still a pleasant place to have a sandwich and a beer and watch the waterfront activity. The Kitchen Table convenience store [10 Queens Quay West; (416) 777-9875] sells a nice selection of sandwiches and other portable food for taking with you while you walk along the waterfront.

4.2 Dining in Toronto

Other alternatives for those who want to explore Toronto's cuisine a bit more

- **Lee Garden** [34]: Chinese (Cantonese) restaurant, very popular. [331 Spadina Ave, between College and Dundas; (416) 593-9524.]
- **Nataraj** [35]: A good Indian restaurant in the Bloor Street West area. [394 Bloor St West, west of Spadina ; (416) 928-2925.]
- **La Bodega** [36]: A good French restaurant. Moderate to expensive. [30 Baldwin St; east of Spadina Ave, south of College St; (416) 977-1287.]
- **Avli** [37]: An upscale Greek restaurant in Toronto's Greektown. Inexpensive to moderate. 401 Danforth Ave. TTC east on the Bloor line to Chester station; (416) 461-9577.]
- **Mezes** : Very authentic Greek restaurant. Moderate. [456 Danforth Ave; TTC east on the Bloor line to Chester station; (416) 778-5150.]
- **Le Trou Normand** [38]: A French provincial restaurant specializing in the cuisine of Normandy. [90 Yorkville Ave; TTC north on the Bay bus to Yorkville ; (416) 967-5956.]
- **Pangaea Restaurant** [39]: High end nouvelle (fusion) cuisine. Expensive. [1221 Bay Street, north of Bloor; TTC north on the

Bay Street bus to Bloor St. ; (416) 920-2323.]

- **Boba** [40]: One of the finest restaurants in Toronto. Mediterranean/Asian fusion cuisine. Expensive. [90 Avenue Road, 3 blocks north of Bloor; TTC north to Museum station on the University line; (416) 961-2622.]
- **Sushi Inn** [41]: Very nice Japanese restaurant in the heart of the Yorkville area. Moderate [120 Cumberland Street, north of Bloor; TTC Bay Station and exit on Cumberland or Yorkville; (416) 923-9992.]

5. Conclusions

This document is for personal use only. Although there is not enough experimentation, it provides the basis for a pleasant and smooth stay in the city of Toronto, the place where the 5th International Conference on Middleware is being held for the year 2004.

Even if you use this document as the basis for your getting around in Toronto, we encourage you to check the links provided. The author has done his best to assure the consistency and correctness of its contents; however, we would appreciate your input should there be missing or inaccurate information in it.

Finally, we are proposing to pursue several directions for further research. Firstly, we plan to explore variability of our evaluations with respect to factors such as ethno-cultural background (Canadian/Greek/Japanese/ etc.), age (student/junior professor/senior professor etc.), and position (academia/industry). We are also working on a framework for conducting more accurate evaluations, both with respect to outcomes and process. Therefore, we invite you to explore our city and propose your own recommendations therein.

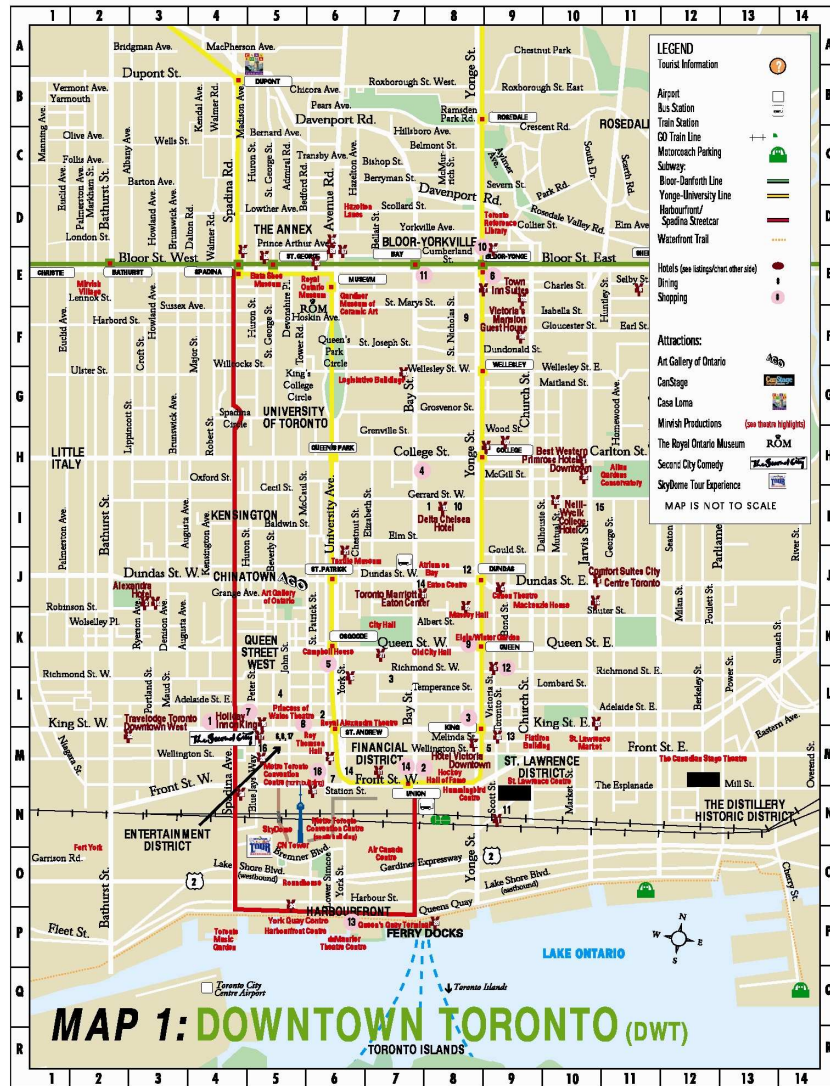
Acknowledgements

The contents presented in this document would not have been available to the attendees of the Middleware 2004 conference without the contributions of Mike Godfrey (MG) and Dave Wortman (DW), who compiled similar guides for ICSE 2001 and RE 2001, respectively. The present guide includes some updated and additional information.

