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# FINAL PROGRAMME

BCEC, Brisbane, Australia, 10 - 14 July 2013

## Design & Health

9<sup>TH</sup> WORLD CONGRESS & EXHIBITION



An international forum for continuous dialogue  
between researchers and practitioners

[www.designandhealth.com](http://www.designandhealth.com)  
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Media partner



A healthcare professional, a woman with blonde hair in a ponytail wearing a white lab coat, is leaning over a patient. The patient is an older man with dark hair and glasses, wearing blue and white striped hospital pajamas, lying in a hospital bed. The professional is holding a small white device and appears to be checking the patient's abdomen. In the background, there is a window with blinds and an IV stand with a drip chamber.

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# Welcome to the 9th World Congress



*Alan Dilani*

Prof Alan Dilani,  
Chief Executive Officer,  
International Academy  
for Design and Health



*Ray Pentecost III*

Dr Ray Pentecost III,  
President,  
International Academy  
for Design and Health



*Marc Sansom*

Marc Sansom, Chief  
Operations Officer,  
International Academy  
for Design and Health

## Dear Colleagues and Friends,

It is with great pleasure that we welcome you to the 9th World Congress on Design & Health (WCDH 2013) in Brisbane at the Brisbane Convention & Exhibition Centre.

Organised by the International Academy for Design & Health in partnership with Government State Health Departments, world-renowned academic institutions and health industries worldwide, a leading edge scientific programme has been created that will underpin future professional practice in health promotion by design.

The health status of people living in Australasia is one of the highest in the world, with rising life expectancies and falling mortality and morbidity rates. But the region's healthcare systems face similar challenges to the rest of the developed world, characterised by increasing cost pressures, an ageing population and a rise in the level of lifestyle diseases, most notably diabetes and obesity. In addition, Australia faces the challenge of addressing the inequities in health outcomes of its indigenous population and those living in more remote and rural areas.

In recognition that a healthy population is the foundation for social development and economic growth, Australia is undergoing a policy shift that is addressing the need to redesign its health systems to embrace health promotion and embed a preventative approach based on better education and research. At the same time, the region is enjoying a period of major health capital investment, with many new benchmark facilities recently opening or due for completion.

The leading edge scientific programme will focus on the development of a 'salutogenic approach' to health and public infrastructure investment embedded at the core of a preventative care strategy that will change the emphasis from risk factors and the treatment of disease to a more holistic understanding of a healthy society that promotes wellness.

In addition, the socio-economic and technological trends and interdisciplinary influences on design & health will be considered in a pre-congress symposium which will provide a participatory framework for delegates to explore ideas and visions for the future of health and healthcare provision.

On the final evening of the congress, the annual Design & Health International Academy Awards 2013 will be presented at a prestigious ceremony and gala dinner in the newly restored Brisbane City Hall.

The congress will be concluded with the choice of a range of impressive study tours around Queensland of state of the art healthcare facilities, including the new Gold Coast University Hospital and the new Queensland Children's Hospital.

The high quality of scientific research presented in combination with powerful case studies, an exhibition of ideas, and a varied cultural program, will ensure participants enjoy a unique knowledge-enhancing experience in Brisbane, capital of Queensland and famously known as Australia's 'Sunshine State'.

We wish you a rewarding and enjoyable congress in the beautiful city of Brisbane.



Credit Valley Hospital: Peel Regional Cancer & Ambulatory Care Centre,  
Ontario, Canada

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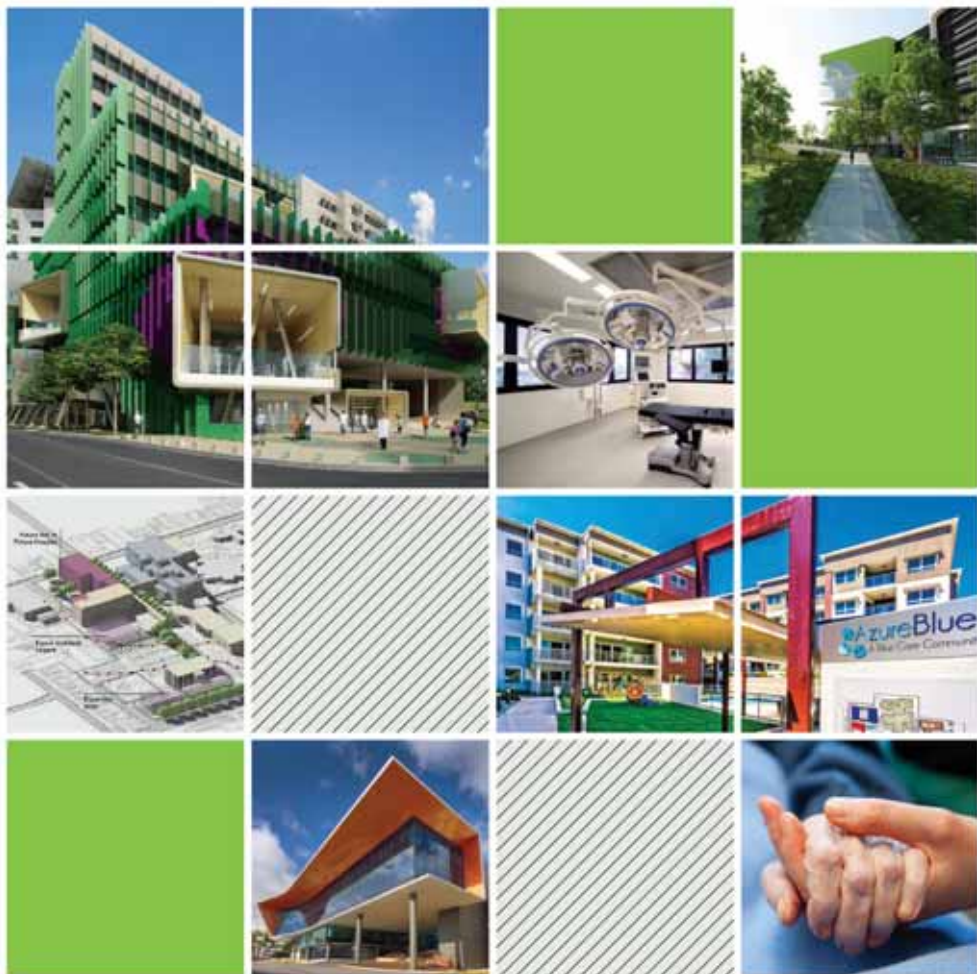
**Farrow**



# Design & Health

International Academy for Design and Health

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**For more information contact**

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## Thank you Team Australasia



*Kate Copeland*

Senior Director,  
Clinical Infrastructure,  
Health Infrastructure Branch  
within Queensland Health



*Gunther De Graeve*

Gunther De Graeve  
Managing Director  
Destravis Group

Australasian delegates have supported The International Academy for Design and Health (IADH) since its inception, and have continued to support and participate in its events and activities around the globe.

Building on the success of the 6th Design & Health World Congress in 2009 in Singapore and the success of Australian firms in the Academy awards, a small group of interested people turned their thoughts towards the opportunity for Australia to host a future World Congress and to showcase its considerable achievements in the field of design an health in recent years.

In 2011, a steering committee, jointly led by Gunther De Graeve and Kate Copeland with the energetic support of Mary Ann Russell from the Brisbane Convention and Exhibition Centre, was formed with the intention to make this a reality. The committee, nicknamed "Team Australasia", included Australian representatives on the International Academy's International Advisory Board, and representatives of Australian state jurisdictions and New Zealand. Our thanks go to all those who participated in this committee including Ian Forbes, Liz Paslawsky, Paul Barach, Bruce Wolfe, Ron Bridgefoot, Ron Billard, David Gilbert, Warren Kerr and Darryl Carey. The team later expanded to include Gavin Adams, Keith Joe, Joe Vorrasi and John McGuire.

A formal proposal to the IADH was launched in May 2011 during their Australian symposium in Melbourne, which was considered during the IADH committee meeting in Boston in July 2011, following which formal advice was provided that the bid had been successful and Australia would host the 2013 World Congress. Support for this bid was obtained from a wide range of individuals, organisations and sponsors such as Lend Lease and AECOM – and our thanks to all for their support.

Warren Kerr had also raised the issue that there was no single source of information on Australian and New Zealand hospital and health facilities, to which the committee's response was that a publication providing this information should be explored. Kate Copeland took on the task to materialise this idea and soon after, through the strong support of many companies which provided sponsorship, and the technical expertise of Marc Sansom and his editorial and production team, a hard case book became reality.

Special thanks go to all the authors who provided essays across a range of topics, to the companies and individuals who have contributed their project cases and to all of those who have participated in the planning, development, sponsorship, and production of this World Congress.

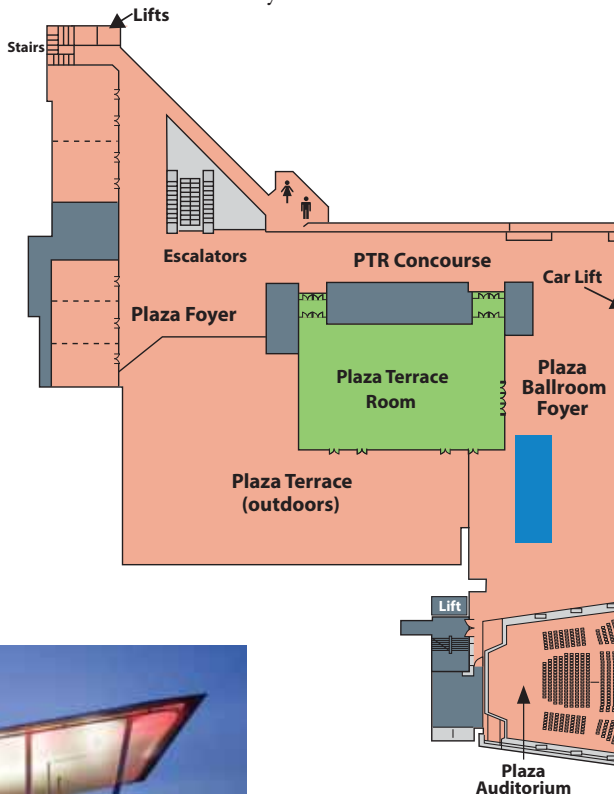
We hope that everyone who attends the Congress enjoys the Australian welcome.

# Venue information

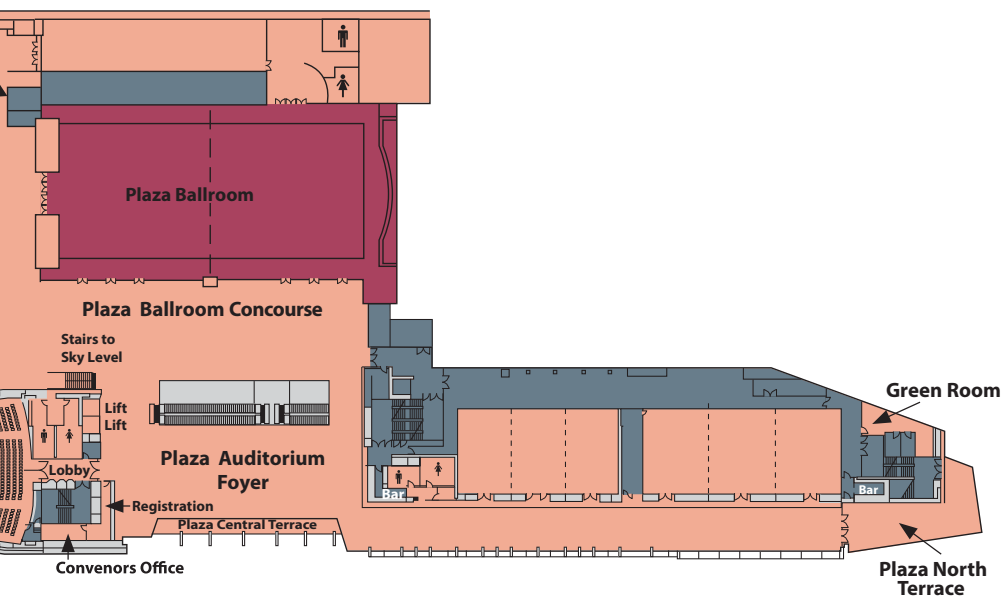
The Brisbane Convention & Exhibition Centre is situated on the South Bank, a unique riverside cultural and entertainment precinct in the heart of the city of Brisbane

Situated at the centre of Brisbane's South Bank with its lush subtropical riverfront parkland and dynamic urban lifestyle and retail precinct which showcases Queensland's art and culture, including one of the world's most important collections of indigenous art, Brisbane Convention & Exhibition Centre is established as Australia's leading convention venue.

The principal conference and exhibition activities of the 9th Design & Health Congress take place on the The Plaza Level, in the centre's signature event space, the Plaza Terrace Room where the main scientific programme will occur and the Plaza Ballroom, where the exhibition, the scientific & awards poster galleries, and the showcase programme will be held, in addition to coffee and lunch. The breakfast symposiums will take place on another level in Sky Room 1 and Boulevard Room 1 (see pp 40-41 for more information).



- REGISTRATION COUNTERS
- PLAZA BALLROOM - Exhibition, Showcases, Posters & Lunch
- PLAZA TERRACE ROOM - Main Conference



# Scientific Programme

Day 1 – Wednesday 10th July, 2013

08.30 – 18.00 **Registration at Brisbane Convention & Exhibition Centre (BCEC)**

10.00 – 17.00 **Pre-congress Symposium**  
**Future Health Lab: Designing Our**  
**Future Health System And Infrastructure**



10.00 – 10.05 **Welcome Remarks**

**Dr Ray Pentecost**, President,  
International Academy for Design & Health (USA)

10.05 – 10.10 **Chairman's Introduction**

**Dr Brendan Lovelock**, Cisco Systems (Australia)

10.10 – 10.30 **Ten Major Trends In Global Health Systems**

Luke Baxby, Partner, Health Advisory, Deloitte, Australia (Australia)

10.30 – 10.50 **The Intersection Between Human Health,**  
**Climate Change and Environmental Sustainability**

**Prof Tony Capon**, Head of Discipline, Public Health and Occupational Therapy,  
Faculty of Health, University of Canberra (Australia)

10.50 – 11.10 **Preventing Chronic Diseases In The 21st Century:**

**Are Our Health Systems, Organisations And Professionals 'Fit For Purpose'?**

**Dr Sally Fawkes**, Senior Lecturer in Health Promotion and Leadership,  
Latrobe University (Australia)

11.10 – 11.30 **Beautiful One Day: Old, Sick And Fat The Next: The Challenges of Chronic**  
**Disease, Demographic Change and Health Inequities**

**Stephen Robertson** (Australia)

11.30 – 12.00 **Coffee and Networking**

12.00 – 13.00 **CEO Panel Discussion**

CEO, Green Building Council, Romilly Madew (Australia)

CEO, AIA, David Parken (Australia)

CEO, IHEA, James Cozens (Australia)

13.00 – 14.00 **Lunch and Networking**

14.00 – 14.15 **Workshop Introduction**

**Chair, Dr Paul Barach** (Australia)

14.15 – 15.15 **Future Health Lab Workshop**

15.15 – 15.30 **Coffee and Networking**

15.45 – 16.45 **Future Health Lab Workshop**

16.45 – 17.00 **Pre-congress Symposium Summary and Close**

18.30 – 20.30 **Welcome Reception Drinks and Book Launch**  
**of Australian Healthcare Design 2000-2015, Brisbane City Hall**

## Day 2 – Thursday 11th July, 2013

08.00 – 09.30 **Late Registration**

09.00 – 09.30 **Opening Ceremony: Welcome to Country**

09.30 – 11.30 **Session 1 Opening Remarks: Visions, Challenges and Strategies**



**Chair: Gunther De Graeve**, (Australia),



Keynote Address

**The Honourable Lawrence Springborg MP and Queensland Health Minister**  
Queensland's Health Policy and My Vision



Keynote Address

**Ian Frazer, Congress Patron and CEO and Director of Research,**  
**Translational Research Institute**  
The Challenges of Health Sciences, Research & Innovation

**Alan Dilani** (Sweden), The Salutogenic Approach to Global Health Policy & Provision

**Ray Pentecost** (USA), A Perfect Storm: The Economic Challenge and The Salutogenic Response

11.30 – 12.00 **Panel Discussion**

12.00 – 14.00 **Lunch, Exhibition, Technical Showcases and Posters**

14.00 – 16.00 **Session 2: Health Policy and Infrastructure in Australia**

**Chair: Kate Copeland** (Australia)

**Glenn Rashleigh** (Australia) Queensland Government, Queensland Health

**Sam Sangster** (Australia) New South Wales Government, Health Infrastructure

**Anna Burgess** (Australia) Victoria Department of Health

**Angela Kelly** (Australia) Western Australia, Department of Health

**Grant Carey-Ide** (Australia) Australian Capital Territory Government, Health Directorate

*Panel discussion*



16.00 – 16.30 **Coffee Break, Exhibition, Technical Showcases and Posters**

16.30 – 18.00 **Session 3: Children's Health and Natural Environments**

**Chair: Paul Barach** (Australia)

**Pekka Lahdenne** (Finland) Designing the Next Generation

Pediatric Hospital in Helsinki

**Corbett Lyon** (Australia) The Salutogenic Design Framework for the Queensland Children's Hospital

**Debajyoti Pati** (USA) The Impact of Nature and Visual Stimuli on Stress

**Eve Edelstein** (USA) New Methods for Creating Healthy Environments

*Panel discussion*



19.00 – 22.00 **International Academy for Design & Health Annual Board Meeting**

Hilton Brisbane

## Day 3 – Friday 12th July, 2013

08.00 – 09.30 **Late Registration**

09.00 – 10.30 **Session 4: Innovation in Healthcare Design**



**Chair: Abd Rahim Mohamad** (Malaysia)

**Massoud Shaker** (South Africa) The International Competition for the Design of the University of Kwazuku-Natal College of Health Sciences (Nelson R Mandela School of Medicine and Associated Health Sciences) and the King Edward VIII Central Hospital

**Elke Kropf** (Australia) Developing the Functional Brief to Describe Future Hospital, SA Health

**Alice Liang** (Canada) The Hospital's Contribution to a Healthy and Vibrant Community

**Gavin Adams, John Temple, Jeff Soutar** (Australia) The Primary Care Model of the Future

Panel discussion

10.30 – 11.00 **Coffee Break, Exhibition, Technical Showcases and Posters**

11.00 – 12.30 **Session 5: Design for Mental Health**



**Chair: Keith Davis** (Australia)

**Noemi Bitterman** (Israel) The Study of the Dayroom in the Psychiatric Ward

**Celeste Alvaro** (Canada) Design for People Living with Complex Conditions

**Jan Golembiewski** (Australia) Salutogenic Design to Improve Indigenous Health

**Raechal Ferguson** (UK) David Bagshaw (Australia) Design for Mental Health

Panel discussion

12.30 – 14.00 **Lunch, Exhibition, Technical Showcases and Posters**

14.00 – 16.00 **Session 6: Culture Change, Technology and Performance in Healthcare Design**



**Chair: Steve Trevenar** (Australia)

**Gunther De Graeve, David Farlow** (Australia) Enhancing Culture and Performance through Participatory Design

**Abbie Galvin** (Australia) Using Design and Architecture as a Communication Tool

**Alastair Leighton** (Australia) Tools for Evaluating the Sustainability of Healthcare Facilities

**Kelvin Steel** (Australia) The Impact of Procurement Models on Achieving Salutogenic Outcomes

Panel discussion

16.00 – 16.30 **Coffee Break, Exhibition, Technical Showcases and Posters**

16.30 – 18.00 **Session 7: Advances in Global Hospital Infrastructure**



**Chair: Aija Thomas** (Australia)

**Steven J Goe** (Canada) North America's Most Advanced Digital Hospital

**Frank Burger** (Netherlands) The Organic Design of a New Hospital in Zwolle

**Innocent Okpanum** (South Africa) Case Studies of Successful Healthy Built Environments

**Norwina Mohd Nawawi** (Malaysia) Birthing Room Design in a Malaysian Public Hospital

Panel discussion

19.00 – 22.00 **International Academy Advisory Board Meeting**

Brisbane Polo Club

## Day 4 – Saturday 13th July, 2013

08.00 – 09.00 **Late Registration**

09.00 – 10.30 **Session 8: Sustainability and Healthy Urban Planning**



**Chair: Anthony Capon** (Australia)

**John Miller, Adam Davies** (Australia) Healthy Communities and Urban Planning

**Stephen Verderber** (USA) The Impact of City and Urban Planning on Healthy Lifestyles

**Xuemei Zhu** (USA) Evaluating Health Impacts of Walkable Communities

**Nancy Wilson, Christophe Gauthier** (Canada) Rethinking the Community Center as a Wellness Center

Panel discussion

10.30 – 11.00 **Coffee Break, Exhibition, Technical Showcases and Posters**

11.00 – 12.30 **Session 9: Health Promoting Environments and Communities**



**Chair: Cliff Harvey** (Canada)

**Mardelle McCuskey Shepley** (USA) Design Characteristics of a Healthy Work Environment

**Linda Jones, Chloe Hamman** (New Zealand)

The Effect on "Mood" of a Living Work Environment

**Judith Hemsworth** (Australia) Design Quality in Healthcare: Health Promoting Environments

**Alex Symes** (Australia) Indoor Environmental Quality that Improves Health and Wellbeing

Discussion

12.30 – 14.00 **Lunch, Exhibition, Technical Showcases and Posters**

14.00 – 15.30 **Session 10: Keynote Address And Designing for the Elderly**



Keynote Address

**Andrew Laming, Federal Member of Parliament**

**Coalition Spokesperson for Regional and Indigenous health**

The Challenge of Social and Health Inequities in Indigenous Health

**Chair: Paul Berkemeier** (Australia)

**Ian Forbes** (Australia) The Architect's Perception of Designing Environments for Dementia

**Phil Smith** (Australia) Urban Planning: Ageing in Neighborhood

**Margaret Muir** (Australia) The Experiences of Six Women Living with Dementia

15.30 – 16.00 **Coffee Break, Exhibition, Technical Showcases and Posters**

16.00 – 17.00 **Session 11: Panel Discussion:**



**The Role of Infrastructure in Health Promotion**

Representatives of Ministries of Health, International Universities and the Board of the International Academy for Design & Health

19.00 – 22.30 **International Academy Awards, Gala Dinner and Cultural Programme**

(Brisbane City Hall)

Rewarding and recognising excellence in design and health (See pp17, 42-55)



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*Ballarat Regional Integrated Cancer Centre*

# Scientific Poster Gallery

- P01 Richard Fleming (Australia)** Improving Wellbeing In The Final Stages of Dementia Through Evidence-based Environmental Design
- P02 Stuart Turk (Australia)** The New Bendigo Hospital Project: Flexible, Adaptable, Expandable and Salutogenic
- P03 Satyan Chari (Australia)** A Novel Night Lighting Scheme To Reduce Falls Among Older Hospital Patients
- P04 Gayle Souter-Brown (New Zealand)** A Salutogenic Approach To Landscape & Urban Design For Public Health & Wellbeing
- P05 Ian Mitchell (Australia)** Science And Art – A Salutogenic Experience: The Design Of The Queensland Children's Hospital
- P06 Bill Rostenberg (USA), Paul Barach (Australia)** The Hybrid Operating Room: Best Practices For Safety, Flexibility And Improved Outcomes
- P07 Francisco Ortega Montoliu (Spain)** The New Public Collado-Villalba Hospital in Spain. An Example Of A Salutogenic Hospital
- P08 Phil Nedin (UK)** The Flexibility Required To Merge Future Healthcare Provision With An Ageing Estate
- P09 Sheree Proposch (Australia)** Healthy Built Environments For Healthy Communities
- P10 Elke Kropf (Australia)** The New RAH Single Bedroom
- P11 Margaret Muir (Australia)** Nurturing Healthy Environments To Enable People With Dementia To Thrive!
- P12 Gabriella Peretti (Italy)** Humanising Guidelines For Healthcare Design
- P13 John Holm/Mika Hayward (Australia)** Wellness is an Academic Health Care Centre
- P14 Daisy Minde (Netherlands)** Moving From A Focus On The Patient To The Staff Experience
- P15 Keith Davis (Australia)** ICT Solutions: Bridging the Stakeholder And Designer Gap To Create Better Healthcare Delivery By Design
- P16 Bruce Crook (Australia)** A New 'Frontier' For Private Healthcare In Australia
- P17 Melina Thomas/Rohan Wilson (Australia)** The Victorian Comprehensive Cancer Centre – An Integrated Approach To The Discovery, Treatment And Education Of cancer Care
- P18 Allison Waters (Australia)** Performance And A Healing Environment: How Can We Support Both in Health Facility Design?
- P19 Lynne Seear/Peter Steer (Australia)** Art, Health And Wellbeing In The Design And Mission Of The New Queensland Children's Hospital
- P20 Andrew Bradley (Australia)** Healthier Communities By Design
- P21 Donald Garner, (Australia)** Case Study: Blacktown MT Druitt Hospital
- P22 Stéphane Vermeulen (Belgium)** ZNA: A New Integrated, Healing Environment In Antwerp's Lap
- P23 Xuemei Zhu (USA)** Learn From The Differences: Hospital Design In China And The USA
- P24 Raquel Casas Huelin (Australia)** Improving Design, Clinical And Community Outcomes And Construction Delivery Through An Innovative Public And Private Partnership Model
- P25 Jennifer Hands (Australia)** Challenging Acute Inpatient Ward Design Paradigms Utilising Evidence-based Design Attributes

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## Cultural perspectives

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Join your professional colleagues and friends at the Welcome Dinner and Gala Awards Dinner for two special evenings of traditional Australian culture, networking and celebration

### Welcome Drinks Reception

**Venue: Brisbane City Hall**

**Date: Wednesday 10 July, 18.30-20.30**

The International Academy for Design & Health's director-general, Dr Alan Dilani, and president Dr Ray Pentecost III, will be joined by the Honourable Jane Stuckey, Queensland Minister for Tourism, Major Events, Small Business and the Commonwealth Games in providing a warm welcome to friends from Australia and around the globe to the 9th Design & Health World Congress & Exhibition.

