

Knowledge Management @ Arup

Ricky Tsui

R&D Leader, East Asia

ARUP

About Arup



Xicui Entertainment Complex, Beijing, China

Established in 1946

Today we have over 10,000 people
operating in more than 90 offices

Hong Kong office opened in 1976
having about 1,500 staff

Totally 2,200 staff in East Asia

Day-time



Combining Solar Cells and LEDs

Night-time



We are a global firm of engineers, designers, planners and business consultants providing total design, planning, engineering and business solutions



We shape a better world

We foster a strong culture built on the values and ethos of our founder

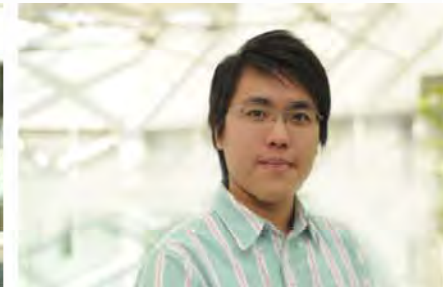
- To enhance prosperity and quality of life
- To deliver real value
- To have the freedom to be creative and learn

Sir Ove Arup (1895-1988)





Our unique organisation is
owned in Trust by our people



We have been delivering iconic design for over 60 years



Beijing National Stadium & National Aquatics Centre

We are able to tackle the most challenging projects



Stonecutters Bridge, Hong Kong



Hong Kong-Zhuhai-Macau Bridge, China



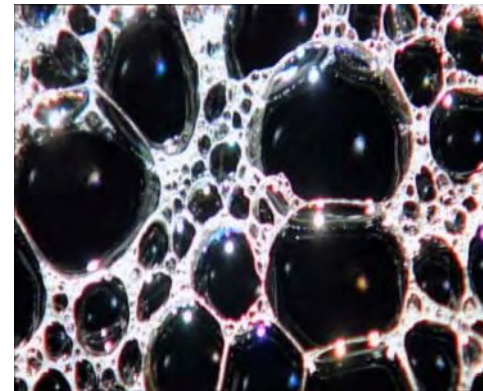
Samsung Green Tomorrow, South Korea

Hundreds of landmark
structures and remarkable
consultancy projects



Osaka Maritime Museum, Osaka, Japan

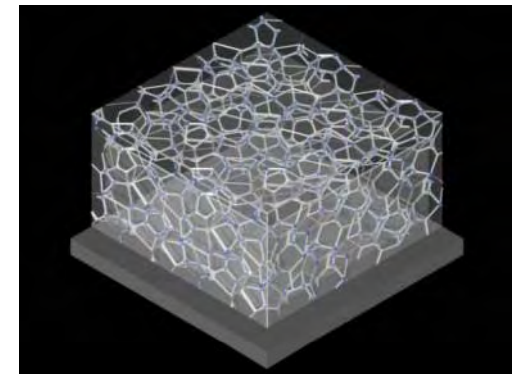
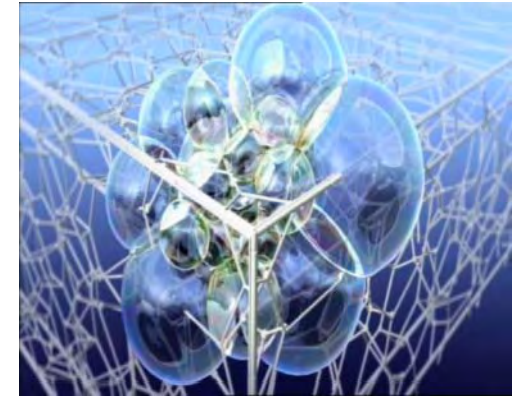
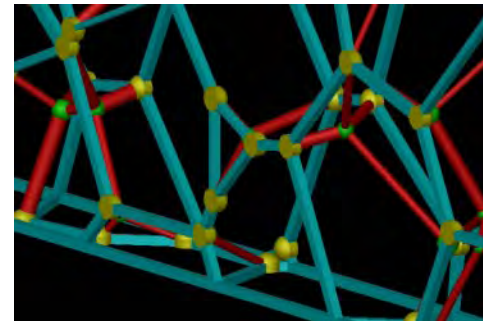
- Collaboration with external partners
- Multi-disciplinary skills



Concept & Design



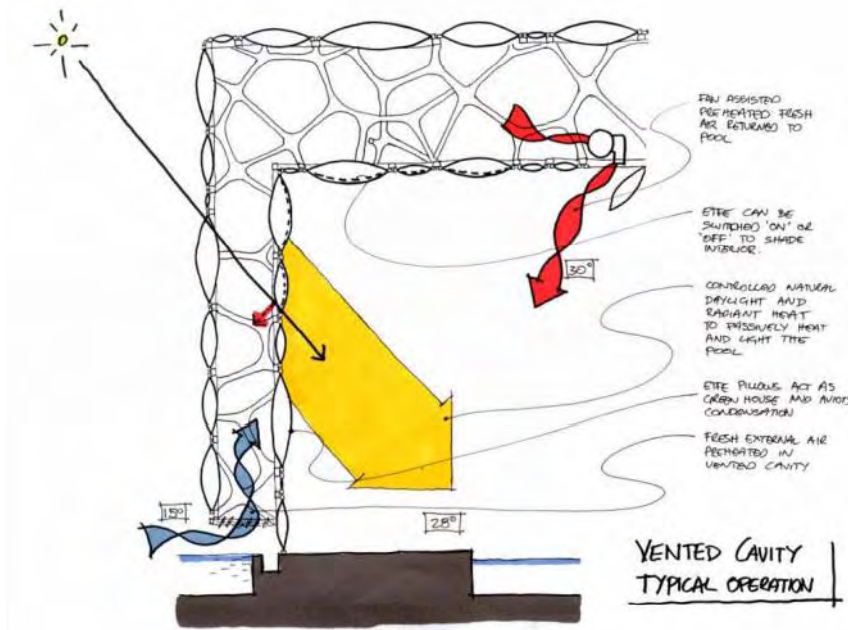
Structure



Collaboration Parties

- Arup
- PTW Architects
- China State Construction Engineering Corporation(CSCEC)
- China State Construction International Shenzhen Design Consulting Co

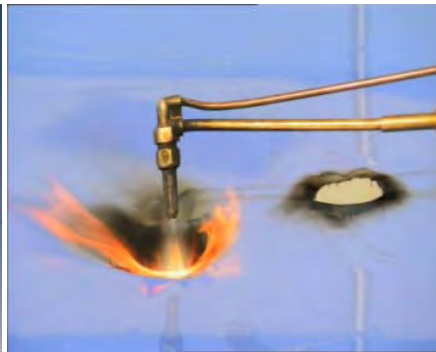
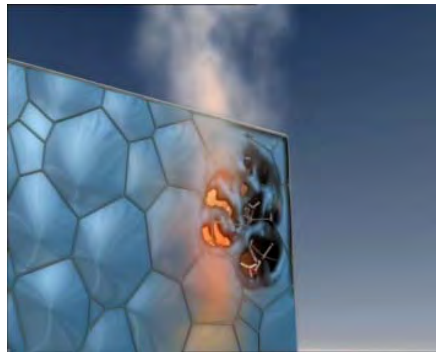
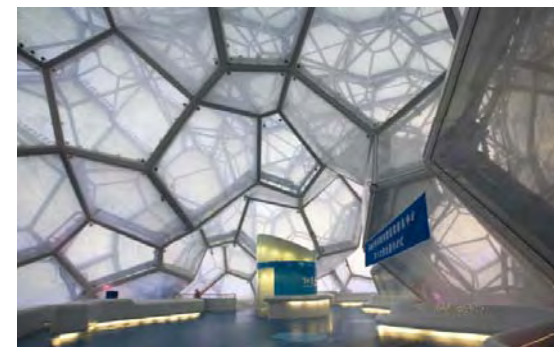
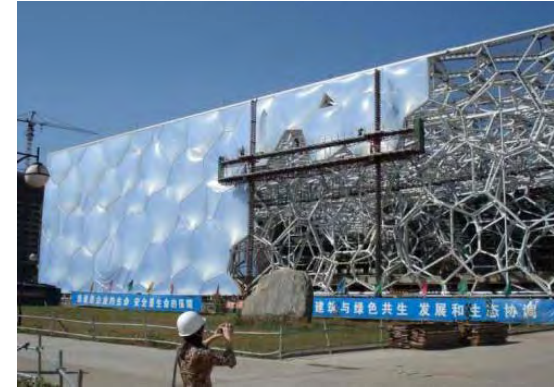
- Collaboration with external partners
- Multi-disciplinary skills



Sustainability

Fire
Engineering

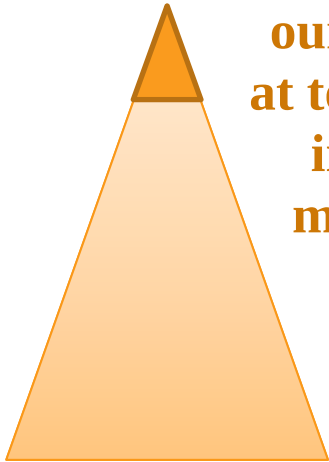
Construction
Management



Need of Knowledge Management

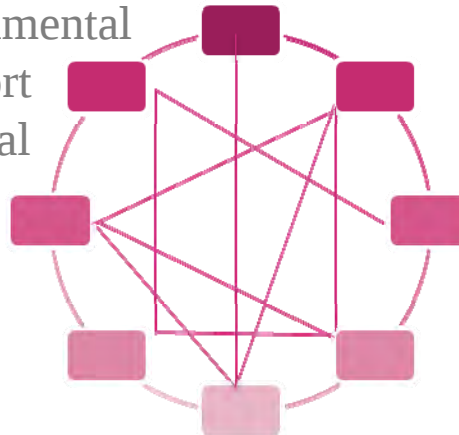
Demand of High-end Technology

Arup position ourselves at top 10% in the market



Multi-disciplinary Skills

Structural
Geotechnical
Mechanical
Environmental
Transport
Electrical
Civil ...