References

- [1] http://www.city.toronto.on.ca/toronto_facts/index.htm
- [2] <http://www.ttc.ca/>
- [3] <http://www.ccra-adrc.gc.ca/E/pub/tg/rc4031/rc4031-e.html>
- [4] <http://www.city.toronto.on.ca/links.htm#guides>
- [5] <http://www.city.toronto.on.ca/emerg/>
- [6] <http://www.cntower.ca/>
- [7] <http://www.skydome.com/>
- [8] <http://www.theaircanadacentre.com/>
- [9] <http://www.city.toronto.on.ca/parks/island/index.htm>
- [10] <http://www.toronto.com/profile/150067/>
- [11] <http://www.harbourfrontcentre.com/>
- [12] <http://www.toronto.com/infosite/310101/>
- [13] <http://www.stlawrencemarket.com/>
- [14] <http://www.thedistillerydistrict.com/>
- [15] <http://www.rom.on.ca/>
- [16] <http://www.ago.net/>
- [17] <http://www.torontoeatcentre.com/>
- [18] <http://www.utoronto.ca>
- [19] <http://toronto.rezrez.com/entertainment/gaytoronto/index.htm>
- [20] <http://www.ontariosciencecentre.ca/>
- [21] <http://www.torontozoo.com/>
- [22] <http://www.casaloma.org/>
- [23] <http://www.canadas-wonderland.com/>
- [24] http://www.cntower.ca/information/13_info_rates_citypass.htm/
- [25] <http://www.totix.ca/>
- [26] <http://www.toronto.com/profile/150592/>
- [27] <http://www.cestwhat.com/>
- [28] <http://www.toronto.com/profile/146442/>
- [29] <http://www.toronto.com/profile/146609/>
- [30] <http://www.toronto.com/profile/146534/>
- [31] <http://www.toronto.com/profile/146446/>
- [32] <http://www.metropolitan.com/lwh/>
- [33] http://www.harhouse.utoronto.ca/userfiles/HTML/nts_3_1320_1.html
- [34] <http://www.toronto.com/profile/147185/>
- [35] <http://www.toronto.com/profile/221627>
- [36] <http://www.labodegarestaurant.com/>
- [37] <http://www.toronto.com/infosite/179730/>
- [38] <http://www.toronto.com/profile/146801/>
- [39] <http://www.pangaearestaurant.com/>
- [40] <http://www.toronto.com/profile/146875/>
- [41] <http://www.toronto.com/profile/115741/>

Map of Downtown Toronto



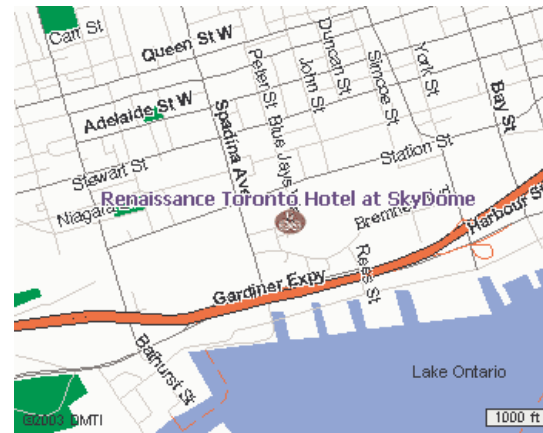
CONFERENCE VENUE



The conference will take place at the Renaissance Toronto Hotel at SkyDome. This 348-room hotel has the amenities and service excellence for following your lead and meeting your every need. Access our comprehensive state-of-the-art leisure and business facilities. Being attached to the SkyDome, 70 of the 348 spacious guest rooms overlook the stadium floor. Connect with the best the city has to offer: sports, theatre, dining, shopping and more. It is next to the Metro Toronto Convention Centre and the CN Tower. It is on the edge of Toronto's financial core and in the heart of its entertainment district.

The main Toronto airport is the "Pearson International Airport". To get from the airport to the hotel, you can use a taxi that can take you to the city in 50 minutes for approximately \$40. The "Airport Express" bus does the same route for approx \$16 in 1 hour and 15 minutes. The "Pacific Western" bus and they travel from the airport to all downtown hotels and vice versa. They charge \$ 14.95. Alternatively, you can use the regular Toronto transportation (TTC) for \$2.25. In particular, take the 192 Airport Rocket bus at Terminals 1, 2 or 3 to Kipling Station. At Kipling, take the Bloor-Danforth subway, change at Yonge/Bloor Station and take the Yonge-University-Spadina Line (southbound trains). Exit at Union Station. The 192 Airport Rocket bus operates every 25 minutes. You will need approximately 30 minutes to Islington subway station and from there 45 minutes ride to get downtown.

Map:



¹ This map is brought to you by WHERE Toronto/Tourism

From Airport

- Hotel Direction: 24 SE
- Driving Directions: 427S to QEW Toronto. // From Buffalo and SW of Toronto: QEW Toronto - Gardiner Expwy E. to Spadina Ave, exit Spadina North, turn right on Front Street and right again on Blue Jays Way. Entrance to the hotel on your left hand side.
- Shuttle Service from Airport
- Subway from Airport
- Taxi

Bus Station

- Union Station (3 Kilometers E)

Subway Station

- Union Station (1 Kilometers E)

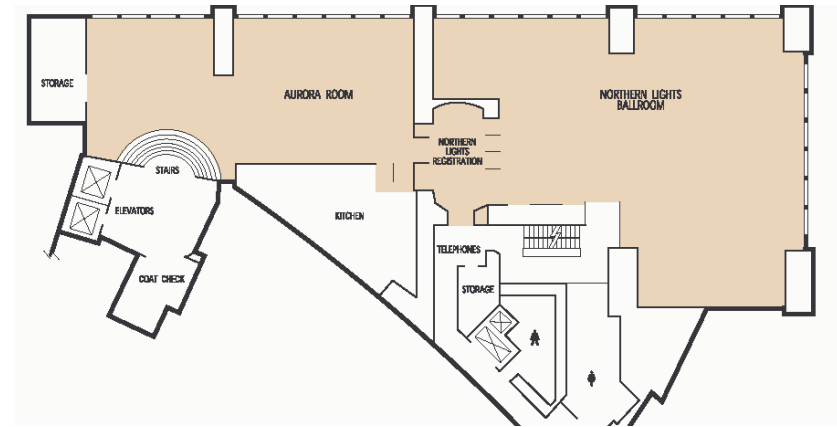
Train Station

- Union Station (1 Kilometers E)

Address:

Renaissance Toronto Hotel at SkyDome
 One Blue Jays Way
 Toronto, Ontario M5V 1J4 Canada
 Phone: 1-416-341-7100
 Fax: 1-416-341-5091
 Sales: 1-416-341-5047
 Toll-Free: 1-800-237-151

HOTEL LAYOUT



MONDAY AT A GLANCE				
	Aurora	Blue Jays	Maple Leaf	Raptor
07:30-08:30	Breakfast (Aurora Room)			
8:30-12:30	T1	W1	T2	W2
12:30-13:30	Lunch Break (Aurora Room)			
13:30-17:00	T1	W1		W2

TUESDAY AT A GLANCE				
	Aurora	Blue Jays	Maple Leaf	Raptor
07:30-08:30	Breakfast (Aurora Room)			
8:30-12:30	W4	T4	T3	W3
12:30-13:30	Lunch Break (Aurora Room)			
13:30-17:00	W4	T5	T6	W3
18:00-21:00	Welcome Reception and Poster Viewing (Northern Lights Ballroom)			

PROGRAM AT A GLANCE

WEDNESDAY AT A GLANCE	
	Northern Lights Ballroom
07:30-08:30	Breakfast (Aurora Room)
08:30-09:00	Opening Ceremony
09:00-10:30	Keynote Address 1 : How Wrong Can You Be? Getting Lost on the Road to Massive Scalability. Werner Vogels - Director of Systems Research, Amazon.com
10:30-11:00	Coffee Break (Aurora Room)
11:00-12:30	Research Session 1 Publish/Subscribe
12:30-14:00	Lunch Break (Aurora Room)
14:00-15:30	Research Session 2 Peer-to-Peer Computing
15:30-16:00	Coffee Break (Aurora Room)
16:00-18:00	Research Session 3 Routing Protocols and Overlays

