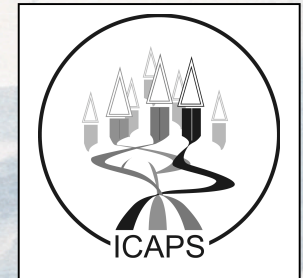


Fourteenth International Conference on Automated Planning and Scheduling

Whistler, British Columbia, Canada

June 3-7, 2004



**ICAPS 2004
Conference Program**

ICAPS 2004 at a Glance

Morning	Afternoon	Evening
Thursday, June 3 Registration Morning Tutorials	Registration Afternoon Tutorials	
Friday, June 4 Registration Workshops	Registration Workshops Doctoral Consortium Meeting	ICAPS Opening Reception
Saturday, June 5 Registration Joint ICAPS / KR Technical Sessions	Registration Joint ICAPS / KR Technical Sessions	ICAPS / KR Festival Doctoral Consortium Poster Presentations Systems Demonstrations Planning Competition Results & Awards
Sunday, June 6 Registration ICAPS Technical Sessions	Registration ICAPS Technical Sessions	ICAPS Banquet
Monday, June 7 Registration ICAPS Technical Sessions	ICAPS Technical Sessions	

ICAPS 2004 Program

Thursday, June 3	Friday, June 4	Saturday, June 5	Sunday, June 6	Monday, June 7
<p>ICAPS Morning Tutorials 9:00 AM – 1:00 PM</p> <p><i>“Planning and Learning”</i> Spearhead B</p> <p><i>“Constraint Satisfaction for Planning and Scheduling”</i> Tantalus</p> <p><i>“Planning on the Web”</i> Black Tusk</p>	<p>ICAPS Workshops 8:30 AM – 5:00 PM</p> <p><i>“Integrating Planning into Scheduling”</i> Spearhead A</p> <p><i>“Connecting Planning Theory with Practice”</i> Spearhead B</p> <p><i>“Planning and Scheduling for Web and Grid Services”</i> Wedgemount B</p>	<p>Joint ICAPS / KR Technical Sessions</p> <p>8:50 – 9:00 AM Opening Remarks Session Chair: Shlomo Zilberstein Rainbow Theatre</p> <p>9:00 – 10:00 AM Invited Speaker: Patrick Doherty Session Chair: Mary-Anne Williams Rainbow Theatre</p>	<p>ICAPS Technical Sessions</p> <p>8:30 – 8:40 AM Opening Remarks Session Chair: Shlomo Zilberstein Rainbow Theatre</p> <p>8:40 – 10:00 AM <i>“Search in Planning and Scheduling”</i> Session Chair: Eric Hansen Rainbow Theatre</p>	<p>ICAPS Technical Sessions</p> <p>8:30 – 8:40 AM Opening Remarks Session Chair: Shlomo Zilberstein Rainbow Theatre</p> <p>8:40 – 10:00 AM <i>“Classical Planning”</i> Session Chair: Craig Knoblock Rainbow Theatre</p>
10:30 – 11:00 AM Coffee Break Valley Foyer	10:30 – 11:00 AM Coffee Break Valley Foyer	10:00 – 10:25 AM Coffee Break Valley Foyer	10:00 – 10:30 AM Coffee Break Valley Foyer	10:00 – 10:30 AM Coffee Break Valley Foyer
11:00 AM – 1:00 PM Morning Tutorials Continue	<p>11:00 AM – 12:30 PM Workshops Continue</p> <p>11:00 AM – 12:30 PM Doctoral Consortium Meeting Session Chair: Eric Hansen Tantalus</p>	10:25 AM – 12:05 PM <i>“Cognitive Robotics”</i> Session Chair: Thomas Lukasiewicz Rainbow Theatre	<p>10:30 – 11:30 AM Invited Speaker: Michaela Milano Session Chair: Sven Koenig Rainbow Theatre</p> <p>11:30 AM – 12:50 PM <i>“Scheduling I”</i> Session Chair: Stephen Smith Rainbow Theatre</p>	<p>10:30 – 11:30 AM Invited Speaker: Reid Simmons Session Chair: Sven Koenig Rainbow Theatre</p> <p>11:30 AM – 12:50 PM <i>“Scheduling II”</i> Session Chair: Weixiong Zhang Rainbow Theatre</p>
1:00 – 2:00 PM Lunch Break	12:30 – 2:00 PM Lunch Break	12:05 – 1:30 PM Lunch Break	12:50 – 2:00 PM Lunch Break	12:50 – 2:00 PM Lunch Break
<p>ICAPS Afternoon Tutorials 2:00 – 6:00 PM</p> <p><i>“Robot Motion Planning”</i> Tantalus</p> <p><i>“Planning using POMDPs”</i> Black Tusk</p>	2:00 – 3:00 PM Workshops Continue	1:30 – 3:10 PM <i>“Knowledge in Planning”</i> Session Chair: Adele Howe Rainbow Theatre	2:00 – 3:20 PM <i>“Planning and Scheduling Applications”</i> Session Chair: Nicola Muscettola Rainbow Theatre	2:00 – 3:20 PM <i>“Model Checking and Plan Recognition”</i> Session Chair: Vincent Vidal Rainbow Theatre
3:30 - 4:00 PM Coffee Break Valley Foyer	3:30 - 4:00 PM Coffee Break Valley Foyer	3:10 – 3:35 PM Coffee Break Valley Foyer	3:20 – 3:50 PM Coffee Break Valley Foyer	3:20 – 3:50 PM Coffee Break Valley Foyer
4:00 – 6:00 PM Afternoon Tutorials Continue	3:30 – 5:00 PM Workshops Continue	3:35 – 5:15 PM <i>“Search in Planning and Scheduling”</i> Session Chair: Robert Holte Rainbow Theatre	<p>3:50 – 4:50 PM <i>“Probabilistic Planning”</i> Session Chair: Paolo Traverso Rainbow Theatre</p> <p>5:00 – 6:00 PM <i>“Planning Competition Results”</i> Session Chairs: Jörg Hoffmann & Michael Littman Rainbow Theatre</p>	3:50 – 5:10 PM <i>“Nondeterministic Planning”</i> Session Chair: Fahiem Bacchus Rainbow Theatre
	6:00 – 8:00 PM ICAPS Reception Grand Foyer	6:00 - 8:00 PM ICAPS / KR Festival The Westin Resort & Spa	7:00 – 10:00 PM ICAPS Banquet The Araxi Restaurant	