The welcome presentations will be followed by the launch of *Australian Healthcare Design 2000-2015*, edited by Kate Copeland of Queensland Health and published by the International Academy for Design & Health.

Musical entertainment will include Toby Wren, a jazz composer and improviser. Toby has had orchestral pieces performed by the Queensland, West Australian and Sydney Symphony orchestras, written arrangements for rock bands like George, Rhubarb, Blind and Chris Pickering and been a member of countless jazz, rock and new musical groups.

Cultural entertainment will be provided by the Koomurri Aboriginal Dance Group, a mesmerizing indigenous performance including a song man, a didgeridoo player and dancers performing traditional aboriginal dance and song that will totally captivate!



### Gala Academy Awards Dinner

**Venue: Brisbane City Hall**

**Date: Saturday 13 July, 19.00-22.30**

Providing delegates with an opportunity to experience Australia's world famous hospitality, the evening feature two leading acts.

Jazz Australis will combine all their experience with the smooth sounds of Nick Hollamby. With over a 1000 gigs together Jazz Australis provide the perfect backdrop for Nick. Charming yet unassuming, charismatic yet unpretentious you can't help but be seduced by the voice and persona of Nick Hollamby.

The evening will also feature Troy Allen, who has been playing Didgeridoo for over 25 years.

Originating from Bundjalung Country in northern New South Wales, Troy has played nationally and internationally to a diverse range of clients, including the Prime Ministers of Australia and Ireland, the Queensland Premiers Department, the Governor General of Australia and New South Wales Premiers Department.

The entertainment on this night provides the ideal backdrop to the Design & Health International Academy Awards 2013, a celebration of design excellence in healthcare design, from all over the world. For more information, see pp42-55.



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# Design & Health Showcases

Venue: Plaza Ballroom

11 July 12.30-12.55 **Shanghai Hospital Development**  
Professor Fang Chen, Vice Director, Shanghai Hospital Development

11 July 13.00-13.25 **Good Preparation And Briefing:  
The Foundation For Good Design**  
Craig Dixon, Director, Capita Consulting

**CAPITA**

11 July 16.35-17.00 **Designing And Delivering The  
Sunshine Coast University Hospital**  
Mark Buckle, Project Director,  
Healthcare and Scientific Research, Lend Lease

**Lend Lease**

12 July 10.35-11.00 **Maximising The Landscape In Designing  
For Wellbeing**  
Julian Ashton, Principal, BVN Donovan Hill

**BVN**

12 July 12.45-13.10 **Improving Design, Clinical And Community  
Outcomes And Construction Delivery Through  
An Innovative Public Private Partnership Model**  
Raquel Huelin, Senior Associate, HASSELL

**HASSELL**

12 July 13.20-13.45 **The ENDOALPHA OR At The John Flynn  
Private Hospital**  
Greg Jenke, CEO, John Flynn Private Hospital, Australia

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12 July 16.05-16.30 **Peak Performance In Healthcare – ICT Case Studies  
In Public And Private Hospitals**  
Richard Morrison, National ICT Manager,  
Norman Disney & Young, Australia

**Norman  
Disney &  
Young**

13 July 10.35-11.00 **Virtual To Reality: Simulation Modelling  
In Health Facilities**  
Steven J Goe, Senior Vice President and  
Director of Health Strategy, HDR, USA

**HDR**

13 July 12.45-13.10 **Healthcare: Learning From Peru**  
Professor Bas Molenaar, Director, EGM, the Netherlands

**EGM**  
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13 July 13.20-13.45 **Vienna North Hospital: High Tech Meets High Touch**  
Albert Wimmer, CEO, Albert Wimmer ZT, Austria

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Thursday 11 July 2013, 12.30-12.55

## Shanghai Hospital Development Center

China is undergoing nationwide reform of the healthcare system involving the provision of insurance, medication and medical treatment. The health insurance system currently covers more than 90% of the population and an essential system of medication provision has been established. Current emphasis is the reform of the public hospital and related service system.

Shanghai Hospital Development Center was founded in September 2005, and is a state-owned, non-profit public service institution with responsibility for investment, management and operation of the state assets of municipal public hospitals, as well as running hospitals on behalf of the government.

Between 2001-2010, 55 hospital renovation and construction projects have been undertaken, with an overall investment of RMB19bn. As a result, hospital beds have increased 42% (from 15,588-22,102) and the building area has increased 61% (from 1.146m sqm to 1.847m sqm).

Environmental protection and energy saving are the basic principles in present hospital renovation and construction in Shanghai. Based on the hospital development plan, the renovation design must be human oriented, economic and applicable, land and energy saving, operation and maintenance expense saving.



### Professor Fang Chen

Shanghai Hospital Development Center, China

Dr Fang Chen has served as vice director of Shanghai Hospital Development Center since 2012. Previously, he was the president of Shanghai Children's Hospital and vice president of Xin Hua Hospital, affiliated to Shanghai Jiao Tong University School of Medicine. Dr Fang Chen has held leadership roles in the health service industry for over 25 years, including a successful career in public health care in Shanghai. He is committed to healthcare design, environmental protection and energy saving in hospital renovation and construction. Dr Fang Chen was a visiting scholar of Harvard Medical School and Boston Children's Hospital by national scholarships. He is a member of the Section of Urology, American Academy of Pediatrics, the chairman of the Academic Committee at the Asian-Pacific Academy of Pediatric Urology and a member of the Editorial Committee for World Journal of Pediatrics.

# CAPITA



## Working with you to achieve better healthcare for all



Capita is at the heart of helping reshape the delivery of international healthcare.

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For further information please contact:

Craig Dixon, Director  
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[www.capita.co.uk/consulting](http://www.capita.co.uk/consulting)



# CAPITA

Thursday 11 July 2013, 13.00-13.25

## Good Preparation And Briefing – The Foundation For Good Design

This presentation is based on the hypothesis that good preparation and briefing will lead to good engagement with designers and to good facility design.

This presentation will

- Present a methodology for assessing whether to invest in service change or infrastructure development
- Describe what 'good preparation and briefing' might consist of
- Detail what key elements should be included in the brief
- Explain how those key elements might be achieved, including the role of the client, and clinical stakeholder involvement.



**Craig Dixon**

Director, Capita Consulting, UK

Craig has provided specialist healthcare planning advice to capital schemes around the world using all of the currently available procurement methods and is currently leading the development of Capita's international healthcare planning business. Prior to entering the private sector in 2001, he worked in strategic and operational management and commissioning roles within the UK National Health Service (NHS) for eight years. His NHS experience includes roles with acute, community, mental health and primary care service providers. He holds a masters degree in Public Service Management and an honours degree in Public Administration.



# CREATING BETTER PLACES FOR AUSTRALIAN HEALTHCARE

Images: Lend Lease. Clockwise from above: the new Royal Children's Hospital, Victoria; Bendigo Hospital, Victoria; Liverpool Hospital Redevelopment, NSW; North Shore Private Hospital, NSW; Ipswich Hospital Expansion, Queensland; Sunshine Coast University Hospital, Queensland; Gold Coast University Hospital, Queensland.



Lend Lease are proud to partner with Government and private providers to deliver some of the best healthcare facilities in Australia.



**Lend Lease**



Thursday 11th July 2013, 16.35-17.00

## Designing And Delivering The Sunshine Coast University Hospital

Lend Lease, as a member of the Exemplar Health Consortium, are working with Queensland Health to deliver the new \$1.8 billion Sunshine Coast University Hospital. It will open with approximately 450 beds in 2016, growing to a 738 bed facility by 2021.

The Sunshine Coast University Hospital is being developed as part of the 20 hectare Kawana Health Campus that will incorporate the hospital's Skills, Academic and Research Centre (SARC), a co-located private hospital, and the Kawana Health Innovation Park that will accommodate other health-related commercial developments.

The project is the first healthcare PPP completed in Queensland, and makes Lend Lease the first design and construction provider to be awarded two \$1B+ health PPP's in Australia.

This presentation will talk through the bidding process, some of the winning points of the solution, how the design development process has progressed to date, and how we are using an approach to prototyping to help communicate and resolve design answers and enable the project to move efficiently from design to construction.



### Mark Buckle

Project Director, Healthcare and Scientific Research, Lend Lease

Mark has over 22 years' experience in the management and leadership of construction and property management and is currently the project director on the \$1.6 billion Sunshine Coast University Hospital in Queensland. Mark brings substantial knowledge and experience in clinical planning, healthcare equipment and project and design management. Mark joined Lend Lease in 2004. During this time he has been instrumental in the success of some of Lend Lease's most ground breaking healthcare developments. These include his role as project director on the Manchester Joint Hospital Project, the largest single healthcare investment ever undertaken in Greater Manchester, and the senior project manager on the new Romford Hospital project - a complex new build that included 939 beds, 16 theatres and two interventional theatres. Mark is a lecturer at Southbank University on Healthcare Design Management and Construction Delivery.



## 'Designing for well-being'

Robinson Hospital  
Public Health Queensland  
[www.bvn.com.au](http://www.bvn.com.au)

**BVN**

Donovan Hill



Friday 12 July 2013, 10.35-11.00

## Maximising The Landscape In Designing For Wellbeing

The Australian condition arguably offers more opportunities to incorporate significant landscape elements into hospital and healthcare facility design. Current projects by BVN Donovan Hill are located in rural settings that provide sites on which integration of the natural environment is abundant. Taking into account the considerable research on patient recovery time in wards looking out on vegetation, gardens, trees and landscaped views, the options of different types of plans to maximise these settings have been thoroughly explored.

From this process, a set of masterplanning aspirations have been derived for a new regional hospital. Central to these aspirations is the retention of a strong connection to landscape that instills an awareness of the project's specific 'place'. This informs the hospital's siting, optimising its northerly aspect on the edge of the river, and will be a driver in determining an appropriate identity for a regional facility sited in a rural landscape. Planning is generated from a central transparent space able to connect the activity of the new hospital precinct with the landscape beyond, and imbue the facility with a sense of openness, restfulness and healing. Perspectives reveal potential patient spaces, wards and community lounge areas, with exceptional natural views, and the final design has already been received with a universally positive response.

The presentation will include a film incorporating conversations with local health executives about their concerns and hopes for patient welfare in the new hospital, as well as a fly-through of the proposed development, which is now under construction.



Julian Ashton

Principal, BVN Donovan Hill, Australia

Julian has extensive experience in the areas of health, research and education. Previously a director of Silver Thomas Hanley and a principal of Daryl Jackson Robin Dyke, he has been involved in all aspects of project delivery including masterplanning, user group consultation, documentation and contract administration. His interest is in bringing these areas of expertise together and applying them to each new building challenge. Predominantly undertaking health and research projects since joining BVN in 2009, Julian has worked on a number of major projects including the AU\$200m Campbelltown Hospital Redevelopment with clinical and mental health components, the AU\$100m Kinghorn Cancer Centre, the AU\$170m Bega Hospital and recently, conceptual masterplan proposals for a number of regional hospitals in New South Wales, including Goulburn, Parkes, Forbes, Kempsey and Lismore.

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**HASSELL**

# HASELL

Friday 12 July 2013, 12.45-13.10

## Improving Design, Clinical And Community Outcomes And Construction Delivery Through An Innovative Public And Private Partnership Model

The presentation will provide delegates with a focused overview of the design and procurement phases for the new St John of God Midland Public and Private Hospitals in Perth, Western Australia. Upon completion, the hospital will offer 307 public beds and 60 private beds to the Midland and surrounding catchment via a successful variant to the traditional PPP model that is being implemented by the government of Western Australia. HASSELL was awarded the contract to design and construct the new facilities in mid 2012 following a competitive bid phase. The design embodies significant design and operational advancements to deliver an extremely efficient design in terms of clinical design, community interface, programme and cost.

The formation of a co-located design and construction team from the outset – comprising St John of God healthcare service planners, operational managers, HASSELL integrated design team and Brookfield Multiplex design and construction managers – ensured a holistic approach to the design, construction and operations of the new hospital that will meet the comprehensive targets set by the state at a cost that is 30% lower than other comparable hospitals recently constructed in the region. The partnership is delivering affordable excellence in clinical and operational services design, construction and financing, while setting high standards in the provision of a healing environment for patients, a quality and safe workplace for staff and a valued and integrated community healthcare facility. The presentation will discuss the process and the outcomes that have delivered a successful partnering arrangement between a state and private healthcare provider.



**Raquel Huelin**

Senior Associate, HASSELL, Australia

Raquel is a senior associate in HASSELL's Perth studio, currently leading the clinical planning team for the St John of God Healthcare/Brookfield Multiplex partnership on the AU\$410m Midland Health Campus. She specialises in the design of healthcare facilities and has extensive experience from the initial feasibility stages through to managing the design, assisting clients in brief development and in achieving the best possible outcomes. From graduation in Spain, Raquel started her professional career working in different healthcare projects from inception to completion and later, she joined the Andalusia Health Service as an independent consultant. Raquel made the move to the UK in 2002 and worked in several PFI schemes and direct commissions from hospital trusts, working as a practice director for Llewelyn Davies Yeang. She was involved in several international projects in the Middle East and SE Asia. Raquel has worked at the forefront of healthcare design for many years and has been involved with several well-reputed clients such as Great Ormond Street Hospital for Children, Papworth Hospital, Addenbrooke's Hospital, Broomfield Hospital, Oxford-Radcliffe and Cho Ray Hospital.



## Perfecting the Art of OR Integration

Introducing ENDOALPHA, the world's most advanced laparoscopic operating theatre, recently installed at John Flynn Private Hospital in Queensland, Australia.

When John Flynn Private Hospital had a vision of providing world-class working facilities for their clinicians, Olympus were able to make it a reality by delivering Australia's first fully integrated glass-modular operating room.

The new generation of ENDOALPHA OR's provide an unrivalled working environment by incorporating the latest in modular glass construction technology, with state-of-the-art digital integration for video management, communication and documentation, into one seamlessly integrated platform that inspires both medical staff and patients alike.

Increased efficiency, clinical value and inspired teams are key factors to any hospital's future success. With ENDOALPHA, this can become reality.

**To find out more about ENDOALPHA, contact your local Olympus representative or follow the web links on the right.**



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[endoalpha.tv](http://endoalpha.tv)



Friday 12th July 2013, 13.20-13.45

## The ENDOALPHA OR At The John Flynn Private Hospital

In 2011, John Flynn Private Hospital, based on the Gold Coast, Queensland, embarked on a project to refurbish an existing operating theatre that had, up until that point, been used as an ICU store room. What began as a simple technology upgrade, to enable procedures to be conducted in the room, resulted in an operating theatre unlike any other in Australia.

Through its partnerships with Olympus and Draeger, John Flynn Private Hospital were able to completely transform the existing space into Australia's first fully integrated glass modular operating theatre. In September 2012, John Flynn Private Hospital launched the world's most modern ENDOALPHA OR after a two month reconstruction phase and is now setting the bench mark for theatre design and technology in the region.

Encased in stunning blue glass, the ENDOALPHA OR has provided a highly motivating working environment for the surgeons and clinical staff that is second to none and allows for outstanding flexibility with regards to construction and serviceability. Furthermore it provides a raft of technology features that vastly enhances the working experience for all involved and creates a soothing ambience for patients.

A visit to see the ENDOALPHA OR at the John Flynn Private Hospital is an additional option available to delegates on Study Tour 1 to the Gold Coast University Hospital and the Robina Hospital (see pp57-59).



### Greg Jenke

Chief Executive Officer, John Flynn Private Hospital, Queensland, Australia

Greg Jenke is the Chief Executive Officer of John Flynn Private Hospital. In this role he oversees the strategic and operational performance of the hospital. John Flynn Private Hospital is a 323 bed medical, surgical and obstetric hospital located in the Southern Gold Coast and has an ICU, ECC, Rehab, Renal Dialysis and Day Surgery. Greg has considerable experience in hospital management of both public and private hospitals, spanning 28 years and across four states. Greg has held executive positions in Port Lincoln and Clare District Hospitals, both public, in South Australia as well as Mildura Private Hospital in Victoria as a regional management role for Baringa (Coffs Harbour), Tamara (Tamworth) and Port Macquarie Private Hospital in New South Wales. Having had experience in both public and private health sectors he understands the importance of a collaborative approach to the relationship between public and private to ensure the mutual benefit

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Adelaide Brisbane Canberra Darwin Gold Coast Melbourne Perth Sydney Auckland Christchurch Wellington London Dubai Kuala Lumpur



Friday 12 July 2013, 16.05-16.30

## **Peak Performance In healthcare – ICT Case Studies In Public And Private Hospitals**

Find new opportunities to deploy ICT infrastructure by embracing mobile device technologies, while reducing technology spend and supporting wellness management beyond the hospital boundaries. This session reviews the business case for the fundamental platforms, reviews the emerging applications and provides a contrast between the public and private environment across regions highlighting key trends.



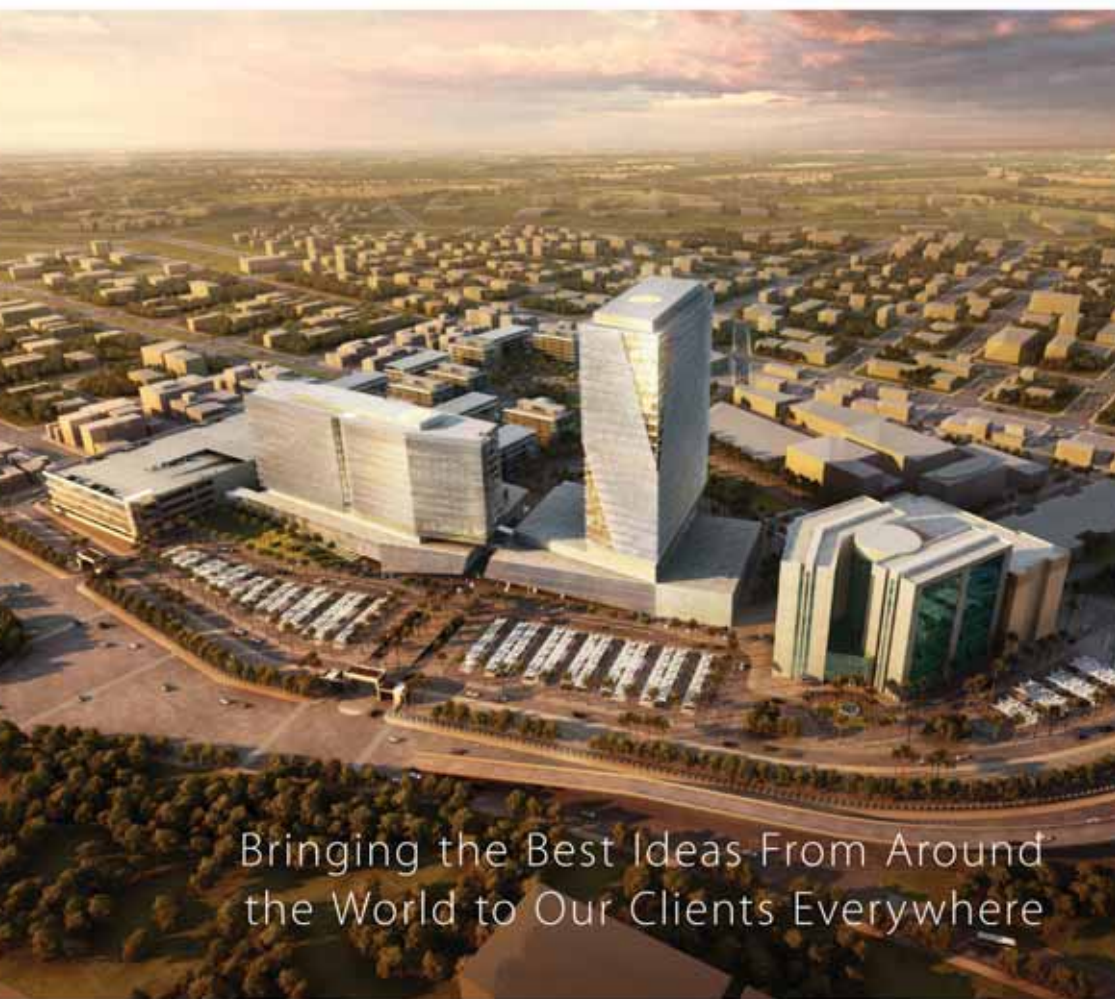
### **Richard Morrison**

National Information And Communications Technology Manager,  
Norman Disney & Young, Australia

With more than 16 years' industry experience as a computer systems engineer and 12 years with Norman Disney & Young, Richard leads NDY's information communications technology (ICT) consulting group. A highly experienced senior IT management professional, Richard has a Bachelor of Engineering (Computer Systems) with Honours from the University of Technology, Sydney. Working across diverse markets, including health, transport, mission critical and buildings, Richard has successfully delivered a range of ICT projects, including new public and private hospitals in Australia, with a proven track record of leading challenging projects.



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Saturday 13 July 2013, 10.35-11.00

## Virtual to Reality: Simulation Modelling In Health Facilities

A simulation is a virtual, 3D testing ground for change, allowing healthcare organisations to maximise the impact of their investment in resources and processes before actually making the investment. This presentation will demonstrate how simulating strategies and operational changes in a virtual environment – prior to live implementation – can be an effective tool in realising an impressive return on investment and ensuring strategic goals are met. It will include a case study of how the Nebraska Medical Center (NMC) used simulation modelling for its future Comprehensive Cancer Center to streamline operating room utilisation, reduce surgeon travel distances and frequency, reduce patient travel distances and reduce turnover times by services and by patient type.

NMC user groups worked with a simulation modeling team to map current processes using the hospital's current information from both the hospital operating system as well as the surgical information system (actual arrival times, staffing models, resource utilisation, durations, travel distances, etc). The hospital was then able to make decisions on the location and number of ORs – and the services and operations within them – not on a gut feeling, but on actual data proving that these strategies would be most effective.



### Steven J Goe, FACHE, EDAC

Senior Vice President, Director of Health Strategy, HDR, USA

Drawing upon more than 25 years of executive-level experience in the healthcare industry, Steven offers a wide range of expertise in health system planning, operational and clinical redesign, strategic planning and business development. Incorporating his experience as a hospital CEO in a large healthcare delivery system, he assists health systems by analysing, developing and recommending short- and long-range strategic and facility solutions for optimal financial performance and quality outcomes. He led the development of a long-range planning tool, Imagining Healthcare Delivery in the Future, which he has successfully used to assist hospitals in forecasting future scenarios about the external and internal forces driving their success. Recent experience includes the programme review and concept planning for the Northern Beaches Hospital Campus in Sydney, Australia, and the Humber River Regional Medical Center in Toronto, Canada.