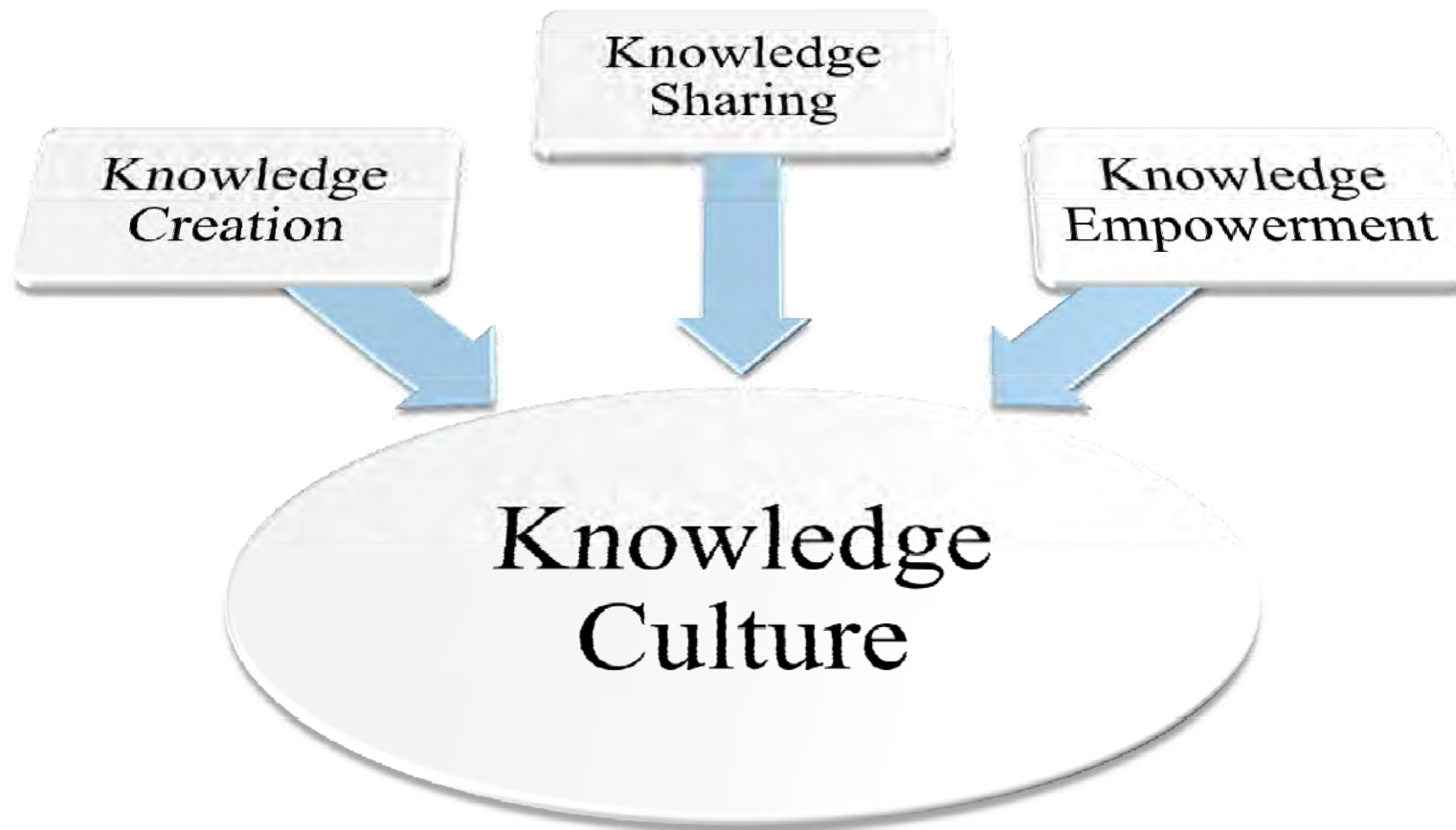


Skills mapping diagram

Drive Innovative Design

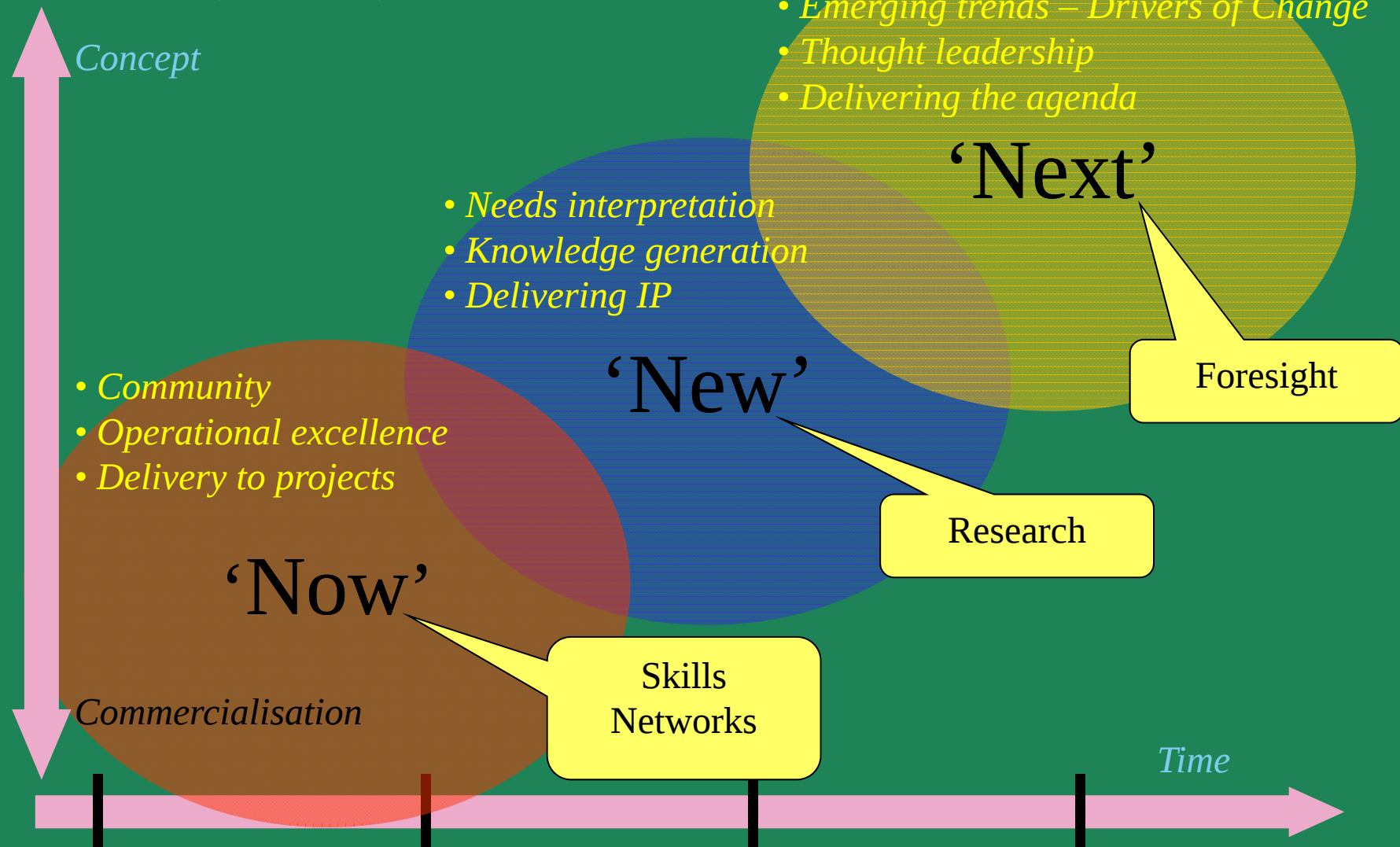


Arup Knowledge Culture



Proactive knowledge creation in parallel with knowledge harvesting on client projects

N³ : Now, New, Next

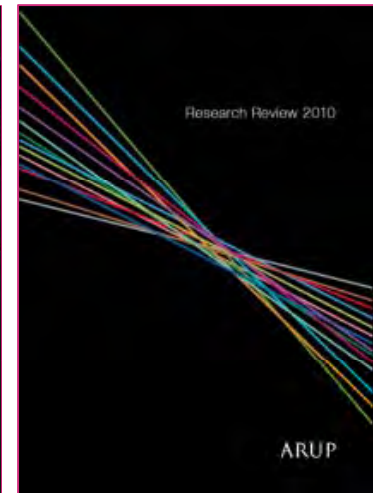


Research & Skills Development

- Roadmapping
 - Drivers, Business Opportunities & Research Elements

risk & disaster		2012	2019	2039
DRIVERS	SHORT-TERM (t < 3yrs)	MID-TERM (3yrs < t < 10yrs)	LONG-TERM (t > 10yrs)	
	1. Natural disaster (earthquake, flood, wind, fire, typhoon, landslide, etc.) (Manila/Bangkok/Tokyo)			
RESEARCH ELEMENTS	2. Safety in high-rise buildings (Bangkok)			
	3. Diseases (Bangkok/Beijing/Tokyo)			
DRIVERS	4. Terrorist attack (Beijing/Tokyo)			
	5. Critical system failure (Beijing)			
RESEARCH ELEMENTS	6. Food safety (Tokyo)			
	7. Tighter security requirement (Tokyo)			
RESEARCH ELEMENTS	Efficient seismic/structural evaluation & retrofit design (SS) (Manila/Beijing/Japan)			
	FRP for seismic retrofit of existing RC buildings (RT) (Manila)			
RESEARCH ELEMENTS	Efficient structural systems for medium- to high-rise buildings (RT) (Manila)*			
	Seismic design technology (RT) (Beijing)			
RESEARCH ELEMENTS	Study of seismic zoning for planning purpose (RT) (Beijing)			
	Seismic control device & system database (RT) (Tokyo/Bangkok)			
RESEARCH ELEMENTS	Establish an after-earthquake survey team (SS) (Beijing)			
	Cost study of base isolation for buildings locally (RT) (Manila)			
RESEARCH ELEMENTS	Cost study of green retrofitting locally (RT) (Manila)			
	Progressive collapse research (RT) (Beijing)			
RESEARCH ELEMENTS	Study on previous typhoon path, frequency, maximum wind speed, maximum rainfall and size of affected area (RT) (Manila)			
	Identification of environmentally critical geographical areas (RT) (Manila)*			
RESEARCH ELEMENTS	Risk assessment for extreme events (earthquake, typhoon, flood, fire) (H-K)*			
	Underground water extraction technology (SS) (Tokyo)			
RESEARCH ELEMENTS	Research for slip-rate of active fault system (RT) (Manila)			
	City flooding protection & prevention solutions (SS) (Bangkok)			
RESEARCH ELEMENTS	Smoke control analysis (SS) (Bangkok)			
	Data-plotting of information for GIS (RT) (Manila)*			
RESEARCH ELEMENTS	Study on material flammability & flame dispersion pattern (RT) (Bangkok)			
	Develop a method to explore the earth beneath (RT) (Beijing)			
RESEARCH ELEMENTS	Specific fire size determination (RT) (Beijing)			
	Research on the spread for high-rise buildings (RT) (Beijing)			
RESEARCH ELEMENTS	Research into fire performance design to structure (RT) (Beijing)			
	Study new clean agent for fire suppression (SS) (Bangkok)			
RESEARCH ELEMENTS	Fire smoke dispersion modeling (RT) (Bangkok)*			
	Lift evaluation of buildings (RT) (Beijing)			
RESEARCH ELEMENTS	X-ray, ultra-sonic and other checking technologies for security (SS) (Tokyo)			
	Bio-gas diffusion protector in public space (SS) (Tokyo)			
RESEARCH ELEMENTS	"Arup shelter" design (RT) (Tokyo)			
	Self-electricity supply in buildings after disaster (RT) (Beijing)			
RESEARCH ELEMENTS	Indoor air purification method assessment (RT) (H-K)*			
	Study of airborne diseases spreading in buildings (RT) (Beijing)			
RESEARCH ELEMENTS	Personal air quality monitoring systems (RT) (H-K)			
	Fire resistant materials (SS) (Shenzhen)			

* High priority



Roadmapping
Exercise



Investment in Arup

HOME APPLY FOR FUNDING REPORTS PROJECTS VALUE REPORTS SHORTCUTS FAQ CONTACTS

Search Projects

This site is the one-stop shop for requesting internal funding for development projects. It also acts as a reporting tool for the current financial year and hosts information on previous years' projects.

Apply for funding

View reports

Information on funds available

See all research reports

See all categories of funding

ANITA SIU

- < My Projects
- < Draft Application [0]
- < Quick Idea [0]
- < With Group Leader [0]
- < With Investment Team [0]
- < With Fund Manager [0]
- < With Applicant [0]
- < Approved [10]
- < Declined [1]
- < Refresh My Projects
- < Admin

0.843s - 716742 page views since 4th April 2005 | Log an error | About Investment in Arup | Developed by Duncan Wilson | API | ©2002-2010 Arup

- Application by related leaders – to ensure meeting business needs (*top-down*)
- Allowing for blue-sky research from all colleagues (*bottom-up*)

Capture global research findings to avoid reinvent the wheel

Research & Skills Development

- More than 450 research projects per year



Slope Monitoring using Optic Fiber



Fire test for Quake Resistance Facade



Intellectual Property

Creation

Sharing

Empowerment

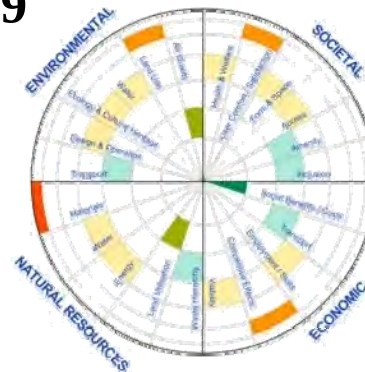
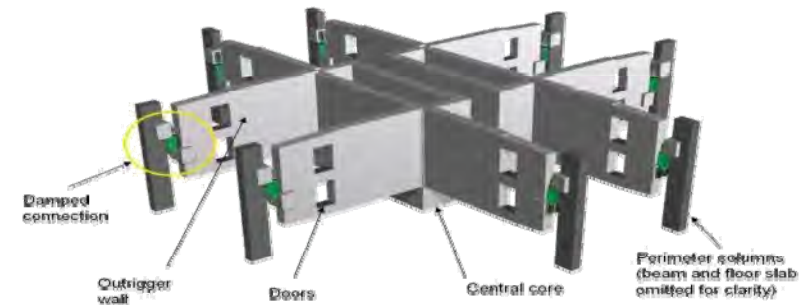
- **Intellectual Property Executive to oversee the development of our IP globally**

- **Patents (incl. all in patent families): 40**

- Damping systems for high-rise
- Pocket habitat for green roof
- Balustrade systems

- **Trademarks: 49**

- SPeAR



Foresight – Knowledge of the Future?