Saturday, June 5

Cognitive Robotics

Extending the Knowledge-Based Approach to Planning with Incomplete Information and Sensing
R. P. Petrick and F. Bacchus

Knowledge of Other Agents and Communicative Actions in the Fluent Calculus*
Yves Martin, I. Narasamya, and M. Thielscher

Precondition Control and the Progression Algorithm*
A. Gabaldon

A Preference-Based Interpretation of Other Agents' Actions*
J. Lang

Knowledge in Planning

From Hybrid Systems to Universal Plans via Domain Compilation
A. Barrett

Planning Graphs and Knowledge Compilation*
H. Geffner

Domain-Specific Preferences for Causal Reasoning and Planning*
J. P. Delgrande, T. Schaub, and H. Tompits

Learning Probabilistic Relational Planning Rules
H. M. Pasula, L. S. Zettlemoyer, and L. P. Kaelbling

Search in Planning and Scheduling

An Improved Integer Local Search for Complex Scheduling Problems
W. Zhang and X. Zhang

Breadth-First Heuristic Search
R. Zhou and E. A. Hansen (Honeywell Best Student Paper Award)

Phase Transitions in Classical Planning: An Experimental Study*
J. Rintanen

A Polynomial Time Algorithm for Constructing k-Maintainable Policies
C. Baral and T. Eiter

Sunday, June 6

Search in Planning and Scheduling II

Multiple Pattern Databases
R. C. Holte, J. Newton, A. Felner, R. Meshulam, and D. Furcy

A Linear Search Strategy using Bounds
S. Climer and W. Zhang

Optimal Rectangle Packing: New Results
R. E. Korf

A Lookahead Strategy for Heuristic Search Planning
V. Vidal

Scheduling I

Iterative Relaxations for Iterative Flattening in Cumulative Scheduling
L. Michel and P. Van Hentenryck