## CREATING EXCEPTIONAL CANCER CARE FACILITIES



The Victorian Comprehensive Cancer Centre (VCCC) is a new \$1 billion world-class cancer centre being built in Melbourne, Victoria. The VCCC aspires to be the best cancer centre in the world through the collaboration of recognised leaders in cancer research, care, treatment, education and training. The VCCC is a powerful alliance between Peter MacCallum Cancer Centre, Melbourne Health, The University of Melbourne, Walter and Eliza Hall Institute of Medical Research, The Royal Women's Hospital, The Royal Children's Hospital, Western Health and St Vincent's Hospital Melbourne.

The VCCC is being undertaken by joint-venture partners Silver Thomas Hanley (STH) and DesignInc (DI), plus McBride Charles Ryan (MCR) Architects. The Joint-Venture was created specifically to deliver exceptional major health projects across Australia. The collaboration brings together outstanding creative and technical knowledge in an exemplary team with extensive national and international experience.

Construction of the VCCC commenced in 2011 and is scheduled to be completed by the end of 2015.

[www.sth.com.au](http://www.sth.com.au) [www.designinc.com.au](http://www.designinc.com.au) [www.vcccproject.vic.gov.au](http://www.vcccproject.vic.gov.au)

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Saturday 13 July 2013, 12.45-13.10

## Healthcare Design: Learning From Peru

Paz-Holandesa is a Peruvian foundation whose core business is to organise and provide affordable medical help to children. In 2005, EGM architects decided to adopt and fund this initiative by designing a children's hospital, which opened in 2012. Now operational, the hospital's overwhelming success is already challenging capacity.

The facility is situated in Arequipa, one of Peru's largest cities, also known as 'the white city' as many of its buildings are constructed by using local white volcanic sillar stone. As the area is frequently hit by earthquakes, its buildings are mainly kept low. The small complex is conceived as a collection of small pavilions in which different functions are located. Thus the design meets two important criteria; earthquake resistance on the one hand and different functions, expressed in small scale buildings on the other hand. Building materials are from local origin, such as the sillar stone, timber window frames and wall plaster. The result is a simple, small-scale hospital with stunning details, leading the daylight inside to reflect on the surprisingly beautiful and colourful 'made as you go' concrete floor.

Although this seems far away from the current high tech, complex and competitive design challenges we face in our daily practice, it provides a clear focus on the essential values in designing healthcare buildings. Architects should design buildings for all people, rich and poor, to make healthcare accessible and to enable people to take control over their own health.



**Bas Molenaar**

Director, EGM, the Netherlands

Bas started his career at EGM architects in 1977 directly after finishing his Masters at the Eindhoven University of Technology, and has been a board member since 1993, leading a team of architects that focuses on healthcare architecture and urban design. Distinctive projects include the OLVG hospital in Amsterdam, the Wilhelmina Children's Hospital in Utrecht and the Albert Schweitzer hospital complex at the Health Park in Dordrecht. His smallest project was the children's hospital Tony Moleapaza in Arequipa, Peru and his largest project, currently under construction, is the Erasmus Medical Centre, a university complex in the heart of Rotterdam. From 2004 until 2010 Bas was professor of healthcare architecture at the Eindhoven University of Technology. Internationally he plays an active role in the UIA Public Health Group and he is an ambassador for the Dutch Union of Architects (International Health).

# CREATING STIMULATING, SAFE & SECURE HEALTHCARE ENVIRONMENTS FROM TRIED & TESTED FENESTRATION



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ALBERT WIMMER

Saturday 13 July 2013, 13.20-13.45

## Vienna North Hospital – High Tech Meets High Touch

Vienna North Hospital is an important step in reconstructing the Viennese hospital landscape, one of seven specialised hospitals in the city. Establishing a partly new set of priorities in the other hospitals, combined with shifting existing hospitals and departments from their present location to the Vienna North Hospital, is significantly improving healthcare services.

The new hospital provides a light-flooded atmosphere as well as an optimal solution for workflow and organisational processes. The design combines the advantages of a pavilion-type hospital with those of a central hospital. The modular expandability ensures the state of the art for many years. The invitingly shaped foyer area, featuring a spacious piazza, connects the hospital with the urban space while at the same time providing optimal protection against noise on account of the building's position.

The rooms are designed exclusively as single and twin rooms, which reflect the high-standard finish of the inpatient wards. Light-flooded atriums, roof gardens and extensive green spaces combine to make the hospital an oasis of wellbeing for patients and employees alike. The landscape design unites the ideas of wellbeing, healing, growth and recovery. The holistic overall concept provides clarity, optimal functional processes, clear organisation, short distances for the nursing staff to get to the patients, and complex networks. The 800-bed hospital will unite state-of-the-art standards with as much comfort as possible.



### Arch DI Dipl TP Albert Wimmer

CEO, Albert Wimmer ZT GmbH, Austria

Albert Wimmer's architecture studio was founded in 1977. Among others, the realisation of large-scale projects such as Vienna's Freudenu power station of Vienna, Austrian football stadiums in Innsbruck, Salzburg and Klagenfurt, and the EURO 2012-Stadium in Lviv, Ukraine, were enabled through major successes in competitions. With the building of the new Vienna North Hospital, Albert transfers his wide-ranging experience to the creation of a health facility that sets new standards to a patient-oriented hospital of the 21st century. His architectural philosophy is based on the belief that architecture can and ought to contribute its part to create and support an open society; this central duty applies to residential buildings as well as to urban planning projects, leisure centres or health projects. Innovation, an emphasis on social responsibility, and the integration of emotions in the design process, keep the spirit of a space or a site alive and create liveliness and wellbeing.

## Breakfast Symposiums

At this year's World Congress in Brisbane, delegates have the opportunity to participate in a new series of specially arranged sponsored breakfast events.



Dr Josef Hollthaler

**07.30-08.30 - Thursday 11th July, 2013**  
**Room S1, BCEC**

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### **Assess. Change. Treat. A Symbiotic Approach in Hospital Planning to Optimise Processes, Assets and Quality of Care**

- Act on Radiology - A systematic approach methodology to make clinical processes transparent and to optimise clinical disease management
- Management Equipment Service - A holistic approach to asset performance, availability, optimisation and replacement

**Dr Josef Hollthaler**, Management Consultant, Siemens AG Healthcare Sector  
**Andreas Roost**, general manager, Value Added Services, Healthcare, Siemens



Andreas Roost



Phil Nedin

**07.30-08.30 - Friday 12th July, 2013**  
**Room S1, BCEC**

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### **Get On Your Soap Box: Re-thinking Healthcare for the 21st Century**

Future affordable healthcare systems and the associated delivery infrastructure is one of the most pressing issues we face globally in the 21st century. Different countries have different funding arrangements for the delivery of healthcare; however diseases and challenges are common. The simple solutions have been used up and we find ourselves in a complex world of 'co-benefits' and 'unintended consequences'. The problems are more complex and their solutions require broad multidiscipline analysis and activity:

- The dilemma of public/political healthcare
- Providing healthcare through a market-demand model
- The value of a healthy population to a growing economy and its cost
- The responsibility of the individual and the information available
- The expectation of the patient of the future, the effectiveness of e-health
- A focus on wellness, not illness
- Healthcare as a metric for inequality
- What does the success of 'next generation' healthcare look like?

Get on your soapbox with Arup's global health leaders to have your say on how these social, economic, political, scientific and clinical issues interlink in the creation of amore ecologically sustainable and fit for purpose future healthcare infrastrucutre.

**Phil Nedin**, Director, Global Business Healthcare Leader, Arup  
**Andy Bradley**, Principal, Building Services Leader, Arup Australia



Andy Bradley



Digby Hall



Matt Coetzee



Kelvin Steel

**07.30-08.30 - Saturday 13th July 2013**  
**Room B1, BCEC**

Sponsored by



## **Can Hospitals Heal the Community? Applying Science, Research and Innovation In Our Healthcare Facilities To Help Reshape Our Cities**

Health infrastructure and health service delivery are becoming increasingly integral in community design and structure, physically, socially, economically and environmentally. Hospitals provide education and community services and they teach communities to live healthier and happier lives.

With approximately 60m people moving into the world's cities every year, each with an expectation of better access to jobs, better education for their children, better healthcare and a better quality of life, the demand on healthcare and health systems is increasing, placing significant pressure on our health infrastructure and on health service delivery.

Megacities, environmental hazards, fast growing and aging societies all require healthcare facilities that are highly efficient, with capacity to change and grow to meet future health service needs. Being able to provide hard and soft infrastructure which is well-planned, designed, constructed, maintained, operated, governed and funded is the most critical factor in meeting customer expectations. The opportunity not to contain urbanisation, but to understand how it is possible to enhance urban resilience, quality of life and economic growth.

Four experts will debate these keynote issues of our time:

**Chair: Dr Peter Steer**, Chief Executive Officer,  
 Children's Health Service, Queensland Health, Australia

**Digby Hall**, Senior ESD Specialist, Aurecon, Australia

**Matt Coetzee**, Urbanisation Leader, Aurecon, Australia

**Kelvin Steel**, Project Director, Aurecon, Australia

## Academy Awards

Book now for the Gala Dinner and Academy Awards Programme on 13 July

### Setting benchmarks in global health design

The 2013 Design & Health International Academy Awards is the leading advocacy programme recognising professional excellence in the research and practice of designing healthy built environments

The Design & Health International Academy Awards programme has a significant influence on the global design and development of humanistic environments that support health, wellbeing and quality of life around the world.

Awards will be presented in nine categories across the key areas of international healthcare delivery, including: International Health Project (over 40,000sqm); International Health Project (under 40,000sqm); Future Health (Unbuilt) Project; Mental Health Design; Salutogenic Design; Sustainable Design; Use of Art in the Patient Environment; Interior Design Project; and Product Design for Healthcare Application. The criteria and judging panel, as well as the finalists and shortlist for each award category are highlighted in the following pages.

The Academy will also present a Lifetime Leadership Award to a leader and visionary who has shown ongoing commitment to enhancing the health, wellbeing and quality of people's lives

**Venue: Brisbane City Hall**

**Date: Saturday 13th July**

**Time: 19.00 – 22.30**

through research, education and the creation of healthy built environments.

The recipients of this year's awards will be teams who, through unique and outstanding efforts, have demonstrated vision and leadership in exemplary initiatives and projects. Open to international organisations and individuals in both the private and public sectors participating in either research or practice, including the planning, procurement, design, construction and management of healthy built environments, only design projects or research programmes completed between 1 January, 2012 and 1 April, 2013 were eligible to enter. The exception



was the Sustainable Design award which had a longer entry period.

The awards are chaired by Prof Alan Dilani, chief executive of the International Academy for Design & Health, who approved the recommendations of the lead judges and their panels in each award category.

The awards will be presented during the Gala Academy Awards Dinner at Brisbane City Hall on 13 July. If you haven't reserved your place at the Gala Dinner and Academy Awards Ceremony, we encourage you to book now at the registration desk to support the prize winners, recognise their unique work and enjoy a wonderful evening of music and entertainment with friends and colleagues.

## Judging criteria

The decisions of each judging panel were based on criteria specific to each category, including: design/creative approach and values; sustainability; planning and organisation; operational efficiency; stakeholder engagement; hospitality, wellness and culture; health promotion; innovation; accessibility and context; research methodology; and function and performance. The winners of each award were determined by a lead judge, supported by a panel of three judges with proven expertise. Each judging panel comprised experts in their field from multidisciplinary backgrounds, bringing with them a breadth of experience in their fields.

## Sponsor's Welcome Presentation

### Creating the Healthiest Places

Murray Coleman OAM is the managing director for project management and construction in Australia for Lend Lease, the proud sponsors of this Design & Health International Academy Awards 2013.



In a rapidly changing world where the speed of urban development in response to massive population movement from rural settings into cities, is increasing exponentially, developers have a corporate responsibility to ensure that the land and buildings they develop are socially cohesive, health-promoting and ecologically sustainable.

Murray Coleman OAM, who joined Lend Lease in 1987, and has over 25 years' experience working in a number of senior roles across the business both in Australia and overseas, will present the vision, culture and strategy of Lend Lease and how it perceives its role in delivering and creating healthier places and a better society for all.

Holding a Bachelor of Building (1st Class Honours) from the University of Melbourne, Murray Coleman was awarded an Order of Australia Medal in January 2012 for services to the construction industry.



**President:** Dr Ray Pentecost III

**Chief Executive Officer:** Prof Alan Dilani PhD

**Chief Operations Officer:** Marc Sansom MBA

**Chief Finance Officer:** Satu Dilani

**Executive Associate:** Nicki Roessler

**International Academy for Design & Health**

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## International Healthcare Project (Over 40,000sqm)

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An award for an outstanding acute or non-acute healthcare building where patient-centred considerations are as evident as clinical and managerial priorities. The project must demonstrate an understanding of the principles and practice of salutogenesis, and show how innovative design permits ongoing flexibility of use, addresses issues of sustainability and recognises the broader civic context.



### Lead judge

**Warren Kerr AM**

Hames Sharley, Australia

### Panel

Craig Dixon, Capita Consulting, UK

John McGuire, AECOM, Australia



Queen Elizabeth Hospital, designed by BDP

### The Shortlist

New Public Collado Villalba Hospital, commissioned by Capio Sanidad SLU, and designed by F Forwarslp  
South West Acute Hospital, commissioned by Western Health & Social Care Trust, and designed by Stantec

Queen Elizabeth Hospital Birmingham, commissioned by University Hospitals Birmingham NHS Foundation Trust, and designed by BDP

Baylor Charles A Sammons Cancer Center, Commissioned by Baylor Health Care System, USA, and Designed by Perkins + Will

### Finalists

Tata Medical Centre, Cancer Hospital, designed by Cannon Design

Hospital Bernhoven, designed by de Jong Gortemaker Algra architects and engineers

Erasmus Medical Centre, Rotterdam, designed by EGM architecten

Al Wakra Hospital, commissioned by Hamad Medical Corporation

Isala Klinieken, designed by Architecten Maatschap Isala

# International Healthcare Project

## (Under 40,000sqm)

Sponsored by



An award for an outstanding acute or non-acute healthcare building where patient-centred considerations are as evident as clinical and managerial priorities. The project must demonstrate an understanding of the principles and practice of salutogenesis, and show how innovative design permits ongoing flexibility of use, addresses issues of sustainability and recognises the broader civic context.



### Lead judge

**Ian Forbes**

University of Technology  
Sydney, Australia

### Panel

Robin Guenther, Perkins + Will, USA

Mike Nightingale, IBI Nightingale, UK

St John's Rehab Hospital – the John C and Sally Horsfall Eaton  
Centre for Ambulatory Care, Canada, designed by Farrow  
Partnership Architects and Montgomery Sisam Architects

### The Shortlist

Akerman, commissioned by Building Better Health and  
Lambeth Primary Care Trust, and designed by Henley  
Halebrown Rorrison

St John's Rehab Hospital – the John C and Sally Horsfall  
Eaton Centre for Ambulatory Care, commissioned by St  
John's Rehab Hospital, Canada, and designed by Farrow  
Partnership Architects and Montgomery Sisam Architects

Children's Hospital Tony Molleapaza Rojas, commissioned by PAZ  
Holandes, The Netherlands, and designed by EGM architecten

### Finalists

Ichi Go Iche E, commissioned  
by University of Washington

Ronald McDonald House, designed  
by Montgomery Sisam

Flinders Centre for Innovation in Cancer Care,  
designed by Woodhead

Translational Research Institute, designed by  
Wilson Architects (+ Donovan Hill in association)

The Kinghorn Cancer Centre, designed  
by BVN Donovan Hill

Ballarat Regional Integrated Cancer Care,  
designed by Billard Leece Partnership

Gold Coast University Hospital Mental Health Unit,  
designed by: Hassell - Queensland, PDT and STH  
Joint Venture

West Australian Comprehensive Cancer Centre,  
designed by Hassell

PET CT Centre Cyclotron, Doha, commissioned  
by Hamad Medical Corporation

Waarnambool Hospital Redevelopment, designed  
by Health Science Planning Consultants

The Montefiore Hospital, UK, designed  
by IBI Nightingale

Kaiser Permanente Gaithersburg Medical Centre,  
designed by AECOM



## Salutogenic Design Project

Sponsored by



Awarded for the design of a completed project of any typology, which is comprehensible, manageable and meaningful, thereby fostering a strong sense of coherence amongst its users that promotes their health and wellbeing. Submissions must show how environmental, social and economic sustainability is improved.



### Lead judge

**Dr Jan Golembiewski**

University of Sydney, Australia

### Panel

Dr Eve Edelstein, University of Arizona, USA

Tye Farrow, Farrow Partnership Architects, Canada



Lebovic Campus Community Complex, Sherman Health and Wellness Centre, designed by ARK

### The Shortlist

RFBI Basin View Masonic Village Aquaponic Garden, commissioned by Royal Freemasons' Benevolent Institution, and designed by Paul Van der Werf of Earthan Group

Potter Street Redevelopment, commissioned jointly by Wintringham and Wallara, and designed by Allen Kong Architect

Lebovic Campus Community Complex, Sherman Health and Wellness Centre, commissioned by UJA Federation of Greater Toronto, Mount Sinai Hospital, Toronto, Canada, and designed by ARK

### Finalists

Ichi Go Iche E, commissioned by the University of Washington Global Fund MDR TB Hospital, designed by Hospital Design Group

The Braggs University of Adelaide, designed by BVN Donovan Hill Indiana University Health, Neuroscience Center of Excellence, designed by Cannon Design

The Kinghorn Cancer Centre, designed by BVN Donovan Hill South West Acute Hospital, Enniskillen, designed by Stantec Charles Stuart University National Life Sciences Hub, designed by BVN Donovan Hill

Flinders Centre for Innovation in Cancer Care, designed by Woodhead

# Mental Health Design

Sponsored by



An award for a mental health facility where an effective reconciliation between issues of security and perceived 'openness' are evident and where the operational need for supervision does not overwhelm the imperative to provide a civilising and humane setting to support therapeutic intervention. The project should appear community friendly and show understanding of the principles and practice of salutogenesis.



Lead judge

**Christopher Liddle**

HLM Architects, UK

Panel

Ron Billard, Billard Leece Partnership, Australia  
Cliff Harvey, Ontario Ministry of Health, Canada

## The Shortlist

"High Care", commissioned by Stichting Rivierduinen, and designed by de Jong Gortemaker Algra architects and engineers  
Gold Coast University Hospital Mental Health Unit, commissioned by Queensland Health, and designed by PDT + STH + HASSELL  
CAMH Village Family Health Team, commissioned by the Centre for Addiction and Mental Health, Toronto, Canada, and designed by ARK

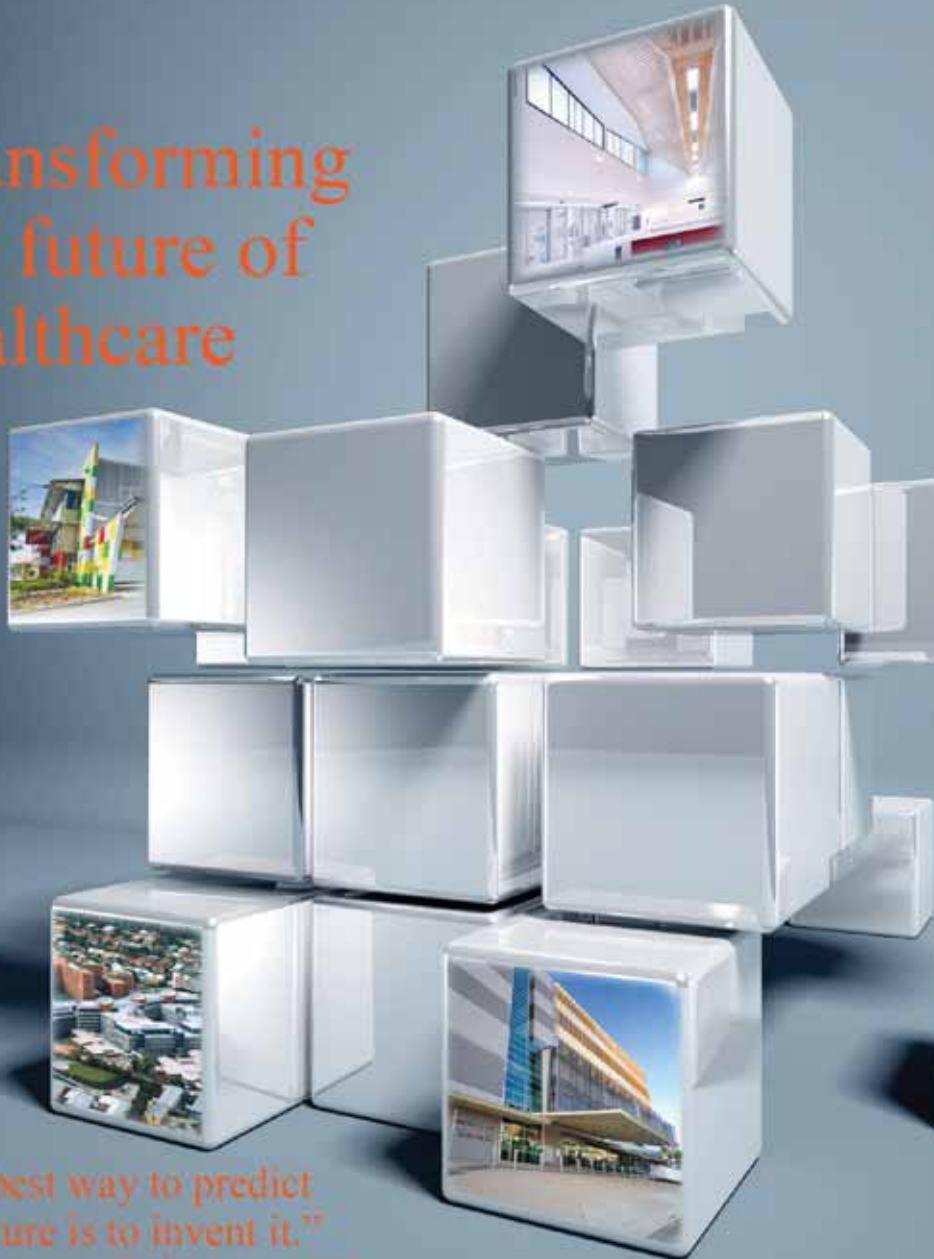
## Finalists

Linn Dara Child & Adolescent Facility, designed by Reddy Architecture + Urbanism  
Potter Street Redevelopment, designed by Allen Kong Architect  
Worcester Recovery Center and Hospital, designed by Architecture+  
Lutherwood Children's Mental Health Centre, designed by Stantec



Gold Coast University Hospital Mental Health Unit,  
designed by PDT + STH + HASSELL

# Transforming the future of healthcare



**"The best way to predict  
the future is to invent it."**

*(Steve Jobs - consumer electronics)*

Right now, we have a very real opportunity to influence and transform the future of healthcare. Arup believes future affordable healthcare systems and the associated delivery infrastructure is one of the most pressing issues we face globally in the 21st century.

Our consultants help our clients respond to the complex challenges of healthcare across all stages of delivery. We take a sustainable approach to the delivery of resilient healthcare that is fit for purpose now and into the future.

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## Sustainable Design

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**ARUP**

Awarded for a completed healthcare project where issues of sustainability are achieved at a level conspicuously above the present mandatory norm, set a new standard of attainment to satisfy legislative, technical, financial and moral imperatives, and show a holistic understanding of the relationship between the principles of salutogenesis and ecological design.



**Lead judge**

**Steve Trevenar**

Lend Lease, Australia

**Panel**

Phil Nedin, Arup, UK

Ihab M K Elzeyadi, University of Oregon, USA



South West Acute Hospital, designed by Stantec

### The Shortlist

South West Acute Hospital, commissioned by Western Health & Social Care Trust, and designed by Stantec

Flinders Medical Centre New South Wing, commissioned by SA Health, and designed by Woodhead

### Finalists

Potter Street Redevelopment, Dandenong, designed by Allen Kong Architect

PET CT Centre Cyclotron, Doha, commissioned by Hamad Medical Corporation

# Informed Healthcare Design



[www.medicalarchitecture.com](http://www.medicalarchitecture.com)

**Rosberry Park, Mental Health Campus**  
RIBA Client of the Year 2012  
RIBA Northern Network Gold Award 2011  
RIBA Northern Network Hadrian Award 2011  
(North East Project of the Year)  
Design & Health International Academy  
Award Highly Commended - Mental Health  
Design 2010



# Future Health (Unbuilt) Project

Sponsored by

**WORLD HEALTH DESIGN**  
AND FUTURE CULTURE TECHNOLOGY

An award for the design of a future acute or non acute healthcare building that recognises the changing role of the hospital within the wider health system and the local community. The project must demonstrate a 'salutogenic' vision for healthy environments that addresses anticipated socio-economic challenges of the future.