Shaping (Y)our strategy



© venkatram

is your business climate ready?

climate change

economic

business opportunity

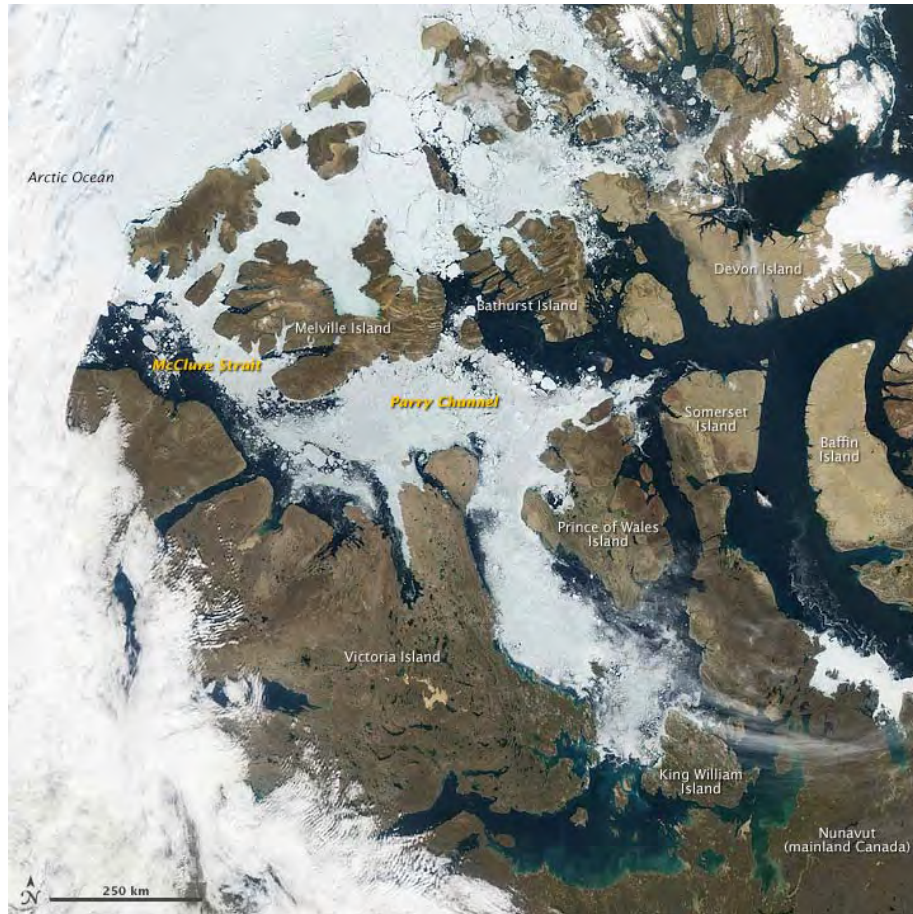
2005 was a record year for investment in the renewable energy sector at US\$38bn, 27% up on the previous year.

Source: Renewables Global Status Report 2006, REN21, 18 July 2006
www.ren21.net/globalstatusreport/g2006.asp

Threat or Opportunity?

Foresight

Arctic Passages – Implications



Northwest Passage, Late August 2009
(<http://earthobservatory.nasa.gov/IOTD/view.php?id=40046>)

Current world shipping lanes

- Fuel efficiency and CO₂ emissions
- Panama Canal Expansion
- Untapped resources in Northern Canada

The New York Times

September 11, 2009

A Shortcut Across The Top of the World

The Northeast Passage, across the Arctic Ocean, provides a shorter alternative for cargo vessels travelling between Europe and Asia than using the Suez Canal. It is shorter than the Panama Canal route for some voyages between the North American west coast and Europe.

LENGTH OF A VOYAGE TO ROTTERDAM FROM:

YOKOHAMA, JAPAN
12,894 miles via Suez Canal,
8,452 miles via Northeast Passage

SHANGHAI, CHINA
12,107 miles via Suez Canal,
9,297 miles via Northeast Passage

VANCOUVER, CANADA
10,262 miles via Panama Canal,
8,038 miles via Northeast Passage



Source: The Russian Ministry of Transport

THE NEW YORK TIMES
TWITTER

☒ SIGN IN TO RECOMMEND

Threat or Opportunity?

Thought Leadership

ARUP

World-leading research disseminated to every employee

The development of urban areas was made possible through the concentration of food production to create a surplus. But many cities have now come to depend on highly unsustainable supplies for most of their food. In London, the components of a typical Sunday lunch for four people travel over 24 000 miles. This practice is in marked contrast to that of many cities of the developing world, which have built upon a tradition of sourcing food grown locally.

Urban agriculture – the practice of growing, raising, processing and distributing food in and around an urban area – contributes significantly to its household food security, particularly among low-income groups. Cuba has become a world leader, with food production decentralised from large mechanised state farms to urban cultivation systems. Half of Shanghai's pork and poultry, 50% of its vegetables and 90% of its milk and eggs come from the city and its outskirts. Dar es Salaam uses 650ha of land to produce vegetables, providing a livelihood for 4000 urban farmers while 80% of Hanoi's demand for fresh vegetables comes from farms within and around the city. According to the 2007 State of the World report, the income of farmers living in and around Beijing has doubled in the past decade.

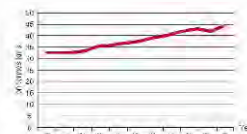


Fig 1: Food, drink and tobacco transported by goods vehicles over 3.5 tonnes (Great Britain)

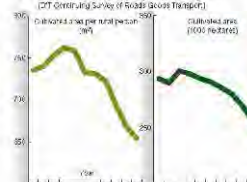
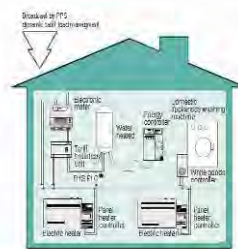


Fig 2: Rural areas under cultivation in Shanghai province
[Statistical Yearbook 2005]

In the electricity industry, the term "demand side management" is used to refer to actions which change the electrical demand on the system. For instance, signals can be sent to householders warning of high consumption or high cost. Consumers then go round the house turning off unnecessary appliances or deferring non-vital activities. By actively engaging with consumers, savings in energy consumption have ranged from 3% to 15%. Finland intends to have an Automatic Meter Management system in full use by 2009 with real time pricing.

Backup capacity is normally provided by open cycle gas turbines, for their fast response, but they are 10-20% less efficient than combined cycle gas turbines that provide base load. If demand is reduced during consumption peaks, it means that the need for this low efficiency reserve power can also be reduced. Even greater reduction in demand could result in deferring or avoiding expansion of electricity networks.



³⁶ CHS PLC, European Home-system, Programmable Logic Control

The most significant change in warfare, from the perspective of the environment, is the fact that it is no longer limited to designated field and clearly identifiable combatants. Instead, wars may rage in urban streets, village squares, on cultivated land, or along highways. Because conflicts are no longer cordoned off in specified combat zones, and are now played out in everyday human environments, the environmental health consequences of war increase exponentially. The Red Cross says environmental disasters already displace more people than war.

Environment-related migration has been most acute in sub-Saharan Africa, but also affects millions of people in Asia and India. Europe and the US face increased pressure from people driven from north Africa and Latin America by deteriorating soil and water conditions. The invasion of modern warfare into urban areas means millions of people can be rapidly displaced. Some of these people become refugees in other countries, but many others stay in-country and become internally displaced persons (IDPs). According to the UN High Commissioner for refugees about 2.1M people had fled Afghanistan by the end of 2003, making it the country inciting the largest number of refugees.



Fig. 1: Lives lost to and number of natural disasters
[Source: World Bank, International Food Policy Research Institute, 2000]

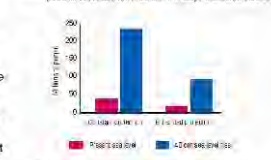


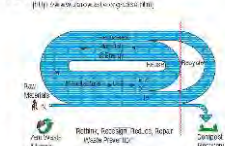
Fig 2: Adaptation and average annual number of people flooded by coastal storm surges, projected for 2080
IPCC Intergovernmental Panel on Climate Change, 2001

Human economies follow a pattern of cradle to grave. Raw materials are extracted and processed and the substances not directly useful become waste. An alternative 'cradle to cradle' system seeks to build closed loop systems where the regenerative cycles of nature provide a model for positive human design. The ultimate goal is to achieve a waste-free industrial system where all wastes become another product.

This is best represented in the Danish industrial town of Kallundborg where the oil refinery provides the coal-fired power station with its treated wastewater for use in its cooling process. In return the power station supplies the waste steam for use in the oil refining process. This waste steam is also used to supply 20 000 households with heating. Waste gases from the refinery are re-used by the power station and by Gyproc, a company which makes plasterboard. Gyproc purchases waste material from the power station in the form of Gypsum. Other partners include a local fish farm, commercial greenhouses and a chemicals company. It is estimated that the companies have reduced yearly consumption of oil by 45 000 tonnes, coal by 15 000 tonnes, water by 25% and the production of ash waste by 80 000 tonnes.



Fig 1: Natural cycle



Alto et al. *Page 5 of 47*

The first firm warnings of the dangers of climate change were issued by the scientific community at a conference in Stockholm in 1979. Then, in 1988, the 1980s came to a close, and the issue of climate change was at the top of the agenda surrounding the issue and in 1988 the UN established the Intergovernmental Panel on Climate Change (IPCC) to assemble the available facts about climate change. At the Earth Summit in Rio in 1992, the UN Framework Convention on Climate Change (UNFCCC) was established, aiming to 'stabilise greenhouse gas levels at a level that would prevent dangerous anthropogenic interference with the climate system'. At the third Conference of the Parties to the UNFCCC (COP3) held in Kyoto in 1997, an agreement was made, the Kyoto Protocol, setting out a programme to reduce global greenhouse gas emissions. The developed countries were committed to reduce emissions by 5.2% (in 1990 levels) by 2012. The developing nations (non-Annex I) were not committed to mandatory emissions reductions.

The Kyoto Protocol finally came into force in 2005, but has only been partially ratified by the 'Annex 1' countries, with the main exceptions being the US and Australia. They claimed the required emissions reductions would be detrimental to their economies. To date, the Kyoto Protocol has failed to slow the accelerating rate of global CO₂ emissions.



Fig 1: The US is the world's largest emitter of anthropogenic greenhouse gases and the emissions of individual countries are compared to those of other countries in the top 30 emitters. This map illustrates how the emissions of different groups of US states compared to those of countries in the year 2000. Total US greenhouse gas emissions (1.9 GtC) were equal to the combined emissions of the UK (0.16 GtC), Brazil (0.23 GtC), India (0.51 GtC), Russia (0.52), Canada (0.19 GtC), and South Korea (0.14 GtC). The combined emissions from the four were approximately equal to those of China (1.1 GtC). World Resources Institute. <http://world.wri.org/energy/fig01a.htm>

Industry is considered an important ingredient for economic growth. Global annual water use by industry is expected to rise from an estimated 725km³ in 1985, to about 1170km³ by 2025. Much of the increase in industrial water use will be in developing countries which are now experiencing rapid industrial development. Currently, Europe and North America are the only global regions where more water is used for industry than for agriculture or domestic purposes. In most Mediterranean countries and in Central Asia most water is used for agriculture. To meet the projected growth in industrial demand for water it will be necessary to improve water management, promote recycling and shift away from water-consuming industries.