Generating Robust Schedules through Temporal Flexibility
N. Policella, S. F. Smith, A. Cesta, and A. Oddi

The Value of Consensus in Online Stochastic Scheduling
R. Bent and P. Van Hentenryck

Trading Places: How to Schedule More in a Multi-Resource Oversubscribed Scheduling Problem
L. Barbulescu, A. E. Howe, L. D. Whitley, and M. Roberts

Planning & Scheduling Applications

Plays as Effective Multiagent Plans Enabling Opponent-Adaptive Play Selection
M. Bowling, B. Browning, and M. Veloso

Distributed Feedback Control for Decision Making on Supply Chains
C. Kiekintveld, M. P. Wellman, S. Singh, J. Estelle, Y. Vorobeychik, V. Soni and M. Rudary

Choosing Objectives in Over-Subscription Planning
D. E. Smith

Decision-Theoretic Military Operations Planning
D. Aberdeen, S. Thiébaux, and L. Zhang

Probabilistic Planning

Heuristic Refinements of Approximate Linear Programming for Factored Continuous-State Markov Decision Processes
B. Kveton and M. Hauskrecht

Optimal Resource Allocation and Policy Formulation in Loosely-Coupled Markov Decision Processes
D. A. Dolgov and E. H. Durfee

Policy Generation for Continuous-time Stochastic Domains with Concurrency
H. L. S. Younes, and R. G. Simmons

Monday, June 7

Classical Planning

A Planning Heuristic Based on Causal Graph Analysis
M. Helmert (Honeywell Best Student Paper Award)

An Empirical Analysis of Some Heuristic Features for Local Search in LPG
A. Gerevini, A. Saetti, and I. Serina

Using Component Abstraction for Automatic Generation of Macro-Actions
A. Botea, M. Müller, and J. Schaeffer

Learning Domain-Specific Control Knowledge from Random Walks
A. Fern, S. Yoon, and R. Givan

Scheduling II

Task Swapping for Schedule Improvement: A Broader Analysis
L. A. Kramer and S. F. Smith

Price Prediction Strategies for Market-Based Scheduling
J. K. MacKie-Mason, A. Osepayshvili, D. M. Reeves, and M. P. Wellman

Two-Job Shop Scheduling Problems with Availability Constraints
R. Aggoun

Incremental Maximum Flows for Fast Envelope Computation
N. Muscettola

Model Checking and Plan Recognition

Planning with Extended Goals and Partial Observability
P. Bertoli and M. Pistore

Guiding Planner Backjumping Using Verifier Traces
R. P. Goldman, M. J.S. Pelican, and D. J. Musliner

Probabilistic Plan Recognition in Multiagent Systems
S. Saria and S. Mahadevan

Statistical Goal Parameter Recognition
N. Blaylock and J. Allen

Nondeterministic Planning

Fault Tolerant Planning: Toward Probabilistic Uncertainty Models in Symbolic Non-Deterministic Planning
R. M. Jensen, M. M. Veloso, and R. E. Bryant

Complexity of Planning with Partial Observability
J. Rintanen

Conformant Planning via Heuristic Forward Search: A New Approach
R. I. Brafman and J. Hoffmann (Best Paper Award)

Heuristic Guidance Measures for Conformant Planning
D. Bryce and S. Kambhampati

ICAPS Invited Talks

Saturday, June 5, 9:00 – 10:00 AM

“Advanced Research with Autonomous Unmanned Aerial Vehicles”

Patrick Doherty, Linköping University, Sweden

Sunday, June 6, 10:30 – 11:30 AM

“Artificial Intelligence Meets Operations Research: A Constraint Programmer's Point of View”

Michela Milano, Università di Bologna, Italy

Monday, June 7, 10:30 – 11:30 AM

“Planning for an Uncertain Future”

Reid Simmons, Carnegie Mellon University, USA

ICAPS Best Paper Awards

Best Paper Award: *“Conformant Planning via Heuristic Forward Search: A New Approach”*