THURSDAY AT A GLANCE	
	Northern Lights Ballroom
07:30-08:30	Breakfast (Aurora Room)
08:30-10:00	Keynote Address 2 : Experiences Building a 24x7 Real-time ASP Service at Citrix Online Thorsten von Eicken, Chief Architect, Citrix Online
10:00-10:30	Coffee Break (Aurora Room)
10:30-12:30	Research Session 4 Middleware for Replication and Transactions
12:30-13:30	Lunch Break (Aurora Room)
13:30-15:00	Research Session 5 Web Services: Composition, Integration and Interoperability
15:00-15:30	Coffee Break (Aurora Room)
15:30-17:30	WIP Paper Session
17:30-18:30	Panel Web Services - The end of Middleware as we know it?
18:30-20:00	Banquet Reception (Aurora Room)
20:00-22:00	Banquet (Northern Lights Ballroom)

FRIDAY AT A GLANCE	
	Northern Lights Ballroom
07:30-08:30	Breakfast (Aurora Room)
08:30-10:00	Keynote Address 3 : Aspect-Oriented Programming - The promise and the controversy Gregor Kiczales, University of British Columbia Gregor Kiczales
10:00-10:30	Coffee Break (Aurora Room)
10:30-12:30	Research Session 6 Middleware for Mobility
12:30-14:00	Lunch Break (Aurora Room)
14:00-16:00	Research Session 7 Application Servers, Enterprise Computing, and Software Engineering
16:00-16:05	Conference Closing

CONFERENCE PROGRAM

TUESDAY 18:00 – 21:00

Welcome and Poster Reception
 Location: Northern Lights Ballroom

WEDNESDAY 8:30 – 9:00

Conference Opening
 Location: Northern Lights Ballroom
 Welcome Address from the Program Chair: Hans-Arno Jacobsen, University of Toronto

WEDNESDAY 9:00 – 10:30

Keynote Address 1
 Location: Northern Lights Ballroom
 Chair: Steven Vinoski, Iona Inc.
How Wrong Can You Be? Getting Lost on the Road to Massive Scalability.
 Werner Vogels - Director of Systems Research, Amazon.com

WEDNESDAY 10:30 – 11:00

Coffe Break
 Location: Aurora Room
 Provided by the conference

WEDNESDAY 11:00 – 12:30

Research Session 1: Publish/Subscribe
 Location: Northern Lights Ballroom
 Session Chair: Bettina Kemme, McGill University, Canada
An Ontology-based Publish/Subscribe System
 Jinling Wang (Chinese Academy of Sciences, China), Beihong Jin (Chinese Academy of Sciences, China), Jing Li (Chinese Academy of Sciences, China)
Meghdoot: Content-Based Publish/Subscribe over P2P Networks
 Abhishek Gupta (University of California at Santa Barbara, U.S.), Ozgur Sahin (University of California at Santa Barbara, U.S.), Divyakant Agrawal (University of California at Santa Barbara, U.S.), Amr El Abbadi (University of California at Santa Barbara, U.S.)
Subscription Propagation in Highly Available Publish/Subscribe Middleware
 Yuanyuan Zhao (IBM T.J. Watson Research Center, U.S.), Daniel Sturman (IBM T.J. Watson Research Center, U.S.), Sumeer Bhola (IBM T.J. Watson Research Center, U.S.)

WEDNESDAY 12:30 – 14:00

Lunch Break
 Location: Aurora Room
 Provided by the conference

WEDNESDAY 14:00 – 15:30

Research Session 2: Peer-to-Peer Computing

Location: Northern Lights Ballroom

Chair: Rick Schantz, BBN, U.S.

A Content Model for evaluating Peer-to-peer Searching Techniques

Brian F. Cooper (Georgia Institute of Technology, U.S.)

Foreseer: A Novel, Locality-Aware Peer-to-Peer System Architecture for Keyword Searches

Hailong Cai (University of Nebraska-Lincoln, U.S.), Jun Wang (University of Nebraska-Lincoln, U.S)

Guiding queries to information sources with InfoBeacons

Brian F. Cooper (Georgia Institute of Technology, U.S.)

WEDNESDAY 15:30 – 16:00

Coffe Break

Location: Aurora Room

Provided by the conference

WEDNESDAY 16:00 – 18:00

Research Session 3: Routing Protocols and Overlays

Location: Northern Lights Ballroom

Session Chair: Roy Campbell, UIUC, U.S.

The Peer Sampling Service: Experimental Evaluation of Unstructured Gossip-Based Implementations

Mark Jelasity (University of Bologna, Italy), Rachid Guerraoui (EPFL, Lausanne, Switzerland), Anne-Marie Kermarrec (INRIA, Rennes, France), Maarten van Steen (Vrije Universiteit, The Netherlands)

Directed Flood-Routing Framework for Wireless Sensor Networks

Miklos Maroti (Vanderbilt University, U.S.)

On Exploring Performance Optimizations in Web Service Composition

Jingwen Jin (University of Illinois at Urbana Champaign, U.S.), Klara Nahrstedt (University of Illinois at Urbana Champaign, U.S.)

iOverlay: A Lightweight Middleware Infrastructure for Overlay Application Implementations

Baochun Li (University of Toronto, Canada), Jiang Guo (University of Toronto, Canada), Mea Wang (University of Toronto, Canada)

THURSDAY 8:30 – 10:00

Keynote Address 2

Location: Northern Lights Ballroom

Chair: Werner Vogels, Director of Systems Research, Amazon.com

Experiences Building a 24x7 Real-time ASP Service at Citrix Online

Thorsten von Eicken, Chief Architect, Citrix Online

THURSDAY 10:00 – 10:30

Coffe Break

Location: Aurora Room

Provided by the conference

THURSDAY 10:30 – 12:30

Research Session 4: Middleware for Replication and Transactions

Location: Northern Lights Ballroom

Session Chair: Cristiana Amza, University of Toronto, Canada

Ganymed: Scalable Replication for Transactional Web Applications

Christian Plattner (ETH, Switzerland), Gustavo Alonso (ETH, Switzerland)

Adaptive Middleware for Data Replication

J. M. Milan-Franco (Technical University of Madrid, Spain), Ricardo Jimenez-Peris (Technical University of Madrid, Spain), Marta Patio-Martnez (Technical University of Madrid, Spain), Bettina Kemme (McGill University, Canada)

Alternative Edge-Server Architectures for Enterprise JavaBeans Applications

Avraham Leff (IBM T.J. Watson Research Center, U.S.), James T. Rayfield (IBM T. J. Watson Research Center, U.S.)

Transparent Information Dissemination

Amol Nayate (University of Texas at Austin, U.S.), Mike Dahlin (University of Texas at Austin, U.S.), Arun Iyengar (IBM T.J. Watson Research Center, U.S.)

THURSDAY 12:30 – 13:30

Lunch Break

Location: Aurora Room

Provided by the conference

THURSDAY 13:30 – 15:00

Research Session 5: Web Services: Composition, Integration and Interoperability

Location: Northern Lights Ballroom

Session Chair: *Gustavo Alonso, ETH Zürich, Switzerland*

Composition of Coordinated Web Services

Stefan Tai (IBM T.J. Watson Research Center, U.S.), Rania Khalaf (IBM T.J. Watson Research Center, U.S.), Thomas Mikalsen (IBM T.J. Watson Research Center, U.S.)

