CAOS 2006 Montréal

6th Annual Conference of the International Society for Computer Assisted Orthopaedic Surgery

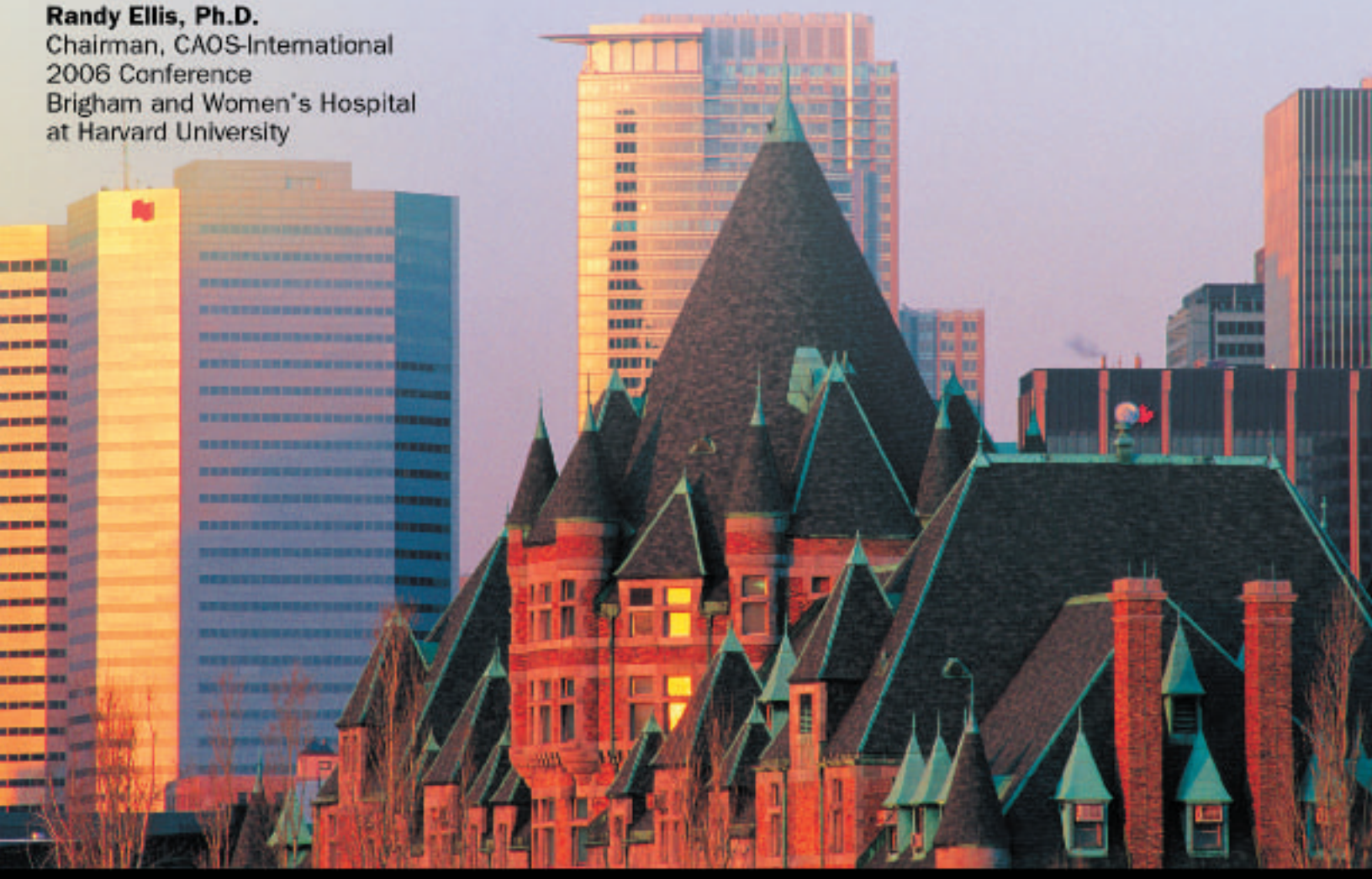
Montréal, Quebec Canada

June 21- 24, 2006

Conference Organizers:

David Pichora, M.D. FRCSC
President, CAOS-International
Chair, Division of Orthopaedic Surgery
Queen's University

Randy Ellis, Ph.D.
Chairman, CAOS-International
2006 Conference
Brigham and Women's Hospital
at Harvard University



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Queen's University

PROGRAM at a GLANCE

TIME	WEDNESDAY, JUNE 21	THURSDAY, JUNE 22	FRIDAY, JUNE 23	SATURDAY, JUNE 24
7:20		Introduction and **CAOS-International General Assembly I**	Introduction	Introduction
7:30		7:30 - 8:00 **Video Session I** *Total Knee Replacement*	7:30 - 8:00 **Video Session II** *"Pelvic & Hip Surgery"*	7:30 - 8:00 **Video Session III** *"Hip Resurfacing"*
8:00		8:00 - 9:30 **Session I** *Total Knee Replacement* *Part 1: General Aspects*	8:00 - 9:30 **Session VI** *Total Hip Replacement*	8:00 - 9:20 **Session IX** *Tracking, Registration, and Imaging*
8:30				
9:00				
9:30		9:30 - 10:00 Coffee Break in the **Industrial Exhibition**	9:30 - 10:00 Coffee Break in the **Industrial Exhibition**	9:20 - 9:50 Coffee Break in the **Industrial Exhibition**
10:00		10:00 - 10:40 **Session II** *New Technologies for CAOS*	10:00 - 11:00 **Session VII** *Aspects of Trauma Surgery*	9:50 - 10:30 **Session X** *CAOS for the Upper Extremities*
10:30		10:40 - 11:10 **Session III** *Spine*		10:30 - 11:50 **Session XI** *Alternatives to Total Hip Replacement*
11:00		11:10 - 12:00 **Round Table I** *Evaluation, Validation, and Evidence-Based Medicine in CAOS*	11:00 - 11:50 **Round Table 2** *"CAOS and Minimally Invasiveness"*	
11:30				
12:00		12:00 - 12:30 **Presidential Guest Lecture** John Rudan, M.D.	11:50 - 13:30 Lunch Break and **CAOS-International General Assembly II**	11:50 - 12:20 **Scientific Awards and Reception**
12:30		12:30 - 13:30 Lunch Break		12:20 Closing Remarks
13:00				
13:30		13:30 - 14:30 **Poster Session 1**	13:30 - 14:30 **Poster Session II**	
14:00				
14:30		14:30 - 15:10 **Session IV** *Knee Ligament Replacement*	14:30 - 15:40 **Session VIII** *Total Knee Replacement -* *Part 2: Special Aspects*	
15:00		15:10 - 15:50 **Session V** *Computer Assistance for Pelvic and Tibial Osteotomies*		
15:30				
16:00		16:00 - 17:55 **Educational Workshop** Rotation A: 16:00 - 16:25 Rotation B: 16:30 - 16:55 Rotation C: 17:00 - 17:25 Rotation D: 17:30 - 17:55	15:40 - 16:30 **Open Poster Review**	
16:30				
17:00				
17:30	17:30 - 20:00 *Registration*			
18:00				
18:30	18:00 - 20:00 **Welcome Reception**		18:30 *Buses leave to Banquet*	
19:30			19:00 - 23:00 **CAOS Banquet**	

CAOS 2006 Montréal

6th Annual Conference of the International Society for Computer Assisted Orthopaedic Surgery

Table of Contents

Cover Photo

Old Viger Station

GENERAL INFORMATION

Conference Location

Fairmont The Queen Elizabeth
900 Rene Levesque Blvd. W
Montréal, Québec CANADA H3B 4A5
Tel: +1-514-861-3511 or 1-800-441-1414
Fax: +1-514-954-2296

Registration and Information Desk

The Registration and Information Desk will be open during the following times:

Wednesday, June 21st . . . .16:00 – 20:00
Thursday, June 22nd . . . . . .6:45 – 18:00
Friday, June 23rd . . . . . .6:50 – 18:00
Saturday, June 24th . . . . . .6:50 – 13:45

Evaluation

There is a conference evaluation form in your packet. Your feedback is very important to the improvement and development of this Conference. Please return the completed form to the Conference Registration Desk.

Job Market Board

Please visit the Job Market Board located near the Conference Registration Desk to see current job opportunities or to place your resumé on the board.

Cellular Phones, Pagers and Watch Alarms

Out of courtesy to our speakers and other attendees, please turn off any cellular phones, pagers and watch alarms during sessions.

Cameras and Tape Recorders

Cameras and tape recorders are strictly prohibited in the sessions, poster presentations, workshops, and the exhibit area.

Name Badges

All attendees and guests must wear their name badge at all times to gain admission to all conference sessions, exhibit area, workshops, Welcome Reception, and the banquet on Friday night.

Meeting Room Logistics

Please contact the Conference Registration Desk if you find the temperature in the room uncomfortable or you are unable to hear or see because of equipment difficulties.

Smoking

All meeting rooms and seated functions are smoke free. Please adhere to the smoking policy of the Fairmont The Queen Elizabeth when the Conference is not in session.

Information/Message Board

The Information/Message Board will be located near the Conference Registration Desk. Messages will be posted in this area throughout the Conference.

Conference Proceeding

An extended abstract of each paper presented at the Conference has been published in the Proceedings. One copy is included in your bag. Additional copies may be purchased at the Conference Registration Desk. Purchase price of the Proceeding will increase after the Conference. Be sure to order your additional copies in advance.

Additional Conference Proceeding

You registration fee includes (1) Proceeding.
Additional Proceeding……$80.00 US each
(Price does not include shipping)

Official Language

Although French and English are the primary languages in Montréal, the official language of the Conference is English and will be used for all presentations and printed materials.

Credits for Specialists

This event is an accredited group learning activity *(section 1)* as defined by the maintenance of certification program of The Royal College of Physicians and Surgeons of Canada, approved by Queen's University. *(Maximum number of hours 19.25)*

Certificates of attendance will be provided for all other allied health professionals.

Currency Exchange

The unit of currency in Canada is the Canadian Dollar *(CAD)* and it is acceptable at regular stores and restaurants. The exchange rate fluctuates daily. For current exchange rates, please visit http://www.exchangerate.com.

Traveler's Checks and Credit Cards

Credit cards, including MasterCard® and Visa® and traveler's checks are accepted at most hotels, restaurants, department stores, and souvenir shops.

Tipping Standards

Tipping and service charges vary between 10% and 15% for taxis, restaurants and night-clubs. Hotel, rail station and airport porters expect $1.00 per bag carried and $1.00 per night for housekeeping.

Electricity

Electric current in Canada is 110 volts, 60 cycle AC. An adaptor must be used with appliances from Europe or elsewhere that operates on a different voltage.

Shipping Service

If you need to ship or mail any packages, please visit the Xerox Business Center located in the lower lobby. Shipping is to be made at attendees' own expense. Business Center hours are Monday through Friday, 8:30-17:00.

Wireless Internet

The Fairmont The Queen Elizabeth has "purchasable" high-speed Internet connection (Ethernet), in their sleeping rooms. For those who do not have a laptop, please visit the Business Center.

The Conference will have limited wireless Internet connections in the general session room during the conference hours. We kindly ask that you limit your connection to 5 minutes and log off to allow everyone the opportunity to check their email. The password code is: ABCDEF1234 (please note that the password must be in all CAPS). Again, we are limited on how many laptops may be connected at once and appreciate your consideration and patience during the meeting.