## Lead judge

### Mungo Smith

Medical Architecture  
Asia Pacific, Australia

## Panel

Tarek El Khatib, Zeidler Partnership Architects, Canada  
Lim Lip Chuan, CPG Consultants, Singapore

## The Shortlist

Vienna North Hospital, Commissioned by Vienna Hospital Association, and designed by Health Team KHN – Albert Wimmer ZT  
Sheikh Khalifa Medical City, commissioned by SEHA, Abu Dhabi Health Services Company, and designed by Skidmore Owings & Merrill LLP in Joint venture with ICME and Tilke  
New Queensland Children's Hospital, commissioned by Queensland Health, and designed by Conrad Gargett Lyons

## Finalists

Healthcare Clinic for the Homeless (Orlando), designed by HKS  
Urban Daycare Complex for Adults with Developmental Disabilities for Semi-Arid Climates, designed by SynThesis Architects  
Small Hospital, Big Idea, designed by de Jong Gortemaker Algra architects & engineers  
Lions International Eye Centre, Accra, Ghana, designed by Broadway Malyan



New Queensland Children's Hospital,  
designed by Conrad Gargett Lyons

King Fahad Medical City, designed  
by Devereux Architects

Bridgepoint Hospital Revitalisation Project,  
designed by HDR

Espoo Hospital and Senior Centre, designed  
by K2S Architects

Care Campus, Sijsele, designed by VK Architects  
and Engineers

King Khalid Medical City, designed by AECOM

## Care for Design | Design for Care

Montgomery Sisam Architects strive to normalize the healing environment to positively transform the healthcare experience for patients, families and staff.



MontgomerySisam



**PROJECTS FROM THE TOP CLOCKWISE** St. John's Rehabilitation Hospital, in joint venture with Farrow Partnership; Ronald McDonald House Toronto; McMaster Children's Health Centre, Planning, Design and Compliance, in joint venture with Perkins+Will; Centre for Addiction and Mental Health, Phase 1B, Design Exemplar by C3, the joint venture consortium (KPMB Architects, Montgomery Sisam Architects, and Kearns Mancini Architects) / Planning, Design and Compliance by C3+Cannon Design / Design, Build, Finance and Maintain by Stantec Architecture (Architect of Record) **CONTACT** Montgomery Sisam Architects Inc. T 1.416.364.8079 F 1.416.364.7723 [www.montgomerysisam.com](http://www.montgomerysisam.com)

# Interior Design Project

Sponsored by  
**MontgomerySisam**

An award to recognise a therapeutic space that enhances the health, wellbeing and quality of life of the patients, staff and visitors. Preference will be shown to projects which show an understanding of the principles and practice of salutogenesis, respect the privacy and dignity of patients, illustrate originality in the design approach and can demonstrate environmental sustainability.



Lead judge

**Alice Liang**

Montgomery Sisam, Canada

Panel

Susan Francis, Architects for Health, UK

Nicola Bertrand, Hassell, Australia



CAMH Village  
Family Health Team,  
designed by ARK

## The Shortlist

South West Acute Hospital, commissioned by Western Health & Social Care Trust, and designed by Stantec

CAMH Village Family Health Team, commissioned by the Centre for Addiction and Mental Health, Toronto, Canada, and designed by ARK

Kaleida Health Gates Vascular Institute/Suny at Buffalo Clinical Translational Research Center, designed by Cannon Design

## Finalists

Entrance Hall, Ikazia Hospital, designed by Cannon Design

Isala Klinieken, designed by Architecten Maatschap Isala

Patient Care Environment Phase 1, Hamad Bin Khalifa Medical City, Doha, commissioned by Hamad Medical Corporation

## The Use of Art in the Patient Environment

Sponsored by



An award that recognises the effective application of creative endeavour (of any type or in any medium) which further advances knowledge of the potential of the arts to assist significantly in the therapeutic process. Preference will be given to conspicuous success in new approaches, stretching still further the boundaries of possibility in the wide creative field.



### Lead judge

**Marily Cintra**

Health and Arts Research  
Centre, Australia

### Panel

Nadia Tobia, Farrow Partnership Architects, Canada  
Annette Ridenour, Aesthetics Inc, USA



University of Kentucky, Albert B.  
Chandler Hospital Arts in Healthcare  
program, created by AECOM

### The Shortlist

Royal Brompton Centre for Sleep, commissioned by Royal Brompton & Harefield Hospitals Charity and Royal Brompton & Harefield NHS Foundation Trust, UK, created by Steven Appleby with rb&hArts

Global Fund MDR TB Hospital, commissioned by The Global Fund, The National Department of Health South Africa, Limpopo Department of Health South Africa and Council for Scientific and Industrial Research and Sakhiwo Health Solutions, and created by Hospital Design Group

University of Kentucky, Albert B. Chandler Hospital Arts in Healthcare program, commissioned by University of Kentucky Healthcare, and created by AECOM

### Finalists

The Kinghorn Cancer Centre, created by BVN Donovan Hill

The Montefiore Hospital, Hove, UK, created by IBI Nightingale

CAMH Village Family Health Team, Toronto, created by ARK

South West Acute Hospital, Enniskillen, created by Stantec

SafeVent Fencing, designed by Britplas (Safevent Systems Group)

# Product Design for Healthcare Application

Sponsored by



An award for a manufactured product or item of equipment that adheres to principles and practice of salutogenesis and human factors, and which is integrally installed in a healthcare environment, advances levels of technical performance and integrates satisfactorily with the setting designed to accommodate it.



Lead judge

**Gunther De Graeve**

Managing Director,  
Destravis Group

Panel

Bill Rostenberg, Stantec, USA

## The Shortlist

Whiterock Wall Cladding Systems,  
designed by Altro

SafeSee Door, designed by Britplas

Artis Q.zen Interventional Imaging System,  
designed by Siemens Healthcare – AX Division

## Finalists

UUBEE Integrated Toilet, designed by UUBEE

UUBED Hospital Bed, designed by UUBEE



Artis Q.zen Interventional Imaging System,  
designed by Siemens Healthcare – AX Division



IMAGE BY JOHN GOLLINGS

International Construction Consultancy Company Philip Chun is delighted to be associated with the Design and Health World Congress and Exhibition.

Our services include: Building Code Consultancy, Accessibility, Fire Engineering and Essential Services Auditing.

## Projects:

- Royal North Shore Hospital (RNSH) - \$1.127 Billion (Image Above)
- Victorian Comprehensive Cancer Centre (VCCC) Melbourne - \$1.2 Billion
- New Perth Children's Hospital (NPCH), Perth - \$1 Billion
- Austin & Mercy Hospital Redevelopment, Victoria - \$356 Million
- ANU, John Curtin School of Medicine Research, Canberra - \$200 Million

Visit us on Stand number 30 - we will be pleased to meet you.

For more information contact: Tracey Burgess on +61 434 220 332 or [marketing@philipchun.com](mailto:marketing@philipchun.com)

[www.philipchun.com](http://www.philipchun.com)

# Study Tours: Inspiring places

Join colleagues on the morning of the 14 July for international benchmarking study tours of some of Queensland's most impressive healthcare facilities and iconic architectural buildings

There is no better opportunity to complete a memorable congress than to join friends and colleagues on the Design & Health study tours, which will be held on the morning of Sunday 14 July. This year, thanks to our local partners, there is choice of two study tours of a diverse range of hospital buildings in both the public and private sectors to visit and enrich your knowledge of design, health planning and service delivery in Queensland and Australia. At the time of printing, a possible third tour was also being confirmed with further information available at the Congress registration desk. To register for a tour, please visit the Congress registration desk.

## Study Tour 1

**Date: Sunday 14 July**

**Time: 08.30-13.00**

**Departure point: Hilton Hotel, Brisbane**

**Gold Coast University Hospital (GCUH)** uses the region's good climate and natural beauty to its fullest advantage, drawing in nature and offering plenty of outdoor amenity space that becomes an integral part of the treatment process. The 175,000sqm tertiary hospital is one of the first fully integrated urban design, landscape and architecture health projects that incorporates a precinct strategy. Serving the Gold Coast region of Queensland, the hospital's integrated facilities include: a pathology education building; a 72-bed mental health facility; a comprehensive cancer care centre; a 50-bed neonatal intensive care unit; paediatric ambulatory care and inpatient services; a birthing suite with women's ambulatory care services; and hot floors for intensive care and surgical services. The masterplan for the site promoted the creation of 'place' and a vision that would allow for future expansion. A parkland setting was created, incorporating connections with light rail infrastructure, enabling the public to reach the site via public transport.

**Robina Hospital** forms part of the infrastructure of the Gold Coast Health Services District, delivering public health services to the region. The project transformed the small local hospital into a major regional health facility through the expansion of existing departments and the provision of new facilities. The design was based around the idea of the modern healthcare environment as a place of wellness and as a workplace for highly skilled staff.

The project used natural light, colour and the integration of landscape to create uplifting and inspiring spaces.

**The John Flynn Private Hospital** ENDOALPHA Operating Room (OR) is a state-of-the-art operating theatre and the first fully integrated glass modular operating theatre in Australia. It is also the first OR in the world to incorporate the latest Olympus technology. This multimillion dollar theatre features the latest endoscopy, digital image management and glass-panel technology that is expected to transform operating theatres. Enclosed in spectacular blue glass walls, the room is aimed at improving disinfection whilst substantially decreasing wear and tear of the room as well as creating a working environment that delights staff.



Gold Coast University Hospital



Robina Hospital

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image courtesy Conrad Gargett Lyons



New Queensland Children's Hospital

## Study Tour 2

**Date:** Sunday 14 July

**Time:** 09.00-13.00

**Departure point:** Hilton Hotel, Brisbane

**New Queensland Children's Hospital** has been designed as a 'living tree' to both facilitate the patient journey and provide a 'green' environment of wellness and health for the patients, staff and visitors who use the facility. Located at Southbank, Brisbane, the new Queensland Children's Hospital (QCH) brings together two existing children's hospitals – the Royal Children's and Mater Children's Hospitals – into a new purpose-designed facility to deliver state-of-the-art tertiary/quaternary paediatric care to the state-wide community, using a healthcare model that empowers patients and families and which uses the built environment to support health and wellness. The building has been designed around the concept of a 'living tree'. This design concept was developed early in the planning phases in collaboration with the project's stakeholders. It provided an underlying design narrative to develop specific strategies for wayfinding and to develop the salutogenic objectives of the project – connecting inside and outside, and with nature to provide a 'green' working and care environment for patients and staff.



Ecosciences Precinct

**Ecosciences Precinct** brings together 1,000 scientists from four state agencies and six divisions of CSIRO (the Commonwealth Scientific and Industrial Research Organisation) across diverse scientific disciplines into a single, collaborative research environment with shared laboratory, office and support facilities. Scientists are co-located by scientific outcome, not by organisational boundary. Three north-orienting wings are linked by an internal multi-level street of staff social, common and meeting rooms connected by atriums, lifts and open staircases to optimise vertical and horizontal connectivity. This central interaction street draws staff out of their quiet work zones into a lively social hub encouraging the exchange of ideas. At the time of printing, the Ecosciences tour was still being confirmed. Please contact the registration desk for further information.



# Ngonyama Okpanum & Associates

ARCHITECTS PROJECT MANAGERS URBAN DESIGNERS INTERIOR DESIGNERS TOWN PLANNERS

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Ngonyama Okpanum and Associates is dedicated to providing knowledge-based solutions to health care design.

Architecture has a strong behavioral influence on the community and society at large. As such, our approach to design is characterised by a focus on the interpretation of factors which impact on the built environment i.e. the social, architectural, spatial, philosophical, political and technological aspects of design; and their interpretation in the site-specific context.

Ngonyama Okpanum and Associates provides developmental, managerial and technical services in this respect, and within the context of human upliftment and the development of the built environment. Our architecture seeks to promote quality buildings with a strong recognition of the positive influence of architecture through the creation of pleasant therapeutic environments and well-designed spaces.

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## CANCER RESEARCH FACILITY

PROJECT: MOTHER AND CHILD CANCER RESEARCH  
INSTITUTE



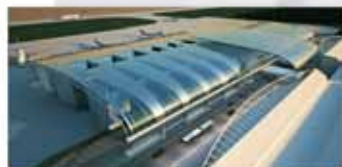
## PRIVATE HEALTH CARE

PROJECT: BELLVILLE HOSPITAL  
CAPE TOWN, SOUTH  
AFRICA



## INTERNATIONAL AIRPORT

PROJECT: ABUJA INTERNATIONAL AIRPORT  
ABUJA, NIGERIA



## REGIONAL AIRPORT

PROJECT: ENUGU REGIONAL AIRPORT  
ENUGU, NIGERIA



## COMMUNITY LIBRARY AND CLINIC

PROJECT: ALBROW GARDENS  
CAPE TOWN, SOUTH AFRICA  
COMPLETED 2000



## PRIMARY HEALTH CARE FACILITIES

PROJECT: OPOLLO HOSPITAL  
BAYELSA, NIGERIA  
COMPLETED 2009



## TERTIARY HEALTH CARE FACILITIES

PROJECT: CHRIS HANI BARAGWANATH HOSPITAL  
JOHANNESBURG, SOUTH AFRICA  
COMPLETED 2009



**Chair:**

Dr Brendan Lovelock,  
Cisco Systems,  
Australia

## Future Health Laboratory: Designing Our Future Health System And Infrastructure

Keynote presenters



**The Intersection Between Human Health, Climate Change and Environmental Sustainability**

Prof Tony Capon, Head of Discipline, Public Health and Occupational Therapy, University of Canberra, Australia



**Beautiful One Day: Old, Sick and Fat the Next: The Challenges of Chronic Disease, Demographic Change and Health Inequities.**

Stephen Robertson, Australia

### Ten Major Trends In Global Health Systems

Luke Baxby, Partner, Health Advisory, Deloitte, Australia

### Preventing Chronic Diseases In The 21st Century: Are Our Health Systems, Organisations And Professionals Fit For Purpose

Dr Sally Fawkes, Senior Lecturer in Health Promotion and Leadership, Latrobe University, Australia

The pre-congress symposium and workshop aims to provide an interdisciplinary forum for a strategic review of the global and Australian health system and its future delivery. Its objectives are to engage a diverse mix of interdisciplinary and geographically disperse presenters, delegates and strategic partners in a provocative, challenging and disruptive debate to stimulate ideas and future scenarios and interventions that will support a future health system and infrastructure that is fit for purpose and meets anticipated population health needs. As health policy shifts its focus to disease prevention and health promotion, four expert presenters in the morning session will address four keynote challenges.

In a challenging economic climate, with western economies still struggling to overcome the financial crisis, massive budget deficits and recession, Luke Baxby will consider the ten major trends facing global health systems, and how they will cope with rising health bills resulting from a perfect storm of ageing populations with increasing levels of morbidity and chronic disease.

Tony Capon will explore the intersection between human health, climate change and ecological sustainability, with a focus on the development of the concept of 'healthy places', building on the links between health, the built environment and urban planning. He will also explore how the ecological orientation emphasises that the most effective health interventions will be tailored to place, respecting that individuals of different ages, socioeconomic and backgrounds and genders will respond to interventions differently.

Dr Sally Fawkes will focus on how to prevent and respond to chronic diseases, considering if our health systems, organisations and professionals are 'fit for purpose'? The presentation will consider: The rise of non-communicable diseases: What do we know about trends and causes? Health services users in the era of NCDs: What is their role in health service innovation? The role of the WHO-affiliated International Health-Promoting Hospital (HPH) Network.

As society ages and becomes increasingly urbanised, Stephen Robertson's presentation will centre on the relationship between changing demographics and social and health inequities with the increasing prevalence of chronic diseases.

## Panel Discussion

### Panelists



David Parken LFRAIA, Chief Executive Officer, Australian Institute of Architects



Jim Cozens, Chief Executive Officer, Institute of Hospital Engineers Australia;



Romily Madew, Chief Executive Officer, Green Building Council of Australia



**Chief Facilitator:**  
Dr Paul Barach  
MD, MPH

## Workshop

The afternoon workshop will consider a number of future scenarios aimed at stimulating ideas, solutions and design interventions both in the health system and health infrastructure that will help to redesign a more holistic and fit for purpose global and national health system, and meet the health challenges identified in the morning session.

### Workshop questions:

1. In light of the financial constraints facing the health sector, the public sector will need to look more to the private sector to deliver services. What will the shape of public and private healthcare look like in the future?
2. It is recognised that NCDs place the greatest demand on our health systems, however, the traditional model of a hospital is a large acute facility sitting at the centre of the care regime. What would or should a health system look like that has re-engineered its priorities to deal with NCDs and chronic diseases?
3. Over the last 10-15 years Australia has undergone a renewal of health assets. Over the same period, it has experienced a 4.3M (23%) increase in its population. In the next 15 years, the population is expected to grow by between a further 7 to 12M people. What impact will this have on Australia's health systems and how should it respond?
4. Considering the linkage between human health and ecological sustainability, what responsibility should the health sector take for climate change and how should our health facilities adapt?
5. "Your children will experience a world where automated vehicles will have reduced the rate of traffic accidents to zero, and where personalised medicine will have almost eliminated some chronic diseases. But with improvements in technology, populations and cities will continue to grow. Aging is now the key health issue, and the panacea of anti-aging is still being sought. What does the health system that your children will experience look like and what does it take now to get there?"



## The Honourable Lawrence Springborg MP

Queensland Minister for Health, Queensland, Australia

### Queensland's Health Policy and My Vision

Around the world, health systems are under ever-increasing cost pressures. Demand for healthcare is rising exponentially due to population ageing and the shift in the profile of diseases from infectious to chronic. In terms of life expectancy, Australia is considered to be one of the healthiest nations in the world. But we are spending an increasing percentage of our GDP on hospitalisation and acute care, with diminishing returns in the overall health of our people.

In Queensland, as in many state and national governments around the world, the health budget is dominant, with over a third of staffing resources committed to providing healthcare. International health systems can no longer sustain this level of investment.

Australians need encouragement to maintain and improve their health and wellbeing. In our quest for better preventative health measures, we must respond to evidence of what works and what does not. Dependency on hospitalisation and healthcare services must be reduced, but a repeat of failed measures is not the key to improved social participation or economic productivity. Queenslanders do not judge our health system by its size, but by health services delivered effectively, efficiently, with care and on time.

Public investment in our health system needs to be re-engineered to extend its capacity beyond its current focus. Ways must be found to leverage government expenditure and to bring new sources of capital and investment to support our health system. Our goal must be the creation of a healthy society, with an appropriate level of government resources directed towards an efficient and effective health system. My vision is to develop new collaborative methods and partnerships, to make our health system economically efficient and to achieve better health outcomes for all Queenslanders.



## Prof Ian Frazer AC, FRA, FAA

Chief Executive Officer and Director of Research,  
Translational Research Institute, Australia

### The Challenges of Health Science, Research and Innovation

As global society comes to terms with today's keynote challenges of climate change and human health, investment in science, research and innovation is ever more critical if we are to build a future for the next generation and their children.

In the 20th century, great advances were made in medical science, enabling society to reduce – and in many cases eradicate – infectious diseases that had plagued mankind for centuries, dramatically increasing life expectancy around the world. In the 21st century, as increased lifespans and modern consumption-led lifestyles combine, we are faced with a new challenge and a major shift in the disease profile.

Debated for the first time at the 66th meeting of the General Assembly of the United Nations in 2011, the health challenge in the modern age is non-communicable diseases (NCDs) or lifestyle diseases, which are now the leading cause of death in the world, representing 63% of all annual fatalities and killing more than 36 million people each year.

Medical science alone cannot provide the solution to this huge challenge. As scientists, politicians and practitioners, we must seek to collaborate across disciplines in an effort to use science and research to maintain people's health and prevent the onset of chronic diseases. Together with climate change, it is the most important scientific question of our lifetime. We can diagnose many causes of sickness, but what are main causes of health? How do we maintain our health, independence and quality of life far into old age? How do we reduce the burden of cost on healthcare systems and economies globally through the prevention of chronic disease?

The built environment and the way we design our cities and communities provides a context for civil society and has a huge influence on our lifestyles and our health. We need more scientific endeavour into this fast developing field of work to support the adoption of innovation in the physical environment that will both directly impact people's health and wellbeing and facilitate them to lead healthier lifestyles.

As the world undergoes an economic and demographic shift to the east, Australasia is at the forefront of an opportunity to demonstrate its leadership in the creation and application of scientific research that will build a future society that is healthy, harmonious and economically and culturally progressive.



## Alan Dilani, PhD

Chief Executive and Founder, International Academy for Design & Health, Sweden

### The Salutogenic Approach To Healthcare Policy And Provision

Today's rapid movement of individuals and populations living in ever-larger, multicultural urban environments, combined with the equally rapid evolution of the knowledge society, means that the world we live in today is one with few boundaries. In the 21st century, the health of nations is a global issue and health status of Australia is dependent on recognition of its international coexistence.

Growing awareness of the importance of health promotion and the need to invest in healthy and sustainable public, social, institutional and domestic infrastructure is placing Australia at the forefront of opportunity and at the leading edge of change.

Embracing a salutogenic approach to health and public infrastructure investment and development, embedded at the core of a preventative care strategy, changes the focus from risk factors and the treatment of disease to a more holistic understanding of this progression towards a healthier society. Research on salutogenesis highlights the impact of design factors that inspire the designer and planner towards the creation of a healthy society through the development of the conditions that stimulate health and wellbeing, thereby preventing diseases at all levels of society.

An increase in the consideration of the salutogenic design approach leads to social innovation and economical growth. It requires an interdisciplinary application of sciences such as architecture, medicine, public health, psychology, design and engineering with culture, art and music.

**Keywords:** Salutogenic Design, Stress Reduction, Health Promotion, Psychosocial Factors



## **A Ray Pentecost III, DrPH, FAIA, FACHA, LEED AP**

President, International Academy for Design & Health, USA

### **A Perfect Storm: The Economic Burden and the Salutogenic Response**

A pathogenic approach to achieving health has yielded widespread chronic disease in many countries around the world. The unsustainable cost burden of this approach, and the intensely unacceptable health status resulting from a pathogenic orientation, have contributed to a perfect storm in the world of health from which significant opportunities to improve population health are now emerging.

This presentation will frame the components of this perfect storm and suggest ways the design community can take advantage of salutogenic opportunities to significantly impact the health of a nation. And, as this presentation will make clear, failure to do so risks more than just the health of the world's populations.



**St. Vincent's Private Young Adult Mental Health Unit**

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## Kate Copeland, chair

Senior Director, Clinical Infrastructure,  
Health Infrastructure Branch, Queensland Health (pictured top left)

## Glenn Rashleigh

Chief Health Infrastructure Officer,  
Health Infrastructure Branch, Queensland Health (pictured bottom left)



## Sam Sangster

Chief Executive Officer, New South Wales Government, Health Infrastructure

## Anna Burgess

Director of Health Service Programs, Department of Health Victoria

## Angela Kelly

Acting Director of Infrastructure, Western Australia, Department of Health

## Grant Carey-Ide

Executive Director, Service and Capital Planning,  
Australian Capital Territory Government, Health

### Panel Discussion: The Future of Health Infrastructure in Australia

Design and health is changing. In Australia, as healthcare experiences an incredible revival; from a once-traditional stance, it is now creating inspiring healthcare environments that attract users with fascinating, inspirational spaces that support the healing process and promote health.

Over the last 15 years, the philosophical shift in thinking in both models of care and health facility design in Australia has been profound and, as a result, we are seeing new and innovative hospital design emerging in cities across the country.

The shift is driven by health providers, who are struggling with rising costs and increased demand for services, and have developed new models of care that are delivering seamless and focused outcomes for users. In the past, public buildings such as airports and hospitals were often designed to accommodate functionality, and their planning was based on quantitative criteria. Now, functionalist planning models have been replaced by new paradigms that prioritise the experiences of patients and staff, and match consumer expectations of a supportive healthcare environment.

But, as finances tighten and health system costs continue to rise, health policy and the planning, design and development of healthcare infrastructure inevitably lags behind the dramatic socio-economic changes we are seeing in society, will this new health infrastructure remain fit for purpose over the next 30 years?