Adaptive Resource Sharing in a Web Services Environment

Vijay Naik (IBM T.J. Watson Res Center, U.S.), Swami Sivasubramanian (Vrije Universiteit, The Netherlands), Sriram Krishnan (Indiana University, U.S.)

Interoperability among Independently Evolving Web Services

Shankar Ponnekanti (Stanford University, U.S.), Armando Fox (Stanford University, U.S.)

THURSDAY 15:00 – 15:30

Coffe Break

Location: Aurora Room

Provided by the conference

THURSDAY 15:30 – 17:30

WiP Paper Session

Location: Northern Lights Ballroom

Session Chair: *Fabio Kon, U. of São Paulo, Brazil*

Discovering Services is not Enough

Andrei Dragoi (University of Waterloo), James Black (University of Waterloo)

MoCA: A Middleware for Developing Collaborative Applications for Mobile Users

Vagner Sacramento (PUC-Rio), Markus Endler (PUC-Rio) Hana, Rubinsztejn (PUC-Rio), Luciana Lima (PUC-Rio), Kleider Gonzalves (PUC-Rio), Fernando Nascimento (PUC-Rio), Giulliano Bueno (PUC-Rio)

A Middleware Architecture for Securing Ubiquitous Computing Cyber Infrastructures

Raquel Hill (Department of Computer Science, University of Illinois Urbana-Champaign), Jalal Al-Muhtadhi (Department of Computer Science, University of Illinois, Urbana-Champaign), Roy Campbell (Department of Computer Science, University of Illinois, Urbana-Champaign), Apu Kapadia (Department of Computer Science, University of Illinois, Urbana-Champaign), Prasad Naldurg (Department of Computer Science, University of Illinois, Urbana-Champaign), Anand Ranganathan (Department of Computer Science, University of Illinois, Urbana-Champaign)

Profile-driven Component Placement for Cluster-based Online Services

Christopher Stewart (University of Rochester), Kai Shen (University of Rochester), Michael Scott (University of Rochester), Sandya Dwarkdas (University of Rochester), Jian Yin (IBM Research)

Service Continuity in Networked Control using Etherware

Girish Baliga (Coordinated Science Lab), Scott Graham (Coordinated Science Lab, UIUC), Lui Sha (Dept. of Computer Science, UIUC), P. R. Kumar (CSL & Dept. of ECE, UIUC)

A Highly Available Distributed Event Notification Service for Mobile Ad-hoc Networks

Katrine Stemland Skjelsvik (Department of Informatics, University of Oslo), Vera Goebel (University of Oslo), Thomas Plagemann (University of Oslo)

THURSDAY 17:30 – 18:30

Panel

Location: Northern Lights Ballroom

Web Services - The end of Middleware as we know it?

Panel chair: *Werner Vogels, Director of Systems Research, Amazon.com*

Panelists: *Steven Vinoski, John Lam, others TBA.*

THURSDAY 18:30 – 22:00

Banquet Reception and Banquet

Location: Reception in Aurora Room 18:30 - 20:00

Banquet at Northern Lights Ballroom 20:00-22:00

Dinner and dessert talk:

Middleware and Web Services for the Collaborative Information Portal of NASAs Mars

Exploration Rovers Mission (invited paper)

Elias Sinderson (CSC, NASA ARC, U.S.), Vish Magapu (SAIC, NASA ARC, U.S.), Ronald Mak (RIACS, NASA ARC, U.S.)

FRIDAY 8:30 – 10:00

Keynote Address 3

Location: Northern Lights Ballroom

Chair: Hans-Arno Jacobsen, University of Toronto

Aspect-Oriented Programming - The promise and the controversy

Gregor Kiczales, Professor, University of British Columbia

FRIDAY 10:00 – 10:30

Coffe Break

Location: Aurora Room

Provided by the conference

FRIDAY 10:30 – 12:30

Research Session 6: Middleware for Mobility

Session Chair: Gordon Blair, Lancaster University, U.K.

Location: Northern Lights Ballroom

SyD: A Middleware Testbed for Collaborative Applications over Small Heterogeneous Devices and Data Stores

Sushil K. Prasad (Georgia State University, U.S.), Vijay Madiseti (Georgia Institute of Technology, U.S.), hamkant B. Navathe (Georgia Institute of Technology, U.S.) et al.

Dynamically Programmable and Reconfigurable Middleware Services

Manuel Roman (DoCoMo Labs, U.S.), Nayeem Islam (DoCoMo Labs, U.S.)

MiddleWhere: A Middleware for Location Awareness in Ubiquitous Computing Applications

Anand Ranganathan (University of Illinois at Urbana-Champaign, U.S.), Jalal Al-Muhtadi (University of Illinois at Urbana-Champaign, U.S.), Shiva Chetan (University of Illinois at Urbana-Champaign, U.S.), Roy Campbell (University of Illinois at Urbana-Champaign, U.S.), M. Dennis Mickunas (University of Illinois at Urbana-Champaign, U.S.)

A Game Theoretic Approach for Power Aware Middleware

Shivajit Mohapatra (University of California, Irvine)
Nalini Venkatasubramanian (University of California, Irvine)

FRIDAY 12:30 – 14:00

Lunch Break

Location: Aurora Room

Provided by the conference

FRIDAY 14:00 – 16:00

Research Session 7: Application Servers, Enterprise Computing, and Software Engineering

Session Chair: Jan de Meer, IHP-Microelectronics, Germany

Location: Northern Lights Ballroom

Developing and Managing Software Components in an ontology-based Application Server

Daniel Oberle (University of Karlsruhe, Germany), Andreas Eberhart (University of Karlsruhe, Germany), Steffen Staab (University of Karlsruhe, Germany), Raphael Volz (University of Karlsruhe, Germany)

Extending a J2EE Server with Dynamic and Flexible Resource Management

Mick Jordan (Sun Microsystems, Inc., U.S.), Grzegorz Czajkowski (Sun Microsystems, Inc., U.S.), Kirill Kouklinski (University of Waterloo, U.S.), Glenn Skinner (Sun Microsystems, Inc., U.S.)

Portable and Efficient Distributed Threads for Java

Eli Tilevich (Georgia Institute of Technology, U.S.), Yannis Smaragdakis (Georgia Institute of Technology, U.S.)

Platform Independent Model Transformation Based on Triple

Andreas Billig (ISST Fraunhofer Gesellschaft, Berlin, Germany), Susanne Busse (Technical University of Berlin, Germany), Andreas Leicher (Technical University of Berlin, Germany), Joern Guy Suss (Technical University of Berlin, Germany)

FRIDAY 16:00 – 16:05

16:16:05 Conference Closing

Location: Northern Lights Ballroom

SPECIAL EVENTS

Keynote Speech 1: How Wrong Can You Be? Getting Lost on the Road to Massive Scalability.**Werner Vogels - Director of Systems Research, Amazon.com****Location: Northern Lights Ballroom****Wednesday 9:00-10:30**

In 10 years of academic distributed systems research I have been involved with the development of a number of systems that were all targeted to address realistic problems the industry was facing. Some of these technologies became successful, but often for reasons we had not expected, and others failed miserably, while we had predicted great success. In this talk I will review a number of the assumptions that we used in the research into scalability and reliability of distributed systems, and I will investigate the role these assumptions played in the success and failures of some technologies. In the second half of the talk I will look at the state of the art in distributed systems, and whether our current technologies are a good foundation for building the massively scalable distributed systems of the future.