Airline Phone Numbers

Air Canada	1-888-247-2262 (Canada/USA)	www.aircanada.com
Air France	1-800-667-2747 (Canada) 1-800-237-2747 (USA)	www.airfrance.ca
American Airlines	1-800-433-7300 (Canada/USA)	www.aa.com
Austrian Airlines	1-888-817-4447 (Canada) 1-800-843-0002 (USA)	www.aua.com.us.eng
British Airways	1-800-247-9297 (Canada/USA)	www.britishairways.com
Continental	1-800-523-3273 (Canada/USA)	www.continental.com
Delta Airlines	1-800-221-1212 (Canada/USA)	www.delta.com
Japan Air Lines	1-800-525-3663 (Canada/USA)	www.jal.com
KLM Royal Dutch Airlines	1-800 345-7458 (French) 1-800 225-2525 (English)	www.klm.com
Lufthansa	1-800 563-5954 (Canada) 1-800 399-5838 (USA)	www.lufthansa.com
Northwest Airlines	1-800 345-7458 (French) 1-800-225-2525 (English)	www.nwa.com
Swiss	1-877-359-7947 (Canada/USA)	www.swiss.com
United Airlines	1-800-865-8331 (Canada/USA)	www.united.com
US Airways	1-800-428-4322 (Canada/USA)	www.usairways.com

FACULTY

The Faculty of the CAOS-International 2006 Conference is comprised of internationally renowned physicians and scientists widely recognized for their clinical and teaching expertise.

Conference Organizers

David Pichora, M.D. FRCSC
President, CAOS-International . . . . . *Queen's University, CANADA*

Randy Ellis, Ph.D.
Chairman, CAOS-International . . . . . *Brigham and Women's Hospital at Harvard University, USA*

Technical Program Committee

Norberto Confalonieri, M.D. . . . . . *Orthopaedic Center (CTO), ITALY*
Brian L. Davies, Ph.D. Chairman . . . . . *Imperial College, UNITED KINGDOM*
Randy Ellis, Ph.D. . . . . . *Brigham and Women's Hospital, USA*
Florian Gebhard, M.D. . . . . . *University of Ulm, GERMANY*
Branislav Jaramaz, Ph.D. . . . . . *Western Pennsylvania Hospital, USA*
Ponnezhathu S. John, M.D. . . . . . *Medical College, INDIA*
Leo Joskowicz, Ph.D. . . . . . *Hebrew University of Jerusalem, ISRAEL*
Martin Krismer, M.D. . . . . . *University of Innsbruck, AUSTRIA*
Frank Langlotz, Ph.D. . . . . . *University of Bern, SWITZERLAND*
Lutz-Peter Nolte, Ph.D. . . . . . *University of Bern, SWITZERLAND*
Michael L. Swank, M.D. . . . . . *Cincinnati Orthopaedic Research Institute, USA*

Presidential Guest Lecture

John F. Rudan, M.D. FRCSC . . . . . *Queen's University, CANADA*

Faculty

Please find the presenters underlined in the program.

Notre Dame Basilica

PROGRAM SCHEDULE

Wednesday, June 21

17:30 – 20:00 **Registration**

18:00 – 20:00 **Welcome Reception**

Thursday, June 22

6:45 **Registration**
Coffee Break in the Industrial Exhibition

7:20 **Welcome, Introduction, and CAOS-International General Assembly I**
Randy Ellis, Conference Chairman & David Pichora, Society President

7:30 **Video Session I**
Total Knee Replacement

Session I: Total Knee Replacement - Part I: General Aspects

Session Chairmen: Brian Davies and Justin P. Cobb

8:00 LOW INCIDENCE OF POST OPERATIVE COMPLICATIONS DUE TO REFERENCE ARRAY PIN PLACEMENT IN IMAGE FREE COMPUTER ASSISTED TOTAL KNEE REPLACEMENT
M.L. Swank

8:10 CADAVER STUDY: A BONE MOUNTED SEMI-ACTIVE DEVICE FOR PRECISE FEMORAL CUTTING DURING MIS KNEE REPLACEMENT
A. Bauer and C. Plaskos

8:20 LEARNING CURVE OF A NAVIGATION SYSTEM FOR TOTAL KNEE REPLACEMENT - A MULTICENTRIC STUDY
J.-Y. Jenny, R.K. Miehlke, and A. Giurea

8:30 PRELIMINARY RESULTS OF A PROSPECTIVE RANDOMIZED STUDY - COLUMBUS CR FIXED VS. RP ROTATING PLATFORM NAVIGATED TOTAL KNEE ARTHROPLASTY
F. Lampe, S.P.M. Dries, A. Sufi-Siavach, E. Hille, and D.S. Stulberg

8:40 COMBINING KNEE NAVIGATION WITH 2 DIFFERENT SUBVASTUS SURGICAL APPROACHES: A PROSPECTIVE, RANDOMIZED AND COMPARATIVE STUDY
P. Graf, F. Poulin, L.P. Amiot, and A. Richard

8:50 COMPUTER ASSISTED SURGERY IMPROVED ALIGNMENT IN TKA: A PROSPECTIVE, RANDOMIZED, MULTI-CENTER STUDY
W.P. Barrett, D.F. Dalury, J.T. Moskal, J.B. Mason, K.A. Dwyer, and C.B. Southworth

9:00 META-ANALYSIS OF ALIGNMENT OUTCOMES IN COMPUTER ASSISTED TOTAL KNEE REPLACEMENT SURGERY
J.B. Mason, T.K. Fehring, R. Estok, K. Fahrbach, D.K. Banel, and L. Nalysnyk
*presented by M. Freeman

9:10 NAVIGATED TOTAL KNEE REPLACEMENT - A COMPREHENSIVE CLINICAL STATE OF THE ART STUDY
I. Ilsar, L. Joskowicz, L. Kandel, Y. Matan, and M. Liebergall

9:20 COMPUTER-ASSISTED VERSUS MANUAL TKA: A CASE-CONTROLLED STUDY
M.A. Yaffe, S. Koo, J.M. Feinglass, and S.D. Stulberg

9:30 **Coffee Break** in the Industrial Exhibition

Session II: New Technologies for CAOS

Session Chairmen: Joel Bach and Nobuhiko Sugano

10:00 A NOVEL APPROACH TO COMPUTER ASSISTANCE FOR PATIENT SPECIFIC IMPLANT BENDING IN ORTHOPAEDIC SURGERY: EARLY RESULTS AND VALIDATION ISSUES
S. Sagbo, G. Zheng, and L.-P. Nolte

10:10 ACCURACY TESTING OF ELECTROMAGNETIC TRACKING SYSTEMS
A.B. Mor, J. Cipriani, B. Jaramaz, and A.M. DiGioia, III

10:20 RECENT DEVELOPMENTS IN ULTRASOUND-BASED BONE REGISTRATION
D.C. Barratt, G.P. Penney, M. Slomczykowski, and D.J. Hawkes

10:30 GRAPHICS HARDWARE ACCELERATION FOR SPLINE-BASED MULTI-RESOLUTION 2D-3D REGISTRATION
X. Zhang, G. Zheng, and L.-P. Nolte

Session III: Spine

Session Chairmen: Philippe Merloz and Lutz-P. Nolte

10:40 THE ACCURACY OF A COMPUTER-ASSISTED NAVIGATION SYSTEM IN MICROENDOSCOPIC LAMINOTOMY FOR PATIENTS WITH LUMBAR SPINAL CANAL STENOSIS
N. Nakatani, M. Yoshida, M. Kawakami, Y. Nakagawa, A. Minamide, and H. Otakara

10:50 CLINICAL EXPERIENCE OF THREE METHODS OF COMPUTED NAVIGATION IN SPINE SURGERY
W. Tian and Y. Liu

11:00 SMART DISTRACTOR FOR SPINAL SURGERY
S. Ambrosetti, J. Burger, W. Piotrowski, M. Krenn, A. Pfenniger, J. Kowal, S. Ferguson, L. Ebert, and L.-P. Nolte

11:10 **Round Table 1**
Moderator: Dietrich Schlenzka

EVALUATION, VALIDATION, AND EVIDENCE-BASED MEDICINE IN CAOS
B. Jaramaz and L. Joskowicz

12:00 **Presidential Guest Lecture**
COMPUTER-ASSISTED ORTHOPAEDIC SURGERY, A NEW WORLD PERSPECTIVE
John Rudan

12:30 **Lunch Break**

13:30 **Poster Session I**
See page 7 for complete listing of Special Posters and page 8 for Contributed Posters

Session IV: Knee Ligament Replacement

Session Chairmen: Tiburtius Klos and Sandra Martelli

14:30 USE OF A COMPUTERIZED OPTICAL TRACKING SYSTEM TO EVALUATE ROTATIONAL AND TRANSLATIONAL LAXITY PRE- AND POST- ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION
S.S. Koo, A. Aminian, J. Leonard, and J. Koh

14:40 THE USE OF COMPUTER ASSISTED NAVIGATION TO DETERMINE THE ANATOMICAL ACCURACY OF GRAFT PLACEMENT IN ACL SURGERY
S. Plaweski, J. Rossi, C. Vasile, S. Blendea, P. Merloz, and R. Julliard

14:50 IN VIVO EVALUATION OF LATERAL PLASTY EFFECT ON ACL RECONSTRUCTION
S. Bignozzi, S. Zaffagnini, S. Martelli, N. Lopomo, and M. Marcacci

15:00 NAVIGATION SYSTEM FOR REAL-TIME INTRA-OPERATIVE EVALUATION OF KNEE KINEMATICS
S. Martelli, S. Zaffagnini, S. Bignozzi, N. Lopomo, and F. Iacono

Session V: Computer Assistance for Pelvic and Tibial Osteotomies

Session Chairmen: Antony Hodgson and Dominique Saragaglia

15:10 A GUIDANCE SYSTEM FOR INTRAOPERATIVELY UPDATING SURGICAL-PLANS DURING PERIACETABULAR OSTEOTOMY: DEVELOPMENT AND CADAVER TESTS
M. Armand, R.S. Armiger, J.V.S. Lepistö, M. Waites, S.C. Mears, and R.H. Taylor

15:20 ANALYSIS OF FEMORAL HEAD COVERAGE IN PATIENTS WITH HIP DYSPLASIA FOLLOWING PERI-ACETABULAR OSTEOTOMY USING A NOVEL CT-BASED TECHNIQUE
W. Dandachli, J.D. Witt, Z. Shah, R. Richards, V. Sauret, and M. Hall-Craggs

15:30 LONG TERM CLINICAL FOLLOW-UP OF IMAGE-GUIDED PERIACTABULAR OSTEOTOMY
M. Lincoln, B. Ma, W. Long, J. Yach, J. Rudan, and R.E. Ellis

15:40 NAVIGATED HTO
P. Keppler, M. Kraus, L. Kinzl, and F. Gebhard

16:00 – 17:55 **Educational Workshops**

Workshop I . . . . . **BrainLAB AG**
Benefits of Imageless Navigation with 3D Bone Model for Hip Resurfacing - Scientific and Hands-On

Workshop II . . . . . **DePuy Orthopaedics Inc.**
Ci Solutions for Difficult Cases

Workshop III . . . . . **BrainLAB AG**
BrainLAB Navigation in Trauma Surgery: Navigated Femoral Nailing and Sacroiliac Screw Placement Hands-On

Workshop IV **Zimmer**

Your name badge indicates which group you are in. Please see below schedule for group location and times. The Workshop floorplan is on page 21

16:00 **Rotation A**
Workshop I . . . . . Group 1 Workshop II . . . . . Group 2
Workshop III . . . . . Group 3 Workshop IV . . . . . Group 4