Water discharged by industries may be of poor quality and, unless adequately treated, threatens the surface and ground water resources. The damage of industrial effluents is not just a local problem as both population and industry increasingly concentrate in coastal zones. While "polluter pays" policies may help reduce such damage, many countries are unwilling to hinder potential industrial and economic development. It is possible to reduce demand for water by making industry managers in middle and lower-income countries more aware of how water is used in their enterprises.

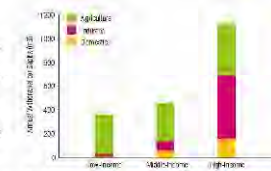
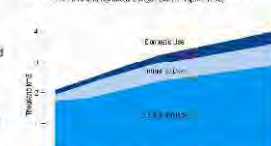


Fig 1: Sector water withdrawals by country income group
 UN Food and Agriculture Organization Report, 1995



Year	Percentage of population aged 65 and over
1900	10
1925	11
1950	12
1975	15
2000	18

Thought Leadership

■ Drivers of Change

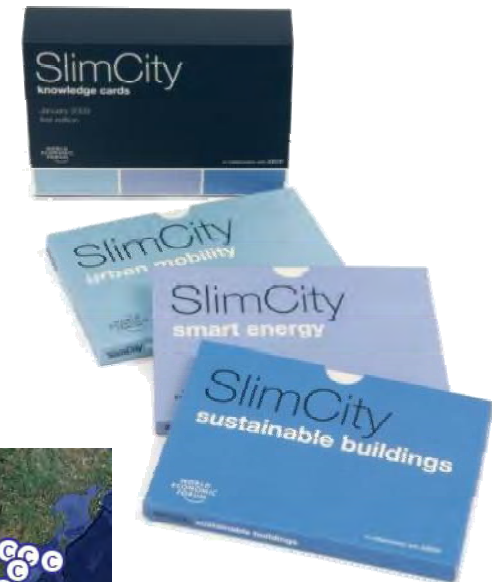
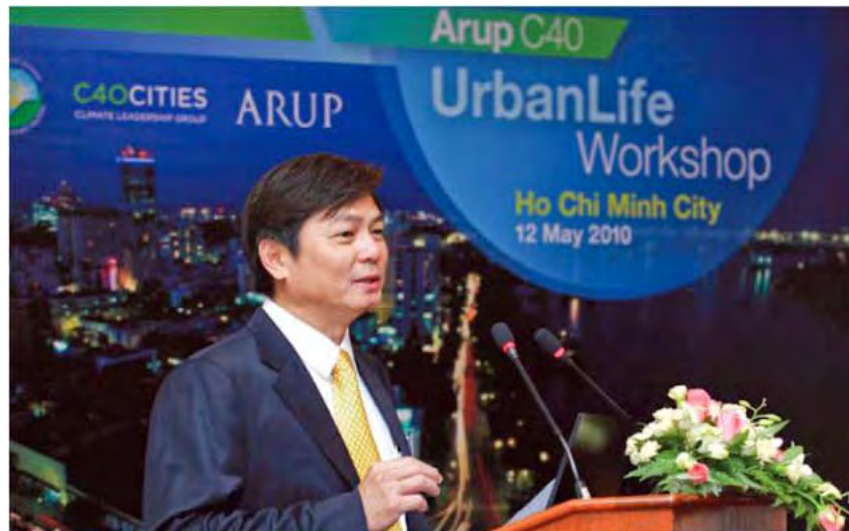


Foresight Research

ARUP

Thought Leadership

- E.g. SlimCity Knowledge Cards (C40 Partnership)



smart metering

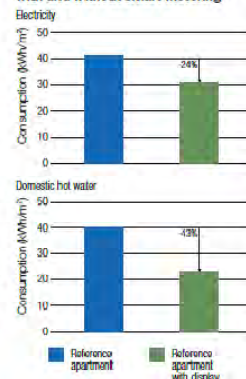
Energy is often invisible. Consumers rarely see how much energy they consume at the point of use, and the price of energy is typically only ever communicated to customers in their monthly bills.

This is also the case from the perspective of the network operator. There is often no way of ascertaining energy use at the periphery of a network. Supply could be better managed if more accurate information were available in realtime. This would also allow for controlled reductions in online backup generation capacity.

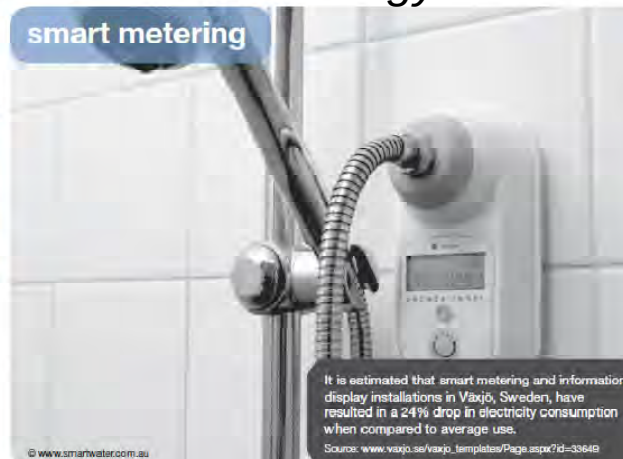
Until recently, electricity or gas consumption at a consumer's property has been manually read from meters at the intake for the building or premises. Many utilities are now installing "smart" meters with the ability to communicate load-use back to a control or administration point. Some smart meters can communicate with home area networks or mobile devices, allowing the consumer more intuitive access to their energy information. This enables consumers to better manage their energy consumption to reduce demand as and when appropriate.

Since smart metering was first introduced into apartments in Växjö, Sweden, customers have reduced their electricity consumption by 24% and their hot water usage by 43%. The system includes a web portal that allows users to see hourly rates of consumption and make comparisons to others in the neighbourhood.

Fig. Electricity and hot water consumption of Växjö apartments with and without smart metering



smart metering



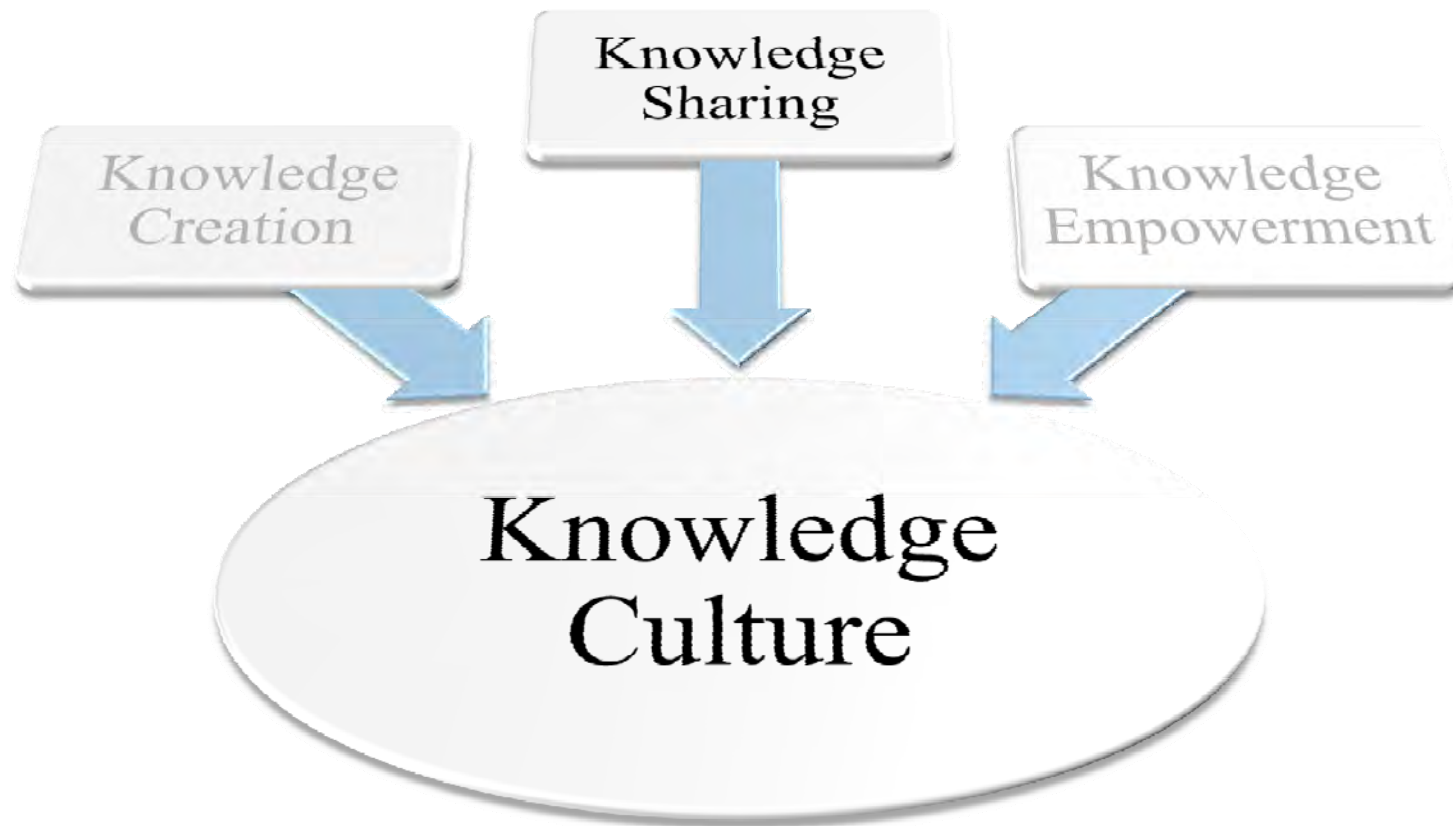
It is estimated that smart metering and information display installations in Växjö, Sweden, have resulted in a 24% drop in electricity consumption when compared to average use.
Source: www.vaxjo.se/vaxjo_templates/Page.aspx?id=33649



Foresight Research

ARUP

Arup Knowledge Culture



Arup Portal

Creation

Sharing

Empowerment

The screenshot shows the Arup Portal homepage. The top navigation bar includes links for Ovanet, People, Projects, Insights, Networks, and Essentials. A search bar is located on the right. The main content area is divided into several sections:

- Navigation Aid:** A sidebar on the left containing links for Arup Essentials, Arup Organization, East Asia Region, Hong Kong Office, and Ovanet Help.
- Corporate News:** A central section featuring news articles such as "Possible interruption of service to Ovanet, Extranet and Networks" and "Americas Region News 287".
- Forum Threads:** A section on the right titled "Forum Threads" showing a list of discussion topics.
- External News Stories:** A section on the right titled "External News Stories" displaying news items from external sources.
- World Clock:** A section on the right titled "World Clock" showing a world map with time zones.
- Notice Board:** A section at the bottom right titled "Notice Board" containing a list of notices.
- Knowledge Brands Link:** A link at the top right of the page.
- Search Box:** A search bar at the top right of the page.
- Links:** A sidebar on the right containing links for My Ovanet, My Tasks, My Location, and My Links.