Ronen Brafman and Jörg Hoffmann

Runner-up for Best Paper Award: *“Multiple Pattern Databases”*

Robert Holte, Jack Newton, Ariel Felner, Ram Meshulam, and David Furcy

Honeywell Best Student Paper Award: *“A Planning Heuristic Based on Causal Graph Analysis”*

Malte Helmert

Honeywell Best Student Paper Award: *“Breadth-First Heuristic Search”*

Rong Zhou and Eric Hansen

Runner-up for Honeywell Best Student Paper Award: *“Trading Places: How to Schedule More in a Multi-Resource Oversubscribed Scheduling Problem”*

Laura Barbulescu, Adele Howe, Darrell Whitley, and Mark Roberts

ICAPS Sponsors



Computational Sciences Division at NASA Ames Research Center



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Honeywell
Honeywell



American Association for Artificial Intelligence

General Information

Headquarters Hotel

The Westin Resort & Spa Whistler
4090 Whistler Way
Whistler, BC, Canada
Phone: (604) 905-5000

Conference Venue

All ICAPS meetings will take place at the Whistler Conference Centre except for the ICAPS/KR Festival, which will take place at the Westin Resort & Spa.

Registration

The registration desk will be located on the Conference Level Foyer of the Westin Resort & Spa. Registration Desk Hours:

Wednesday, June 2	8:00 AM – 5:00 PM
Thursday, June 3	8:00 AM – 5:00 PM
Friday, June 4	8:30 AM – 5:00 PM
Saturday, June 5	8:30 AM – 5:00 PM
Sunday, June 6	8:00 AM – 5:00 PM
Monday, June 7	8:00 AM – 12:00 PM

ICAPS Doctoral Consortium Lunch

Friday, June 4, 12:30 – 2:00 PM
Harmony A (Whistler Conference Centre)
(By invitation only)

ICAPS Opening Reception

Friday, June 4, 6:00 – 8:00 PM
Grand Foyer (Whistler Conference Centre)
(Free with registration)

ICAPS Executive Council Meeting

Friday, June 4, 8:00 PM
Fitzsimmons Room (Whistler Conference Centre)
(By invitation only)

ICAPS/KR Festival

Saturday, June 5, 6:00 – 8:00 PM
Emerald AB (Westin Resort & Spa)
(Free with registration)

ICAPS Organizing Committee Lunch

Sunday, June 6, 12:50 – 2:00 PM
Mountain View (Whistler Conference Center)
(By invitation only)

ICAPS Banquet

Sunday, June 6, 7:00 PM
Araxi Restaurant.
4222 Village Square, Whistler.
Phone: (604) 932-4540
(Ticket required)
Banquet tickets will be available for purchase during registration hours (US\$65) prior to the lunch break on Friday, June 4. Banquet tickets will NOT be available for sale at the restaurant.

Internet Room

Internet service will be available in Glacier B at the Westin Resort & Spa during registration hours.

Wireless Internet Service

Wireless Internet access cards are available at the registration desk during registration hours for \$5.00. The cards are valid between June 2-8. If you did not reserve a card ahead of time, the supply is limited on a first-come, first-served basis.

Poster Setup Time

Participants in the Doctoral Consortium will be able to set up their posters from 12:00 – 4:00 PM on Saturday, June 5.

Tickets

Each ICAPS 2004 registrant will receive tickets with the registration materials for one copy of the conference proceedings and one copy of the International Planning Competition Notes. Tutorial and workshop registrants will receive tickets for copies of the appropriate workshop(s) and/or tutorial(s) material. Tickets can be redeemed at the Glacier Room of the Westin Resort & Spa during registration hours.

Material for Purchase

Additional copies of conference proceedings, tutorial syllabi, workshop notes, International Planning Competition notes as well as ICAPS t-shirts and bags will be available for purchase at the registration desk during registration hours. Supplies are limited.