As health policy shifts from a sickness to a wellness paradigm, what kind of health infrastructure will be needed in the future? What are the strategic and capital investments plans of each of the state health departments for the delivery of health infrastructure that will support this policy shift in the future? How will a high quality of healthcare infrastructure continue to be delivered at an affordable cost? What will the role of the hospital be in the future?



## Pekka Lahdenne, MD, PhD

Department of Gynaecology and Paediatrics,  
Helsinki and Uusimaa Hospital District, Finland

### A New Simulation Model In The Planning Of A Next-generation Children's Hospital In Finland

#### Objectives

To utilise the planning and construction processes of a new hospital to carry out significant changes in the paediatric care towards child/family-centered processes.

#### Background

The Children's Hospital at the Helsinki University Central Hospital, Helsinki, Finland is the only comprehensive tertiary-level pediatric hospital in Finland with national (heart defects, organ transplantations, severe epilepsy, stem cell transplantations) and local (secondary pediatric care for the Helsinki metropolitan area) responsibilities. The current hospital dates back to 1946 and no longer fulfills the current standards for paediatric hospital care. However, the quality of especially the most complicated/resource intensive modalities of care has reached and even exceeded high international standards, adding challenges to the transformative process.

#### Methods

For strategic and adaptive development of the hospital processes, several analyses and methods were used. The future demand for specialised care was estimated by the relevant specialists. The prediction factor was calculated for each specific patient group using a formula that incorporated the birth rate estimate and a combined factor including the estimated change in the incidence or prevalence of a given disease; change in the treatment modalities; change in the centralisation of the care of certain patient groups; and change in the production of care strategically selected by the hospital. The workloads of the nursing staff in the wards and the utilisation of the allocated space in the outpatient clinics were analysed and a simulation model created. This model was used for calculating and setting standards for the expected levels of the managerial performance.

#### Results

In the present situation, wards were organised in 15 units. Within these units, nursing was divided into four groups of wards: paediatric surgery, child neurology and two paediatric groups. This resulted in large variations in workload of nurses and variable numbers of beds and staff. A simulation model for a new organisation of the staff was applied with standardisation by the amount of staff. This resulted in a remarkably more even beds/nurses ratio. These changes will imply improved cost-effectiveness of space and staff.

#### Conclusions

The planning process can be utilised to improve ways how future paediatric care will be delivered. This would result in return of investment and better, more economical and more sustainable paediatric care of uncompromised quality.

**Keywords:** Hospital Planning, Child-centered Process, Simulation Model



## Professor Corbett Lyon, BArch, MArch (Penn), FAIA

Founding Director, Lyons, Australia

### Applied Salutogenics: The New Queensland Children's Hospital

Antonovsky's principles of salutogenics<sup>1</sup> and their application and benefit to improved wellbeing and to health facility planning and design have been well documented by Dilani<sup>2</sup> and others in recent literature. With the salutogenic model being increasingly adopted across the international healthcare community, health service providers, architects and planners are seeking practical and meaningful ways in which these design principles can be incorporated into the planning and design of new hospitals and healthcare facilities.

This paper presents a design framework and set of metrics that have been developed through a systematic analysis and synthesis of published salutogenic research (1990–present) and design theory. It provides a framework that can be used to inform the salutogenic planning and design of new healthcare facilities.

Building on Antonovsky's Sense of Coherence<sup>1</sup>, the framework translates each of Antonovsky's constituent elements – comprehensibility, manageability and meaningfulness – into specific design principles and environmental attributes. Within each set, factors and design attributes promoting health and wellbeing are weighted and ranked in terms of their contributory effect to the development of an optimised environment.

The salutogenic model proposes that all elements in the framework must work effectively, and in combination, for the design to be successful.

The thinking and theoretical underpinnings used in the design of the new Queensland Children's Hospital (QCH) project in Brisbane, Australia are presented as a case study. As Australia's first major healthcare project designed from first principles using this design approach, it offers useful expositions of the application of the design framework tool.

Underpinning the salutogenic design framework, and the Queensland Children's Hospital project, is an interactive consultation and design methodology that directly engages with the client organisation and project stakeholders.

In late 2013, research will be undertaken to measure anticipated incremental levels of improvement in salutogenic outcomes between the existing Children's Hospital facilities in Brisbane and the new QCH facility. This will involve empirical observations and data collection from patients and their families to measure comparative environmental outcomes across the two projects. Conclusions drawn from this study will be used to formulate new hypotheses to explain and predict future desired outcomes and to further refine the salutogenic design framework model.

**Keywords:** Salutogenic Design Framework, Interactive Design Methodology, Queensland Children's Hospital

1 Antonovsky, Aaron. Health, Stress and Coping. San Francisco, CA: Jossey Bass Publishers, 1979

2 Dilani A. Psychosocially Supportive Design: A Salutogenic Approach to the Design of the Physical Environment, from proceedings of the 1st International Conference on Sustainable Healthy Buildings, Seoul, Korea, February 2009.



## Debajyoti Pati, PhD, FIHA, IDEC, LEED AP

Texas Tech University, USA

### **The Secret Of The Human-nature Love Affair: Understanding The Neural Underpinnings**

The impact of nature visual stimuli on stress, pain and anxiety of patients has been well researched in behavioral studies. The exact neural mechanism that triggers such response (both positive and negative) has remained unexplored, however. Past inquiries were handicapped by methodological limitations. Recent technological development in the form of fMRI has enabled the study of brain physiology, providing an unprecedented opportunity to obtain an objective visual of the neural fireworks. Gaining this objective insight is critical from multiple perspectives: (1) a significantly stronger evidence base, (2) finer resolution in decision-making, and (3) a foundation for deeper scientific exploration.

This session will present the findings of phase one of a brain-mapping study at the Texas Tech Neuroimaging Institute, to examine neural responses to photographic sky compositions produced and donated by Sky Factory, and other sets of positive, negative and neutral images (including conventional hospital ceilings). The study included a sample of ten adults (five male and five female), equally distributed across five age groups (20-60 years old). All subjects were right handed (brain lateralisation), with no prior exposition to fMRI imaging. The participants underwent (1) an anatomical scan and (2) a functional scan, while a random sequence of images (positive, neutral, negative and photographic sky compositions) were projected by a computer-controlled visual presentation system. Each participant evaluated 32 images (eight images in each category). In addition, subjects responded to an affect scale simultaneously while viewing the images. Composite images in each image class were compared through subtraction, to identify neural activation unique to nature stimuli (the photographic sky compositions).

Data suggest that nature-based visual stimuli activate all areas of the brain activated by general positive images. However, in addition, nature stimuli activate unique areas of the human brain, which begins to suggest that such stimuli distract cognitive functions in ways that may lead to a different level of human consciousness. What are the unique activation areas? This session will provide a deep dive into the neural activations found in the study, and the implications, using vivid fMRI imagery.

**Keywords:** fMRI, Neuroscience, Nature Stimuli



## Eve A Edelstein

College of Architecture, Planning & Landscape Architecture, University of Arizona, USA  
California Institute for Telecommunications and Information Technology (Calit2),  
University of California, USA

### Research-based Salutogenic Design: New Methods For The Creation Of Healthy Environments

#### Objectives

The application of emerging technologies and a practical research-based design approach together inform design innovations to promote health and wellbeing. Salutogenic design principles are considered in the context of evidence from literature reviews, studies of number of built projects, and immersive 3D CAVE virtual reality design mockups.

#### Methods

Several cases from built and virtual environments are used to assay the impact of specific design variables on measurable human responses in a variety of built types. Wearable wireless biosensors log responses in real and virtual environments. Ethnographic methods are used to monitor responses associated with specific design parameters. Indoor environmental qualities and exterior environmental conditions were measured in hospitals, outpatient clinics, schools and community settings. Immersive 3D virtual reality mockups tested behavioural and physiological responses to design in dynamically changing sound-scenes. Synchronous recordings of brainwaves, visual attention and movement reveal how behaviour and outcomes may be associated with design interventions.

#### Results

Both 'healthy' and healthcare designs are considered. Interdisciplinary study design was guided by rigorous research of design features that influence health, healthy behaviour and wellbeing. This presentation reviews findings from studies in acoustics, circadian rhythms, visual attention, wayfinding and behavioural research that explore the 'environment of health' as well as environments for healthcare. Design innovations consider the needs of a broad range of users, including healthy and infirm, gifted and those with special needs, providers and users, with the goal of improving lifestyles, encouraging exercise, promoting social behaviour, enhancing learning and healing in small and large scale, local and international facilities of multiple types.

Empirical architectural studies in real and virtual mockups with real-time sound simulations demonstrate the impact of competing noises on speech perception, accurate discrimination and stress in 120 participants. Cortical brainwaves synchronised with movement tracking and surveys in a virtual wayfinding mockup of an academic setting reveal the role of colour, landmarks and light in spatial navigation and memory formation. Visual attention, sight-lines and circadian lighting are considered using electrophysiologic monitors of brainwaves, eye movements and light sensors, in real settings and virtual mockups that track attention and response to design. Design hypotheses test spatial navigation parameters in three dimensions.

#### Conclusions

Based upon study findings and review of related literature, salutogenic design principles are proposed. Interventions, innovations and outcomes are evaluated in terms of the opportunity to improve human health and wellbeing via stimulating and sustainable environments that meet indigenous through global needs for healthy settings.



## Massoud Shaker Pr Eng CP Eng

Senior Advisor to Health Minister, National Department of South Africa

### **International Competition For The Design Of The University of Kwazuku-Natal College Of Health Sciences (Nelson R Mandela School of Medicine And Associated Health Sciences) And The King Edward VIII Central Hospital**

Announced in Kuala Lumpur during the 8th Design & Health World congress in June 2012, this presentation provides up update on the status of an international competition for the design of the University of Kwazuku-Natal College of Health Sciences (Nelson R Mandela School of Medicine and Associated Health Sciences) and the King Edward VIII Central Hospital.

The University and Department of Health share a common purpose: to improve the well-being of the citizens by providing quality healthcare, and by investing in the future state of the art facilities, the training of excellent health professionals and build a state of the art health campus that will train health professionals and deliver central hospital services across the health continuum for the promotion of health, prevention of disease, diagnosis and treatment of disease and rehabilitation of patients.

The academic health campus that will comprise of two major precincts: an academic hospital and a health sciences complex for the College of Health Sciences. The health campus will be designed on the following principles:

- Efficient, logical patient flow with the entry and exit to specific facilities at the closest point and minimal mixing of patients en route to specific areas
- Promotion of integrated inter-, multi- and trans-disciplinary care
- Promotion of ambulatory on-going care and day-stay treatment in facilities with an identity distinct from that of the in-patient facilities
- Improve and increase the teaching capacity of the current academic platform
- The unification and consolidation of the health sciences campus.

This presentation will further study how this competition contributes to the current project implementation strategies in South Africa for health infrastructure projects to be procured through public private partnership methods, which are faced with many challenges and deficiencies.



## Elke Kropf

Director Service Development, new Royal Adelaide Hospital, South Australia, Australia

### The Development Of An Outcome-based Design Brief for A Major Hospital

The new Royal Adelaide Hospital (new RAH) is a keystone in South Australia's healthcare plan, providing a blueprint for health reform. The procurement process of the new RAH deliberately sought to spark innovation and cultural change in the ways healthcare is provided in South Australia. The PPP procurement process, the largest undertaken by the SA Government, therefore required a similarly innovative 'outcome' based design specification that embedded the Model of Care (MoC) as the over-riding concern in the functional brief and technical specifications.

#### Objectives

The objective, and challenge was: To be a hospital facility appropriate for the year 2016 and the 70 years that follow through the delivery of a durable building with adaptable design features and construction processes that adapt to the generational changes in technology, clinical functions and relationships; be fit for purpose through effective and efficient design that enables the provision of modern safe and effective care, provides the best possible environment for patients and staff, supports optimal use of technology, and has a post-disaster capability; and embrace environmentally sustainable practices and minimising the carbon footprint of the hospital.

#### Methods

The development of the functional brief was grounded in an extensive consultation program, undertaken with the clinical community and focusing on: agreement and articulation of the patient centred model of care consistent with SA's Healthcare plan that would provide the basis for clinical service delivery; mapping and documenting key functional relationships and patient journeys; and a review of trends in hospital design internationally and an analysis of trends in healthcare technology. Design requirements and functional relationships were then developed for each of the "functional spaces" of the hospital.

#### Results and Conclusion

The functional brief presented an outcome-based specification that included the following key features: The MOC as an over-riding principle; the desire to facilitate innovation; the requirement to be read and interpreted as a whole with an emphasis on the overarching objectives and fundamental strategies as well as specific design requirements; the use of the concepts of modular and generic/standardised spaces to facilitate flexibility and adaptability; the inclusion of "green space" (gardens and courtyards) and "blue space" (workspace, amenity, teaching and learning space) as functional spaces.



## Alice Liang, OAA, MRAIC

Principal, Montgomery Sisam Architects Inc, Canada

### Public Realm That Heals:

#### A Hospital's Contribution To A Healthy And Vibrant Community Background

In North America, most hospitals and healthcare facilities are the stewards of a significant tract of land and real estate in the communities they serve. Traditionally these institutions occupy a much-internalised physical presence, more preoccupied with healing patients in a highly medical and clinical interior environment.

While these large sites and buildings are often situated in urban centres or at the heart of suburban communities, they rarely seek out opportunities to directly engage the public, to use their prominent presence to contribute to the civic good, and to create a public realm that enhances and enriches the daily lives of the citizens in the communities where we live, work and play. As these facilities solely focus on treating the ill, they often overlook their mandate and opportunities to support and promote healthy lifestyle and to prevent illness.

#### Objectives

The objective of this paper is to demonstrate the success of a reciprocating/symbiotic relationship between a healthcare facility and its civic context. It is the positive outcome, mutually beneficial, of being a "good neighbour". It also exemplifies the hospital's vision in being a champion of social responsibilities to improve the holistic health of citizens by contributing to the quality of the public realm – an integral part of our daily lives.

#### Methodology

The study will include comparative analysis of historical precedents, current healthcare facilities developed in the traditional manner, and the innovative approach taken by The Centre for Addiction and Mental Health (CAMH), Canada's largest mental health and addiction teaching hospital and research centre. Photo essays will support information gathered from surveys and interviews conducted with neighbours, local business and retail enterprises, artists' galleries and studios, etc.

#### Conclusion

CAMH is located on a 27-acre site in the midst of a mixed residential, retail, culturally diverse and artistic neighbourhood in downtown Toronto. By sharing its asset and amenities, the hospital invites and engages the community in the public realm at the street level with:

- Landscaped/tree-lined public streets and sidewalks
- Public parks and open spaces for recreational and event uses
- Cafes, restaurants and shops
- Galleries and artists' studios
- A community gym and fitness space.

In turn, through the full integration with the surrounding neighbourhood, the transformative redevelopment at CAMH is realising its vision of normalising the healing environment for its clients, destigmatising and demystifying mental health and addiction, at the same time revitalising and re-energizing the community at large.

**Keywords:** Public Realm, Civic Contribution, Holistic Health



## Gavin Adams

Director, Woodhead, Australia

## John Temple

Associate Director, Woodhead, Australia

## Jeff Soutar

Associate Director, Woodhead, Australia

### Moving Primary Care Upstream And Looking Back To The Future Objective

The salutogenic hospital or healthcare facility is and will be more a product of organisational and operational factors supported by the physical environment, architecture and urban design. In the closing keynote session at Healthcare Design Phoenix 2012, Joe Fowler predicted that one of the five steps to building smart primary care will be by moving upstream and getting closer to patients in ways they're not used to – for example, in easily accessible retail outlets. Adaptive design will be key: "Get the building out of the way of operations". These objectives were seen as a kind of Holy Grail within the UK primary care sector for some years; the norm was standalone health buildings where people generally go because they are unwell in either an acute or chronic way, with a little health prevention (sexual health, travel clinics etc). By contrast, primary care within a shopping precinct could be considered almost the norm in Brisbane – pick up your weekly shop, grab a coffee and see the doctor. The objective of this paper is to evaluate and discuss:

- Whether the common urban context of primary care facilities in Australia provides a head start in developing a primary care model of the future. Can a model that is fundamentally better for non-chronic diseases be adapted to encourage healthy living?
- Does the perceived healthy Australian lifestyle impact on the perception of a salutogenic healthcare service, and if so is it only for certain groups?
- The impact of social inequalities in Australia on access to, and use of, healthcare facilities. How do primary care services differ in rural and remote areas and the main urban centres? What is the impact of technology on the ability to bring care to the patient in remote locations?

### Methods

- Analysis of primary care facilities in Australia (Queensland GP practices located in shopping areas, university-affiliated GP super clinics, and the GP Plus Super Clinic in Marion, South Australia, which is co-located with the South Australia Aquatic and Leisure Centre); aged care; and rural and remote hospital facilities in Queensland
- Literature review/research analysis: the Peckham Experiment in London (1920-1950); Fritjof Capra's holistic approach to science and development; and A Antonovsky's concept of salutogenesis.

### Conclusions

- Opportunities for moving primary care upstream and getting closer to patients
- The difficulties in addressing social, economic and geographic population differences
- Back to the future – the salutogenic hospital or health facility is not a new idea.

**Keywords:** Collaboration, Multidisciplinary, Accessible



## Noemi Bitterman

Faculty of Architecture and Town Planning, Technion, Israel

### Psychiatric Ward Dayroom: Human Factors And Design Issues

In mental health hospitals, the last few years have seen a growing interest in the role of the design of the physical environment in the treatment and rehabilitation of psychiatric patients. This research is aimed at investigating a dayroom in a closed psychiatric ward. It mapped the activities of the common space in order to suggest architectural and design changes of the physical space that may improve the satisfaction and social activity of the patients and the function of the staff.

#### Methods used

The research project included evaluation and definition of the activities and patients' distribution at the dayroom, employing several preparatory visits to the ward, structured interviews with the medical and support staff and well-constructed observations performed by a team of students of industrial design and industrial engineering and management. Four full days (09:00-20:00) of passive confidential observations, documenting all activities performed at the dayroom (Activity Sampling) were independently performed each time by two different students. We used pre-prepared maps of the dayroom setup to document the position of the patients and the activities they were engaged with every 20 min. Activities were divided into planned activities (eg meals, medication, group meetings) and spontaneous activities (eg standing, sitting, smoking, drinking, talking with staff, conversation with another patient, making a phone call, watching television, knocking on the nursing station window), and were marked by a symbol on the individual dayroom plans.

#### Results

Using the Activity Sampling and the pictured maps enabled assessment of the distribution of activities at the diverse parts of the dayroom over the entire period. The most frequent activity of the patients was wandering around, doing nothing and smoking (in the smoking area). A surprisingly high number of incidents of knocking on the nursing station glass were recorded, mostly for non-specific reasons and a need for attention.

#### Conclusions

Based on observations and interviews we suggested design changes for improving the activity and social interaction between patients including environmental, architectural and interior design modifications. We suggest creating an interactive activity space, a socialised and meaningful activities environment such as integrating gaming options in the furniture and environment and incorporating recreation activities such as music, computers, arts and personal television screens. We also recommended removal of glass partitions from the closed nursing station. The hospital management accepted most of our suggestions. We plan to revisit the ward after completion of the design changes for monitoring their effect on patients' activities and social interaction.

**Keywords:** Psychiatric Hospital Design, Mental Health, Healing Environment



## Celeste Alvaro, PhD

Bridgepoint Health, Canada

Department of Architectural Science, Ryerson University, Canada

### **Design For Health And Psychosocial Wellbeing: Assessing The Impact Of Healthcare Facility Design On The Lives Of People Living With Complex Conditions**

#### **Objectives**

Billions of dollars are spent annually on the construction and refurbishment of healthcare facilities. As healthcare needs both increase (population ageing) and change (from acute to chronic) we will need facilities that promote health and contribute to models of chronic disease management. Despite advances in evidence-based design and increased knowledge about the role of the built environment in human health and psychosocial wellbeing, there has been little systematic research and evaluation of how design features influence outcomes, particularly with people with complex chronic illness (eg long-term, multi-morbidity, disease management, rehabilitative care) – some of the highest users of the healthcare system. This research examines the impact of facility design on health and psychosocial wellbeing outcomes in complex chronic disease (CCD). Using theory in environmental psychology and social psychology, we developed a conceptual framework and metrics to assess the effect of architectural design on functional health, psychosocial wellbeing and organisational efficiency.

#### **Methods**

A pre-post test quasi-experimental design assesses health outcome as a function of design elements across the existing, new, and comparison facilities. The direct and indirect impact of design was assessed on functional health, psychosocial wellbeing and organisational efficiency across patients and staff. Data collection methods include: computer assisted survey interviews, paper-and-pencil surveys, naturalistic observation, go-along interviews (guided tours of “day to day living” with prompts by an interviewer), focus groups and extraction of variables from hospital databases.

#### **Results**

Preliminary results of pre-test data collection at the existing and comparison facility will be presented. The results will reveal the relative impact of specific design elements on functional, psychosocial and organisational health outcomes as well as the moderating role of individual differences, personal characteristics and illnesses. Implications and expected results of post-test data collection will be discussed.

#### **Conclusions**

This work will contribute to research on evidence-based healthcare facility design and the development of performance measures to be used in future design and health studies. Integrated knowledge translation ensures the sharing of our outcomes and processes across private and public sectors to inform strategic investments in healthcare facility design, design for healthcare management in rehabilitation and chronic disease, and evidence-based post-occupancy evaluation. Results will elucidate potential benefits of the inclusion of psychosocial aspects in facility design and in the development of standardised health metrics for the evaluation of healthcare facilities.

**Keywords:** Healthcare Design, Research Design, Psychosocial Health & Wellbeing



## Jan A Golembiewski BFA BArch MArch PhD

University of Sydney, Australia. University of New South Wales, Australia  
Schizophrenia Research Institute, Australia

### Salutogenics: Designing For Indigenous Health

The health of post-colonial indigenous people is a pressing problem the world over. Nowhere in the world could the issues be more apparent than in Australia, where the indicators of social disadvantage are so extreme: although the indigenous population is relatively small (it makes up about 1 in 46 people<sup>1</sup>), indigenous Australians carry about 2.5 times the national average burden of disease.<sup>2</sup>

#### Objectives

The theory of salutogenics has a basis in the empirical testing and ideas of Antonovsky<sup>3</sup>, which state that health outcomes improve when a sense of coherence is fostered. But is the salutogenic theory sufficiently transferrable to be an appropriate paradigm to address indigenous health problems, both in Australia and elsewhere?

#### Methods

A sense of coherence depends on the net resources that support meaning, comprehensibility or manageability. Current literature is reviewed to establish the efficacy of indigenous health interventions that address these resource deficits.

#### Results

Disparate studies show that most salutogenic interventions are effective, but not evenly so. Preliminary data suggests that interventions that promote manageability over meaningfulness are less likely to gain acceptance.

#### Conclusions

There's nothing quite so practical as a good theoretical model when grappling with a complex problem<sup>4</sup>. The application of the theory of salutogenics is particularly useful for designing health interventions for indigenous peoples because it is not invasive, it's holistic and it creates a strong basis for understanding issues that underlie poor health outcomes, and not just health issues once they have become critical.

**Keywords:** Aboriginal, Health Design, Theoretical Framework

1. Australian Bureau of Statistics. Census data. 2011.
2. Hunter E. Disadvantage and discontent: A review of issues relevant to the mental health of rural and remote Indigenous Australians. *Aust J Rural Health*. 2007; 15(2): 88-93.
3. Antonovsky A. *Unravelling the Mystery of Health*. San Francisco: Jossey-Bass Inc.; 1987.
4. Van den Broucke S. Theory-informed health promotion: seeing the bigger picture by looking at the details. *Health Promotion International*. 2012; 27(2): 143-7.



## Raechal Ferguson

Director, Medical Architecture, UK



## David Bagshaw

Director, Swanbury Penglase, Australia

### Design For Mental Health: Global Perspective, Local Identity

#### Objectives

- Demonstrating a research approach applying knowledge of successfully designed UK mental health projects to a local context in Adelaide, Australia
- Discussing how international involvement facilitated a rethink in operational policy and encouraged a change in the way the facilities were designed
- Highlighting what characteristics of mental health design apply regardless of location and what are unique to a particular locality.

The following mental health projects were applied as exemplars when designing the new Glenside Health Facilities, Adelaide, Australia 2013: Highcroft, Birmingham (UK, 2002; Wandsworth, London (UK, 2009); Roseberry Park, Middlesbrough (UK, 2010). All (including Glenside) had common themes: replacing the old asylum & not fit-for-purpose institutions; built on an existing hospital site within a reduced land parcel; reduction in bed numbers; new model of care.