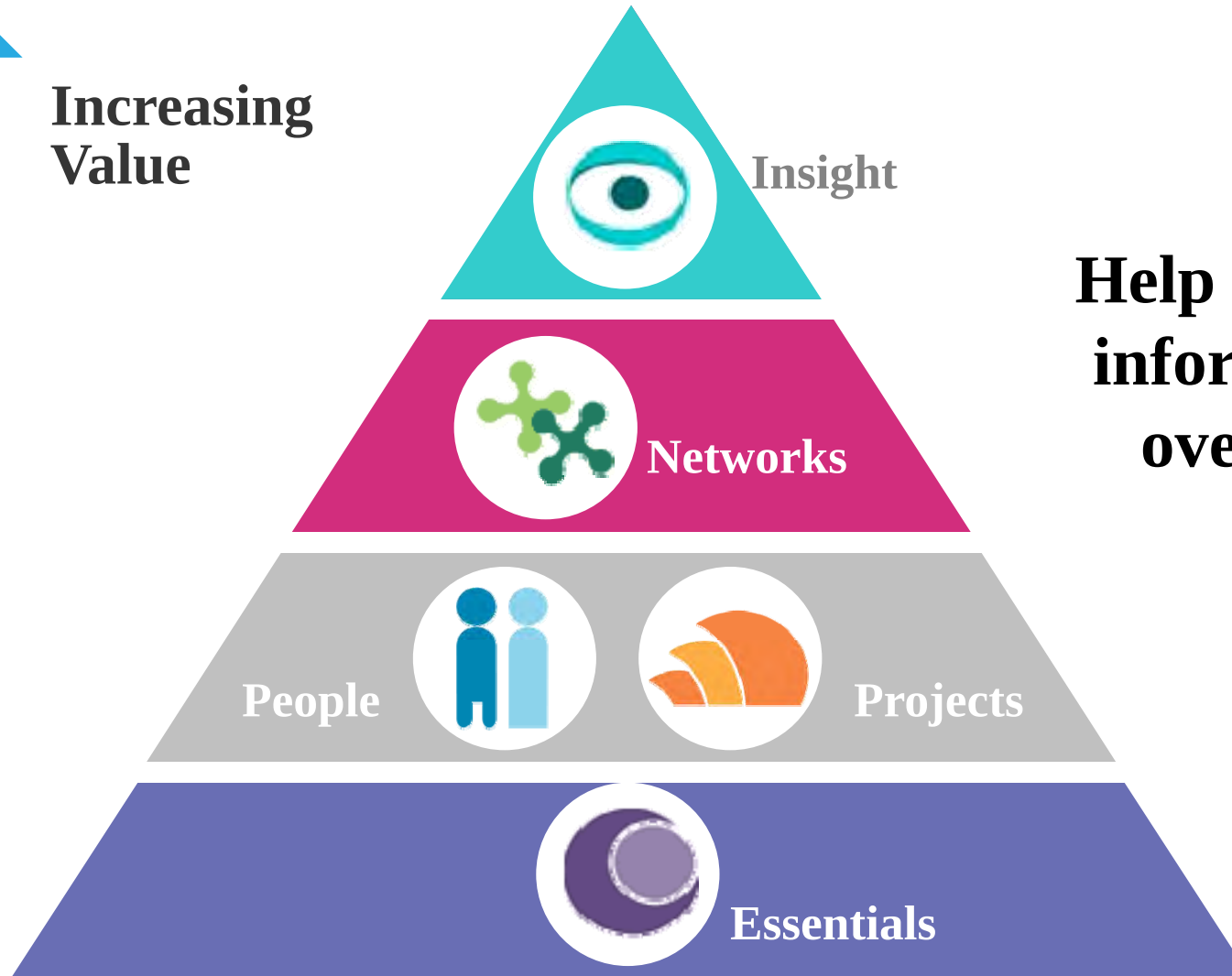
Knowledge Brands

Creation

Sharing

Empowerment

Increasing
Value



**Help manage
information
overload**

Arup People

Contact Details
Expertise
Community

Arup Intranet

Arup People

Current Staff Find People

Ricky Tsui, Associate Director

My Contact Details

Location: Hong Kong Office - 8837 29 20 HKT

Telephone Ext: 3900

ISO Telephone: +852 2266 3900

Fax: 22483946

Email: ricky.tsui@arup.com

Mobile:

Personal Assistant: [How to add a Personal Assistant](#)

Group: [Hong Kong H Group](#)

Cost Centre: [08-013 Central Services](#)

Address: Arup Level 5 Festival Walk, 80 Tat Chee Avenue

Blog:

Disciplines: Research & Development

Also known as:

Alternative Contacts: [Becky Wong](#)

Don't confuse me with:

About Me

Subjects which I would expect people in Arup to ring me up and discuss

R&D Strategy and Ideas
Funding for R&D Projects
Renewable Energy
Knowledge Management
Application of Materials

Subjects in which I have a developing interest

Nano-technology
Smart Materials
Renewable Energy
Knowledge Management
Carbon Capture and Sequestration

My proudest achievement

I was granted with the HK Awards for Industry on Machinery and Equipment Design Category 2002.

Social and after-hours interests, hobbies etc

Sailing/Windsurfing
Diving/Swimming
Skiing
Learning German
Wine Tasting

Additional data, such as subjects I speak about at conferences, membership of committees etc.

Fellow of Cambridge Commonwealth Society

Photo

Your profile is... 100% complete

[What is Profile Completeness?](#)
Profile Updated: 19 Nov 11

Creation Sharing Empowerment

My Mini Biographies

General

Ricky Tsui holds a B.Sc degree in engineering and a Ph.D degree in science. His career spans twenty years in high technology research, product and process development, management and marketing. He worked in a semi-government organization for many... [read more](#)

My CVs / Resumes

[East Asia R&D Leader \(DOC 83709\)](#)
CV attached
30 Nov 2009 | [Edit](#)

My Documents and Links

Publications

[Mechanical Properties and Compatibility of Bio-active Coatings for Medical Implants](#)
21 Jan 2011 | [Edit](#)

My CVs / Resumes

[CV \(DOC 106298\)](#)
- Sept 09
21 Sep 2009 | [Edit](#)

I am a Member of these Communities

Community Type Size Owner

AT&T Global Community
The Global Advanced Technology and Research Practice Community
Skills Network | 133 members | [Jokee Hargreaves](#) | [Add Comment](#)

CDO Module
Community for accessing the Computational Design Optimisation Masters Level module
Skills Network | 38 members | [Adam Pope](#) | [Add Comment](#)

Energy Skills & Business Network
This facility lists the participants in the Energy Business Network and associated Energy Skills Forum.
Skills Network | 392 members | [Brian Fairs](#) | [Add Comment](#)

Parade Engineering Skills Network
Skills Network | 734 members | [Gordon Forster](#) | [Add Comment](#)

Forecast
Individuals who are interested in the drivers of change, implications of the drivers and strategic planning.
Personnel | 216 members | [Chris Leckie](#) | [Add Comment](#)

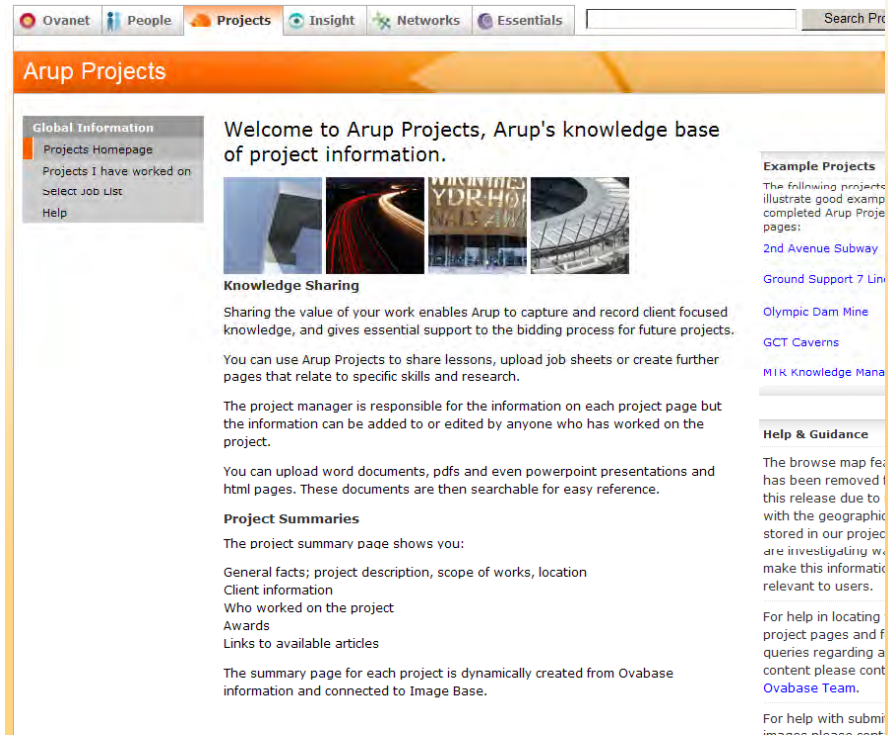
Showing 1-5 of 200 in 40

I am an Owner of these Communities

No details available.

...or you feel anything is missing or could be improved or to give general feedback - e-mail the [HRD Intranet Support Team](#)

Arup Intranet



Welcome to Arup Projects, Arup's knowledge base of project information.

Global Information

- Projects Homepage
- Projects I have worked on
- Select Job List
- Help

Knowledge Sharing

Sharing the value of your work enables Arup to capture and record client focused knowledge, and gives essential support to the bidding process for future projects.

You can use Arup Projects to share lessons, upload job sheets or create further pages that relate to specific skills and research.

The project manager is responsible for the information on each project page but the information can be added to or edited by anyone who has worked on the project.

You can upload word documents, pdfs and even powerpoint presentations and html pages. These documents are then searchable for easy reference.

Project Summaries

The project summary page shows you:

- General facts; project description, scope of works, location
- Client information
- Who worked on the project
- Awards
- Links to available articles

The summary page for each project is dynamically created from Ovarbase information and connected to Image Base.

Example Projects

The following projects illustrate good examples of completed Arup Project pages:

- 2nd Avenue Subway
- Ground Support 7 Line
- Olympic Dam Mine
- GCT Caverns
- MIK Knowledge Mana

Help & Guidance

The browse map feature has been removed from this release due to the geographic information stored in our project pages. For help in locating project pages and for queries regarding a content please contact the [Ovarbase Team](#).

For help with submitting images please contact the [Image Base team](#).

Use e-mail intranet_support@arup.com

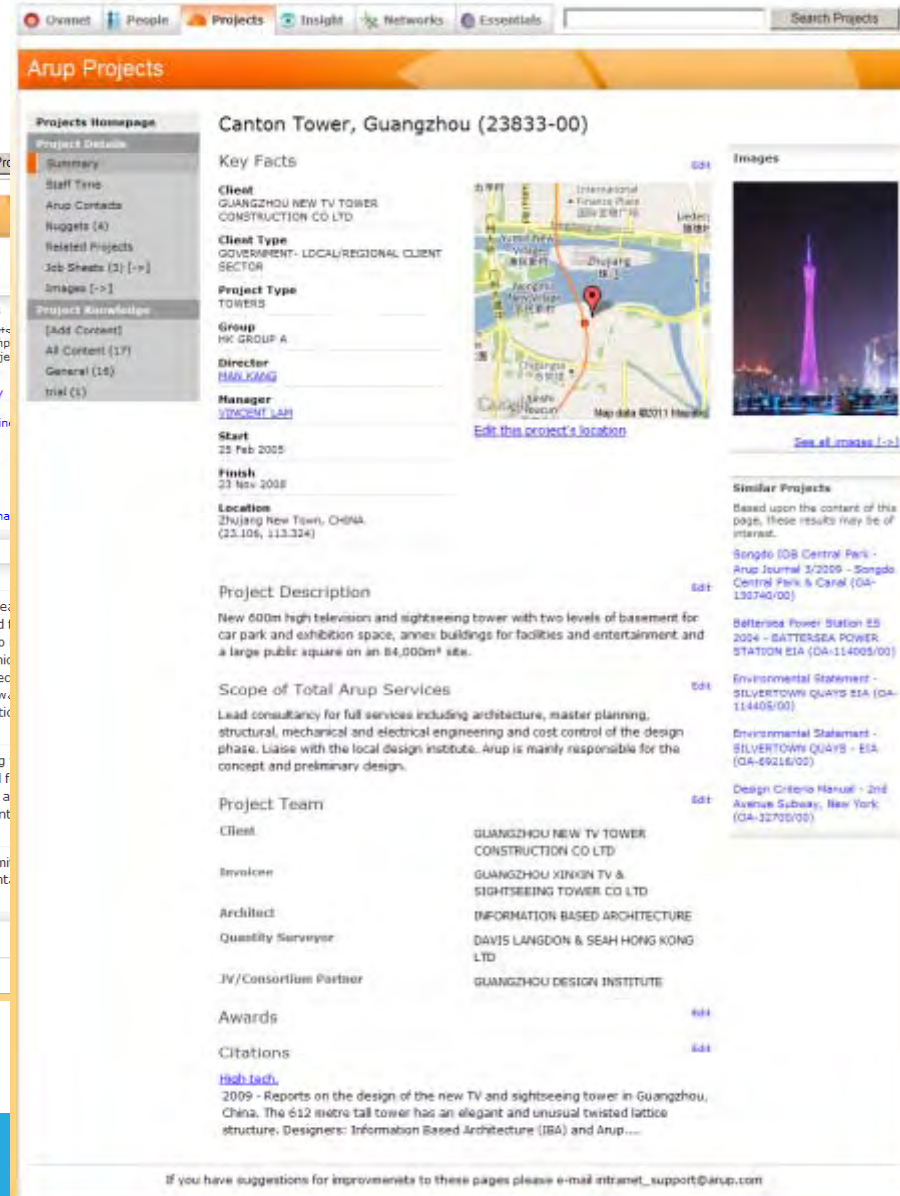
Project Details

Link to Image Base

Lessons Learnt

Published Documents

Arup Intranet



Arup Projects

Projects Homepage

- Project Details
- Summary
- Staff Terms
- Arup Contacts
- Nuggets (4)
- Related Projects
- Job Sheets (2) [->]
- Images [->]
- Project Knowledge
- [Add Content]
- All Content (17)
- General (16)
- trial (1)