Room Rates & GST

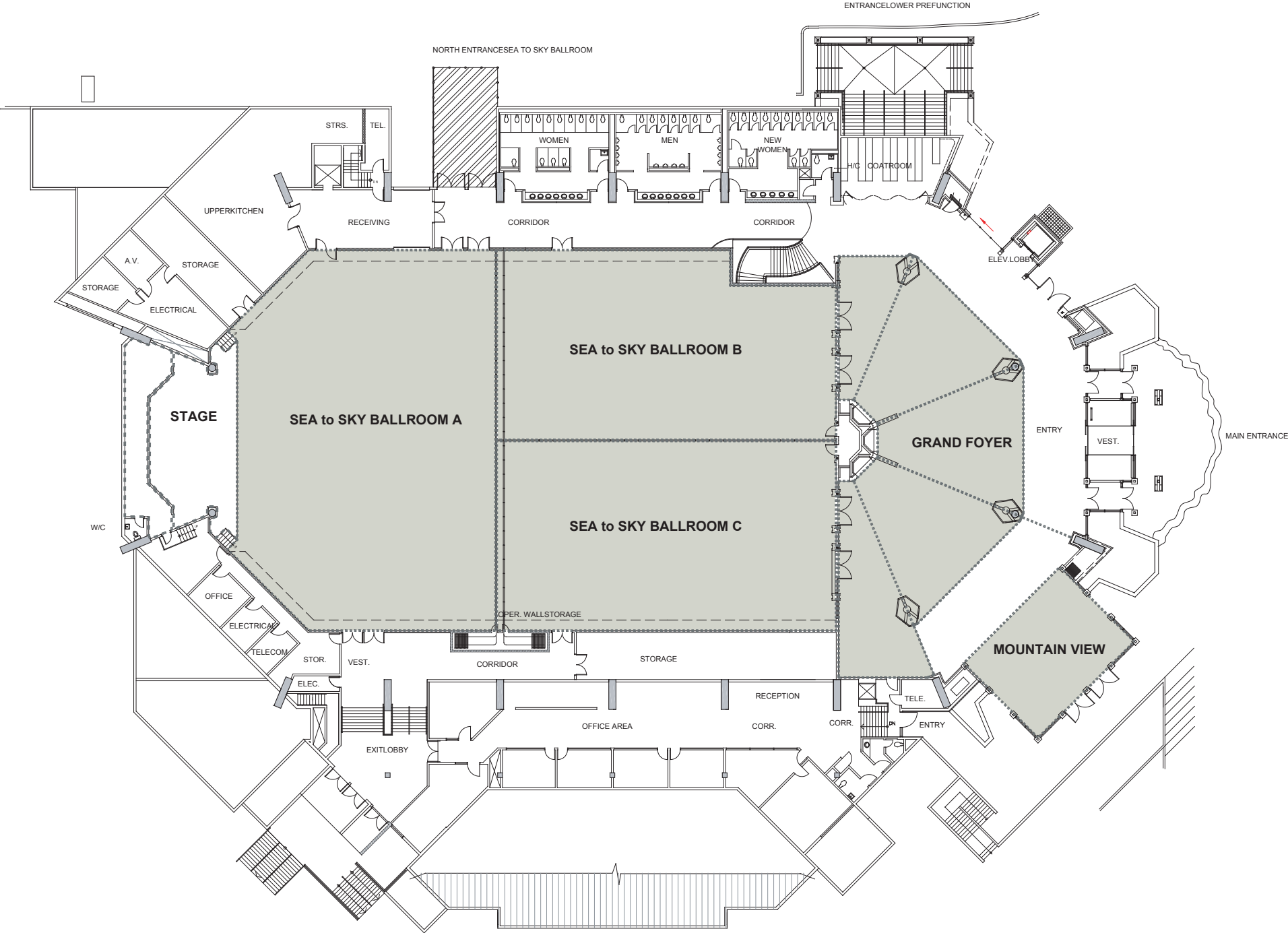
The Conference special rate is \$139.00 CAD (\$131.00 + \$8.00 Resort Fee) for Studio Junior Suites and \$179.00 CAD (\$171.00 + \$8.00 Resort Fee) for One Bedroom Suites plus applicable taxes. Please note that the above rates are INCLUSIVE of a Resort Fee and DISREGARD the confirmation letter stating that there is an additional Resort Fee charge of \$20.00. Note also that non-residents of Canada are eligible to reclaim the GST for hotel rooms at the border when they leave the country. The Westin Resort & Spa may be able to directly rebate the GST on its invoices.