Bio:

Dr. Werner Vogels is Director of Systems Research at Amazon.com, where he is responsible for the research and development of massively scalable distributed systems in support of Amazon.com's global operations. Before joining Amazon.com in September 2004, he was for 10 years a researcher in the Computer Science Department of Cornell University where he worked on scalability and reliability in mission critical enterprise systems. He also was a co-founder and Chief Technology Officer for Reliable Network Solutions, Inc. In his role at Amazon.com he remains involved in collaborations with academia and research labs. He holds a Ph.D. in computer science from the Vrije Universiteit in Amsterdam, the Netherlands.

Keynote Speech 2: Experiences Building a 24x7 Real-time ASP Service at Citrix Online**Thorsten von Eicken, Chief Architect, Citrix Online****Location: Northern Lights Ballroom****Thursday: 8:30-10:00**

Citrix Online (formerly Expercitey.com) runs 24x7 real-time ASP services for remote access (GoToMyPC), help desk (GoToAssist), and collaboration (GoToMeeting) used by a large community of personal and corporate users. This talk will present some of the challenges faced in building the service infrastructure, including managing an overlay network, building a distributed back-end server platform, handling security requirements, and debugging the system.

Bio:

Thorsten von Eicken is currently Chief Architect at Citrix Online, formerly Expercitey.com and now a division of Citrix Inc. He received his Ph.D from the University of California at Berkeley working on Active Messages and continued with research in high-performance networking as Assistant Professor at Cornell University.

Keynote Speech 3: Aspect-Oriented Programming - The promise and the controversy**Gregor Kiczales, Professor, University of British Columbia****Location: Northern Lights Ballroom****Friday: 8:30-10:00**

Aspect-oriented programming (AOP) is based on a commitment above all else to allowing programmers to express their design intent in clean modular form. This commitment is why AOP is able to modularize crosscutting concerns and improve program and design clarity. It is also why AOP is controversial - it runs afoul of existing precepts about modularity. In this talk I will argue

that AOP represents the next turn of the wheel in expressiveness, and talk about both the promise and the controversy. I will show some of what is already being done with AOP, and will also outline some of the most promising areas for future research.

CONFERENCE CO-LOCATED WORKSHOPS

W1: 2nd Workshop on Middleware for Grid Computing

Organizers: Bruno Schulze - National Scientific Computing Laboratory (Brazil) and Radha Nandkumar - NCSA/UIUC (USA)
 Monday, October 18th
 Location: Blue Jays room

W2: 2nd Workshop on Middleware for Pervasive and Ad-Hoc Computing

Organizer: Paddy Nixon - Strathclyde University (UK)
 Monday, October 18th
 Location: Raptor room

W3: 3rd Workshop on Adaptive and Reflective Middleware

Organizer: Fabio Costa, Federal University of Goiás - (Brazil) and Nanbor Wang - Tech-X Corporation (USA)
 Tuesday, October 19th
 Location: Raptor room

W4: 1st Middleware Doctoral Symposium

Organizers: Edward Curry - National University of Ireland (Ireland) and Doug Lea - SUNY Oswego (USA)
 Tuesday, October 19th
 Location: Aurora room

TUTORIALS

T1: Building Distributed .NET Applications - Technologies, Architecture, Comparison with J2EE

Michael Stal, Siemens AG Germany
 Monday, October 18th, full-day (morning and afternoon)
 Location: Aurora room

T2: Getting Started with Aspect-Oriented Programming for Middleware

Yvonne Coady, University of Victoria, Canada
 Monday, October 18th, half-day (morning)
 Location: Maple Leaf room

T3: Middleware and Data Management for Sensor Networks

Sam Madden, MIT, USA
 Tuesday, October 19th, half-day (morning)
 Location: Maple Leaf room

T4: Enterprise Integration Patterns: Asynchronous Messaging Architectures in Practice

Gregor Hohpe, ThoughtWorks Inc., USA
 Tuesday, October 19th, half-day (morning)
 Location: Blue Jays room

T5: Data Grid Management Systems

Arun Swaran Jagatheesan,
 University of California, San Diego, USA
 Tuesday, October 19th, half-day (afternoon)
 Location: Blue Jays room

T6: DDS: The Real-Time Publish-Subscribe Standard for Data Distribution

Gerardo Pardo-Castellote, Real-Time Innovations Inc., USA
 Tuesday, October 19th, half-day (afternoon)
 Location: Maple Leaf room

Morning tutorials start at 8:30 am – 12:30 with a 30 minute break at 10 am.
 Afternoon tutorials start at 1:30 pm - 5 pm with a 30 minute break at 3 pm.

CONFERENCE OFFICERS

Conference Organizers

General Chair

Steven Vinoski (IONA Technologies, Inc.)

Program Chair

Hans-Arno Jacobsen (University of Toronto, Canada)

Work in Progress Chair

Jean Bacon (University of Cambridge, UK)

Posters Chair

Eyal de Lara (University of Toronto, Canada)

Advanced Workshops Chair

Fabio Kon (USP, Brazil)

Tutorials Chair

Stefan Tai (IBM T.J. Watson, US)

Local Arrangements Chair

Baochun Li (University of Toronto, Canada)

Publicity Chair

Cristiana Amza (University of Toronto, Canada)

Student Travel Grants Program Chair

Daby M, Sow (IBM T.J. Watson, USA)

Steering Committee

- Gordon Blair (Lancaster University, UK)
- Markus Endler (PUC-Rio, Brazil)
- Rachid Guerraoui (EPFL, Switzerland)
- Peter Honeyman (CITI, University of Michigan, USA)
- Guy LeDuc (University of Liege, Belgium)
- Jan de Meer (IHP-Microelectronics, Germany)
- Doug Schmidt (Vanderbilt University, US)
- Joe Sventek (University of Glasgow, UK)