16:30 **Rotation B**
Workshop I . . . . . Group 2 Workshop II . . . . . Group 3
Workshop III . . . . . Group 4 Workshop IV . . . . . Group 1

17:00 **Rotation C**
Workshop I . . . . . Group 3 Workshop II . . . . . Group 4
Workshop III . . . . . Group 1 Workshop IV . . . . . Group 2

17:30 **Rotation D**
Workshop I . . . . . Group 4 Workshop II . . . . . Group 1
Workshop III . . . . . Group 2 Workshop IV . . . . . Group 3

17:55 **Adjourn for the day**

Friday, June 23

6:45 **Registration**
Coffee Break in the Industrial Exhibition

7:20 **Introduction**

7:30 **Video Session II**
Pelvic & Hip Surgery

Session VI: Total Hip Replacement

Session Chairmen: Frank Langlotz and John Rudan

8:00 ACQUISITION OF THE ANTERIOR PELVIC PLANE IN TOTAL HIP ARTHROPLASTY. ACCURACY AND RELIABILITY OF CUTANEOUS AND 2.5D ECHOGRAPHY METHODS IN A CADAVER STUDY
S. Parratte, P. Kilian, P. Champsaur, and J.-N. Argenson

8:10 THE TRANSVERSE PELVIC PLANE: A NOVEL AND PRACTICAL REFERENCE FRAME FOR HIP ARTHROPLASTY
W. Dandachli, R. Richards, V. Sauret, S. Harris, B. Davies, and J.P. Cobb

8:20 THE EFFECT OF COMPONENT POSITIONING ON BONY IMPINGEMENT IN TOTAL HIP ARTHROPLASTY
W.B. Kurtz, II and S.B. Murphy

8:30 IS THE "FIGURE OF FOUR"- VECTOR A VALID REFERENCE FOR STEM ROTATION IN NAVIGATION? – A CADAVER STUDY
M. Thaler, E. Mayr, J. Moctezuma de la Barrera, M. Krismer, and M. Nogler

8:40 IMAGE-FREE CUP NAVIGATION INACCURACY: A TWO-STUDY APPROACH
S. Blendea, J. Troccaz, J.N. Ravey, S. Plaweski, P. Merloz, and S. Lavallee

8:50 IMAGELESS NAVIGATION FOR CUP INSERTION IN TOTAL HIP ARTHROPLASTY IS AS ACCURATE AS CT-BASED NAVIGATION
T. Kalteis, J. Grifka, M. Handel, T. Renkawitz, H. Hahn, and L. Perlick

9:00 CLINICAL EFFICACY OF COMPUTER NAVIGATION IN MIS-THA
N. Sugano, T. Nishii, H. Miki, T. Koyama, M. Takao, and T. Hanaouchi

9:10 ACCURACY OF A SIMPLIFIED LEG LENGTH MEASUREMENT ALGORITHM IN TOTAL HIP ARTHROPLASTY
S.B. Murphy and T.M. Ecker

9:20 A NOVEL CT BASED ALGORITHM FOR ACCURATE ESTIMATION OF COMPONENT POSITION IN THR
V. Kannan, R. Richards, V. Sauret, and J.P. Cobb

9:30 **Coffee Break** in the Industrial Exhibition

Session VII: Aspects of Trauma Surgery

Session Chairmen: Paul A. Grützner and Leo Joskowicz

10:00 EVALUATION OF AN IN-SITU VISUALIZATION SYSTEM FOR NAVIGATED TRAUMA SURGERY
S.M. Heining, P. Stefan, F. Sauer, E. Euler, N. Navab, and J. Traub

10:10 MAPPING ACCURACY OF PRE-CALIBRATED AND CONVENTIONAL NAVIGATED INSTRUMENTS IN TRAUMA ORTHOPEADIC SURGERY
M. Militz, S. Hungerer, J. Gabel, O. Trapp, and J. Vastmans

10:20 LONG BONE FRACTURE REDUCTION USING FLUOROSCOPIC BASED NAVIGATION – A FEASIBILITY AND ACCURACY STUDY
Y.A. Weil, M. Liebergall, R. Mosheiff, D.L. Helfet, and A.D. Pearle

10:30 ROBOTICS IN NAVIGATION-GUIDED FRACTURE FIXATION - ACCURACY VERIFICATION AND CLINICAL APPLICATIONS
N. Tang, W.K. Ng, K.S. Lee, P.L. Liu, and K.S. Leung

10:40 COMPUTER ASSISTED ANKLE JOINT ARTHROPLASTY USING BIO-ENGINEERED AUTOGRAFTS: CADAVERIC TRIAL RESULTS
R. Sidler, W. Köstler, H. Bonél, M. Styner, N. Südkamp, and M. González Ballester

10:50 SAFETY AND ACCURACY OF COMPUTER NAVIGATED DRILLING OF OSTEOCHONDRAL DEFECTS OF THE TALUS
U.C. Liener, M. Arand, M.W. Knöferl, L. Kinzl, and F. Gebhard

11:00 **Round Table 2**
Moderator: Andre Bauer

MINIMALLY INVASIVE SURGERY AND CAOS

11:50 **Lunch Break** and **CAOS-International General Assembly II**

13:30 **Poster Session II**
See page 7 for complete listing of Special Posters and page 8 for Contributed Posters

Session VIII: Total Knee Replacement - Part 2: Special Aspects

Session Chairmen: Klaus Radermacher and S. David Stulberg

14:30 PEROPERATIVE VARUS VALGUS STRESS AS A PREDICTOR OF NEED FOR SOFT TISSUE RELEASE TO ACHIEVE SOFT TISSUE BALANCING IN EXTENSION IN TOTAL KNEE REPLACEMENT FOR THE VARUS KNEE
F.K.M. Dean, F.J.M. Picard, A. Mennessier, A.C.P. Gregori, A.W.G. Kinninmonth, and M. Sarungi

14:40 MECHANICAL PROPERTIES OF SOFT TISSUES RELEVANT FOR LIGAMENT BALANCED TKR MEASURED IN VITRO
P. Ritschl, F. Machacek, F. Gruber, R. Fuiko, and M. Wülser

14:50 CAN MINIMAL INCISION APPROACH BE COMBINED WITH COMPUTER ASSISTED NAVIGATION TOTAL KNEE REPLACEMENT? A CADAVERIC STUDY ON THE ERRORS IN OBTAINING VISUALLY SELECTED ANATOMICAL LANDMARKS DURING REGISTRATION PROCESS
P.W.P. Yau, A. Leung, K.G. Liu, C.H. Yan, L.L.S. Wong, and P.K.Y. Chiu

15:00 JOINT LAXITY IN NAVIGATED TKA
N. Biasca

15:10 COMPARISONS OF THE FUNCTIONAL RESULTS BETWEEN NAVIGATION ASSISTED MINIMALLY INVASIVE AND CONVENTIONAL TECHNIQUES IN BILATERAL TOTAL KNEE ARTHROPLASTIES
E.K. Song, J.K. Seon, T.R. Yoon, B.H. Bae, and S.J. Park

15:20 M.I.S. VERSUS C.A.S. IN TKR: A RADIOLOGICAL PROSPECTIVE RANDOMIZED STUDY
N. Confalonieri and A. Manzotti

15:30 PRECISION OF THE POSITIONING OF AN UNICOMPARTMENTAL KNEE PROSTHESIS BY A MINI-INVASIVE NAVIGATED TECHNIQUE
J.-Y. Jenny, P.E. Mueller, R. Weyer, M. John, and E. Ciobanu

15:40 **Open Poster Review**

16:30 **Adjourn for the day**

18:30 **Buses leave to Banquet**

19:00 – 23:00 **Conference Banquet**
- Presentation of the Maurice E. Müller Award for Excellence in Computer Assisted Surgery
- Inauguration of the new CAOS-International President
- Invitation to the 7th Annual Conference of CAOS-International in Heidelberg, GERMANY

The Conference Banquet will be held at the Chalet Mont Royal. Shuttle buses will depart from the main entrance of the Fairmont The Queen Elizabeth at 18:30. Please note that there will be a half mile walk to the Chalet from the shuttle drop-off/pick-up area. We recommend that you wear appropriate shoes and bring a light jacket.The last shuttle will leave the Chalet at 23:00. This event is included in the registration fee. Additional tickets may be purchased for guests at the Registration Desk.

Saturday, June 24

6:45 **Registration**
Coffee Break in the Industrial Exhibition

7:20 **Introduction**

7:30 **Video Session III**
Hip Resurfacing

Session IX: Tracking, Registration, and Imaging

Session Chairmen: Neil D. Glossop and Michael L. Swank

8:00 MECHANICAL-ARM NAVIGATION SYSTEM FOR ACETABULAR CUP ORIENTATION
W.S. Kim, B.H. Ko, and Y.S. Yoon

8:10 ON/OFF ACTIVE CONSTRAINT CUTTER CONTROL WITH MOTION COMPENSATION
M. Jakopec, P. Gomes, S.J. Harris, A.R.W. Barrett, J.P. Cobb, and B.L. Davies

8:20 COMPUTER ASSISTED TIGHTENING OF BONE SCREWS TO ADAPTIVE TORQUE LEVELS
T.C. Hearn, K.J. Reynolds, and T.M. Cleek

8:30 MUSCULOSKELETAL NEEDLE PLACEMENT WITH MRI IMAGE OVERLAY GUIDANCE
G.S. Fischer, A. Deguet, C. Csoma, R.H. Taylor, S.J. Zinreich, and G. Fichtinger

8:40 ACCURATE AND ROBUST RECOVERY OF DISTAL LOCKING HOLES IN COMPUTER-ASSISTED INTRAMEDULLARY NAILING OF FEMORAL SHAFT FRACTURES
G. Zheng, X. Zhang, D. Haschtmann, P. Gedet, F. Langlotz and L.-P. Nolte

8:50 FULLY AUTOMATIC ESTIMATION OF GEOMETRICAL PARAMETERS OF PROXIMAL FEMUR FROM CALIBRATED X-RAY IMAGES THROUGH PARTICLE FILTERING
X. Dong, G. Zheng, and L.-P. Nolte

9:00 3D SHAPE ITERATIVE RECONSTRUCTION METHOD BASED ON STATISTICAL MODELS
E. De Momi, P. Cerveri, M. Audrito, A. Facchini, and G. Ferrigno

9:10 A-MODE ULTRASOUND BASED INTRA-FEMORAL BONE CEMENT DETECTION AND 3D-RECONSTRUCTION IN RTHR
S. Heger, R. Sellei, M. de la Fuente, D. Wirtz, and K. Radermacher

9:20 **Coffee Break** in the Industrial Exhibition

Session X: CAOS for the Upper Extremities

Session Chairmen: Meir Liebergall and Russell Taylor

9:50 IMPROVED ACCURACY & RELIABILITY OF COMPUTER ASSISTED GLENOID IMPLANTATION: A RANDOMIZED CONTROLLED TRIAL
D. Nguyen, J. MacDermid, G. King, J. Johnson, D. Drosdowech, and K. Faber

10:00 COMPUTER-ASSISTED SURGICAL ALIGNMENT FOR TOTAL ELBOW ARTHROPLASTY
J.R. Brownhill, L.M. Ferreira, S.M. Guerra, G.J.W. King, and J.A. Johnson

10:10 INTRA-OPERATOR VARIABILITY FOR A NEW PERCUTANEOUS SCAPHOID PINNING PROCEDURE USING ULTRASOUND GUIDANCE
M. Beek, P. Abolmaesumi, S. Luenam, R. Sellens, and D.R. Pichora