Canton Tower, Guangzhou (23833-00)

Key Facts

Client
GUANGZHOU NEW TV TOWER CONSTRUCTION CO LTD

Client Type
GOVERNMENT- LOCAL/REGIONAL CLIENT SECTOR

Project Type
TOWERS

Group
HK GROUP A

Director
[HAK KANG](#)

Manager
[WONG CHIT LAM](#)

Start
23 Feb 2005

Finish
23 Nov 2008

Location
Zhujang New Town, CHINA (23.106, 113.324)

Project Description

New 600m high television and sightseeing tower with two levels of basement for car park and exhibition space, annex buildings for facilities and entertainment and a large public square on an 84,000m² site.

Scope of Total Arup Services

Lead consultancy for full services including architecture, master planning, structural, mechanical and electrical engineering and cost control of the design phase. Liaise with the local design institute. Arup is mainly responsible for the concept and preliminary design.

Project Team

Client	GUANGZHOU NEW TV TOWER CONSTRUCTION CO LTD
Invoicee	GUANGZHOU XINXIN TV & SIGHTSEEING TOWER CO LTD
Architect	INFORMATION BASED ARCHITECTURE
Quantity Surveyor	DAVIS LANGDON & SEAH HONG KONG LTD
JV/Consortium Partner	GUANGZHOU DESIGN INSTITUTE

Awards

Citations

[High Tech](#)

2009 - Reports on the design of the new TV and sightseeing tower in Guangzhou, China. The 612 metre tall tower has an elegant and unusual twisted lattice structure. Designers: Information Based Architecture (IBA) and Arup....

Images

[See all images \[->\]](#)

Similar Projects

Based upon the content of this page, these results may be of interest.

- Songdo ICB Central Park - Arup Journal 3/2005 - Songdo Central Park & Canal (04-135740/00)
- Battersea Power Station EIS 2004 - BATTERSEA POWER STATION EIA (04-114405/00)
- Environmental Statement - SILVERTOWN QUAYS EIA (04-114405/00)
- Environmental Statement - SILVERTOWN QUAYS - EIA (04-69216/00)
- Design Criteria Manual - 2nd Avenue Subway, New York (04-32700/00)

If you have suggestions for improvements to these pages please e-mail intranet_support@arup.com

Project Knowledge

Creation

Sharing

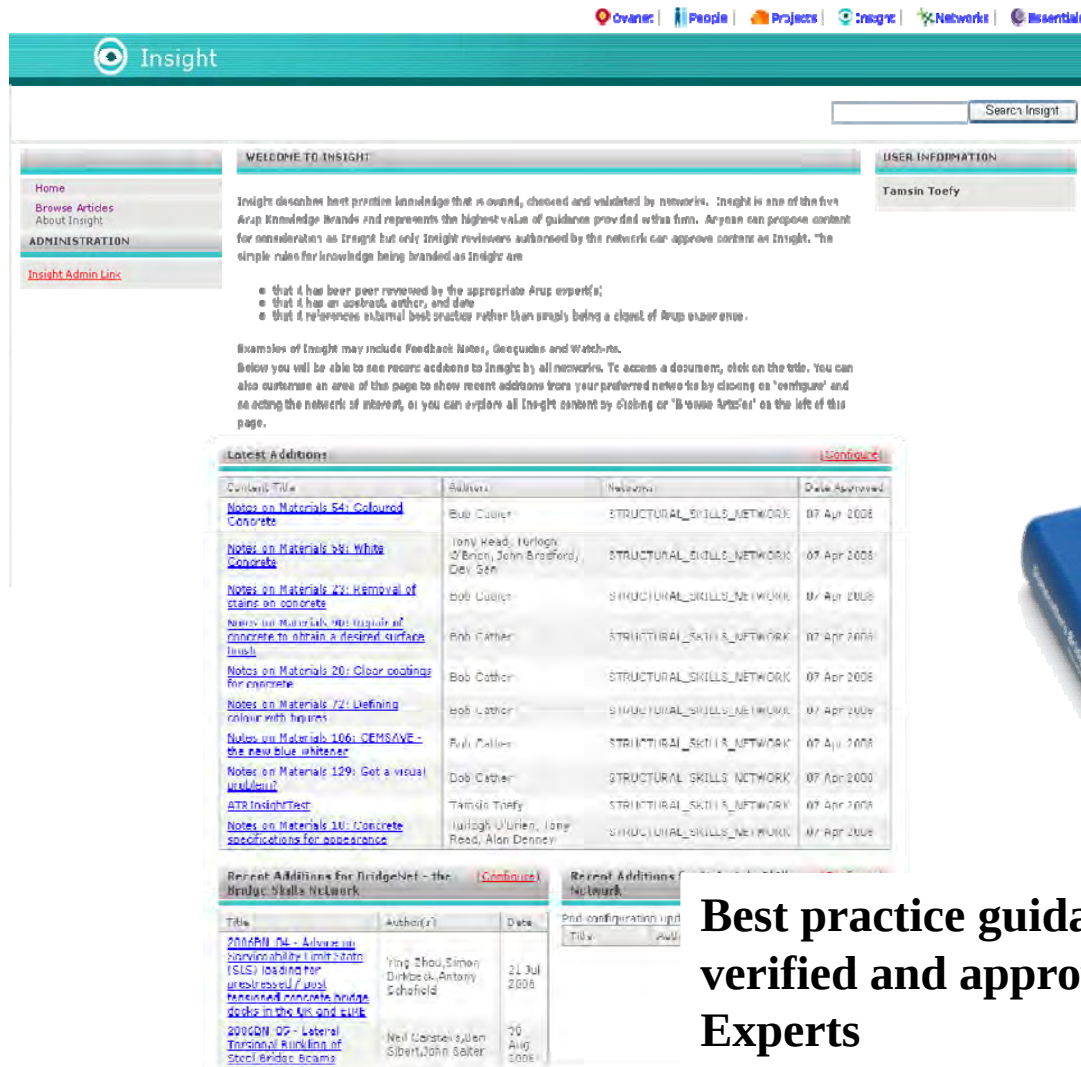
Empowerment



Project / Close-out Review



Internal Newsletter



WELCOME TO INSIGHT

Insight describes best practice knowledge that is owned, checked and validated by networks. Insight is one of the five Arup Knowledge Brands and represents the highest value of guidance provided within firm. Anyone can propose content for consideration as Insight but only Insight reviewers authorised by the network can approve content as Insight. The simple rules for knowledge being branded as Insight are:

- that it has been peer reviewed by the appropriate Arup experts;
- that it has an abstract, author, and date;
- that it references external best practice rather than simply being a digest of Arup experience.

Examples of Insight may include Feedback Notes, Designguides and Watch-outs.

Below you will be able to see recent additions to Insight by all networks. To access a document, click on the title. You can also customise an area of the page to show recent additions from your preferred networks by clicking on 'configure' and selecting the network of interest, or you can explore all Insight content by clicking on 'Browse Articles' on the left of this page.

Latest Additions (Configure)

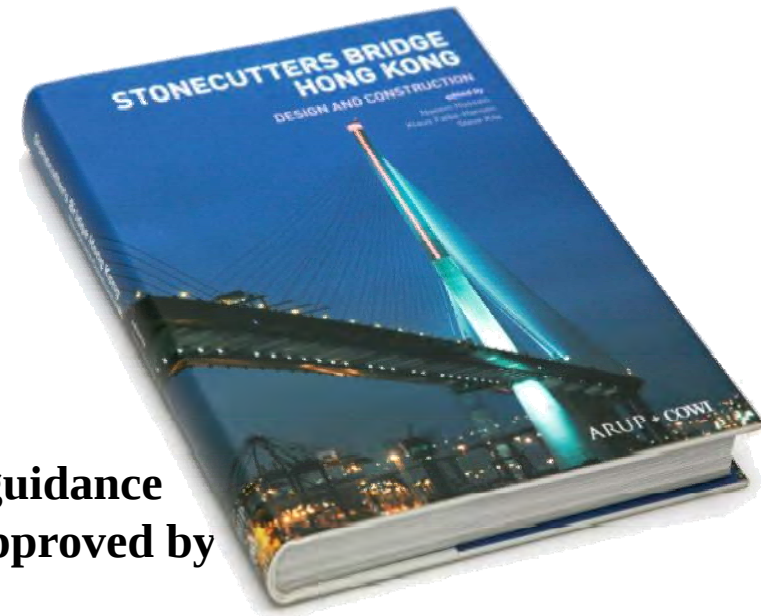
Content Title	Author	Network	Date Approved
Notes on Materials 54: Coloured Concrete	Bob Coother	STRUCTURAL_SKILLS_NETWORK	07 Apr 2008
Notes on Materials 53: White Concrete	Tony Head, Terence O'Brien, John Broadford, Dev Sen	STRUCTURAL_SKILLS_NETWORK	07 Apr 2008
Notes on Materials 42: Removal of stains on concrete	Bob Coother	STRUCTURAL_SKILLS_NETWORK	07 Apr 2008
Notes on Materials 40: Repair of concrete to obtain a desired surface finish	Bob Coother	STRUCTURAL_SKILLS_NETWORK	07 Apr 2008
Notes on Materials 20: Clear coatings for concrete	Bob Coother	STRUCTURAL_SKILLS_NETWORK	07 Apr 2008
Notes on Materials 12: Defining colour with pigments	Bob Coother	STRUCTURAL_SKILLS_NETWORK	07 Apr 2008
Notes on Materials 106: CEMSAVE - the new blue whitener	Paul Palmer	STRUCTURAL_SKILLS_NETWORK	07 Apr 2008
Notes on Materials 129: Get a visual yellow?	Bob Coother	STRUCTURAL_SKILLS_NETWORK	07 Apr 2008
ATR Indirect Test	Tamsin Tooley	STRUCTURAL_SKILLS_NETWORK	07 Apr 2008
Notes on Materials 10: Concrete specifications for appearance	Harold U'Brien, Tony Head, Alan Denney	STRUCTURAL_SKILLS_NETWORK	07 Apr 2008

Recent Additions for BridgeNet - the Bridge Skills Network (Configure)

Title	Author(s)	Date
2004P11-04 - Allowable serviceability limit state (SLS) loading for prestressed / post-tensioned concrete bridge decks in the UK and EU	Ying Zhou, Simon Durrant, Anthony Schofield	21 Jul 2005
2004CDN-09 - Lateral Torsional Buckling of Steel Bridge Beams	Neil Corbett, Ellen Sibert, John Selter	20 Aug 2005

Recent Additions for Structural Skills Network (Configure)

Title	Author
2004P11-04 - Allowable serviceability limit state (SLS) loading for prestressed / post-tensioned concrete bridge decks in the UK and EU	Ying Zhou, Simon Durrant, Anthony Schofield



**Best practice guidance
verified and approved by
Experts**



Creation

Sharing

Empowerment

Platform for colleagues sharing knowledge and experience of a specific skill

Home
Business
Costs
Fees
Technical
Analysis & Design
Building & Structure Types
Loading & Performance
Criteria
Materials
Sustainability
R&D Projects
Tools
Learning
Forum
News
Links
Diary
People & Plans
Insight
Site map
Latest Additions

Networks

Structural Skills Network

Home

Business

Costs

Fees

Technical

Analysis & Design

Building & Structure Types

Loading & Performance

Criteria

Materials

Sustainability

R&D Projects

Tools

Learning

Forum

News

Links

Diary

People & Plans

Insight

Site map

Latest Additions

WELCOME TO THE STRUCTURAL SKILLS NETWORK

SSN

Getting it Wrong - Learning from Mistakes

ordinary bolts slip

HSFG connections don't

Click on image for details

Use of High Strength Friction Grip connections

Shallow trusses with bolted cover plate type splices are likely to experience unexpected deflection due to slip in the connections.