Program Committee Members

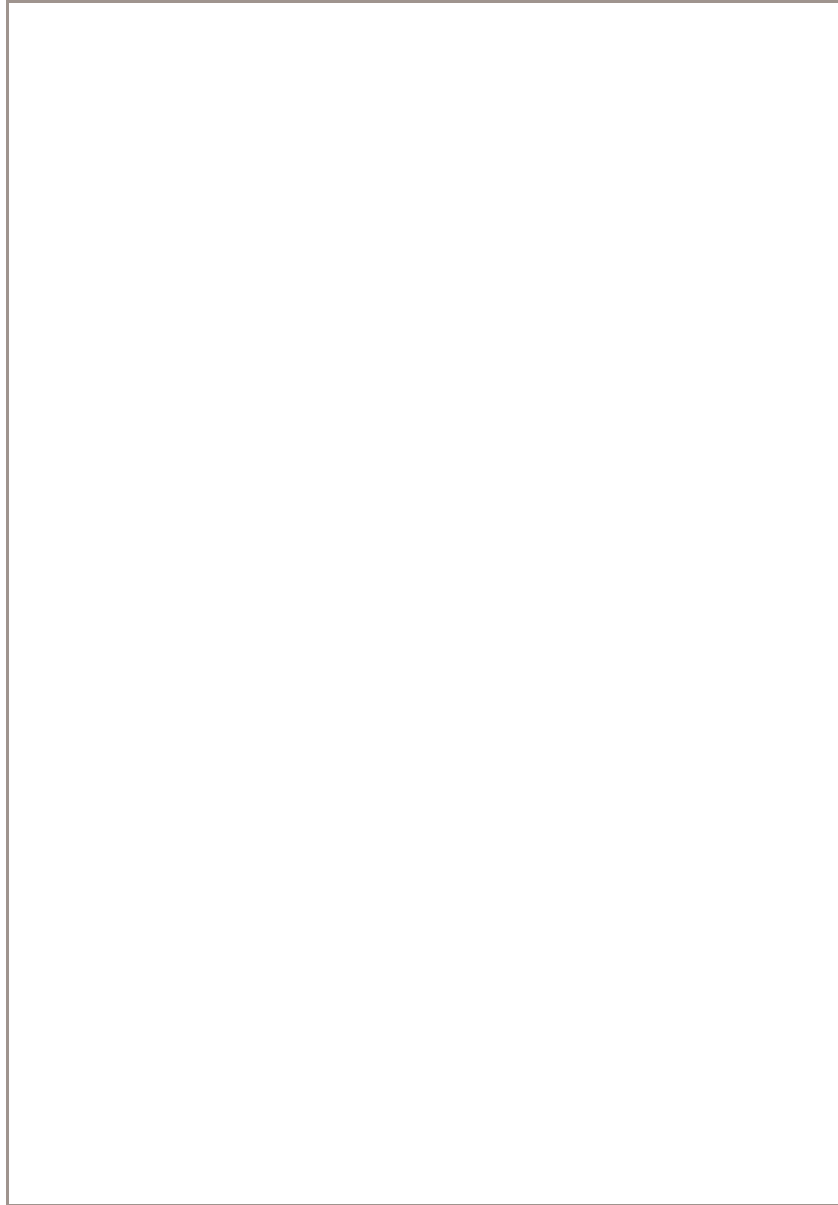
- | | |
|--|--|
| <ul style="list-style-type: none"> Gul Agha (U. of Illinois, Urbana Champaign, USA) Gustavo Alonso (ETH Zürich, Switzerland) Cristiana Amza (University of Toronto, Canada) Jean Bacon (Cambridge U., UK) Mark Baker (Canada) Guruduth Banavar (IBM T.J. Watson, USA) Alejandro Buchmann (Darmstadt U. of Technology, Germany) Andrew Campbell (Columbia U., USA) Roy Campbell (U. of Illinois, Urbana Champaign, USA) Harold Carr (Sun, USA) Geoff Coulson (Lancaster U., UK) Prem Devanbu (UC Davis, USA) Jan DeMeer (IHP-Microelectronics, Germany) Naranker Dulay (Imperial College, UK) Markus Endler (PUC-Rio, Brazil) Mike Feeley (U. of British Columbia, Canada) Chris Gill (Washington U., St. Louis, USA) Aniruddha Gokhale (Vanderbilt U., USA) Peter Honeyman (CITI, U. of Michigan, USA) Bettina Kemme (McGill U., Canada) Fabio Kon (U. of São Paulo, Brazil) Doug Lea (SUNY Oswego, USA) | <ul style="list-style-type: none"> Joe Loyall (BBN Technologies, USA) Edmundo Madeira (U. of Campinas, Brazil) Keith Moore (HP Laboratories, USA) Hausi Muller (U. of Victoria, Canada) Klara Nahrstedt (U. of Illinois, Urbana Champaign, USA) Dennis Noll (Boeing, USA) Kerry Raymond (DSTC, Australia) Luis Rodrigues (U. of Lisboa, Portugal) Isabelle Rouvellou (IBM T.J. Watson, USA) Michael Stal (Siemens, Germany) Rick Schantz (BBN Technologies, USA) Douglas Schmidt (Vanderbilt U., USA) Jean-Bernard Stefani (INRIA, Grenoble, France) Joe Sventek (University of Glasgow, UK) Janos Sztipanovits (Vanderbilt U., USA) Stefan Tai (IBM T.J. Watson, USA) Peter Triantifilou (U. of Padras, Greece) Nalini Venkatasubramanian (U. of California, Irvine, USA) Werner Vogels (Cornell U., USA) Martina Zitterbart (U. of Karlsruhe, Germany) |
|--|--|