10:20 COMPUTER ASSISTED OSTEOCHONDRAL GRAFT FROM THE RIB FOR THE RECONSTRUCTION OF FINGER JOINTS
H. Gotani, H. Teraura, and M. Koshimune

Session XI: Alternatives to Total Hip Replacement

Session Chairmen: Branislav Jaramaz and Ponnezhathu S. John

10:30 THREE DIMENSIONAL ANALYSIS OF RANGE OF MOTION AND VIRTUAL DEBRIDEMENT IN PATIENTS WITH FEMOROACETABULAR IMPINGEMENT
T.M. Ecker, M. Tannast, S.B. Murphy, M. Kubiak-Langer, F. Langlotz, and K.A. Siebenrock

10:40 HIP JOINT DAMAGE OCCURS AT THE IMPINGEMENT ZONE OF FEMORO-ACETABULAR IMPINGEMENT – A COMPUTER-ASSISTED STUDY
M. Tannast, M. Kubiak-Langer, T.M. Ecker, S.B. Murphy, F. Langlotz, and K.A. Siebenrock

10:50 FEMORAL NECK FRACTURE WITH BIRMINGHAM HIP RESURFACING: A BIOMECHANICAL STUDY OF IMPLANT ALIGNMENT
M. Olsen, E.T. Davis, R. Zdero, C.M. Whyne, and E.H. Schemitsch

11:00 COMPUTER AIDED HIP RESURFACING ARTHROPLASTY
G.L. Xenoyannis, W.J. Long, J. Rudan, and R.E. Elllis

11:10 FLUOROSCOPIC NAVIGATION SYSTEM FOR HIP SURFACE REPLACEMENT
P. Belei, A. Skwara, M. de la Fuente, E. Schkommodau, S. Fuchs, and K. Radermacher

11:20 THE ACCURACY OF IMAGELESS COMPUTER NAVIGATION IN THE PLACEMENT OF THE BIRMINGHAM HIP RESURFACING: A CADAVERIC STUDY
E.T. Davis, P. Gallie, K. MacGroarty, J.P. Waddell, and E.H. Schemitsch

11:30 FLUOROSCOPIC IMAGE GUIDED VS IMAGELESS NAVIGATION IN HIP RESURFACING
R.G. Middleton, T.W. Wainwright, S.A. Edwards, and S.A. Serjeant

11:40 EARLY EXPERIENCE USING THE ACROBOT® NAVIGATION SYSTEM FOR COMPUTER-ASSISTED HIP RESURFACING SURGERY
A.R.W. Barrett, M. Jakopec, S.J. Harris, V. Kannan, B.L. Davies, and J.P. Cobb

11:50 **Scientific Awards Ceremony and Reception**

- Best Clinical Podium Presentation Award
  Sponsored by B.BRAUN-AESCULAP
- Best Technical Podium Presentation Award
  Sponsored by NDI
- Best Clinical Poster Presentation Award
  Sponsored by B.BRAUN-AESCULAP
- Best Technical Poster Presentation Award
  Sponsored by NDI

12:20 **Closing Remarks**

12:25 **Conference Adjourns**

SPECIAL POSTERS

P1 A COMPARISON OF REGISTRATION TECHNIQUES FOR COMPUTER AND IMAGE-ASSISTED ELBOW SURGERY
C.P. McDonald, J.R. Brownhill, G.J.W. King, T.M. Peters, and J.A. Johnson

P2 A COMPARISON STUDY: BILATERAL TOTAL KNEE ARTHROPLASTY WITH AND WITHOUT SURGICAL NAVIGATION
B.N. Stulberg and J.D. Zadzilka

P3 A ROBUST AND ACCURATE APPROACH FOR RECONSTRUCTING PATIENT-SPECIFIC 3D BONE MODEL FROM SPARSE POINT SETS
G. Zheng, X. Dong, K.T. Rajamani, and L.-P. Nolte

P4 AN EASY-TO-USE PHANTOM WITH REDUCED COMPLEXITY FOR AUTOMATED FREEHAND ULTRASOUND CALIBRATION IN THE OPERATING ROOM AND LARGE-SCALE COST-EFFECTIVE MANUFACTURE
T.K. Chen, P. Abolmaesumi, and R.E. Ellis

P5 AUTOMATED DETECTION AND SEGMENTATION OF FRACTURAL BONE FRAGMENTS FROM CALIBRATED C-ARM IMAGES
G. Zheng, X. Dong, and L.-P. Nolte

P6 COMPUTER ASSISTED ORTHOPAEDIC SURGERY WITH LIGAMENT BALANCING TECHNIQUE USING AN INTERNAL TENSIONOMETER LOWERS MANIPULATION RATE IN TOTAL KNEE REPLACEMENT
M.L. Swank and L.L. Korbee

P7 COMPUTER-AIDED EVALUATION OF CENTER-EDGE ANGLE VARIABILITY
J. Inoue, B. Ma, M.B. Matusiak, J. Stewart, R.E. Ellis, and J.F. Rudan

P8 CT-BASED SEMI-AUTOMATIC PLANNING FOR PROXIMAL FEMORAL FRACTURE REDUCTION USING FRACTURE LINES AND THE CONTRALATERAL FEMUR
T. Koyama, Y. Iwasaki, Y. Sato, T. Okada, Y.-W. Chen, and N. Sugano

P9 CUP PLACEMENT IN NAVIGATED AND NON-NAVIGATED MINIMALLY INVASIVE THA THROUGH AN ANTERIOR SINGLE INCISION APPROACH – RESULTS OF A CADAVER STUDY
M. Thaler, E. Mayr, J. Moctezuma de la Barrera, M. Krismer, and M. Nogler

P10 INITIAL CLINICAL RESULTS OF COMPUTER-ASSISTED DISTRACTION OSTEOGENESIS BY ILIZAROV'S METHOD
A.L. Simpson, B. Ma, D.P. Borschneck, and R.E. Ellis

P11 INTEREST OF COMPUTER ASSISTED SURGERY (CAS) IN THE EXCISION OF OSTEOID OSTEOMA BY USING FLUOROSCOPY-BASED NAVIGATION
P.F. Merloz, A. Eid, J. Troccaz, S. Blendea, J. Tonetti, and H. Vouaillat

P12 LACK OF CORRELATION BETWEEN POST-OPERATIVE RADIOGRAPHIC AND INTRA-OPERATIVE NAVIGATION MEASUREMENT OF LIMB IMPLANTS
M.A. Yaffe, S. Koo, J.M. Feinglass, and S.D. Stulberg

P13 LASER-ASSISTED MRI-GUIDED NEEDLE INSERTION AND COMPARISON OF TECHNIQUES
G.S. Fischer, C. Wamsley, S.J. Zinreich, and G. Fichtinger

P14 OPTOELECTRONIC AND ELECTROMAGNETIC TRACKING TECHNOLOGY FOR USE IN ORTHOPAEDIC NAVIGATION – A LITERATURE OVERVIEW
F. Langlotz

P15 TOTAL HIP ARTHROPLASTY PERFORMED USING CONVENTIONAL AND TISSUE-PRESERVING COMPUTER-ASSISTED TECHNIQUES
S.B. Murphy, T.M. Ecker, and M. Tannast

CONTRIBUTED POSTERS

ACL Reconstruction

P16 A COMPARISON OF THE ACCURACY OF NAVIGATED VS NON-NAVIGATED ACL RECONSTRUCTION USING A COMPUTERIZED OPTICAL TRACKING SYSTEM (ORTHOPILOT)
J. Koh, S.S. Koo, and A. Aminian

P17 A COMPUTER ASSISTED CADAVERIC ANALYSIS OF TIBIAL TUNNEL LENGTHS IN ACL SURGERY: A RATIONALE FOR COMPUTER ASSISTANCE IN ACL RECONSTRUCTION
M.A. Rauh, G. Bernas, M. Bayers-Thering, W.M. Mihalko, K.A. Krackow, and M.S. Fineberg

P18 FLUOROSCOPY-BASED NAVIGATION SYSTEM ASSISTED ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION BY ARTHROSCOPY
H. Zhang, H. Feng, L. Hong, X.-S. Wang, X.-S. Geng, and M.-Y. Wang

P19 NAVIGATED KNEE STABILITY EXAMINATION DURING ACL LIGAMENT RECONSTRUCTION
A.D. Pearle, F. Shanon, B. Domb, C. Granchi, and R.F. Warren

P20 TOWARDS INCORPORATION OF ACL ANATOMICAL DATA INTO THE NAVIGATION SYSTEM FOR DOUBLE BUNDLE ACL RECONSTRUCTION
H. Tsukada, Y. Ishibashi, E. Tsuda, A. Fukuda, and S. Toh

General Aspects of Total Knee Replacement

P21 A NEW ALGORITHM FOR HIP JOINT CENTER COMPUTATION IN TKR
E. DeMomi, P. Cerveri, M. Audrito, A. Facchini, and G. Ferrigno

P22 ASSESSMENT AND CORRECTION OF PATELLAR MALTRACKING IN TOTAL KNEE ARTHROPLASTY USING COMPUTER ASSISTED NAVIGATION
R.K. Strachan, S.-L. Chia, A. Merican, R. Trichy, R.S. Deol, and A. Amis

P23 BONE MORPHING FOR OPTIMIZATION OF FRONTAL LAXITY IN TOTAL KNEE ARTHROPLASTY
H. Wu, S. Van Driessche, and D. Goutallier

P24 CHANGE IN AXIAL ALIGNMENT OF THE KNEE DURING KNEE FLEXION BEFORE AND AFTER COMPUTER NAVIGATED KNEE REPLACEMENT
D. Karadaglis, R. Varma, O. Lahoti, M. Wilkinson, G. Groom, and A. Shetty

P25 COMPUTER AIDED TOTAL KNEE REPLACEMENT- THE LEARNING CURVE IN A SMALL PRIVATE CLINIC
M. Sangster, H. Davies, V. Voon, M. Srinivas, M. Bolton, and S.A.C. Sampath

P26 COMPUTERIZED TOMOGRAPHY ASSESSMENT OF FEMORAL ROTATION IN TOTAL KNEE ARTHROPLASTY – IS THERE A TARGET FOR NAVIGATION?
T. Mattes, O. Ostertag, and H. Reichel

P27 EFFECT OF INTERNAL-EXTERNAL ROTATION POSITION OF THE FEMORAL COMPONENT ON KINEMATICS OF THE KNEE POST TKR
D.J. Lucas, M. Alam, A.M.J. Bull, O. Kessler, and A.A. Amis

P28 IMPROVED KNEE KINEMATICS IN POSTTRAUMATIC NON-ANATOMIC ARTICULAR GEOMETRY - APPLICATION OF COMPUTER ASSISTED ORTHOPEDIC SURGERY USING ORTHOPILOT SOFTWARE
M. Bhattacharyya and B. Gerber

P29 INTRA-OPERATIVE VS. POST-OPERATIVE PATELLOFEMORAL MECHANICS IN CADAVERIC SPECIMENS
C. Anglin, J.M. Brimacombe, A.J. Hodgson, D.R. Wilson, J. Tonetti, N.V. Greidanus, and B.A. Masri

P30 LEARNING CURVE EFFECT OF NAVIGATED TOTAL KNEE REPLACEMENT
R. Rambani, M. Wilkinson, R. Varma, D. Hatziemannuil, A. Shetty, and G. Groom

P31 NAVIGATION IN TKA - EFFECTS IN LIFE QUALITY, FUNCTIONAL SCORES AND ECONOMICS - A PROSPECTIVE RANDOMIZED STUDY
T. Mattes, M. Stefanski, and H. Reichel