#### Evolution of the mental health brief

- Increase in acuity of patient – pressure on the physical environment
- Tension around staffing costs and budget – increase in ward sizes
- Recognition of the impact the built environment has on therapeutic care
- Human rights (privacy and dignity)
- Recovery-focused model of care more clearly articulated
- More complex engineering solutions
- Increase in stakeholder diversity.

#### What have we learnt from each subsequent project?

- A flexible & adaptable design solution for an evolving model of care
- Site context considered with the model of care to form the architectural response
- The importance of landscape and useable outside space
- Circulation routes as 'active' spaces not just linkages
- The importance of interior design 'beyond the room data sheet'.

#### How have lessons learnt from international projects been applied locally?

- An 'outside-in' approach to design rather than a rigid operational model response from an 'inside-out' design process
- Assessment of briefed accommodation and benchmarking bed/day space ratio data
- Emerging body of knowledge provided due diligence data

#### What characteristics were unique to the local context?

- One overarching operational model of care conflicted with differences in metropolitan and country mental health delivery
- Greater focus on normalisation and the need to integrate the design solution
- Focus on climate aspects and how outside spaces are used



## Gunther De Graeve

Managing Director, Destravis, Australia



## Dr David Farlow

Director of Clinical Services, Mackay Health Service, Australia

### Improving hospital culture through retention-based design

Any hospital CEO will concur that staff retention is one of the biggest factors to affect the productivity and culture of a care environment. The Australian health sector has been subject to a chronic shortage of care workers, which heightens the retention problem, and staff attraction has become a major focus and objective.

#### Objectives

This paper demonstrates how the change management towards a new hospital culture can drive innovative hospital design to create a positive and collaborative work environment, and to stimulate staff attraction and retention while improving overall hospital performance and care quality for patients.

It demonstrates the processes used for interaction with executive management, clinical leadership, staff and the wider community. The paper will highlight the opportunities and risks for the executive management and the change processes required to mitigate these. It will outline how the design process was the catalyst of this change process and led to overall change in individual behaviour, in management style, in leadership behaviour and overall workplace culture.

The paper will demonstrate that good design and planning principles are directly linked to retention and attraction. It will further demonstrate how these principles can be applied to masterplanning and precinct planning and how the wider built environment can contribute to a healthier outcome for staff, patients and visitors by improving the social aspects of the environment. The application and success of retention-based design will be demonstrated by recently completed design studies and POE.

#### Methods used

This paper draws on practical experiences of planning and occupancy evaluation of new hospital environment in conjunction with a case study that then seeks to make some general observations about critical success factors. The case study is presented jointly between the clinical leadership (the hospital client) and the design leadership (the architect).

#### Results and conclusion

The focus on staff retention and attraction will remain critical for the next 20 years with the increase in ageing population. Salutogenic design should not remain limited to improve wellness of patients – it needs to extend to the wellness of staff and focus on grass-roots change to the health environment, by providing healthy buildings, communities and planning.



## Abbie Galvin

Director and Principal, BVN Donovan Hill, Australia

### First impressions: using architectural detail to communicate

*"Anyone who has ever scanned the bookshelves of a new girlfriend or boyfriend – or peeked inside his or her medicine cabinet – understands this implicitly: you can learn as much – or more – from one glance at a private space as you can from hours of exposure to a public face"*

– Malcolm Gladwell, *Blink: The Power of Thinking Without Thinking*, 2005

*"Architecture has not only an instrumental purpose, but also a psychological function... we therefore have to investigate more closely how we really perceive the world around us"*

– Christian Norberg-Schulz, *Intentions in Architecture*, 1963

Malcolm Gladwell made accessible research on the power of first impressions. We form instant opinions whenever we "meet a new person or have to make sense of something quickly or encounter a novel situation". Gladwell adds that "snap judgments are, first of all, enormously quick: they rely on the thinnest slices of experience ... they are also unconscious."

The implications of this concept have enormous significance for our personal reactions to most situations, including our physical environment. As architects we have the ability to impact an environment and, as a consequence, people's impressions and emotions. There are a number of building types where these impressions can have a powerful impact: health and research design is an example. And the 'message' of a building is not always required to be the same.

Through constructing environment-response networks that capture the structure of new visitors' thoughts and feelings of four health and research buildings, we identify each building's 'message'. The networks are built on data collected from interviews using metaphor elicitation. This data is coded and visualised as a network, and analysed using network analysis. A key feature of the environment-response network is that it demonstrates links between environmental features and thoughts and feelings. This allows tracing of how particular responses were generated, by presenting their structure in a graphically legible form. Network analysis brings a degree of robustness to drawing conclusions about architectural 'messages', which would, without the help of this method, be hindered by the number of individual response constructs and complexity of their interconnections.

The cases, all designed by BVN and opening this year, include a large public hospital (welcoming, anxiety reducing, engaged with community), an acute mental health facility (domestic, calming, non-institutional), a children's hospital (playful, reassuring, distracting) and an elite research institute (engaging, exciting, inspiring). The study maps these impressions to architectural design, and demonstrates how a design firm uses research to participate more fully in the design of environments under their control.

**Keywords:** Health and Research Design, Environmental Response, Network Analysis

## Alistair Leighton

Associate Director - Design & Planning, AECOM, Australia

### An Urgent Need For A New Sustainability Metric For Healthcare Facilities

Sustainability is now part of the common vocabulary for the design and construction of new buildings. Invariably the industry interprets this language of sustainability as compliance to or benchmarking against an industry-recognised environmental rating system, such as the Green Star rating system in Australia, the LEED system in the US, and BREEAM in the UK.

While there has been a significant adoption of environmentally rated buildings in the commercial sector, their take-up in the healthcare sector has been markedly lower. There is little doubt that our environmental rating systems have raised awareness and significantly moved on the knowledge of sustainability in the industry; however, their suitability to a healthcare facility is in some doubt and this may in part explain a lesser appetite for environmentally rated healthcare facilities. Sustainability rating systems evolved from the commercial office sector in response to market-driven forces for tenants seeking more sustainable buildings for their employees, and to display an outward commitment of the organisation to sustainable operation. In the healthcare industry these same drivers do not exist. The problem created is that a majority of new facilities are opting out of pursuing an environmental rating for their building, or alternatively attempting to use some self-assessed set of criteria, resulting in no basis for comparison of performance and potentially diminished environmental effectiveness. A disconnect therefore exists between the drivers for healthcare and the drivers for sustainability, to the extent that the relevance of sustainability in a healthcare setting is put in to question.

Despite this problem, an urgent and critical need exists for all developments to adopt sustainability as a core element of their design and operation. A solution that links sustainable design initiatives more tangibly and directly to the improved health and wellbeing of patients, to reducing infection rates and promoting better outcomes, is postulated as a solution.

#### Objective

The objective of this paper is to canvass a new set of metrics for sustainability in a healthcare facility that link the drivers in healthcare (health outcomes) against environmental inputs, so that sustainability in healthcare moves from a formula-based approach to a benefits-based approach.

#### Methods used

The methodology is vested in a current body of work that is matching actual healthcare outcomes from a number of recently completed facilities against on-site measured environmental performance indices.

#### Conclusion

The desired conclusion will be to produce an initial empirical framework for mapping and grading sustainable design initiatives that are targeted at improving healthcare outcomes.

**Keywords:** Sustainability, Salutogenic, Health Outcomes



## Kelvin Steel, FRAIA, MAIPM, BArch (Hons)

Project Director, Aurecon Australia, Australia

### Australian Procurement Models and Their Impact On Achieving Salutogenic Project Outcomes

#### Objectives

- To compare the salutogenic outcomes of nine major Australian hospital projects, involving five different procurement methodologies: public private partnership (PPP), managing contractor (MC), design document novate construct (DDNC), traditional lump sum (TLS) and construction management (CM)
- To assess the facilitation of innovation under the different delivery methodologies
- To assess the relative degree of 'buy-in' from key stakeholders, including clinicians, during design and following occupation under the different delivery methodologies.

#### Methods used

Structured interviews with key stakeholders including CEOs, health department staff, clinical staff, project directors, architects and contractors (and, where possible, patients)

#### Results

- Projects that involve the Design and Construct methodology, which is primarily cost driven, restrict innovation compared to other delivery methods, and often involve the building contractor instructing the consultant team to 'dumb down' the project design, resulting in sub-optimal salutogenic outcomes
- However, early contractor involvement (ECI) in the MC, DDNC, and TLS methods, where a construction adviser is involved in the project design phases, generally results in improved salutogenic outcomes
- Projects that adopt a 'fast-tracked' methodology, such as CM, can deliver salutogenic project outcomes
- The rate of change in e-health and medical technology is not being appropriately dealt with under any of the current procurement methodologies.

#### Conclusions

- The adopted procurement model for a project has a direct impact on achieving salutogenic project outcomes
- Under all procurement models the most important single document is the project functional brief.
- Where the project procurement model is primarily cost driven, salutogenic project outcomes are compromised
- The degree of stakeholder buy-in, particularly from clinicians, varies between the different procurement methodologies
- High levels of environmental sustainability are achievable under all procurement models, provided that the functional brief clearly defines the sustainability outcomes
- During the typical five-year timeframe from masterplanning to occupation of a major hospital project, considerable change will occur in the healthcare environment. The e-health and medical technology brief for a project will therefore need to undergo progressive evolutionary change; construction contracts will need to allow for major changes in the technology brief during construction

**Keywords:** Procurement, Salutogenic, Innovation



## Steven J Goe FACHE, EDAC, AIA

Director of Healthcare Strategy, HDR, USA

### North America's Most Advanced Digital Hospital

#### Background

The first fully digital hospital in North America, Humber River Regional Hospital (HRRH) serves an urban community of over 850,000 north-west Toronto residents. The new 656-bed, 170,000 sqm acute-care facility is located on an approximately 25-acre block and is planned to annually treat 97,400 emergency department patients, deliver 5,300 newborns, perform 19,900 inpatient and 20,670 outpatient surgeries as well as support 192,700 on-site clinic visits. The greenfield facility is scheduled for occupancy in late 2015.

#### Objectives

HRRH's 'lean green digital' project vision provides the conceptual and strategic underpinnings for the project:

- Operational efficiency, reduce duplication, decrease non-value-added effort and eliminate unnecessary variation to improve outcomes, throughput and staff satisfaction
- Environmentally sustainable, energy efficient strategies to minimise waste and resource consumption
- Digital systems integration and interoperability embrace the capabilities of information, communication, and automation technology as an essential operational enabler.

#### Methodology/design approach

Lean process improvement concepts reduce duplication, decrease non-value-added effort and eliminate unnecessary variation to improve outcomes, throughput and staff satisfaction all while driving operational efficiency. PHCP's design reduces staff travel distance or 'sneaker' time by 17.2%. Environmentally sustainable, energy efficient strategies to minimise waste and resource consumption. Based on ASHRAE energy standard 90.1-2007, PHCP's design reduces energy consumption by 41.8%. HRRH provides a unique opportunity to optimise design, apply technology and change processes, allowing staff to spend more time with patients and deliver more accurate, faster treatment. To improve effectiveness and efficiency of clinical and healthcare services as well as control operational costs, new Information, Communication and Automation Technologies (ICAT) are fundamentally integrated with facility planning and design. While every major industry has long embraced IT's capabilities as a fundamental part of its business strategy, the healthcare industry has not yet broadly embraced ICAT as an essential operational enabler, instead employing technology as an independent tool. Healthcare providers use some of the most advanced technology available, yet these devices are typically leveraged within organisational silos lacking fundamental information interoperability.

#### Results/conclusion

The authors will illustrate how HDR's global healthcare practice uses evidence-based design methodologies to fully integrate clinical, operational and facility planning to support HRRH's strategic objectives, and describe the concept of a digital hospital and how technology convergence is used to enable the transformation of care at HRRH.

**Keywords:** Digital, Green, Lean



## Frank Burger

Architect, a/d amstel architecten, the Netherlands

### The New Hospital in Zwolle: Combining Organic Design, advanced Technology And The Spirit Of Collaboration

Isala's new building, which will be one of the largest hospitals in the Netherlands, is slated for opening in 2013. The facility's design and construction is distinguished by organic architecture, state-of-the-art technology and the spirit of collaboration.

The hospital's organic architectural style is expressed through a diversity of materials, colours and free forms, and characterised by one important feature – the human dimension. The architectural style, the interior and the abundant greenery are all positive influences on the recovery process and wellbeing of the people who work and reside within it. Nature is brought into the building by the presence of large planters and visitors are accompanied by the greenery when travelling to their destination. The building's logical structure, art and sight lines make it clear and understandable to the eye. Physical and visual contact with the natural environment is made at as many spaces as possible. The gardens and atria are designed to be living quarters for patients and families. Isala is implementing several new ways of working, supported by IT. Patients are immediately given current wait times when checking in so they can choose where they would like to wait. Care professionals can quickly log on to computers from anywhere via a card reader. Furthermore, an innovative concept for intake and planning has been introduced to better utilise capacity. The new hospital is virtually paperless and utilises digital files only. The procurement and delivery procedures employed for the construction of the hospital are unique. The architect and various executive parties that made up the construction consortium signed a code of conduct before construction began. Apart from laying down good project management agreements, the code of conduct also established that problems were to be openly discussed. Choosing for mutual trust and self-inspection instead of mistrust and 'blaming and shaming'. As a result, the construction is proceeding on schedule and well within the budgetary framework. This approach has led to more fun and less stress for the contractors, inviting everyone to bring forward innovative, sustainable solutions and to create less waste in the construction process.

**Keywords:** Organic Architecture, Advanced Technology, Collaboration



## Innocent Okpanum, PhD

Managing Director, Ngonyama Okpanum Associates, South Africa

### Case Studies of Successful Healthy Built Environments: Designing for Healthy Lifestyles to Prevent Non-Communicable Diseases

Until recently, healthcare systems policy has consistently argued that the quality of the environment should remain secondary to the top priority of healthcare services delivery. Indeed, much of the thinking has focused only on cost-benefit analysis. This is a major reason why there has been little emphasis on the update of the project development processes used for development and improvement of healthcare facilities in South Africa. It is important to note that design professionals in the field are now focusing on developing and adopting project development processes that can improve healthcare facility design. This paper presents a case study of some success stories on new approach to healthcare facilities development in South Africa.

### Theoretical and empirical contributions

There are many similarities between today's healthcare services delivery philosophy and traditional African medical treatment approaches, in particular on issues relating to human interaction, human touch, and unlimited access to families and friends. Access to information in today's healthcare institutions is unrestricted, and family members and friends are encouraged and enabled to spend time with patients to prevent loneliness and isolation. Thus, South African healthcare institutions and design professionals are focusing on the new trend in healthcare services delivery philosophy, and traditional African medical treatment approaches for the development of healthcare facilities.

### Methods used

The data collected from observational studies and interviews after completion of the initial data management procedures were noted according to the pre-specified systems. Finally, the researcher developed naturalistic generalisation from the data analysed by noting the patterns of themes, statements to build a logical chain of evidence and the limitations encountered during and after the research.

### Findings and conclusions

This study revealed that we need to carefully examine our decision making through research-based information and knowledge systems using the full power of both our rational and emotional capabilities. In practice we have seen in this study that in patient rooms and other areas, space design should be flexible and adaptable in order to accommodate evolving needs. Hence, the need for continuous updates of healthcare facilities project development processes to provide the healing and spiritual uplift that a good building can provide through operational processes. This will result in the improved equity, efficiency, effectiveness and responsiveness of the healthcare system.



## Norwina Mohd Nawawi

International Islamic University, Malaysia

### Defining Optimum Quality Of Healthcare Spaces: A Case Study On Labour Delivery Room Design In Malaysian Public Hospitals

Current Malaysian healthcare facilities are a legacy of the colonial government of the Portuguese, Dutch and the British; their design, planning and processes have been derived from alien standards of western-based medicine and western culture. Malaysia is now undergoing a programme of transformation towards becoming a developed nation in its own mould – Asian, and particularly Malaysian. In healthcare, it is seeking to identify the basis of norms of spaces that are derived from the Malaysian culture itself.

#### Objectives

This research was conducted to obtain the optimum space for healthcare performance through identifying the ‘critical dimension’ of a selected healthcare space to function safely and effectively through behavioural and cultural use of space. This will be used as a basis for other Malaysian public healthcare spaces to determine facilities’ space standards.

#### Methods used

Both qualitative and quantitative approaches were adopted for this research, through case studies and phenomenology, and via observations, interviews, site measurements and literature review.

#### Results

Results were taken from data collected and analysis of more than seven public hospitals’ non-standard labour delivery room (LDR) designs for safe and effective use. Results found that there were ranges of overall sizes and configurations, which were generally based on “typical floor area based on foreign standards, practice and room data discussion outcomes pre construction”. The less effective LDR design spaces, where the critical dimensions for safe and effective use were seen as being compromised, were overcome by the sheer carefulness of the staff in complementing the design through on-site adjustment operational use and familiarity of the site, ie, adapting function to space.

#### Conclusions

Malaysian culture is seen as tolerant, accepting and adapting to circumstances, whatever it may be, and there were no complaints as to how the design of healthcare spaces had been received from users once handed over. For Malaysians, silence is a sign either of consent, or of not inviting business next time round. As designers, to design any space or facilities related to culture, a phenomenological approach to how the space is used in comparison to how it should be used for an effective and quality care should be the norm. Never take silence as a sign of quality work. For design that cares it pays to observe.

**Keywords:** Labour Delivery Room Design



## John Miller

Principal, HASSELL, Australia

## Adam Davies

Principal, HASSELL, Australia



### Healthy Active By design

This paper addresses the wider question of how the environment and buildings can contribute to healthy outcomes, including a study of the macro scale of planning and urban design, as well as the buildings themselves. The objective is to provide delegates with an overview of the international research evidence regarding a healthy environment and the reduction of chronic disease, demonstrating how this can be used for practical design guidance on planning and architecture with recent examples. Healthy Active by Design is a project in Western Australia aimed at assisting local authorities, agencies, designers, developers and the community to understand and embed healthy objectives in physical planning. The project was commissioned by the National Heart Foundation in collaboration with the Physical Activity Taskforce. The consultant team includes the Centre for Building Environment and Health at UWA, Aurecon and Bouncing Orange. The project has undertaken an international research review of the evidence linking the environment to chronic disease. The paper will describe how the team is now translating the research into a series of practical and implementable outcomes. The paper will also discuss recent research such as New York City's Active Design Guidelines regarding approaches that can be taken in building design to improve health and wellness. Examples will be provided from current projects, including Medibank Headquarters, currently under construction in Melbourne, where the client wished to put wellness at the heart of the building. Health of course, goes beyond physical health to also encompass mental health. This paper will discuss the sometimes almost deterministic historic relationship between mental health buildings and therapeutic outcomes and the lack of evidence to back this up. Further research is required into establishing the principals behind the design of a good mental health building. The paper will provide recent examples of community and hospital based mental health buildings across Australia to support this.

**Keywords:** Salutogenic, Communities, Lifestyle



## Stephen Verderber ArchD, NCARB

Clemson University, USA

### **Sprawling Cities And The Critical Role Of Transfusion-based Community Planning And Design**

Unmitigated, sprawling cities foster unhealthy lifestyles and contribute to a diminished quality of life. In the US, more than half the population now lives in suburbia and the typical household owns three automobiles. Sprawl's demographic, economic, health and socio-cultural influences are profound and far-reaching. Auto-dependency, anti-pedestrianism, and placelessness can result in adverse health outcomes, including increased rates of chronic heart disease, mental health disorders, diabetes and obesity. Against this backdrop, the interventional role of architecture and urban design calls for critical re-examination of the international style and its legacy – roadside commercial vernacular typologies, the rise of post-WWII suburbia, postmodernism, the late-20th-century suburban megamall, and the suppression of time-tested local vernacular building and town planning traditions. Suburbia, and its prevailing mythology, is explored in some detail relative to its aforementioned adverse personal and public health consequences. Cautionary tales from rapidly developing societies, including China and India, are contrasted with lessons learned (or not learned) from highly developed countries. The ongoing debate between the precepts of the New Urbanism, and the emerging iconoclasm of landscape urbanism is specifically discussed in relation to Beckett's pithy definition of human folly: "Try again. Fail again. Fail better." A compendium of 75 ecologically based community planning and architectural design precepts is presented as a device to aid a rethinking of the unhealthful (counter-salutogenic) effects of sprawl machines. Pedestrianism, and health-promoting buildings for wellness are emphasised via these evidence-based guidelines. Suburban transfusion is presented as an alternative, to guide the amelioration of unmitigated sprawl and its associated deleterious health outcomes. The aim is to remediate 'diseased' or frayed tissue within diffuse, low-density communities. A case study of one such community in the US is used to illustrate this methodology and its assessment metrics in the promotion of increased physical activity and behaviour in the everyday landscape. Carbon neutral infrastructure, including the prominent function of architecture, constitutes the core of transfused urban/suburban landscapes. Interdisciplinary teams comprised of designers, planners, policy makers in the governmental and non-governmental sectors, and healthcare providers at all levels, will be called upon to work closely together, with equanimity, to improve the public health of their own communities. This discussion will aid individuals and organisations committed to finding innovative solutions. Comprehensive, sustainable, human-scaled transfusion strategies are instrumental in this pursuit.



## Xuemei Zhu

Texas A&M University, USA

### Evaluating Health Impacts Of Walkable Communities: Best Practices And a Toolkit For Future Design And Research

#### Background

The obesity epidemic has become a leading public health problem in the world, calling for more collaboration between design and public health professionals. Research showed that compact communities with mixed land uses, connected street networks, rich physical activity (PA) resources and pedestrian-friendly design can promote population health by integrating walking and other PA into daily routines. These features are synergetic with the principles of New Urbanism, Smart Growth and Leadership in Energy and Environmental Design-Neighborhood Development (LEED-ND) in addressing societal concerns about sustainability, health, economy and equity. Leaders in public health, urban planning, transportation and architecture now share this belief, as evidenced by the City of New York's Active Design Guidelines. An increasing number of communities are using 'design' as the means to promote their residents' health. However, their actual health impacts are understudied.

#### Objectives

This study addresses these gaps of knowledge by (1) developing a survey- and observation-based toolkit to measure community impacts on promoting PA, and (2) using this toolkit to test the PA promotion benefit of moving into a LEED-ND certified community – Mueller Austin in Texas.

#### Methods used

First, a toolkit is being developed based on the existing literature and validated instruments. It includes measures for (a) PA-related environmental features such as land-use mix, development density, street connectivity, visual quality, safety, maintenance and PA resources (eg parks, trails, sidewalks, sports fields); and (b) PA behaviours in terms of the location, time, duration, intensity and purpose. Second, the toolkit will be validated through an empirical study, which will identify specific design features (toolkit items) contributing to PA increases among residents moving into Mueller. Mueller's development status and diverse PA-friendly features offer a unique opportunity for a pre-post and case-control study on this topic.

#### Expected results

The research team collected the data between December 2012 and March 2013 and data analysis will be finished by early June 2013. It is expected the results can inform the future design and research of healthy and sustainable communities.

#### Relevance

This presentation will address three conference themes, including: case studies of successful healthy built environments; salutogenic design for healthy communities and urban planning; and design for healthy lifestyle to prevent non-communicable diseases.

**Keywords:** Healthy Community, Physical Activity, Sustainability



## Nancy Wilson OAA, LEED AP

Architects + Research + Knowledge (ARK), Canada

## Christophe Gauthier

Senior Designer, Architects + Research + Knowledge (ARK), Canada



### Creating Healthy Communities:

#### Rethinking The Community Centre As a Wellness Centre

Similar to Australia, Canada faces significant challenges in the promotion of health and delivery of health and wellness services. In the Province of Ontario, the government is moving toward decentralisation of services and to patient-based funding, which could leave rural areas short of patient dollars, exacerbating the divide between urban and rural services, and further disadvantaging rural indigenous populations.

We know from numerous sources, including the Harvard Study of Adult Development, that happiness, health, and lifestyle are inextricably linked. A sense of community is increasingly being recognised as a central component in the promotion of health and wellness. This paper repositions the idea of a mixed-use community centre as a keystone of a healthy community, through its ability to provide programmes and services that integrate the health of body, mind and spirit.