My Notes

NOTES

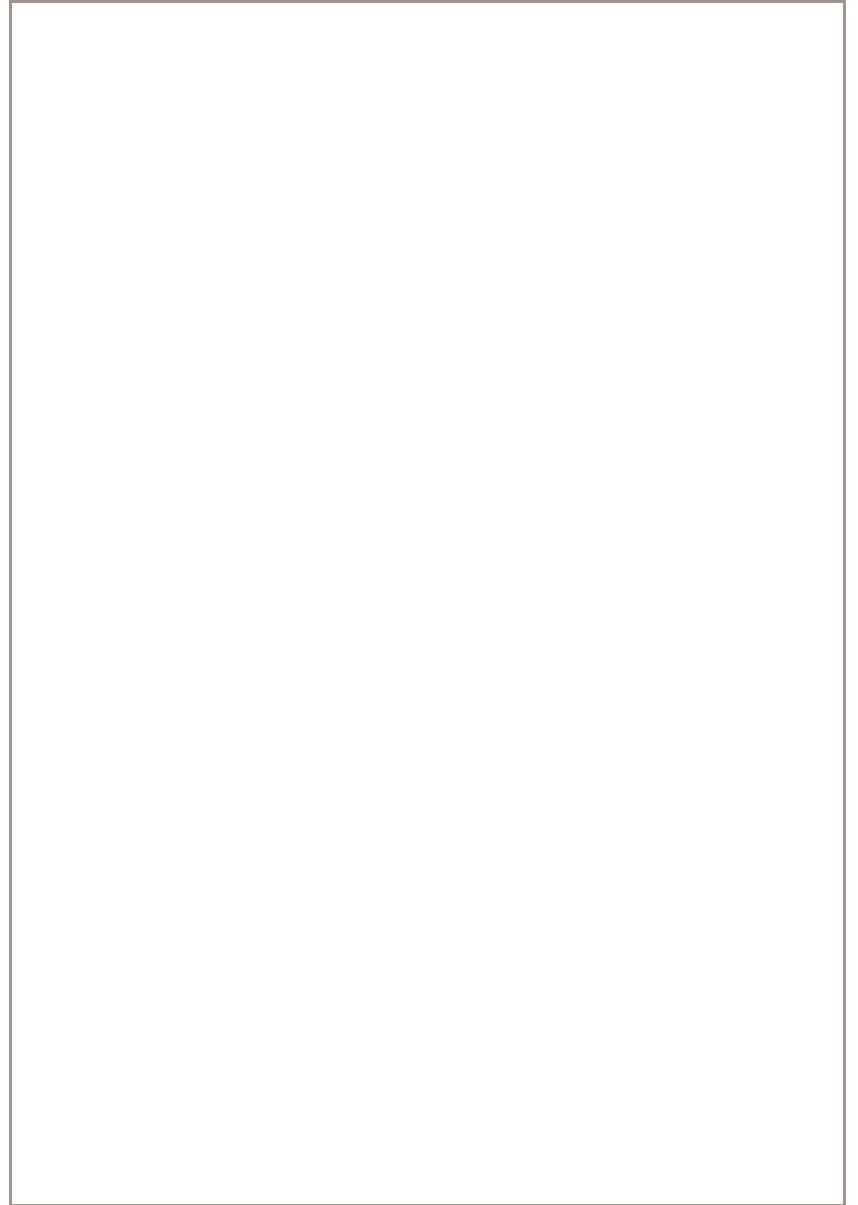
My Notes

NOTES



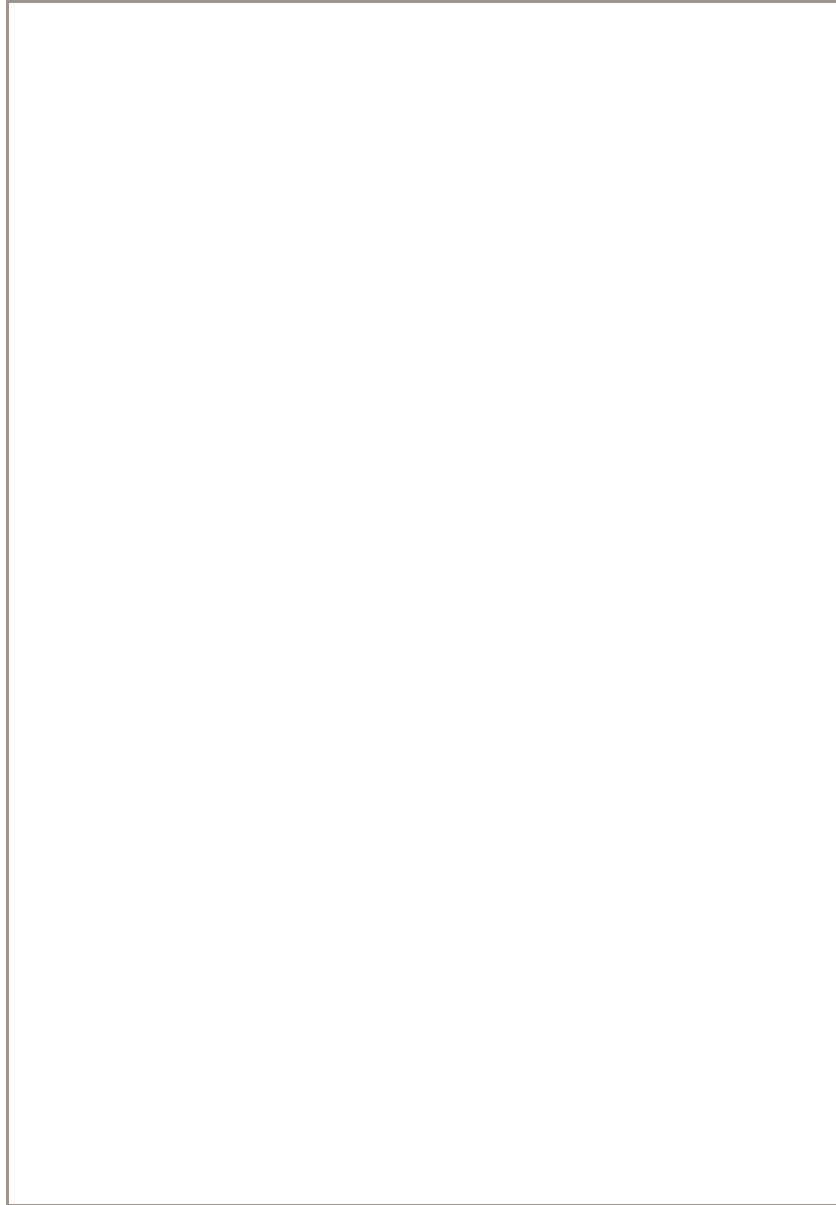
My Notes

NOTES



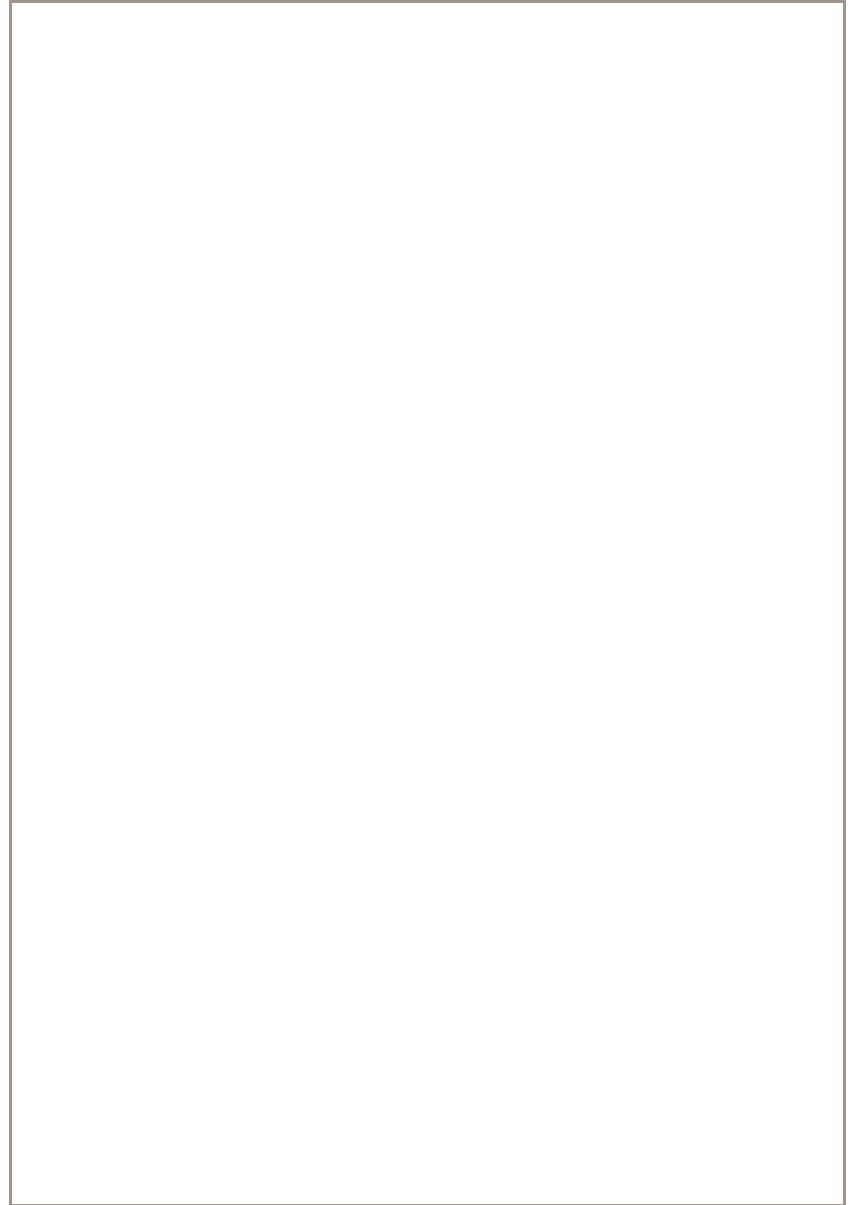
My Notes

NOTES



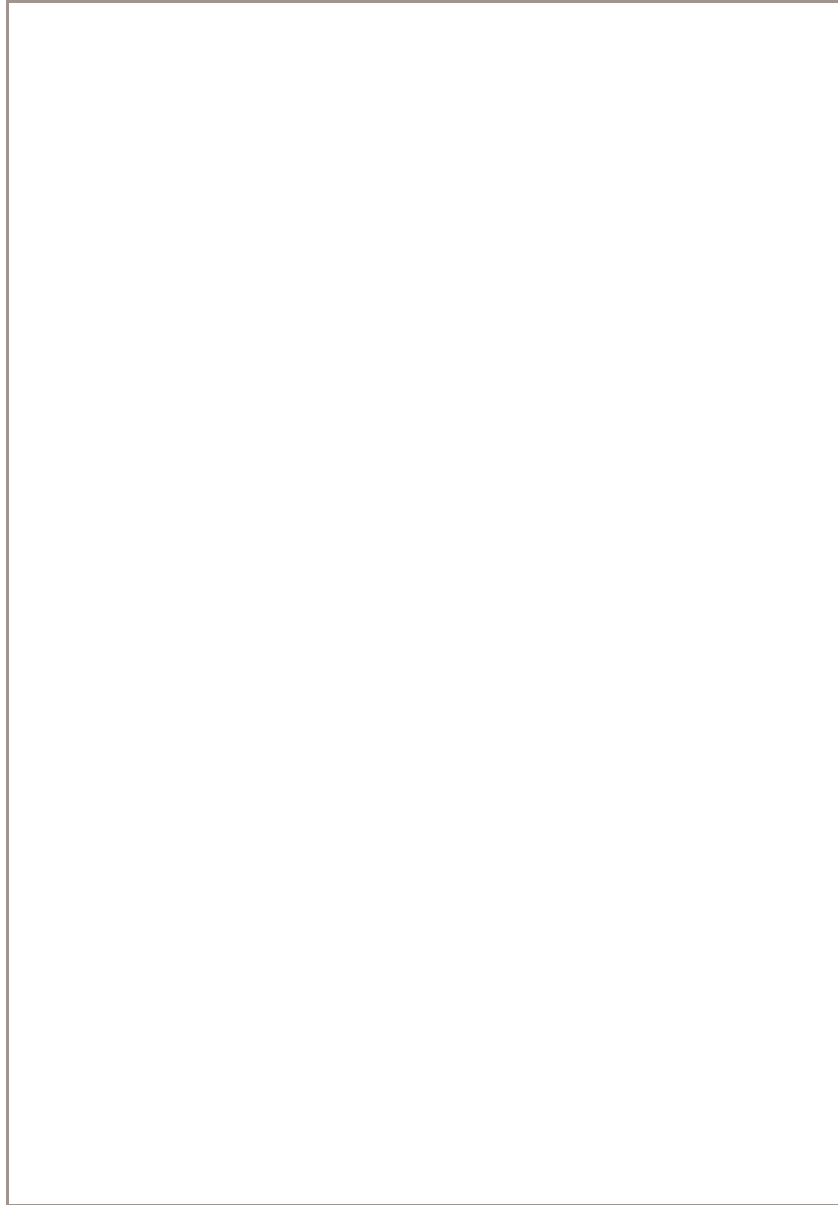
My Notes

NOTES