P32 OPTICAL SYSTEMS VS ELECTROMAGNETICAL SYSTEM IN TKA
C.C. Castelli, F. Barbieri, and V. Gotti

P33 RESULTS OF 22 COMPUTER ASSISTED TOTAL KNEE ARTHROPLASTIES FOR GENU VALGUM DEFORMITY
D. Saragaglia and D. Gorduza

P34 THE ACCURACY OF COMPUTER ASSISTED NAVIGATION IN THE ASSESSMENT OF FIXED FLEXION DURING TOTAL KNEE ARTHROPLASTY: A CADAVERIC STUDY
E.T. Davis, P. Gallie, K. MacGroarty, J.P. Waddell, and E.H. Schemitsch

P35 THE EFFECT OF TIBIAL COMPONENT THICKNESS ON TERMINAL EXTENSION AND FLEXION IN TOTAL KNEE ARTHROPLASTY
M.J. Weaver and J.M. Siliski

P36 THE FUNCTIONAL KNEE JOINT AXIS – A REPRODUCIBLE FEMORAL ROTATION LANDMARK IN NAVIGATED KNEE ARTHROPLASTY
G. Matziolis, J. Stifter, A. Anner, and C. Perka

P37 THE POSITION OF THE DISTAL END OF THE EXTRAMEDULLARY ALIGNMENT GUIDE FOR TIBIA IN TOTAL KNEE ARTHROPLASTY
S. Matsuda, H. Mizu-uchi, H. Miura, H. Higaki, K. Okazaki, and Y. Iwamoto

P38 THREE-DIMENSIONAL ANALYSIS OF CT-BASED NAVIGATION SYSTEM FOR TOTAL KNEE ARTHROPLASTY
H. Mizu-uchi, S. Matsuda, H. Miura, H. Higaki, K. Okazaki, and Y. Iwamoto

P39 TRANSEPICONDYLAR DISTAL FEMORAL PIN PLACEMENT IN COMPUTER ASSISTED SURGICAL NAVIGATION
J.B. Stiehl

Hip Resurfacing

P40 CT-BASED PLANNING AND NAVIGATION OF THE HIP RESURFACING PROSTHESES CORMET - METHODS AND FIRST RESULTS
T. Hennecke, M. Sungu, and A. Krainz

P41 DOES APPROACH INFLUENCE PLANNING AND NAVIGATION IN IMAGELESS GUIDED HIP RESURFACING?
B. Ma, M. Kunz, Y. Chen, L. Ploeg, and J.R. Rudan

P42 FEMORAL COMPONENT POSITIONING USING ACROBOT NAVIGATION HIP RESURFACING SYSTEM - EARLY RESULTS
V. Kannan, J.P. Cobb, A.R. Barrett, S.J. Harris, M. Jakopec, and B.L. Davies

P43 NAVIGATED HIP RESURFACING - A TRAINEE'S PERSPECTIVE
S.A. Edwards, T.W. Wainwright, R.G. Middleton, and S.A. Serjeant

P44 PINS AND THINGS - NAVIGATED HIP RESURFACING
S.A. Edwards, R.G. Middleton, T.W. Wainwright, and S.A. Serjeant

P45 THE CLINICAL APPLICATION OF USING COMPUTER NAVIGATION IN THE HIP RESURFACING PROCEDURE - A QUESTION OF COST?
T.W. Wainwright, R.G. Middleton, S.A. Serjeant, and S.E. Edwards

Minimally Invasive Knee Replacement

P46 EFFECTS OF MINI APPROACH ON PATELLA, MECHANICAL AXIS AND JOINT STABILITY IN ORTHOPILOT NAVIGATED CRUCIATE AND PATELLA RETAINING TKA
S.I. Hakki and S.M. Coleman

P47 PRELIMINARY REPORT FOR NAVIGATED MIS TKA WITH ORTHOPILOT
K. Kanesaki, H. Hieda, T. Tamaki, M. Kubo, and K. Nagata

P48 QUALITY OF IMPLANT ALIGNMENT IN MINIMALLY INVASIVE NAVIGATED TOTAL KNEE ARTHROPLASTY
F. Lampe, K. Bohlen, S.P.M. Dries, A. Sufi-Siavach, D.S. Stulberg, and E. Hille

Osteotomies

P49 ANALYSIS OF THE ABILITIES OF THE COMPUTER ASSISTED ORTHOPAEDIC SURGERY IN ASSESSMENT OF THE ACETABULUM OF THE HIP
A. Czwojdzinski, J. Czubak, and M. Tyrakowski

P50 COMPUTER ASSISTED PLANNING AND NAVIGATION OF PELVIC TUMOUR SURGERY - REVIVAL OF CT BASED NAVIGATION
B. König, U. Stöckle, A. Schäffler, K. Schaser, and I. Melcher

P51 EXACT TIBIO-FEMORAL AXIS CORRECTION AFTER COMPUTER-GUIDED OPEN WEDGE HIGH TIBIAL OSTEOTOMY
M. Janecek, R. Hart, T. Pink, V. Stipcak, and B. Kucera

P52 FIRST FOLLOW-UP RESULTS AFTER CORRECTION OF POSTTRAUMATIC ANKLE AND HINDFOOT DEFORMITIES USING COMPUTER-ASSISTED SURGERY (CAS)
J. Geerling, S. Zech, D. Kendoff, T. Hüfner, C. Krettek, and M. Richter

P53 HTO REAL-TIME UPDATE BY NAVIGATED ULTRASOUND
P. Keppler, C. Wehrle, and J. Kozak

P54 RATIONAL AND ISSUES OF HIGH TIBIAL OSTEOTOMIES - KEY POINTS OF AN IMAGE LESS NAVIGATION SYSTEM
E. Stindel, D. Gil, R. Gerard, C. Roux, and C. Lefevre

P55 THE DIFFERENCE OF THE DYNAMIC LOADING AXIS BETWEEN MIKULICZ LINE AND THE LINE FROM THE GROUNDING POINT TO THE CENTER OF THE FEMORAL HEAD DURING GAIT
H. Kawakami, N. Sugano, K. Yonenobu, H. Yoshikawa, A. Hattori, and N. Suzuki

Soft Tissue Consideration During TKR

P56 A NEW 2.5D ULTRASOUND METHOD TO MEASURE THE MEDIAL AND LATERAL INSTABILITY OF THE KNEE JOINT
D. Christian, J. Kozak, F. Gebhard, L. Kinzl, and P. Keppler

P57 ACCURACY OF NAVIGATED KNEE STABILITY EXAMINATION: A CADAVERIC EVALUATION
A.D. Pearle, D.J. Solomon, M. Lenhoff, C. Granchi, and R.F. Warren

P58 MEASUREMENT AND CLASSIFICATION OF FLEXION AND EXTENSION GAP USING NAVIGATION FOR EQUALLY BALANCED TOTAL KNEE ARTHROPLASTY
E.K. Song, J.K. Seon, T.R. Yoon, S.Y. Cheon, S.J. Park, and B.H. Bae

P59 ROLE OF BONY CUTS & LIGAMENT RELEASE IN DEFORMITY CORRECTION IN COMPUTER NAVIGATED TOTAL KNEE REPLACEMENT
R.K. Varma, M. Wilkinson, O. Lahoti, and A.F.G. Groom

P60 STABILITY AFTER TOTAL KNEE ARTHROPLASTY USING A NAVIGATION SYSTEM
J.K. Seon, E.K. Song, T.R. Yoon, S.J. Park, B.H. Bae, and J.Y. Lee

P61 THE ROLE OF NAVIGATION TO PREDICT SOFT TISSUE RELEASE DURING COMPUTER-ASSISTED TOTAL KNEE ARTHROPLASTY
D. Saragaglia

P62 THE STABILITY OF THE LATERAL LIGAMENTS IN NAVIGATED TKA
P. Keppler, C. Dumps, L. Kinzl, and F. Gebhard

Spinal Surgery

P63 ACCURACY OF PEDICLE SCREW PLACEMENT BY USE OF ARCADIS ORBIC 3D C ARM BASED NAVIGATION IN COMPARISON TO 2D C ARM BASED NAVIGATION AND CT BASED NAVIGATION TECHNIQUE
A. Schäffler, U. Stöckle, B. König, and N.P. Haas

P64 COMPUTER AIDED SCOLIOSIS SURGERY FOR TWO SURGICAL CORRECTIVE TECHNIQUES
Y. Lafon-Jalby, J. Dubousset, J.-P. Steib, and W. Skalli
*presented by A. Baudoin

P65 ISO-C BASED NAVIGATED SCREW OSTEOSYNTHESIS OF ODONTOID FRACTURE - AN EXPERIMENTAL PRECISION ANALYSIS
J. Geerling, D. Kendoff, M. Citak, S. Frenzel, C. Krettek, and T. Hüfner

P66 THE USE OF COMPUTER ASSISTED NAVIGATION SYSTEM FOR PEDICLE SCREW INSTRUMENTATION IN THE LUMBAR SPINE FUSION – RETROSPECTIVE CLINICAL STUDY
A. Alobaid and B. Goulet

Technical Aspects of CAOS

P67 A HANDHELD ROBOTIC TOOL FOR LESS INVASIVE BONE SHAPING
G. Brisson, B. Jaramaz, A.M. DiGioia, III, and T. Kanade

P68 A SMALL SIZE FLUOROSCOPE TRACKING (FTRAC) FIDUCIAL
A.K. Jain, I. Iordachita, and G. Fichtinger

P69 A VALIDATED METHOD TO ASSESS FLUOROSCOPICALLY THE VARUS-VALGUS STABILITY IN FLEXION IN TKA
C.C. Castelli, F. Barbieri, V. Gotti, and A. Remuzzi

P70 ACCURACY ANALYSIS OF A VIDEOOPTICAL BASED NAVIGATION SYSTEM
T. Pfeifer and A. Göggelmann

P71 ACCURACY OF RECONSTRUCTING PATIENT-SPECIFIC 3D BONE MODEL FROM CLINICALLY RELEVANT SPARSE POINTS OBTAINED BY MAGNETIC TRACKING: INITIAL RESULTS
R. Thoranaghatte, G. Zheng, L.-P. Nolte, and K.T. Rajamani

P72 ACCURACY STUDY ON A FLUOROSCOPIC IMAGE GUIDED ROBOTIC SYSTEM FOR REMOVAL OF FEMORAL BONE CEMENT IN RTHR
M.F.J. Hahndorff, S. Serefoglou, M. de la Fuente, R. Sellei, D.C. Wirtz, and K. Radermacher

P73 AN ACCURATE PELVIS AXIS SYSTEM USING A LOW DOSE X-RAY DEVICE
A. Baudoin, D. Mitton, and W. Skalli

P74 AN EXTERNAL HEADBAND BASED REFERENCING TECHNIQUE FOR ORTHOPEADIC NAVIGATED PROCEDURES
D. Kendoff, M. Citak, A. Bogojevic, C. Maier, C. Krettek, and T. Hüfner

P75 AUTOMATED COMPUTER ASSISTED ORTHOPAEDIC SURGICAL PLANNING ON PACS AND IMAGING SYSTEMS
H. Croitoru, P. Tate, M. Kesavankutty, V. Accomazzi, and M. Sati

P76 AUTOMATIC DETERMINATION OF AN ANATOMICALLY ORIENTED COORDINATE SYSTEM OF THE HUMERUS AND ITS EVALUATION BASED ON 3D IMAGING
E. Bobrowitsch, C. Imhauser, H. Graichen, and L. Dürselen

P77 AUTOMATIC X-RAY IMAGE REGISTRATION: PRELIMINARY INVESTIGATION OF THE CONCEPT
M. Ritrovato, L. Nofrini, S. Bignozzi, M. Slomczykowski, and M. Marcacci