Consider the use of HSFG bolts in these situations. Their use should also be considered in fatigue, vibration and load reversal situations.

[See more 'Getting it Wrong' budgets](#)

Not a member yet? Join us!

Belonging to the Structural Skills Network (SSN) means that you can seek advice from its members and are open to sharing your own knowledge by participating in the network's activities in a number of ways:

(1) Indicate your membership by joining 'Structural Skills Network' community on Arup People; and (2) Subscribe to the [SSN Forum](#).

Our news

What has been happening in the SSN community? Read our quarterly newsletter [SSN Newsletter](#) or check out the [News Archive](#) to see stories that were hosted on the SSN homepage in the past.

About us

Find out the current [SSN Leaders and Office Representatives](#). Learn about the aims and plans for our network by reading the [SSN Strategy](#).

Our website

View the [SSN Website Guide](#) to find out how the site is structured and how you can contribute to its development and maintenance.

Contact Us

If you feel a new section that should be added, you have a technical note that could be published here, or you found an existing document that out of date, please contact your local [SSN Website Administrator](#) or Lead SSN Website Administrators [Urszula Kanturska](#) and [Russell Fraser](#)

Please contact [Urszula Kanturska](#) with any comments on the SSN website, suggestions regarding SSN initiatives, or other general matters related to the SSN.

News

[Suggest News.](#)

[Admixtures for waterproof concrete?](#)

A Note has been published on the Materials Skills Network concerning a range of admixtures for concrete that it is claimed, provide waterproof

Projects

Latest projects to be updated

[Anti-Vibration Tie Calcs, SOUTH DERBYSHIRE HOSPITAL \(6786400\) \(Document\)](#)

Updated by Kath Lewis, 16 March, 2010

USER INFORMATION

Anita Siu

Skills Networks

Business Networks

Social & Informal

The image shows a screenshot of the Structural Skills Network (SSN) website. The website has a green header with the 'Networks' logo and 'Structural Skills Network' text. The main content area is divided into sections: 'Home', 'Business' (with links to Costs and Fees), 'Technical' (with links to Analysis & Design, Building & Structure Types, Loading & Performance Criteria, Materials, Sustainability, and R&D Projects), 'Tools', 'Learning', 'Forum', 'News', 'Links', 'Diary', 'People & Plans', 'Insight', 'Site map', and 'Latest Additions'. On the right side, there is a search bar and a section for 'R INFORMATION' with a link to 'a Siu'. The website also features a sidebar with links to 'Business', 'Costs', 'Fees', 'Loading & Performance Criteria', 'Materials', 'Sustainability', 'R&D Projects', 'Tools', 'Learning', 'Forum', 'News', and 'Links'. A callout box points to the 'Business' section, another to the 'Technical' section, and others to the 'Tools', 'Learning', 'Forum', 'News', 'Links', 'Diary', 'People & Plans', 'Insight', 'Site map', and 'Latest Additions' sections. A large callout box on the right side of the website says 'More than a web site.....'. The website also features a 'Not a member yet' banner with the SSN logo and a 'Click on image for details' link.

Networks

Structural Skills Network

Home

Business

Costs

Fees

Technical

Analysis & Design

Building & Structure Types

Loading & Performance Criteria

Materials

Sustainability

R&D Projects

Tools

Learning

Forum

News

Links

Diary

People & Plans

Insight

Site map

Latest Additions

Search All Networks

R INFORMATION

a Siu

Not a member yet

Click on image for details

SSN

More than a web site.....

Info for marketing

Technical knowledge

Design tools – spreadsheet, software

Training materials

Skills network forum

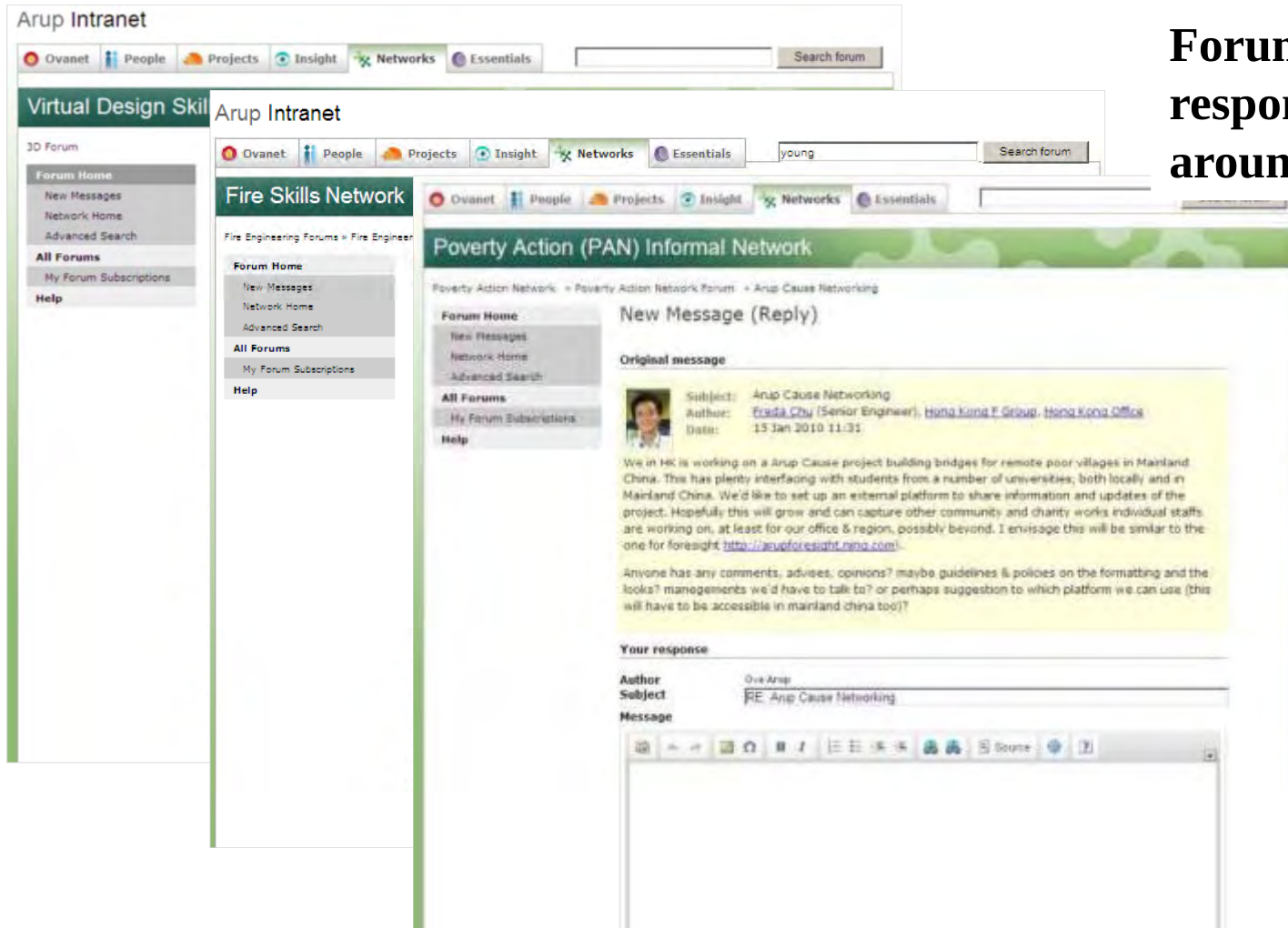
What will happen?

Reference links

What is going on?

People involved

Best practice guides



The screenshot displays the Arup Intranet forum interface. The top navigation bar includes links for Ovanet, People, Projects, Insight, Networks, and Essentials, along with a search bar. The main content area shows a thread titled "New Message (Reply)" in the "Poverty Action Network" forum. The thread details include the subject "Anup Cause Networking", the author "Prada Chy (Senior Engineer), Hong Kong F Group, Hong Kong Office", and the date "15 Jan 2010 11:31". The message content discusses a project in Mainland China and seeks input on platform guidelines. Below the message, there is a section for "Your response" with fields for Author, Subject, and Message.

Forum allows instant response from offices around the world

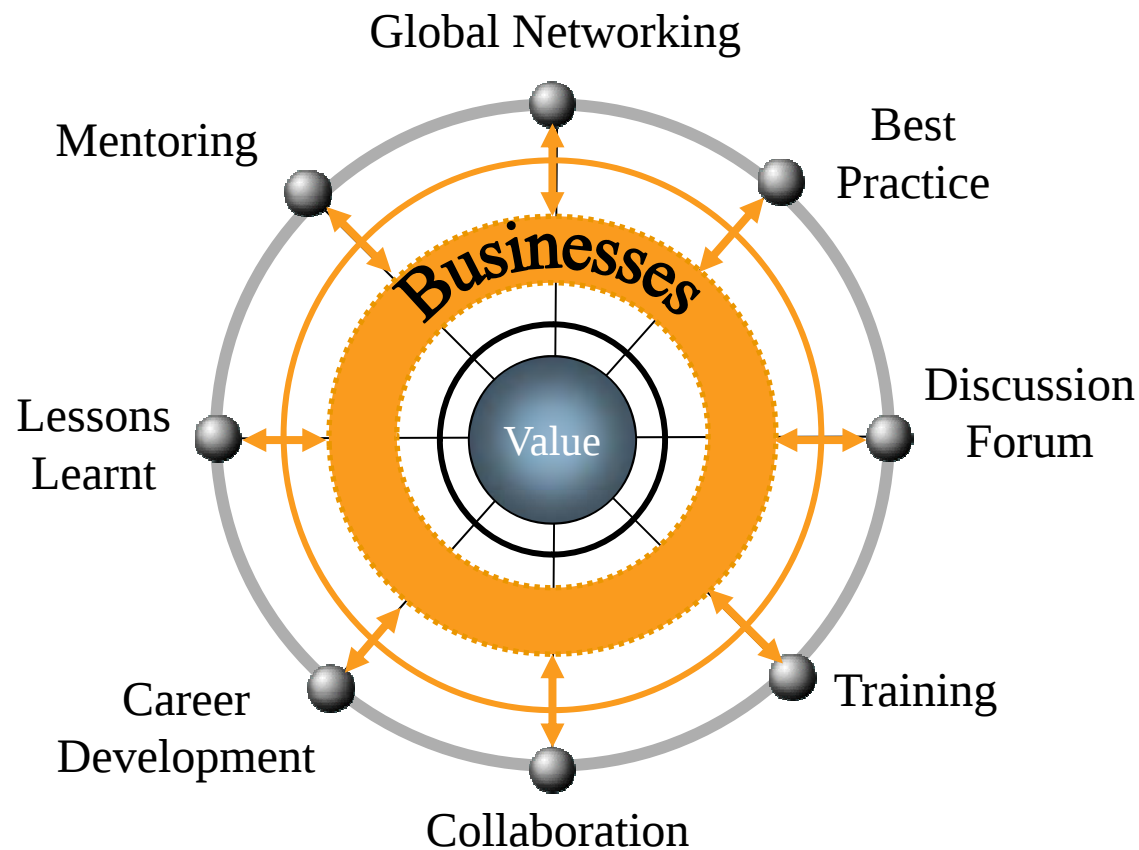
Using Network Forum for Work

Study on Measures to Reduce Excessive Packaging of Consumer Products in Hong Kong

- During the initial stage of the Study, forum was used to collect overseas views in respect of the excessive packaging.
- Fruitful findings in terms of environmental, economic and social perspectives were obtained.