This architectural floor plan illustrates the layout of the Rainbow Theatre and its associated facilities. The central feature is the **RAINBOW THEATRE**, which includes a **STAGE**, **300 SEATS**, **SYMPHONY** section, **CONTROL BOOTH**, **THEATRE LOUNGE**, and a **WHEELCHAIR RAMP**. Surrounding the theatre are various rooms and corridors:

- Top Section:** Includes **BLACK TUSK**, **TANTALUS**, **BUSINESS CENTRE**, and **MECHANICAL** rooms. Entrances include **ENTRANCE LOWER PREFUNCTION**, **NORTH ENTRANCE**, and **VESTIBULE**. Corridors and a **VALLEY FOYER** are also shown.
- Left Section:** Features **FITZSIMMONS**, **HARMONY A**, and **HARMONY B** rooms. Other areas include **STORAGE**, **MECHANICAL**, **WORKSHOP**, **TRASH/RECYCLING**, **EMPLOYEE ENTRANCE**, **RECEIVING**, **LOWER KITCHEN**, **ELECTRICAL**, **TRANSFORMER**, and **TELECOM**.
- Bottom Section:** Contains **MECHANICAL ROOM**, **LOWER MECHANICAL ROOM**, **STAFF ROOM**, **MECHANICAL ROOM**, **I.T. ROOM**, **OFFICE**, **WOMEN**, **MEN**, **ELEC. RM.**, **VALVE RM.**, **STOR.**, **VESTIBULE**, **TICKETS**, and **OFFICE SPACE**.
- Central Corridors:** A **SERVICE CORRIDOR** runs horizontally, with **OP.** (Operations) and **WEDGEMOUNT A/B** rooms. A **CORRIDOR** runs vertically through the center.

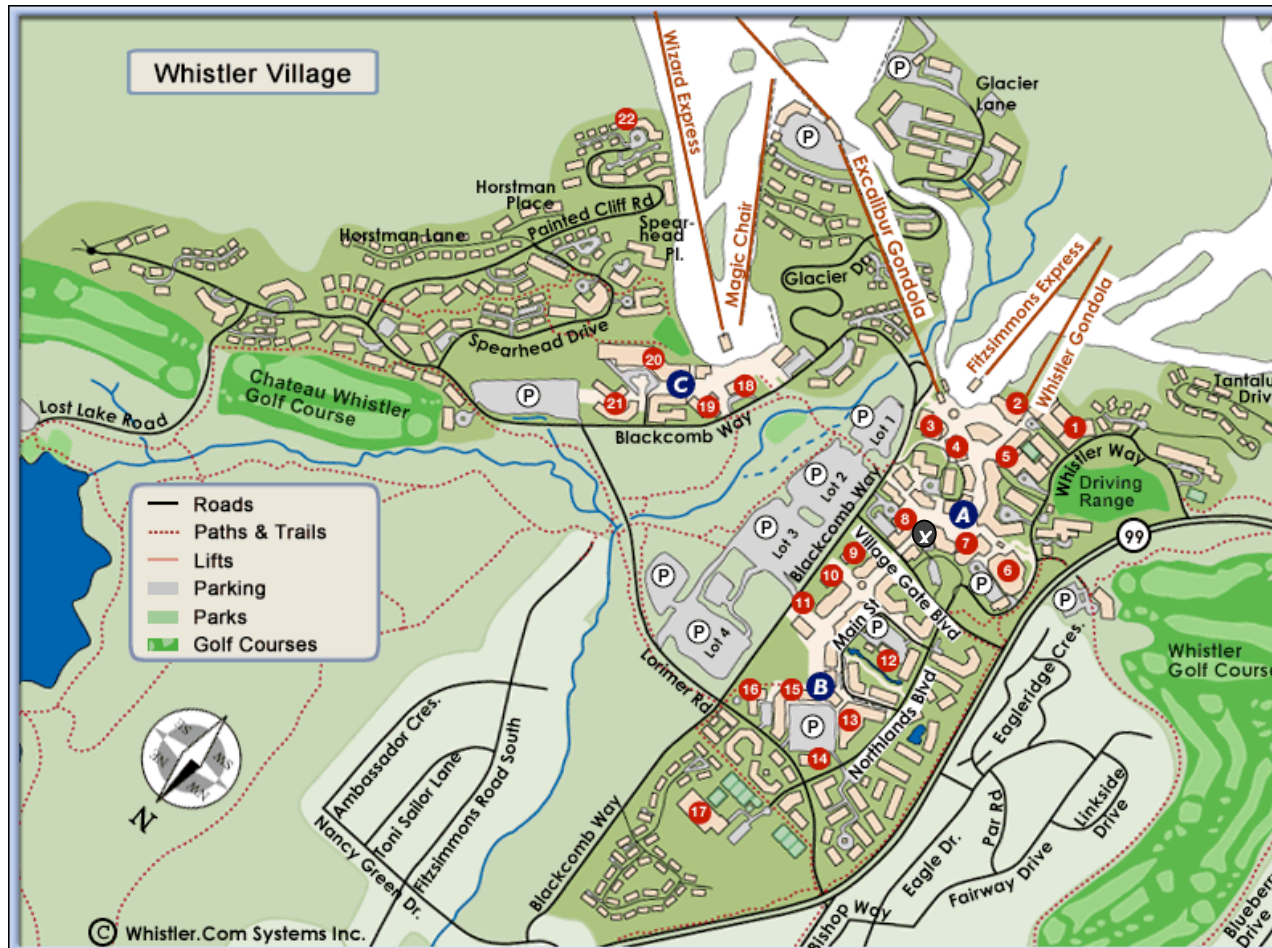
The plan also shows various utility and support spaces such as **STORAGE**, **CONCESSION**, **WHEELCHAIR RAMP**, and **WOMEN/MEN** restrooms.