P78 BIOMECHANICAL STABILITY OF DIFFERENT ATTACHMENTS ARRAYS OF REFERENCE MARKERS IN NAVIGATED ORTHOPAEDIC SURGERY
T. Hüfner, D. Kendoff, J. Geerling, V. Look, C. Krettek, and M. Citak

P79 COMPARISON AND CLINICAL PROBLEM OF THE FLUOROSCOPY - AND THE CT-BASED METHODS OF DETERMINATION OF FEMORAL ANTETORSION ANGLE
M. Citak, D. Kendoff, J. Geerling, M. Citak, V. Stüber, and T. Hüfner

P80 COMPARISON BETWEEN THE CIRCLE FITTING AND THE MEAN HELICAL ALGORITHMS TO COMPUTE THE KNEE CENTER
J.D. GilCano, E. Stindel, C. Hamitouche, G. Moineau, and C. Roux

P81 COMPUTING THE RANGE OF FEMORAL COMPONENT ALIGNMENT IN METAL ON METAL HIP RESURFACING
B. Ma and J.R. Rudan

P82 CT BASED NAVIGATED BIOPSY FOR VIRTUAL AUTOPSY
L.C. Ebert, E. Aghayev, C. Jackowski, C. Anderegg, J. Kowal, and M.J. Thali

P83 DEVELOPMENT OF A BIOMECHANICS VALIDATED FINITE ELEMENT MODEL OF THE PELVIS
S. Klima, B. Joerg, J. Dorow, R. Huelse, V. Slowik, and C. Josten

P84 ESTIMATION OF THE MEAN TARGET REGISTRATION ERROR IN FREEHAND ULTRASOUND PROBE CALIBRATION
M.H. Moghari and P. Abolmaesumi

P85 FEASIBILITY OF 3D ULTRASOUND-INITIALIZED DEFORMABLE BONE-MODELING
H. Talib, G. Zheng, K. Rajamani, X. Zhang, M. Styner, and M.A. González Ballester

P86 IDENTIFYING EVOLUTIONARY TRENDS IN THE DEVELOPMENT OF CAOS SYSTEMS
G. Douta, O. Nierstrasz, and F. Langlotz

P87 INTEGRATED NAVIGATION SYSTEM – PRECLINICAL EVALUATION AND FIRST CLINICAL EXPERIENCES
U. Stöckle, B. König, A. Schäffler, and N.P. Haas

P88 INTERACTIVE AND REALTIME DIGITALLY RECONSTRUCTED RADIOGRAPHS
E.C.S. Chen, R.R. Ellis, and T.S.Y. Tang

P89 INTRA-OPERATIVE FLUOROSCOPIC IMAGE GUIDANCE FOR OSTEOTOMY AND EXTERNAL FIXATOR
H. Lin, M.L. Samchukov, and J.G. Birch

P90 INTUITIVE GUIDES FOR 6D RELOCATION IN COMPUTER ASSISTED SURGICAL INTERVENTIONS
M. Bläuer, J. García Santacreu, D. Stucki, and F. Langlotz

P91 ROBOTIZED HYDRAULIC TENSOR FOR LIGAMENT BALANCE IN TOTAL KNEE ARTHROPLASTY
H. Wu, M. Christophe, M. Philippe, L. Abdel, L. Stéphane, and C. Philippe

P92 TWO FACTORS WHICH INFLUENCE THE ACCURACY OF THE ROTATION CENTER ALGORITHMS TO COMPUTE THE HIP CENTER
J.D. GilCano, E. Stindel, C. Hamitouche, G. Moineau, and C. Roux

P93 ULTRA-FAST AUTOMATIC SEGMENTATION OF PATHOLOGICAL FEMORAL HEAD DATA FROM CT IMAGES USING RAY CASTING SEGMENTATION AND FREE-FORM-DEFORMATIONS
G. Marti, C. Baur, P.-Y. Zambelli, and D. Dörig

P94 WORKFLOW ANALYSIS IN OR - KEYSTONE FOR FURTHER OPTIMIZATION AND HARDWARE INTEGRATION
B. König, U. Stöckle, A. Schäffler, V. Steubing, L. Neuefeind, and N.P. Haas

Total Hip Replacement

P95 A CADAVERIC STUDY INVESTIGATING THE PLACEMENT OF THE ACETABULAR COMPONENT IN TOTAL HIP ARTHROPLASTY BY REFERENCE TO THE ACETABULAR LABRUM AND TRANSVERSE ACETABULAR LIGAMENT: DEFINING A PATIENT SPECIFIC 'FUNCTIONAL' SAFE-ZONE FOR CUP PLACEMENT
P. Archbold, M. Slomczykowski, G. Penney, D. Barratt, and D. Beverland

P96 ACCURACY OF THE ANTETORSION IN NAVIGATED TOTAL HIP REPLACEMENT
J.E. Brandenberg and C. DeSimoni
*presented by W. Moser

P97 ACCURACY OF THE POSITIONING IN THA USING CT BASED NAVIGATION SYSTEM
N. Hirasawa, M. Matsubara, N. Okuda, and T. Muneta

P98 AN IMAGE-FREE CAS-METHOD FOR INTRAOPERATIVE KINEMATIC PLANNING OF CUP ORIENTATION IN TOTAL HIP REPLACEMENT
M. Kunz, J. Rudan, and R.E. Ellis

P99 ASSESSING PELVIC FLEXION FROM AP RADIOGRAPHS USING LANDMARK LOCALIZATION
K. Eckman, M. Hafez, T.J. Levison, B. Jaramaz, and A.M. DiGioia, III

P100 AUTOMATED PREOPERATIVE PLANNING SYSTEM OF TOTAL HIP ARTHROPLASTY USING ANATOMICAL FEMORAL COMPONENTS
I. Otomaru, M. Takao, M. Nakamoto, N. Sugano, Y.Sato and Y.Tada

P101 COMPUTER ASSISTED THREE-DIMENSIONAL RECONSTRUCTIONS OF THE HUMAN ACETABULUM: IN-VIVO MEASUREMENTS OF ACETABULAR ANTEVERSION AND ABDUCTION
A.A. Jamali

P102 EFFECT OF OSTEOPHYTE REMOVAL ON RANGE OF MOTION AND IMPINGEMENT FOLLOWING THR
B. Jaramaz, K. Mohamed, C. Nikou, J. Cipriani, and A.M. DiGioia, III

P103 EFFECT OF PATIENT POSITION ON ACCURACY OF REFERENCING THE ANTERIOR PELVIC FRAME
J.B. Sledge and N.F.P. Peres

P104 FEMORAL ANTEVERSION DETERMINED BY A NEW CAD METHOD
K. Freund, J. Kozak, S. Gaßner, F. Gebhard, S. Klein, and P. Keppler

P105 IMAGE LESS NAVIGATION SYSTEMS TO IMPROVE LENGTH AND OFFSET RESTORATION IN THR
G. Moineau, E. Stindel, M. Henry, R. Gerard, and C. Lefevre

P106 LATERAL RADIOGRAPHS AND MANUAL LANDMARK BASED PELVIC FLEXION MEASUREMENT ACCURACY
K. Eckman, M. Hafez, B. Jaramaz, and A.M. DiGioia, III

P107 LEG LENGTH CONTROL IN TOTAL HIP REPLACEMENT WITH CT-FREE COMPUTED ASSISTED SURGERY
F. Bassini and M. Pozzi-Mucelli

P108 OUTCOMES, TECHNICAL ASPECTS AND PITFALLS OF ORTHOPILOT® NAVIGATED HIP ARTHROPLASTIES
S.I. Hakki, V.J. Bilotta, and S.M. Coleman

P109 ROBOTIC-ASSISTED PRIMARY CEMENTLESS TOTAL HIP ARTHROPLASTY USING SURFACE REGISTRATION TECHNIQUES; A SHORT-TERM RESULT
N. Nakamura, N. Sugano, T. Nishii, H. Miki, A. Kakimoto, and M. Yamamura

P110 ROBOTICALLY ASSISTED VERSUS CONVENTIONAL MANUAL IMPLANTATION OF CEMENTLESS STEM PRIMARY THR - 8 YEARS FOLLOW-UP OF A RANDOMIZED TRIAL
S.P.M. Dries, M. Honl, K. Schwieger, E. Hille, and F. Lampe

P111 THE EFFECT OF SURGICAL APPROACH ON THE ACCURACY OF MEASURING ACETABULAR COMPONENT ORIENTATION WITH A CT-BASED HIP NAVIGATION SYSTEM
T. Hananouchi, N. Sugano, T. Nishii, H. Miki, and H. Yoshikawa

P112 THE INFLUENCE OF PELVIC TILT ON ACETABULAR CUP POSITIONING
T. Kalteis, B. Herbst, J. Grifka, T. Renkawitz, and M. Handel

Traumatology

P113 COMPUTER-ASSISTED FULL-LENGTH PLANNING SYSTEM FOR LONG BONE FRACTURE TREATED WITH INTRAMEDULLARY NAILING
J. Wang, W. Liu, C. Zhao, Y. Su, L. Hu, and M. Wang

P114 COMPUTER-ASSISTED LISS PLATE PLACEMENT, AN IN VITRO STUDY
A. Quinn, A. Al-Ahaideb, J. Yach, E. Smith, R.E. Ellis, and D.R. Pichora

P115 FIRST FOLLOW-UP RESULTS OF ISO-C 3D BASED NAVIGATED RETROGRADE DRILLING IN OSTEOCHONDRAL DEFECTS OF THE TALUS
J. Geerling, S. Zech, M. Citak, C. Krettek, T. Hüfner, and M. Richter

P116 INTRAOPERATIVE THREE-DIMENSIONAL IMAGING (ISO-C-3D) IN TRAUMA SURGERY
K. Atesok, A. Khoury, J. Finkelstein, A. Peyser, M. Liebergall, and R. Mosheiff

P117 LOCKING OF INTRAMEDULLARY NAILS UNDER VIDEO-AUGMENTED FLOUROSCOPIC CONTROL: FIRST CLINICAL APPLICATION IN A CADAVER STUDY
S.M. Heining, S. Wiesner, E. Euler, W. Mutschler, and N. Navab

P118 MEASUREMENT OF THE FEMORAL ANTETORSION ANGLE WITH A FLUOROSCOPIC-BASED OPTOELECTRONIC NAVIGATION SYSTEM
P.A. Grützner, C. Keil, F. Langlotz, J. von Recum, K. Wendl, A. Wentzensen, and L.-P. Nolte

P119 NAVIGATION IN INTRAOPERATIVE 3D-DATASETS IN FRACTURES OF THE PELVIS
K. Wendl, J. von Recum, A. Wentzensen, and P.A. Grützner

P120 NAVIGATION-ASSISTED CANNULATED HIP SCREW INSERTION-THE HADASSAH EXPERIENCE
I. Ilsar, Y. Weil, R. Mosheiff, A. Khoury, A. Peyser, and M. Liebergall

P121 NONINVASIVE CT TO ISO-C3D REGISTRATION FOR THE USE IN COMPUTER ASSISTED PELVIC FRACTURE REDUCTION
T. Rudolph, J. Kowal, T. Huefner, and L.-P. Nolte

P122 PERCUTANEOUS ILIO-SACRAL SCREW FIXATION UNDER FLUORO-NAVIGATION FOR UNSTABLE PELVIC FRACTURES
K.S. Leung, P.P.L. Liu, and N. Tang