#### Key points:

- Diversity of programme: A significant segment of the health-ease to dis-ease spectrum is supported through facilities serving physical fitness (fitness centre, natatorium, outdoor playgrounds, sports fields); culture and creativity (art, contemplation, celebration and spiritual spaces); mental health and wellness (family counselling, social workers, psychologists); and primary care (Family Health Team Clinic with interdisciplinary health practitioners)
- Transparency, views, hierarchy of spaces: Transparency and views between programmatic spaces, supported by a clear hierarchy of spatial organisation, provide wayfinding clarity and make it simple for users to intuitively comprehend their environment
- Inclusion: Healthy communities are inclusive communities. All buildings and landscapes are barrier-free accessible, and the programmes support users of all ages and mental and physical abilities
- Supporting healthy habits for the next generation: Support for family activities, including child care and family change facilities, and a Family Health Team Clinic support families in creating healthy lifestyles to prevent non-communicable diseases, such as type II diabetes
- Efficiencies and synergies: Co-location of services in one space reduces the total infrastructure required for the services; facilitates shared programming and staffing; creates a community hub; and promotes a holistic, person-based approach.

Finally, the paper posits the community centre as a scalable wellness centre model (serving a wide swath of the health-ease to dis-ease continuum), which could be implemented not only in cities, but in towns villages and rural communities that are so often at a disadvantage in terms of access to resources and funding.

**Keywords:** Community, Inclusion, Co-location



## Mardelle McCuskey Shepley, DArch, FAIA, FACHA, EDAC, LEED AP

Texas A&M University, USA

### Design Characteristics Of Healthy And Production Healthcare And Counselling Work Environments: The Staff Perspective

#### Background and objectives

One major goal of building a successful healthcare facility is helping the staff stay healthy and happy, as well as enabling them to do their job better. Staff mental and physical health and satisfaction are likely to improve patient satisfaction and perception of care.

Previous studies have highlighted the influence of indoor environmental quality on employees' satisfaction and health, which in turn affects turnover, efficiency, absenteeism and burnout mainly in non- healthcare settings. No previous studies have identified the most important environmental characteristics of a healthy productive healthcare workspace. The key characteristics of an ideal health and counselling workspace from the staff perspective were documented in this research.

#### Methods used

The participants were 207 clinical and non-clinical employees, holding 25 job titles, from three health facilities in Texas, US. They participated in the study by responding to a set of structured and unstructured survey questions. First, using structured surveys, the participants were asked to identify the most important environmental characteristics of their ideal workspace enhancing their health and performance. Then, the participants' satisfaction level with their current workspace design features was documented using a five-point Likert scale. Finally, they were asked to describe their ideal work space in an unstructured open-ended question. The responses were analysed descriptively and then using analysis of variance statistical methods. The participants' responses to unstructured questions were studied using the content analysis method to investigate all characteristics of a healthy productive workspace.

#### Results and conclusions

The findings showed a consistent pattern across all the responses in the three facilities. A strong significant pattern was found in the ranking of the environmental variables noted by the participants, regardless of research site, gender, age group and title of participants (Sig= 0.0000). The presentation will reveal the top five most important environmental factors contributing to healthy and productive healthcare and counselling workspaces. The research team will describe how various design features are linked to health and performance differently based on job description, gender, and age of the employees. Finally, the employees' overall image of an ideal workspace above and beyond physical environment will be provided to the audience.

**Keywords:** Environmental Quality, Health, Performance



## Chloe Hamman

Massey University, New Zealand

## Linda M Jones MA Well, PhD, MNZPsS

Massey University, New Zealand

### Indoor Environmental Quality That Improves Health And Wellbeing

The biophilia hypothesis suggests that the visual experience of nature can have a positive effect on mood. However, it is yet to be determined which aspects of nature are more strongly related to such effects. This study aimed to investigate the relationship between the living component of nature and restorative potential.

#### Methods used

Nature was introduced into a functional workplace setting in two forms; living and artificial fish and plants, in a 5x4 design where the fifth variable was a control environment. Mood scores were collected on an adapted version of the Profile of Mood States (bi-polar version), which has subscales covering five mood dimensions: composed-anxious, agreeable-hostile, elated-depressed, confident-unsure, energetic-tired, and clearheaded-confused. Data were recorded from a small group of participants, daily, over the five weeks it took to randomly expose each participant to the different levels of the living and artificial variables. The intervention phase was followed by semi-structures interviews with each participant. The study was recorded on the Massey University Human Ethics Committee Low-risk database.

#### Results

Quantitative analysis of the mood scores converted raw data to T-scores for each nature-condition. Participants' daily mood was plotted as a mood profile and compared by condition with published norms. The analysis, whether by environmental condition or participant profile, suggested that living nature, in particular living fish, may have a more positive effect on mood than artificial nature, especially artificial plants. In addition, semi structured interviews revealed that the living fish were actively positively regarded ("The fish made my day"), supporting the theory that animals in an environment may be the catalyst for social interaction, which itself is positively correlated with more positive mood experience. Such findings have implications for workplace design and employee wellbeing. This preliminary study provides justification and direction for further research.





## Judith Hemsworth

Design Services, Capital Projects and Service Planning,  
Department of Health Victoria, Australia

### What Is 'Design Quality' In Healthcare? Why Do We Want It? How Do We Ask For It And How Do We Know It Has Been Delivered?

Multiple stakeholders are involved in the planning and delivery of publicly funded healthcare facilities. Stakeholder experience ranges from those for whom it is their life's work, to others for whom it is a once-in-a-career experience. Nevertheless, every participant in every project will typically specify a requirement for 'design quality'. Does 'design quality' mean the same thing to the architectural consultant as the facilities manager or the nurse unit manager? Is 'design quality' the same for healthcare facilities as for other types of buildings? How do we know we have achieved it and who or what benefits if we do? Recent work by the Victorian Department of Health has defined 'design quality' not as a separately deliverable characteristic of a building project but as an outcome achieved through successfully addressing a number of interconnected concerns including delivery of facilities. Projects should be health-promoting, functional, cost-effective to use, operate and maintain; they should support staff in the safe, effective delivery of health services, address the physical, emotional and social needs of all building users, be financially, socially and environmentally sustainable and be responsive to the context in which they are located. The Department reviewed literature related to design quality generally to design quality specifically in healthcare facilities and reviewed guides and tools developed to assist project stakeholders better brief and evaluate designs. The outcome is a Design Quality Guideline that establishes the Department's standards in relation to design quality and sets out processes and tools to assist stakeholders brief and review projects to achieve the desired outcomes. Case studies of recently completed projects illustrate how the Department's efforts are producing innovative, health-promoting environments.

**Keywords:** Design Quality, Supportive Environments



## Alex Symes, BArch

Arup, Australia

### Indoor environmental quality that improves health and wellbeing

#### Objectives

Internal environmental quality in relation to healthcare facilities broadly relates to: ventilation rates; air change effectiveness; air contaminant monitoring and control; daylight levels; thermal comfort; healthy materials; appropriate acoustic levels; infection control; daylight glare; individual comfort control; and connection with nature. Building envelope design is integral with all of these attributes and this study aims to interrogate and quantify the capital costs and operational costs of their implementation, and the potential benefits of reduced length of stay and staff wellbeing as demonstrated by many evidence-based design (EBD) studies conducted over the past three decades.

#### Methods used:

In Australia and potentially other regions in the world, a perceived disconnect currently exists between the implementation of reducing operational energy for perimeter zones of healthcare facilities and the implementation of building envelopes that can benefit the healing environment. This study aims to quantify the capital cost of envelope configurations and compare the operational costs and potential staff retention and length of stay metrics using literature review, case-study analysis and computational energy and daylight simulation and analysis.

#### Results

Practical lessons learnt will be covered under the headings:

- Capital costs of differing building envelope configurations
- Operational cost of differing building envelope configurations
- Potential length of stay outcomes based on EBD results comparing building envelope configurations
- Potential staff satisfaction based on EBD results comparing building envelope configurations.

#### Conclusions

The development of healthcare facilities is aided by taking a holistic approach to the life-cycle costs of building envelopes, including the potential benefits of reduced length of stay and increase staff satisfaction.

**Keywords:** Building Envelope, Healing Environment, Daylight, Views, Individual Control, Staff Satisfaction, Length of Stay



## Andrew Laming

Federal Member of Parliament  
Coalition Spokesperson for Regional and Indigenous health

### Addressing social and health inequities in indigenous health

Australia delivers world-class health outcomes, despite having the second lowest population density worldwide. In addition to health outcome gaps by income, Australia is working to close the gap between indigenous and non-indigenous citizens and between urban and remote populations. This requires a unique approach to health system investment, which balances fly-in fly-out services, mobile health infrastructure, tele-medicine and incentives for health workforce relocation. This address overviews the last decade of reforms in this area.

*Andrew Laming is Coalition Spokesperson for Regional and Indigenous health and a fellow of the Royal Australian and New Zealand College of Ophthalmologists. He also holds a Diploma in obstetrics and gynaecology from the Royal College of Obstetricians and Gynaecologists, as well as a Master of Public Administration from the John F Kennedy School of Government of Harvard University, a Master of Public Policy from Charles Darwin University and a Master of Philosophy in Public Health from the University of Sydney. He has worked in public health, economics, ophthalmology, international systems and finance.*



## Ian Forbes

University of Technology, Sydney, Australia

### The Architect, The Environment And Dementia

#### Aims and Objectives

To extend the work from a previous randomised trial undertaken that explored the influence of facility interventions intended to have a benefit in improving the Quality of Life (QoL) and the Quality of Care (QoC) for a selected group of people living with dementia. This new study provides an in-depth follow-up at the intervention sites and examines the dose effect (the impact expected from the intervention) and the duration (how the intervention has been influencing outcomes over time). The study describes both the formative evaluation (whether the intervention's objectives were met) and the summative evaluation (whether the interventions were useful in achieving QoL and QoC) involving the 15 dementia-specific facilities. The progressive nature of dementia has a tendency to reduce a person's ability for self-care and self-determination, which are essential elements in maintaining one's quality of life. Historically, design of dementia specific facilities has concentrated on compensating for the loss of a person's ability. However through recent research and from examining collected experience, it has shown a more effective approach is to support residents' retained memories and enhance residual abilities that encourage people to maintain self-control and self-determination. Architects understand the outcome from a dementia-specific design must create places where people can feel comfortable, safe and familiar. We know that this can be done by designing places that focus on reducing collective and individual stress, reduce anxiety and lead to a reduction in behavioural problems that often arise.

#### Methods used

In the previous study, an audit evaluation tool was developed and validated called EAT (Evaluation Audit Tool). This tool then was used to determine the worst aspects of the current dementia-specific facilities and from this the interventions to the physical environment were completed. With the interventions undertaken, a series of psychometric tests (to measure QoL and QoC) were carried out on the residents' pre and post-intervention. The results of these tests indicated that improvement was possible but an understanding of why and what mechanisms were operating needed to be undertaken. The author then created a semi-structured questionnaire to interview managers, careers and relatives as proxies for dementing relatives. The interviews were carried out by developing an in-depth database as well as a series of case studies that provide useful context and an understanding of changes that can be implemented in the design of dementia facilities.

#### Results

Preliminary analysis suggests that while it is often difficult to do, the environmental features of dementia facilities can be changed in order to support people centred approaches. This increases the potential for positive experiences for residents, their supporters and families.

#### Conclusions

This research provides a body of new knowledge to inform those responsible for the design of dementia facilities to promote wellbeing for dementia residents, their supporters and staff.



## Phil Smith

Architect, Urban Designer and Associate Director, Deicke Richards

### Ageing In Neighbourhood: An Holistic Future Approach To Ageing Well In An Urban Environment

#### Objectives

This research investigated the design of liveable, affordable and sustainable housing for seniors, specifically in infill areas. It responded to issues that will shape Australian cities over the next 50 years – an ageing population and increasing urbanisation.

#### Methods used

The investigation used a case study approach with two qualitative and participatory research methods, photovoice and design charrettes. The researchers worked with two groups of people, aged 55 and older, from two different geographic locations in South East Queensland, Australia.

The photovoice method engaged participants in a dialogue around images they had taken, to identify the desirable and challenging aspects of neighbourhood and home environments.

There were two stages:

- To gain understanding of older peoples' perspectives using photovoice and to develop principles to guide design
- To apply the principles and embed participants' perspectives in design typologies using a two-phase design charrette process.

While photovoice has been used extensively in past community development and health studies, more recently it is being used by planners and researchers to understand community values and perspectives to input into planning processes. This "participant elicited data" provides a richer insight into often complex, contextual issues. Visual data identifies problems and strengths omitted from data gathered using other means.

#### Results

Outcomes of the project include: the research publication; 15 design principles; a suite of eight housing typologies suited to infill development opportunities; and the 'ageing in neighbourhood' concept. This concept stems from a range of research findings, which says that location is vitally important to seniors, not just the dwelling itself. An attachment to locality or a community that is familiar is important to older people as age increases. These factors are also important to health and wellbeing outcomes. The design advantage of the 'ageing in neighbourhood' approach is that these typologies could be developed in a suburb, overlaid with home care, health and support services that already exist.

#### Conclusions

The 'ageing in neighbourhood' concept signals a profound shift in how we might design and create future communities. It also provides direction on the rehabilitation of our existing infrastructure into more livable communities, which have the capacity to impact on the wellbeing and health of residents.

**Keywords:** Housing, Seniors, Health



## Margaret Muir BSc (Hons) MAPS, MGANZ

Psychologist, Australia

### Memories And Meringues

This documentary DVD provides an overview of the stimulating and stirring changes in six women living with dementia following a six-week Gestalt Art Therapy Programme. I initially proposed the concepts for this programme in a presentation titled 'Egg whites and...' in 2003 in Montreal at the 3rd Design & Health World Congress. This presentation provides the opportunity to share part of the reality of the dreams and hopes I held for the progression of the programme at that time in Montreal.

The programme, now called GATE-ways to Recovery, has been developed and evaluated in disparate yet unifying components. These are the person-centred approach and trauma recovery, together with gestalt and gestalt art. These areas are linked by the fundamental tenet that not only is each person unique, but also that they are the expert about their life experiences.

The focus of the documentary is the experience of people with dementia participating in the programme; however, also included are researcher and staff observations. The first component is the person-centred approach, which was initially proposed by the late Tom Kitwood in the 1970s. The approach embodied Kitwood's philosophy of life, love and care. His approach is based on the essential human need for comfort, attachment, identity, occupation, inclusion, attachment and love. Framed by the person-centred approach, the second component, the trauma recovery model, is constructed around four steps of safety, trust, skills, mastery and control, with the aim of enabling the person to have faith in, and reveal, their sense of self.

As the person with dementia/disability 'climbs' these four 'steps' they are enabled to establish effective and sustainable social interaction with others, so often missing for these people. As the DVD reveals, through the use of gestalt art therapy, the person with dementia makes and describes 'images' without assistance from or interpretation by the therapist. These images can be as simple as a single line or a piece of abstract art work that 'speaks' of inner thoughts. By describing the image(s) the person is able to then 'tell' the narrative in a meaningful manner.

The vital link in these different approaches, combined in GATE-ways to Recovery is respect for thoughts, feelings and beliefs of both participants and the facilitator. Those who have viewed the documentary state that this innovative non-pharmacological programme is "moving" and "inspirational".

**Keywords:** Dementia, Trauma, Gestalt

# Exhibition Hall and Poster Gallery Floorplan

Our unique combination of an industry exhibition of the latest design and product innovations and solutions, an awards gallery displaying the shortlisted winners of this year's Design & Health International Academy Awards 2013 (see pp42-55), as well as a gallery of scientific research posters (see p15) ensures that the learning experience of the congress

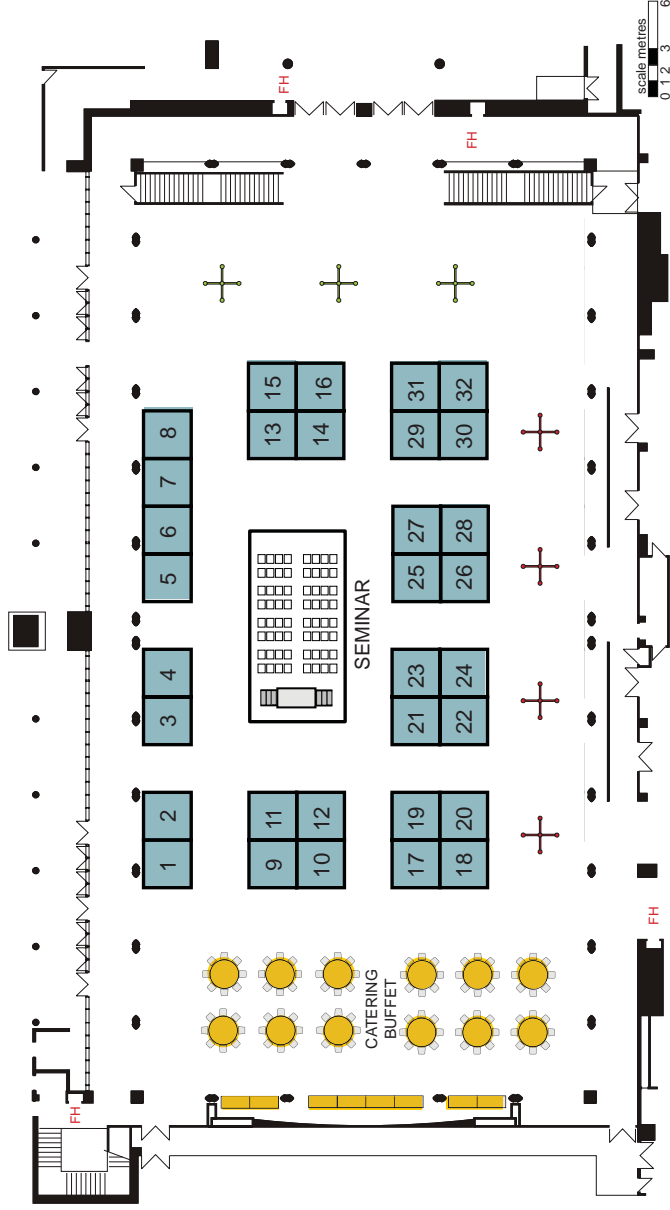
continues outside of the conference hall, at the same time as providing a platform for networking with colleagues and clients to develop business and marketing opportunities. Please also take the opportunity to enjoy our special showcase presentations (see pp19-39), which will take place in the central area of the exhibition hall.

## Opening Times

Thursday	09.00 - 18.00
Friday	09.00 - 18.00
Saturday	09.00 - 18.00

## KEY

- AWARDS / ARCHITECTURAL POSTERS
- SCIENTIFIC POSTERS
- EXHIBITORS
- CATERING



International Academy Awards Poster Gallery			
Health Project (Over 40,000)		Interior Design	
A1	Stantec	A16	ARK
A2	F Forward slp	A17	Stantec
A3	BDP	A18	Cannon Design
A4	Perkins + Will		
Health Project (Under 40,000)		Art in the Patient Environment	
A5	EGM Architecten	A19	AECOM
A6	Henley Halebrown Rorrison	A20	rb&hArts
A7	Farrow/MSA	A21	Hospital Design Group
Future Health Project		Product	
A8	Conrad Gargett Lyons	A22	Britplas
A9	Albert Wimmer ZT	A23	Altro
A10	Skidmore Owings & Merrill	A24	Siemens Healthcare
Salutogenic Design		Mental Health Design	
A11	Allen Kong Architect	A25	de Jong Gortemaker Algra
A12	Earthon Group	A26	PDT + STH + HASSELL
A13	ARK	A27	ARK
Sustainable Design			
A14	Stantec		
A15	Woodhead		
P1-28 Scientific Poster Gallery (see p15 for the poster content)			

Exhibitors			
1	Hipac	17	Materialised
2	Hipac	18	Siemens
3	Altro	19	Olympus
4	Sky Factory	20	Olympus
5	MAQUET	21	Conrad Gargett Riddel
6	Design & Health	22	Woods Bagot
7	World Health Design	23	Aurecon
8	Brisbane Marketing	24	Montgomery Sisam
9	Britplas	25	Norman Disney & Young
10	Design in Mental Health	26	Norman Disney & Young
11	VK Architects & Engineers	27	Norman Disney & Young
12	VK Architects & Engineers	28	Norman Disney & Young
13	Schiavello	29	Philip Chun
14	Schiavello	30	Alzheimer's Australia WA
15	Lyons	31	Arup
16	Lyons	32	Arup



Contact: John McGuire,  
Director – Global Health  
(Building Systems)  
[www.aecom.com](http://www.aecom.com)

## AECOM

AECOM is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation and technical excellence in delivering solutions that create, enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 130 countries and had revenue of \$8.3 billion during the 12 months ended June 30, 2012.



the future is safer with altro

Contact: Glen Stratton,  
Business Manager,  
Australia and New Zealand  
[www.asf.com.au](http://www.asf.com.au)

## Altro

Altro is a leading UK, family-owned manufacturer and supplier of wall and floor coverings, founded in 1919. Altro invented safety flooring, a product area in which we continue to lead the way. In recent years we have also launched many other integrated solutions for practical, decorative interiors, combining floors, walls, ceilings and doorsets. Altro products are designed to offer you a complete system. Our wall and floor cladding solutions work hard, individually or together, to provide hygiene and safety in the most demanding environments. Our safety flooring affords a level of slip resistance that exceeds the latest regulations. It is frequently specified in the education, healthcare, hospitality and leisure sectors. Our Altro Whiterock Wall cladding system provides watertight and seamless surfaces, perfect for areas that demand the highest standards of hygiene.



**Dementia**  
Enabling Environments  
[www.enablingenvironments.com.au](http://www.enablingenvironments.com.au)

Contact: Jason Burton,  
General Manager  
[www.enablingenvironments.com.au](http://www.enablingenvironments.com.au)

## Alzheimer's Australia

Alzheimer's Australia WA is the peak body for people living with dementia in Western Australia. AAWA provides a broad range of services including home support, day centres, education and research services across the state. The Dementia Enabling Environments Project is a knowledge transfer programme to translate research based dementia design principles into practice. Led by a group of dementia design experts from around Australia it consists of a range of initiatives including a comprehensive online dementia design information centre.

## ARUP

Contact: Andy Bradley,  
Principal, Building  
Services Leader  
[www.arup.com](http://www.arup.com)

### Arup

Arup is a multi skilled engineering based consultancy employing approximately 10,000 staff in over 90 offices across the world. They are involved in many sectors, creating cost effective solutions for their clients. In the healthcare business sector, Arup has over 2,500 projects ranging from engineering design through sustainable strategies to management consulting activities. Current activities include comparing whole life cost models, ensuring that future clinical needs are considered during the early planning activities, developing low carbon strategies, seeking appropriate innovation from other sectors and embracing the value generated by the therapeutic environment.



Contact: Kelvin Steel,  
Project Director  
[www.aurecongroup.com](http://www.aurecongroup.com)

### Aurecon

Aurecon provides engineering, management and specialist technical services for public and private sector clients globally. With an office network extending across 25 countries, Aurecon has been involved in projects in over 80 countries across Africa, Asia Pacific, the Middle East and the Americas and employs around 7,500 people throughout 11 industry groups. We seek to foster human achievement in all aspects of our work. Aurecon has a client centric business model that gives us the agility to deliver the full range of our services globally. We create best teams for our key clients, develop strong client relationships and deliver market leading solutions. Our clients benefit from our collaborative business model as it nurtures the development of market leading expertise across their industries. Our technical professionals develop business advantage for our clients based on a deep understanding of the industries in which they operate.



Contact: Ron Billard, Director  
[www.blp.com.au](http://www.blp.com.au)

### Billard Leece Partnership

Billard Leece Partnership (BLP), founded in 1995, provide specialist services across varying sectors with a depth of experience in healthcare. Not just health planners, BLP are a reputable architectural practice who believe in a holistic approach to healthcare design which is not simply wallpaper around functional planning. Our expertise is based on many years of individual and collective experience, not only in the architectural sense but also through clinical health planners with recent backgrounds in clinical and executive roles within the private and public health sectors. This adds a component of understanding to the complexities of healthcare facilities which ensure a different level of dialogue with the client to achieve the best design solution. BLP understands the importance of a concise and clearly articulated patient journey and expected patient outcome and work to ensure this is at the forefront of the design.



Contact: Kylie McKenzie,  
Business Development and  
Research Executive  
[www.meetinbrisbane.com.au](http://www.meetinbrisbane.com.au)

## Brisbane Marketing

The Brisbane Marketing Convention Bureau provides an effortless one-stop-shop with free independent advice and support services to help you plan, promote and stage your most successful event. The Brisbane Convention Bureau will source competitive quotes, secure bid support and prepare a winning bid to hold your next event in Brisbane.