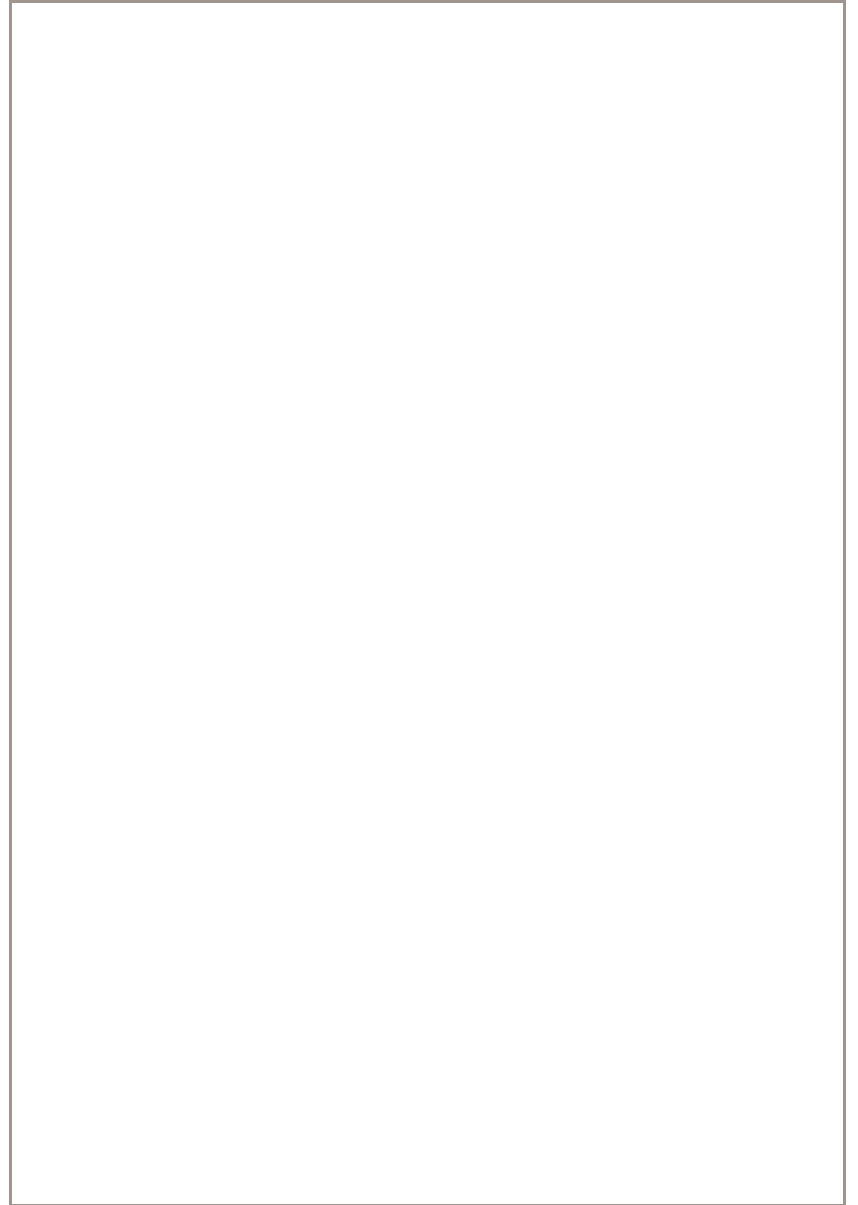
My Notes

NOTES



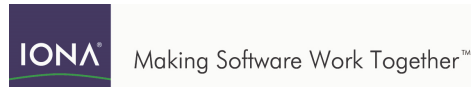
My Notes

NOTES



Corporate Sponsors

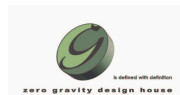
Diamond Level



Silver Level



Supporting Institutions



Middleware Logo Design

Supporting Organization