P123 SURGICAL NAVIGATION FACILITATES LESS-INVASIVE ARTHRODESIS OF THE SACROILIAC JOINT
D.M. Kahler

Uni-Knees

P124 COMPUTER-ASSISTED PATELLOFEMORAL ARTHROPLASTY: SURGICAL TECHNIQUE TO OPTIMISE FEMORAL ROTATION
J.G. Relwani, R. Sastry, K.D. James, A.A. Shetty, and R. Rambani

Upper Extremities

P125 A COMPARISON OF THREE RADIOGRAPHIC INDICES ON SURFACE MESH MODELS AND DIGITALLY RECONSTRUCTED RADIOGRAPHS OF THE DISTAL RADIUS
R. Jalal, B. Ma, P. Abolmaesumi, J. Stewart, H.J. Grant, and D.R. Pichora

P126 ANATOMICAL LANDMARKS FOR OPTIMAL REGISTRATION USING ULTRASOUND IN NAVIGATED SHOULDER ARTHROSCOPY
K. Tyryshkin, P. Mousavi, D.R. Pichora, and P. Abolmaesumi

P127 AVOIDING SURPRISES IN SHOULDER REPLACEMENT: A CASE STUDY IN COMPUTER-ASSISTED TSR PLANNING
C. Nikou, B. Jaramaz, Y.J. Groff, and J.A. Cipriani

P128 COMPUTER-AIDED NAVIGATION FOR SHOULDER ARTHROPLASTY – A CADAVER STUDY
V.K. Sarin, G.M. Gartsman, and T.B. Edwards

Mary Queen of the World Cathedral and 1000 de La Gauchetière

SOCIAL EVENTS

Welcome Reception

Wednesday Evening, 21 June, 18:00 - 20:00

In conjunction with registration, an informal Welcome Reception will be held in the Mackenzie Room, Convention Floor of the Fairmont The Queen Elizabeth.

Conference Banquet

Friday Evening, 23 June, 19:00 - 23:00

The Conference Banquet is scheduled for Friday evening at the Chalet Mont Royal. Mont Royal is a mountain on the Island of Montréal, immediately north of downtown Montréal, Quebec, Canada, the city to which it gave its name. The mountain is the site of Mount Royal Park (officially Parc du Mont-Royal), one of Montréal's largest greenspaces. The park, most of which is wooded, was designed by Frederick Law Olmsted, who also designed New York's Central Park, and inaugurated in 1876.

Join us for a spectacular night. The view from the terrace here takes in downtown Montréal. In the distance you can see Mont-Royal's sister mountains, Monts St-Bruno, St-Hilaire, and St-Grégoire. These isolated peaks, called the Montérégies, or Mountains of the King, rise dramatically from the flat countryside. View the murals depicting scenes from Canadian history.

Shuttle buses will depart from the main entrance of the Fairmont The Queen Elizabeth at 18:30. The last shuttle will leave the Chalet at 23:00.

Please note that there will be a half mile walk to the Chalet from the shuttle drop-off/ pick-up area. We recommend that you wear appropriate shoes and bring a light jacket.

This event is included in the registration fee.

Additional tickets may be purchased for guests at the registration desk.

Guest Banquet Ticket . . . . . $80.00 US

▲ *Vue de Montréal*

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We would like to acknowledge the following institutions and companies for the Unrestricted Educational Grant support for this Conference.

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EXHIBITORS

Exhibits are located in the Hochelaga Room on the Convention Level.
Please see the floorplan on page 17.

Exhibit Hours

Thursday, 22 June . . . . . 6:45 – 14:30
Friday, 23 June . . . . . 6:50 – 14:30
Saturday, 24 June . . . . . 6:50 – 9:50

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OrthoPilot® KneeSuite and HipSuite - B.Braun AESCULAP, Germany, is presenting the OrthoPilot KneeSuite and HipSuite during the CAOS International 2006. Based on years of experience with more than 50,000 navigated hip and knee surgeries a dedicated software and instruments package was established for the use in navigated orthopaedic procedures. Aesculap is addressing the trend to less invasive procedures in hip and knee surgery with the brandnew navigated MIOS program.
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Claron Technology Inc. designs and markets innovative products to measure and track objects in space using computer vision technology. Our main product line is the MicronTracker, the first truly passive real-time sub-millimeter optical pose sensor specialized for surgical navigation.

EXHIBITOR — BOOTH

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Corin is a world leader in pioneering and developing new implants for the treatment of younger patients with degenerative joint disease. The company will show two surgical navigation systems currently available for its products.

Developed by CAS Innovations AG, the CAPPA (Computer Assisted Planning and Positioning Applications) System is an open-interfaced, modular system, which can be applied to various implant procedures including Cormet Hip Resurfacing, Rotaglide+ Total Knee Replacement and Uniglide Unicompartmental Knee Replacement available as CT-based and CT-free Applications with minimally invasive instrumentation. WayFinder is a differentiated surgical navigation system using a digital-arm tracking system and is uniquely available for use with the Cormet Hip Resurfacing system. Developed in conjunction with The Acrobot Company Ltd, WayFinder uses patented technology to allow Hip Resurfacing to be performed using truly minimally invasive surgery techniques.

DePuy Orthopaedics Inc. . . . . . 3, 4 & 5
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DePuy Orthopaedics Inc., a Johnson and Johnson Company, is the world's oldest and largest orthopaedic company and is a leading designer, manufacturer and distributor of orthopaedic devices and supplies. DePuy products are used in both surgical and non-surgical therapies to treat patients with musculoskeletal conditions resulting from degenerative diseases, deformities, trauma and sports related injuries.

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Celebrating 25 years of Innovation in 2006, NDI remains an international leader in providing accurate, trusted measurement solutions. NDI continues this focus on innovation by introducing Radix Rigid Bodies, a new passive technology designed for use in the harshest of surgical environments. Combined with the launch of the next generation of Polaris, the Polaris Spectra, Radix represents a significant leap forward for the image guided surgery marketplace.

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Phone: 1-514-861-4074 ext. 253
Fax: 1-514-866-2197
Website: *www.orthosoft.ca*

ORTHOsoft is launching its new universal applications for computer-assisted total hip and knee replacements. They offer step-by-step, easy-to-learn graphic animation to leverage the surgeons' skill and experience in ensuring the most reproducible results. By improving the overall accuracy of implant alignment and placement, ORTHOsoft products help reduce long-term implant wear and related complications, reduce short-term residual pain, reduce the occurrence of short-term revision surgery and facilitate minimally invasive surgery to speed recovery time and discharge from hospital to home.

EXHIBITOR — BOOTH

Plus Orthopedics AG ..... 22 & 23

Schachenallee 29
Aarau, 5001 SWITZERLAND
Phone: +41-62-832-0606
Fax: +41-62-832-0607
Website: *www.plusorthopedics.com*

Since 1991, the internationally active Plus Orthopedics AG, Switzerland has developed, manufactured and sold implant systems for hip, knee, shoulder and small joints. The Plus Orthopedics Group comprises research, development and sales operations in Switzerland, 12 international subsidiaries in Europe, the USA and Asia as well as several exclusive distribution partners around the globe.

Plus Orthopedics Navigation is a young and dynamic department of Plus Orthopedics AG, dedicated to bringing the most innovative, user-friendly and reliable navigation system into the orthopedic operating room. Over the years we have taken a strong position in research and innovation, and we have built the experience of thousands of surgeries into our comprehensive CAOS solutions that support standard as well as MIS Knee and Hip surgical techniques.

PRAXIM Medivision ..... 22 & 23

486 Hight Plain Street
Walpole, MA 02081 USA
Phone: 1-508-660-1952
Fax: 1-508-660-2783
Website: *www.praxim-medivision.com*

PRAXIM Medivision is the inventor and producer of pioneering, user-friendly and clinically proven CAOS solutions designed specifically for assisting the orthopedic surgeon. SURGETICS™ Station is capable of integrating CT, MRI, ultrasound, fluro and BoneMorphing™ to provide unparallel flexibility in imaging to address orthopedic surgical needs.

Smith & Nephew Orthopaedics 20

1450 Brooks Road
Memphis, TN 38116 USA
Phone: 1-901-396-2121
Website: *www.smith-nephew.com*

AchieveCAS facilitates reproducible and precise implant placement. The accurate alignment and placement of the implant may extend its lifespan by reducing uneven wear, thus preventing future corrective surgeries. In addition, precise implant placement may help reduce the risk of post-operative dislocation and contributes to long-term implant stability and increased range of motion.

AchieveCAS also enhances the use of MIS techniques. With computer assisted technology, smaller incisions made possible for joint replacement surgery mean less muscle is cut and less blood is lost. In turn, this leads to shorter hospital stays and shorter rehabilitation for patients. The increased "vision" from an AchieveCAS procedure advances and strengthens minimally invasive surgery.

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Stryker is a world leader in Navigation integrating software and hardware for computer assisted solutions. Technology sets Stryker ahead of the pack with development of Smart Active wireless instrumentation. With published clinical articles proving ease of use and accuracy, Stryker is committed to this technology and its continued success with future development.

Zimmer ..... 12 & 13

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Zimmer® Computer Assisted Solutions products include advanced tools and cutting-edge technologies that work with minimally invasive and traditional surgical procedures and put Confidence in your hands®. In collaboration with some of the world's leading providers of computer assisted surgery software, Zimmer continues to evolve minimally invasive and traditional computer assisted surgery and strives to provide it in ways that simplify and revolutionize both clinical accuracy and patient outcomes.

Zimmer Computer Assisted Solutions will be demonstrating applications that enable surgical procedures utilizing cutting edge Electromagnetic and Optical technology for Knee and Hip procedures.

▼ *Montréal skyline from the Old Port*

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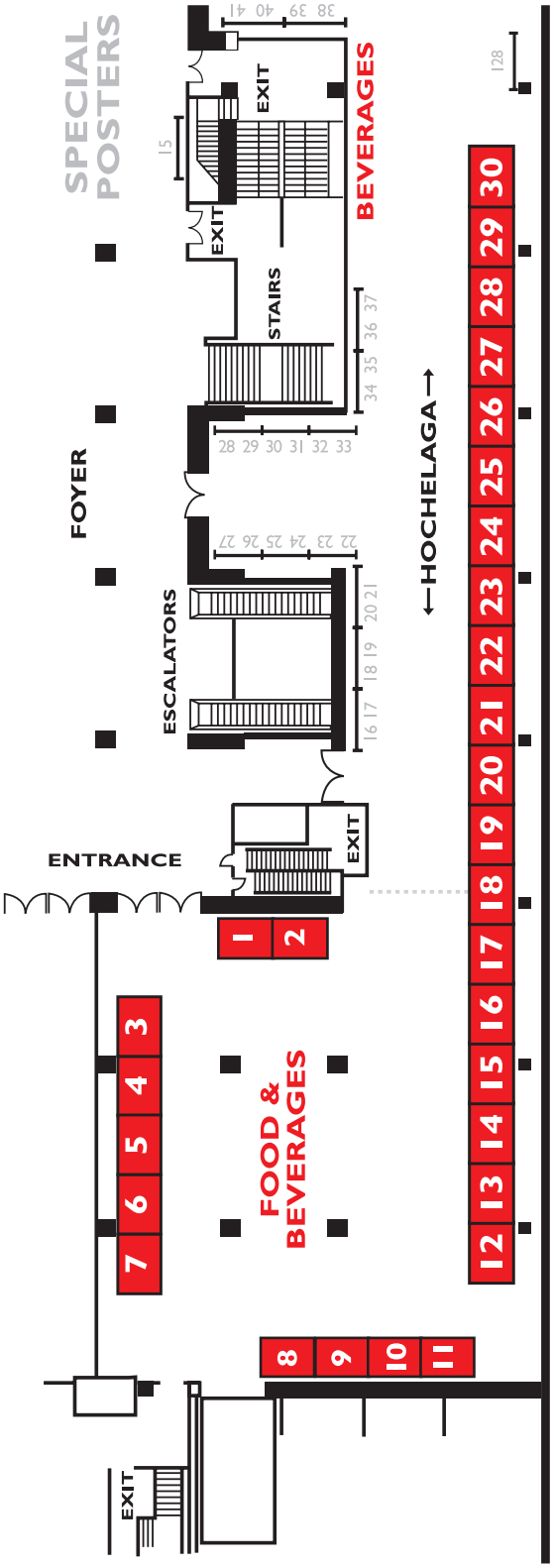