The Upper Level of the Whistler Conference Centre



Highlights

- 1 The Westin Resort & Spa
- 6 Whistler Conference Centre
- X Araxi Restaurant



Village Areas

A Main Whistler Village & Whistler Mtn. Gondola

B Market Place

C Upper Village & Blackcomb Mtn. Chairlifts

Everything is within walking distance. Walking from point A to B will take approx. 8 minutes, from point A to C approx. 7 minutes. To walk from point B to C will take approx. 15 minutes. Alternatively, the Village Shuttle Bus provides free bus service between all three village areas.

Building Names

- 1 The Westin Resort & Spa
- 2 Whistler Gondola Building
- 3 Pan Pacific Lodge
- 4 Sundial Boutique Hotel
- 5 Delta Whistler Resort
- 6 Whistler Conference Centre
- 7 Rainbow Suites
- 8 Whistler Village Centre
- 9 Fire Department & RCM Police
- 10 Resort Municipality of Whistler
- 11 Maurice Young Millennium Place
- 12 Whistler Public Library
- 13 Marketplace - IGA
- 14 Marketplace - Whistler Dental Office
- 15 Canada Postal Outlet
- 16 Whistler Health Care Centre & Ambulance

Building Names

- 17 Whistler Racquet & Golf Resort
- 18 Blackcomb Day Lodge
- 19 Le Chamols Hotel
- 20 Fairmont Chateau Whistler
- 21 Club Intrawest
- 22 Residence Inn by Marriott

Emergency Service

- 16 Ambulance Service
- 9 Fire Department
- 9 R.C.M.P. (Police)

Entertainment

- 11 Maurice Young Millennium Place
- 6 Rainbow Movie Theatre
- 8 Whistler 8 Movie Theatres

Grocery Stores

- 7 The Grocery Store
- 13 IGA - Market Place
- 21 Upper Village Market

Guest Services

- 2 Ticket Sales & Lessons
- 18 Ticket Sales & Lessons

Hotels

- 5 Delta Whistler Resort
- 20 Fairmont Chateau Whistler
- 19 Le Chamols Hotel
- 3 Pan Pacific Lodge
- 7 Rainbow Suites
- 22 Residence Inn by Marriott
- 4 Sundial Boutique Hotel
- 1 The Westin Resort & Spa

Information

- 6 Whistler Conference Centre

Library

- 12 Whistler Public Library

Medical / Dental Services

- 14 Whistler Dental Offices
- 16 Whistler Health Care Centre

Postal Services

- 15 Canada Post Office