Contact: Kevin Gorman,  
Chairman  
[www.britplas.com](http://www.britplas.com)

## Britplas (Safevent Systems Group)

Safevent Systems Group has established itself as innovator, inventor and fabricators of products that address some of the key challenges of the sensitive environments of supervised care. The group's flag ship product, the multi-award winning Safevent Window has been a major success story within supervised care addressing many of the concerns associated with ensuring safe, secure, ligature free environments, preventing self harm, restricting the passing of drugs, generating maximum levels of natural light and ventilation, so adding value to a buildings sustainability, life cycle and energy performance whilst still remaining competitive and consistent on price. The group's product range includes door and curtain walling systems, casement windows, Safevent Security Fencing and other innovations adding value to sensitive secure environments.



Contact: Abbie Galvin,  
Director and Principal  
[www.bvn.com.au](http://www.bvn.com.au)

## BVN Donovan Hill

BVN Donovan Hill is widely acknowledged for creative, award-winning design and sound professional expertise. Included in its portfolio are buildings of all types from workplace, defence and airports through to major hospital projects. These include St Vincents in Sydney, the Mater in Brisbane, Robina on the Sunshine Coast and Sydney's Royal North Shore Hospital which is the biggest public health project undertaken in NSW history. More than 200 prizes have been given to BVN designs in the last decade. These include prestigious architecture awards such as the recent 2010 World Architecture Festival award for the world's best health building, that was given to BVN for the Brain and Mind Research Institute (BMRI) in Sydney.

## CAPITA

Contact: Craig Dixon,  
Director, Health Advisory  
[www.capita.co.uk](http://www.capita.co.uk)

### Capita

Capita is the UK's leading provider of BPO and integrated professional support service solutions. With 46,000 people at more than 300 sites, including 64 international business centres, Capita uses its expertise, infrastructure and scale benefits to transform its clients' services, driving down costs and adding value. Our multi-disciplinary health consultants are experienced in planning and delivering clinical services and are able to provide services ranging from national policy advice to local problem-solving. Health buildings need to support improved and constantly changing models of healthcare delivery. They also need to be efficient, safe, attractive, environmentally sustainable, and affordable. Our multi-disciplinary health planners employ specialist knowledge of planning and design, along with their extensive experience of managing health services and facilities, to help clients worldwide achieve this balance.



Contact: Bruce Wolfe,  
Managing Director  
[www.conradgargett.com.au](http://www.conradgargett.com.au)

### Conrad Gargett Riddell

With over 120 years of experience, Conrad Gargett Riddell is one of Australia's leading multidisciplinary design practices. The practice offers a highly integrated approach to urban design, architecture, interior design and landscape architecture. Supported by a team of specialist design consultants working in Brisbane, Sydney and Townsville studios, Conrad Gargett Riddell successfully delivers projects both domestically and internationally. In 2007, Conrad Gargett Riddell, in association with Lyons, was awarded the design contract for the \$1 billion Queensland Children's Hospital in South Brisbane. Due for completion in 2014, the new hospital will supersede the Royal Children's and Mater Children's Hospitals in capacity, technology and service.



Contact: Gunther De  
Graeve, Managing Director  
[www.destravis.com](http://www.destravis.com)

### Destravis Group

Destravis was established to provide strategic planning and design advice for the early phases of capital projects in the health sector. Our team are experts at delivering quality solutions in this specialised area. We have extensive experience working for public and private sector clients and we are proud to hold a reputation for quality and timely delivery. We understand that health service outcomes are underpinned by efficiency and productivity. This requires defining client and project objectives, gaining commitment and buy-in from stakeholders, efficient planning, and careful management of the project progress to ensure client's objectives are protected. We provide a range of strategic consultancy services, including: project creation and definition; functional design briefs; strategic infrastructure assessment; master plan; project definition plan; technical advisory services; project director, client representative or principal consultant roles; stakeholder management and engagement; and peer reviews.



Contact: Joe Forster,  
Chairman  
[www.dimhn.org](http://www.dimhn.org)

## Design in Mental Health Network

The Design In Mental Health Network is a not-for-profit social enterprise with charitable aims to bring together people involved in mental health environments to collaborate and improve outcomes. We are confident that when people who use and experience mental healthcare settings come together with those who procure, design and construct them, rewarding opportunities open up to think through the issues and challenges we face in making those environments healing, optimistic and effective places to be. It is here for anyone with an interest in the design of mental health units and settings: architects, artists, designers, estates and facilities staff, medical staff, service users, clients, nurses, occupational therapists, psychologists and contractors.



Contact: Tye Farrow,  
Senior Partner  
[www.farrowpartnership.com](http://www.farrowpartnership.com)

## Farrow Partnership Architects

Farrow Partnership Architects delivers high performance buildings that enhance health and wellness. Drawing on themes from nature, Farrow Partnership has designed award-winning projects across Canada and around the world. A core belief is that the focus of global healthcare must change from sickness to wellness. Farrow Partnership has made a major contribution to this shift by creating environments that uplift the human spirit while advancing business goals. The firm's groundbreaking approach at the Credit Valley Hospital and Thunder Bay Regional Health Sciences Centre in Canada is viewed internationally as setting a new standard for healthcare design.



Contact: Warren Kerr,  
National Director,  
Health Portfolio  
[www.hamessharley.com.au](http://www.hamessharley.com.au)

## HAMES SHARLEY

HAMES SHARLEY bases its work on the premise that health and design are inextricably linked and therefore uses design as a strategy to fulfil its philosophy of "creating design value" by assisting healthcare providers to improve healthcare outcomes. To appoint HAMES SHARLEY for a healthcare project enables you to access our demonstrable experience in evaluating the operating cost implications of different designs of health facilities. Our team of health planners, health service planners and health facility planners ensures that your vision and model of care are successfully translated into the most cost efficient design based on world's best practice in evidence-based design and research.

## HASSELL

Contact: Jeff Menkens,  
Principal  
[www.hassellstudio.com](http://www.hassellstudio.com)

## HASSELL

HASSELL has been designing healthcare environments for over 25 years.

Our extensive portfolio encompasses a diverse range of projects from small scale facilities to large complex acute hospitals and specialist services. Our global network of integrated architecture, landscape architecture and interior design studios provide a flexible, specialist resource focused on developing a holistic response to every healthcare environment. Working across geographically diverse markets provides us with a broad understanding of different cultures, climates and construction practices ensuring our response is appropriate and sensitive to context. Our success is based on listening and understanding the needs of our clients underpinned by our extensive portfolio, specialist skills and design research.



Contact: Junny Ni, Product  
Category Manager – Wood  
Case Goods & Healthcare  
[www.haworth-asia.com](http://www.haworth-asia.com)

## Haworth

Haworth is a global leader in the design and manufacture of organic workspaces, including raised floors, movable walls, systems furniture, seating, storage and wood casegoods. Family-owned and privately held, Haworth is headquartered in Holland, Michigan, and serves markets in more than 120 countries through a global network of more than 600 dealers. In 2012, Haworth Asia Pacific initiated a furniture design partnership with international healthcare designer, Linda Porter Bishop. Her theory of The New Five Senses presents a challenge to re-think the design of restorative environments. The new collection gives thoughtful consideration to the needs of patients and their families, their caregivers, the facility managers and designers specifying these special spaces. Using evidence-based design, the introduction includes lounge and guest seating for public and patient waiting areas as well as patient room furniture: sleep sofas, recliners, patient chairs, over-bed tables, bedside cabinets and casegoods.



Contact: Roger P Stewart,  
Director of Global  
Development  
[www.hdrinc.com](http://www.hdrinc.com)

## HDR

HDR is an employee-owned architectural, engineering and consulting firm recognised for providing elegant design solutions for technically complex projects. The firm provides complete design services from more than 180 offices around the globe. For over 50 years, HDR has delivered award-winning integrated healthcare planning and design for some of the world's foremost medical centers and health systems. The firm's success for clients such as the Johns Hopkins School of Medicine, the Mayo Clinic and the Cleveland Clinic, has been informed by a single core philosophy: to embrace the kind of forward-thinking leadership and expertise necessary to deliver facilities that are innovative, flexible, efficient and that support a healing, sensitive environment for patients, their families and the healthcare staff. HDR has been named the world's leading healthcare design firm by *Building Design* magazine's "World Architecture 100" survey for three years, and the No. 1 healthcare design firm in the US by *Modern Healthcare* magazine for an unprecedented ten consecutive years.



Contact: Kent Sneddon,  
Marketing Manager  
[www.hipac.com.au](http://www.hipac.com.au)

## Hipac

Hipac is a leading Australian supplier of reliable healthcare products, supported by a premium national after sales service network. Hipac's dedicated team of individuals are committed to improving the lives of others through the supply and maintenance of market leading surgical equipment and building products which, through their innovative design, produce superior clinical outcomes. Our core products deliver solutions which focus in and around the operating theatre and mental health facilities. Our suite of at risk patient protection products are designed to protect mentally distressed patients and their carers while they are living under a duty of care. Our operating theatre lights, pendants and digital integration systems offer a new dimension to clinical design flexibility and significantly improve clinical workflows.



Contact: Chris Liddle,  
Chairman  
[www.hlmarchitects.com](http://www.hlmarchitects.com)

## HLM Architecture

HLM provides a full range of design and masterplanning services from its offices in London, Sheffield, Glasgow, Belfast, Cardiff and Plymouth supporting clients and projects throughout the UK. HLM is a creatively focused organisation which operates with the belief that good design and architecture enhances the quality of life and environment for current and future generations. As one of the leading UK architecture and design firms, we have developed a unique blend of commercial, teaching and design expertise. We are at the forefront of PPP/PFI, where our design ethos is ideally suited to achieving optimal design solutions to minimise the life cycle cost of our buildings.



Contact:  
Prof Alan Dilani,  
Chief Executive Officer /  
Marc Sansom, Chief  
Operations Officer  
[www.designandhealth.com](http://www.designandhealth.com)

## International Academy for Design & Health

Founded in 1997, the International Academy for Design & Health is dedicated to the stimulation and application of research concerning the interaction between design, health, science, and culture. Providing a highly visible global forum for an ongoing exchange of research findings among scientists, designers and industry, the Academy works in close partnership with an international network of governments, leading universities, health providers and commercial industry to promote human health, wellbeing and quality of life through environmental design. The Academy is the organiser of the 9th Design & Health World Congress & Exhibition in Brisbane, various international symposiums in Europe, Asia, North America and the Middle East, and publisher of *World Health Design* and the new book titled, *Australian Healthcare Design 2000-2015*.



Contact: Steve Trevenar,  
Head of Business and  
Strategy, Healthcare and  
Scientific Research  
[www.lendlease.com](http://www.lendlease.com)

## Lend Lease

Lend Lease is one of the world's leading project management and construction companies, known for its ability to deliver high-quality projects on time and budget. Lend Lease provide innovative and industry-leading project management, construction and design services globally, with a core focus in Australia, Asia, the Americas, Europe and the Middle East. The comprehensive offering includes project and program management, design and construction, design management, construction management and multi-site solutions. Sustainable design is always a focus and green rating certification has been achieved for many developments globally. Lend Lease has been behind some of the biggest healthcare projects in Asia, the US, UK and Australia, including the New Royal Children's Hospital in Melbourne and Gold Coast University Hospital in Queensland. More recently Lend Lease was awarded the Sunshine Coast University Hospital in Queensland and the New Bendigo Hospital in Victoria.



Contact: Corbett Lyon,  
Founding Director  
[www.lyonsarch.com.au](http://www.lyonsarch.com.au)

## Lyons

Lyons is one of Australasia's leading health architecture and planning companies with an international reputation for the design of innovative, cost effective and culturally responsive health facilities. Lyons' design and planning approach responds directly to today's healthcare challenges, delivering solutions which are underpinned by international best practice thinking, evidence-based research, innovations in strategic planning and clinical design and the application of 'salutogenic' design principles. Lyons offers this multi-faceted design capability across: tertiary teaching hospitals; acute hospitals; community hospitals; 'step down'/sub-acute facilities; assessment and rehabilitation facilities; nursing homes / residential facilities; ambulatory 'superclinics'; community health facilities and medical research and university facilities. Lyons is also an award-winning world leader in sustainability.



Contact: Raquel Guarany,  
Marketing and Sales  
[www.maquet.com](http://www.maquet.com)  
[www.getingegroup.com](http://www.getingegroup.com)

## MAQUET

As a trusted partner for hospitals and clinicians since 1838, MAQUET is a global leader in medical systems that advance surgical interventions, cardiovascular procedures and critical care. MAQUET develops and designs innovative products and therapeutic applications for the operating room, hybrid OR/cath lab, intensive care unit and patient transport within acute care hospitals, improving outcomes and quality of life for patients. Cardiovascular specialties include intra-aortic balloon counterpulsation (IABC) therapy for cardiac assist; coronary artery bypass surgery; aortic and peripheral vascular surgery; and extracorporeal circulation. The Critical Care portfolio includes market-leading intensive care ventilators and anesthesia machines. MAQUET also equips surgical workplaces with critical infrastructure such as flexible room design for OR and ICU; OR tables; lights and ceiling supply units; and OR integration for image data management.



Contact: Gary Price,  
Managing Director  
[www.materialised.com](http://www.materialised.com)

## Materialised

Materialised are suppliers of beautiful and functional commercial grade furnishing fabrics with inherently unique qualities suited for use in the healthcare, aged care and hospitality industries, or anywhere that demands high performance furnishings. Our entire stock range of furnishing fabrics is specifically designed for use in the real world where flame retardancy, high abrasion resistance, stability and launderability are a necessity. Waterproof, anti-microbial, antibacterial, UV resistant and recycled polyester fabrics are included in our vast range.



Contact: Mungo Smith,  
Director  
[www.medicalarchitecture.com](http://www.medicalarchitecture.com)

## Medical Architecture

Medical Architecture is an international design practice, providing leadership in the design of high-performing healthcare environments. Our approach is clinically driven, enabling enhanced delivery and improving the experience of patients and staff alike. Our work is rooted in the value of the formulation of intelligent strategies to deliver sustainable settings for health improvement; exemplary design that enhances the human experience of medical care and research and evaluation of project outcomes to inform decision making. Our concern for growth and expansion ensures our buildings are flexible, adaptable and able to respond to future changes in standards and clinical practice. As health developments and trends have globalised, our work has become international with projects in Australasia, North America, Europe, Middle East and Africa. We have a skilled team of 32 architecture professionals in three offices over two continents: London and Newcastle upon Tyne in the UK and Sydney, Australia.



Contact: Alice Liang, Principal  
[www.montgomerysisam.com](http://www.montgomerysisam.com)

## Montgomery Sisam

Montgomery Sisam is a leader and innovator in the design of health care facilities with extensive experience in both the planning and the design of mental health, rehabilitation and complex continuing care facilities. The emphasis of each project is on the creation of a client-centered environment that responds to the opportunities offered by each site and each client's unique vision. Importantly, we have proven that this can be achieved within today's context of sensible budget management, stringent scheduling, and sophisticated technology.



Contact: Keith Davis,  
Director – Health  
[www.ndy.com](http://www.ndy.com)

## Norman Disney & Young

Norman Disney & Young is an innovative and diverse engineering consultancy with a commitment to building a better future through excellence in sustainable design. Established in 1959, we have a long and proud history of offering an extensive range of engineering services and delivering award-winning world-class projects. With over 600 staff and 11 offices across Australia, New Zealand, United Kingdom, United Arab Emirates and Asia, we offer clients access to the highest quality expertise supported by a depth of knowledge and experience. We offer engineering consulting services across a range of market sectors including health, buildings, defence, industrial, mission critical, transport and utilities.



Contact: Dr Innocent  
Okpanum, Managing  
Director / Owner  
[www.ngonyamaokpanum.co.za](http://www.ngonyamaokpanum.co.za)

## Ngonyama Okpanum Associates

"Space design, functional suitability and spatial relationship for buildings to improve the experience and quality of life of those who occupy them." This fundamental principle has guided the firm since its inception in 1993. NOA provides a full range of in-house professional services such as architecture, project management, interior and urban design. This ensures the effective management of projects and confidence in the end product. With eight offices in South Africa and an international office in Abuja, Nigeria, we are able to compete both locally and in the greater African continent. Our fields of expertise are international buildings, office buildings, hospitality and healthcare developments, commercial, residential and industrial projects.



Contact: Oliver Clarke,  
Business Unit Manager –  
Systems Integration  
[www.olympusaustralia.com.au](http://www.olympusaustralia.com.au)

## Olympus

Olympus is the leading manufacturer of optical and digital devices such as endoscopy and microscopy products for medical and industrial use, as well as cameras and voice recorders. The Medical System Division's comprehensive range of products and system solutions include examination and treatment solutions for the surgical and classical endoscopy field covering clinical disciplines such as general surgery, urology, gynecology, arthroscopy, bariatric surgery, ENT surgery, gastroscopy, colonoscopy and respiratory. In addition to innovative, minimally invasive procedures, Olympus develops fully integrated solutions for surgical and endoscopy departments. With the ENDOALPHA concept, Olympus offers the most advanced workplace for surgeons. ENDOALPHA provides utmost support of workflow and documentation – integrating state-of-the-art technologies for improved communication, ergonomics and efficiency in the OR, hospital and beyond.



Contact: Tracey Burgess,  
Client Liaison Consultant  
[www.philipchun.com](http://www.philipchun.com)

## Philip Chun

Philip Chun is an international multi-disciplinary compliance consulting service that provides code consulting and professional engineering services including: building code consultancy, fire engineering, life safety and accessibility code analysis, fire protection engineering, and private authority approvals for the commercial design, development, and construction industries. Established in 1990, Philip Chun's philosophy and methodology includes adopting an innovative, risk managed, system-approach to the areas of building control, accessibility and fire engineering consulting. The outcome is successfully facilitating and ensuring that cost-effective design compliance and assessment services are delivered to a diverse range of projects including: health, public, institutional, commercial, industrial, residential, education, complex high rise and Airport Building Control. The company has considerable experience within the health sector and is currently working on the new \$1billion Perth Children's Hospital.



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## TOURISM and EVENTS QUEENSLAND

Contact: Alex Seary,  
Project Manager – Business  
and Regional Events  
[www.eventsqld.com.au](http://www.eventsqld.com.au)

## Queensland Events

Tourism and Events Queensland (TEQ) is the Queensland Government's lead marketing, experience development and major events agency, representing the state's tourism and events industries. TEQ operates on a national and international level, looking at new and innovative ways to make the most out of emerging opportunities which benefit the Queensland's tourism industry and economy. Through building a dynamic event calendar, Tourism and Events Queensland supports regional economies and showcases Queensland as a premier event destination.

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## schiaavello

Contact: Joseph Tigani,  
Healthcare FF&E  
Consultant  
[www.schiaavello.com](http://www.schiaavello.com)

## Schiaavello

With over 45 years of experience in furniture design, manufacturing, and the ongoing research we do in collaboration with the industry's most highly regarded specialists, Schiaavello can help you create a healthcare solution that supports the needs of patients, visitors, caregivers and even back-of-house staff. We understand healthcare, a critical industry with unique demands, and with patient safety and wellbeing at its core. We know your healthcare facility, no matter how big or small, simple or complex, is key to communicating cues about who you are as an organisation, and what level of care you provide. Our specialists look at every aspect of a customer's operation; the needs of each space and the people who occupy it. We then provide a customised furniture solution that addresses critical issues like infection control and privacy whilst ensuring a safe and comfortable healthcare experience for everyone.

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## SIEMENS

Contact: Michael Meyer,  
Communications Manager  
– Healthcare  
[www.siemens.com.au](http://www.siemens.com.au)

## Siemens

Siemens has been providing innovative technology solutions in Australia and New Zealand for 140 years. Our portfolio offers solutions across the sectors of healthcare, industry, energy, and infrastructure and cities. Siemens Healthcare is one of the world's largest suppliers to the healthcare industry and a trendsetter in medical imaging, laboratory diagnostics and medical information technology. Siemens offers its customers innovative solutions for the entire range of patient care – from prevention and early detection to diagnosis, on to treatment and aftercare. By optimising clinical workflows for the most common diseases, Siemens makes healthcare faster and more cost-effective. Siemens in Australia and New Zealand is committed to research and development to find innovative solutions for accessible, high quality and preventative healthcare, now and in the future.



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ARCHITECTS  
& ENGINEERS



Contact: Bruce Crook,  
Director  
[www.sth.com.au](http://www.sth.com.au)

## Silver Thomas Hanley

Silver Thomas Hanley is an international health care design practice with over 35 years of experience delivering innovative healthcare facilities. STH has a significant health care project portfolio, incorporating a range of successfully completed healthcare facilities including community hospitals, large, complex tertiary university hospitals and research and teaching Facilities. STH specialises in the full range of healthcare design services including master planning, spatial planning, feasibility studies, architecture and interior design. A national practice, STH is headquartered in Melbourne and has offices in Sydney, Brisbane and Adelaide, with associated international healthcare planning offices in Canada, the Middle East and South East Asia.



Contact: Jeff Johnson,  
International Sales  
[www.skyfactory.com](http://www.skyfactory.com)

## Sky Factory

The Sky Factory, a global fine arts and technology company, creates biophilic illusions of nature – Luminous SkyCeilings and Luminous Virtual Windows, as well as the more advanced digital cinema displays, SkyV and eScape. These sophisticated nature image display systems trigger genuine relaxation responses for mind and body – promoting physiological restoration, well-being and inner calm. A unique fusion of art and technology, these virtual skylights and virtual windows dramatically enhance the sense of space and a connection to nature in enclosed spaces. Sky Factory illusions of nature are installed in healthcare environments worldwide.



Contact: Stephane  
Vermeulen, Director -  
Healthcare  
[www.vkgroup.be](http://www.vkgroup.be)

## VK Architects & Engineers

VK Architects & Engineers offers you over 60 years of experience in the design and engineering of hospitals, facilities for mental healthcare and for senior living. In doing so, our experts ensure the right balance between technology and human dignity, based on a broad concept of sustainability. VK is acknowledged as leading agency on the Belgian Healthcare market. Its portfolio presently contains the design and realisation of four 'greenfield' hospitals with more than 500 beds, in addition to ongoing projects for several other large Belgian hospitals, senior care organisations and mental health institutions in Belgium. Recently, VK set up new offices in Vietnam, Kazakhstan and Russia, where it is offering its expertise and knowhow on the local market. In assisting these clients, VK already was awarded several projects. One competition design, Binh Chanh Pediatric Hospital, was awarded the 2011 World Architecture Festival Award.

## woodhead™

Contact: Gavin Adams,  
Director – Health Portfolio  
Leader  
[www.woodhead.com.au](http://www.woodhead.com.au)

### Woodhead

Woodhead is a leading architecture, interiors, and planning practice with more than 80 years experience in the building industry. Woodhead provides specialist services for healthcare projects, including health campus masterplanning, hospital and related medical facilities design, education and health related studies. As a specialist health facilities consultant, we believe that an investment in life-enhancing healthcare design is beneficial to both patients and healthcare providers alike. It is not only possible, but medically and financially wise, that the facility has a positive impact on the health and wellbeing of patients and clients, their families, the staff and the community as a whole.

## WOODS BAGOT™

Contact: Georgia Singleton,  
Director  
[www.woodsbagot.com](http://www.woodsbagot.com)

### Woods Bagot

Woods Bagot is one global studio specialising in design and consulting across three key sectors: lifestyle, workplace and education, science and health. Our multi-disciplinary global team of more than 800 people operate across Europe, North America, the Middle East, Asia and Australia. All of our dynamic international studios are staffed with designers and specialists in the areas of architecture, urban design, consulting, interior design, masterplanning and design management, who have a clear understanding of the cultural and regional issues that our clients encounter. A rigorous design process is central to our Global Studio. Woods Bagot design intelligence is the primary method we employ to ensure the best possible outcome for our clients, public stakeholders and end users. Our mission on each project is to create a built environment of lasting quality and value.

### WORLD HEALTH DESIGN

Contact:  
Marc Sansom, Publishing /  
Editorial Director  
[www.worldhealthdesign.com](http://www.worldhealthdesign.com)

### World Health Design

*World Health Design* is the leading international journal celebrating new knowledge, information and excellence in the field of design and health. Its mission is to:

- Report on the latest architectural products and technologies
- Analyse trends and developments in international markets
- Comment on the political, social, economic and technological environment
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