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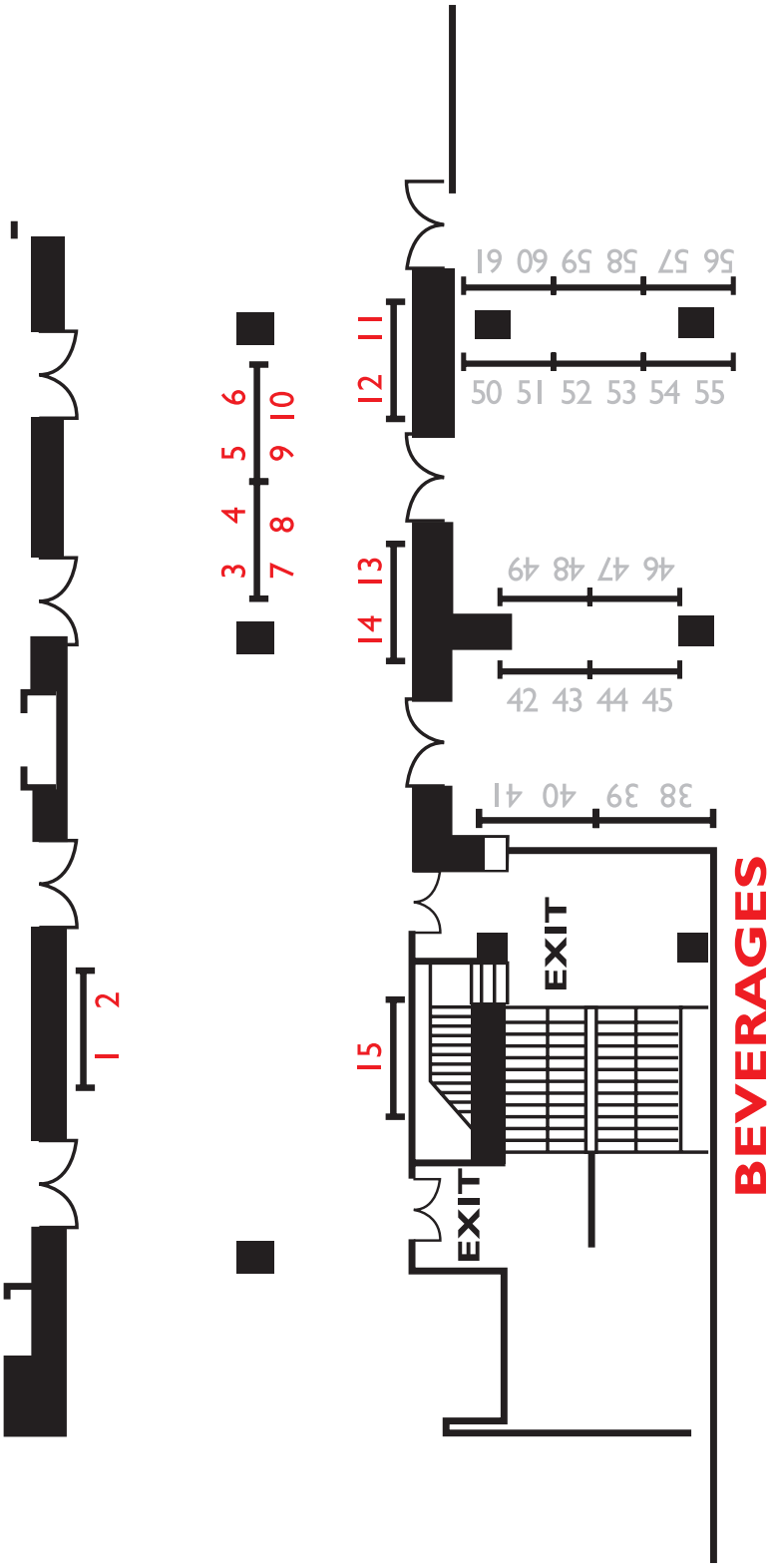

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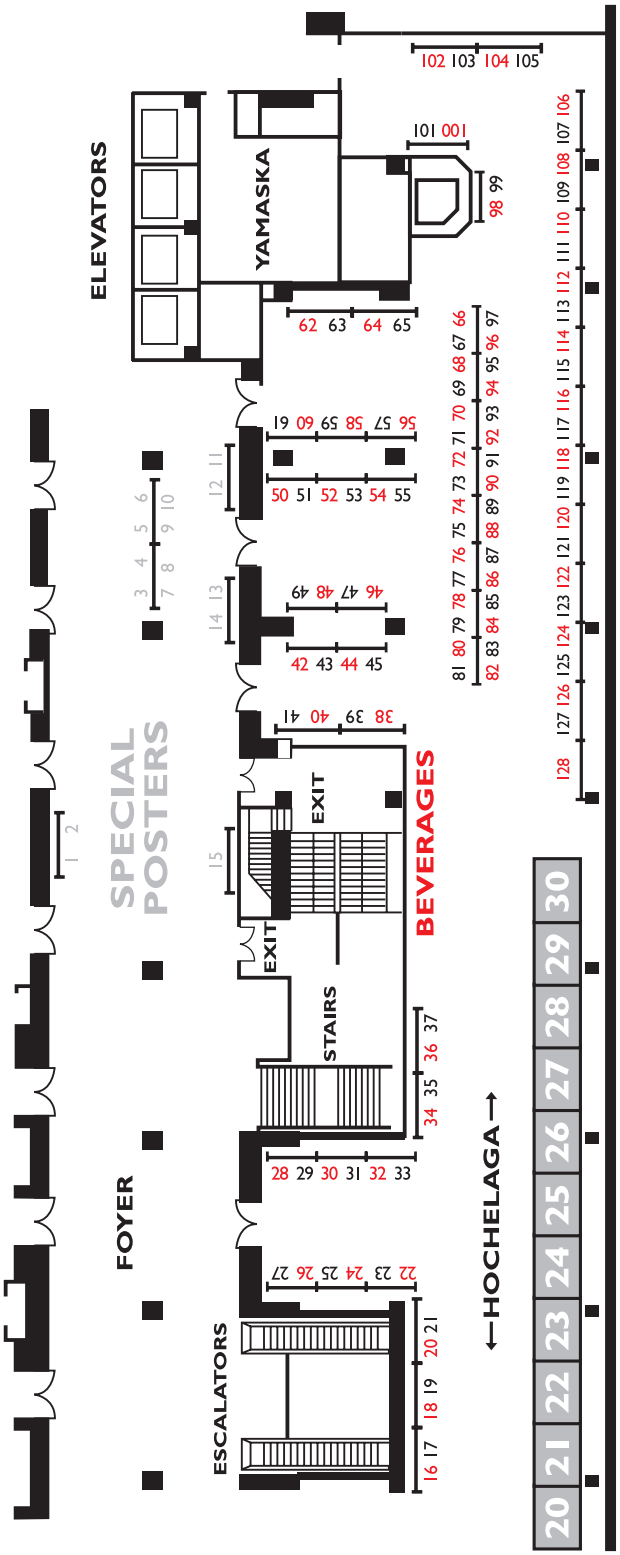

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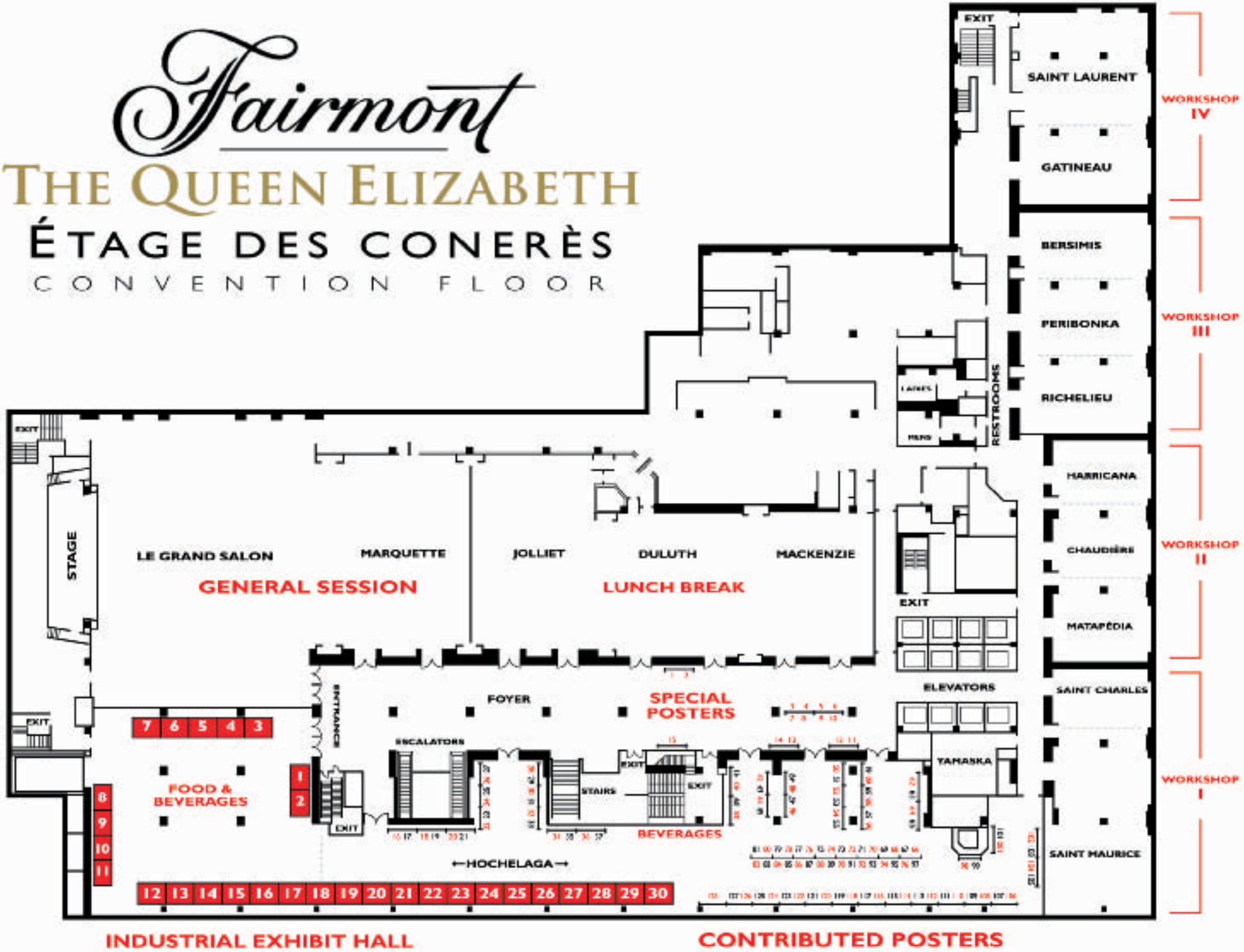

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