■ Coordinated by Network Leaders



Network Activities

Creation

Sharing

Empowerment

Tall Building Education Workshop: CCTV
- a multi-disciplinary workshop

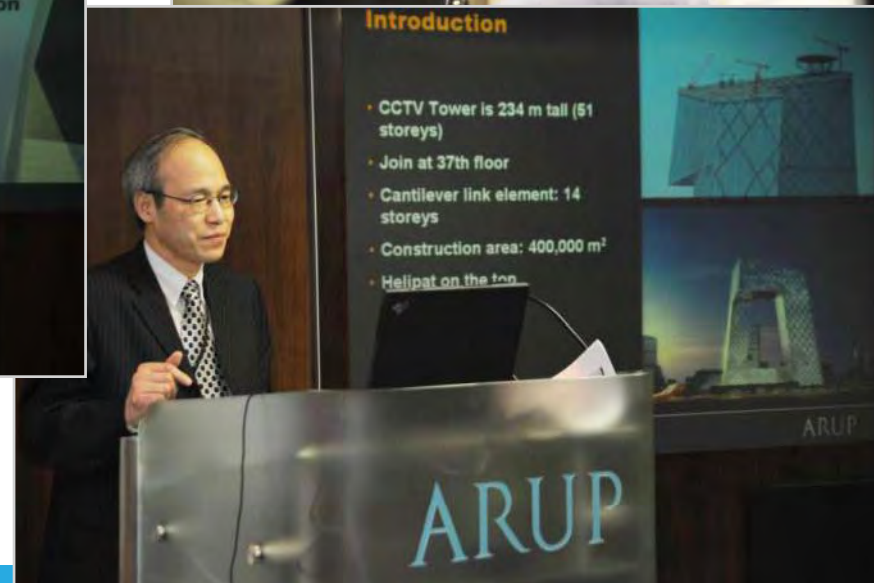
More than 200 skills training
activities in 09/10



Structure

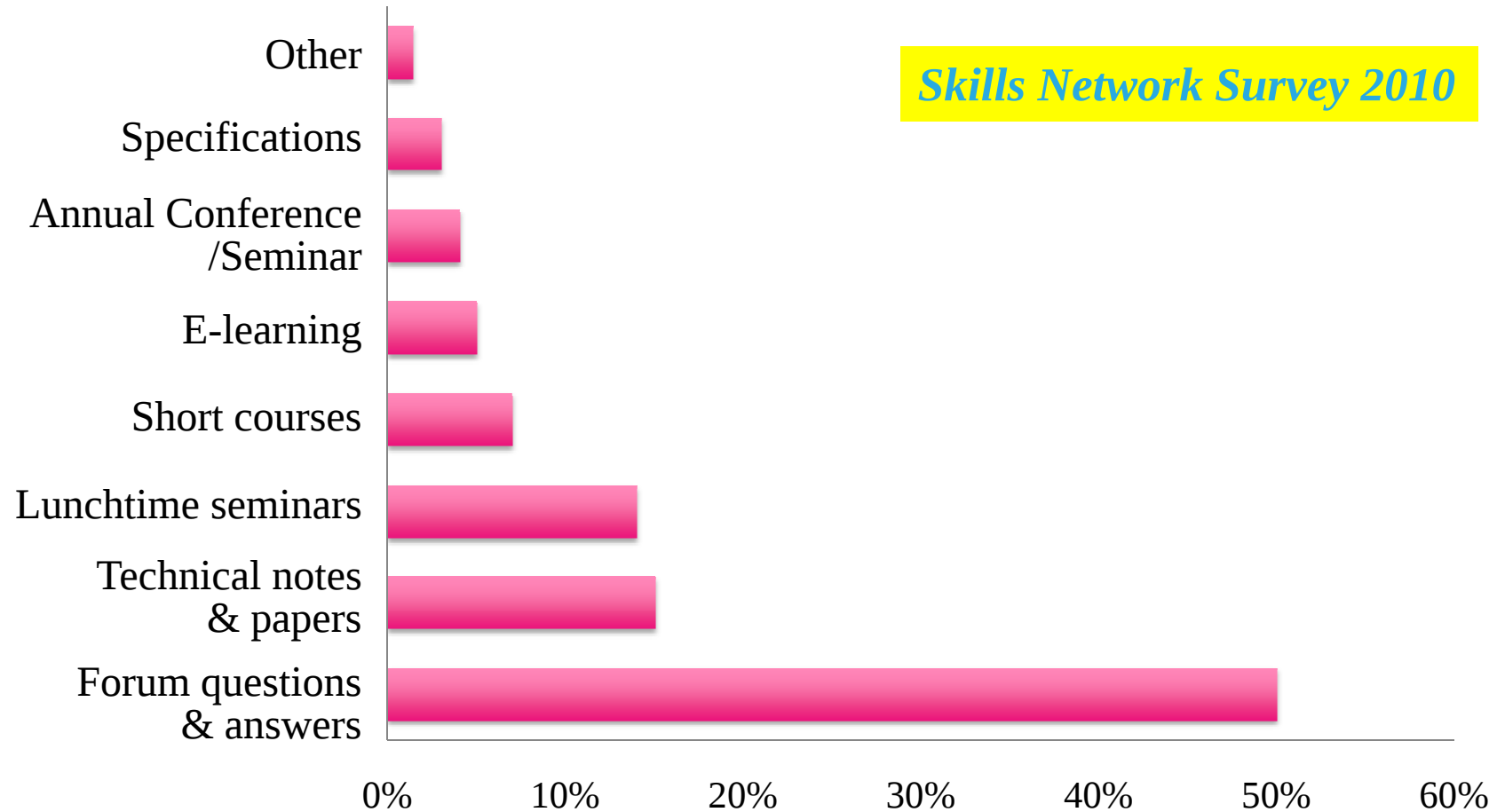


MEP



Fire

Skills Network Survey 2010



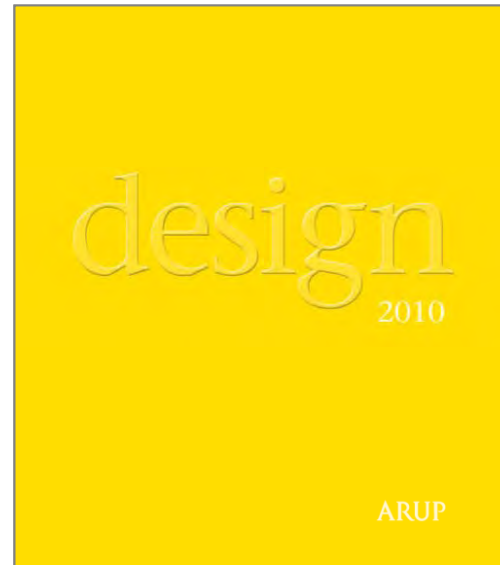
Which learning activities facilitated by your network do you find most beneficial?

Technical Publications

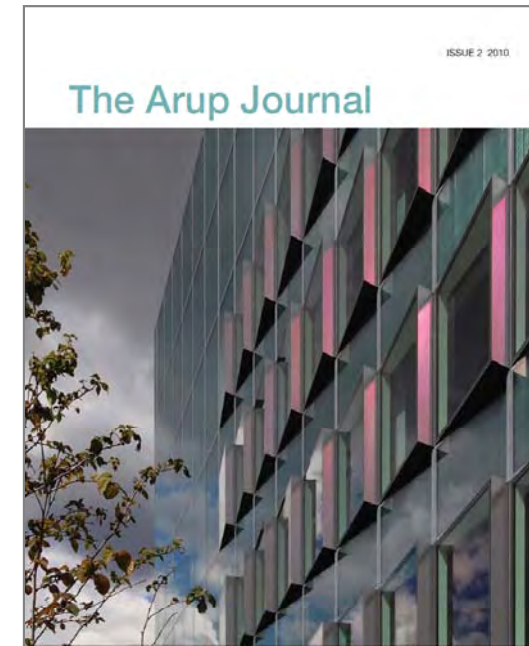
Creation

Sharing

Empowerment



Annual Design Year Book

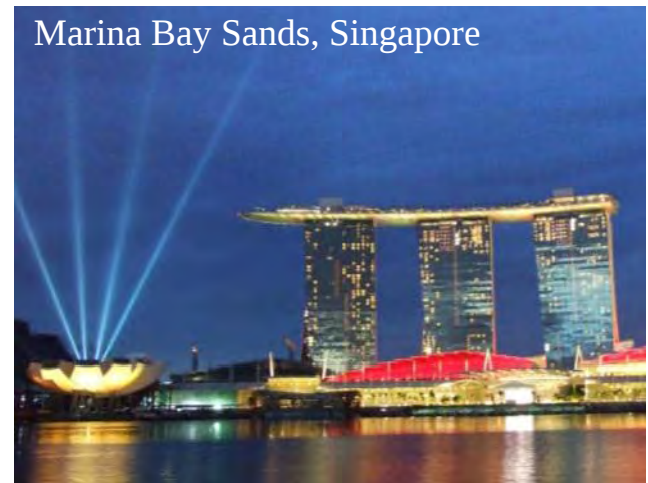
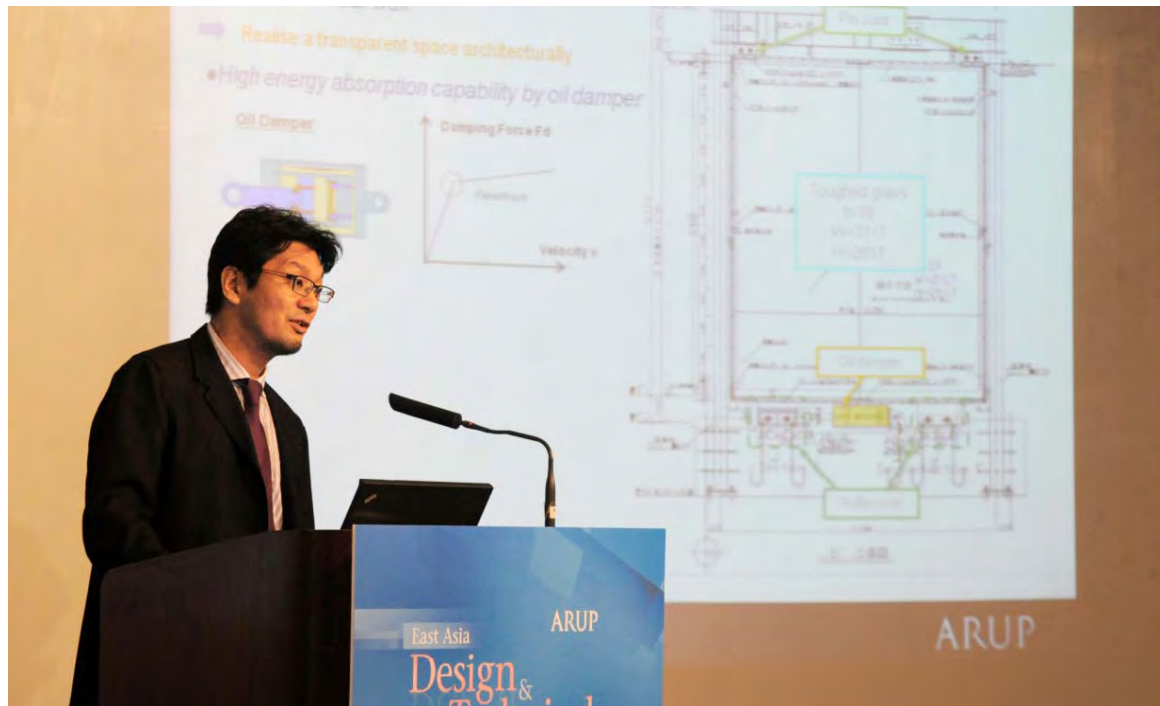


Quarterly Arup Journal

Arup Technical News

Design & Technical Excellence Awards 2010

- To commend creative solutions
- To share the best knowledge



Arup University

Creation

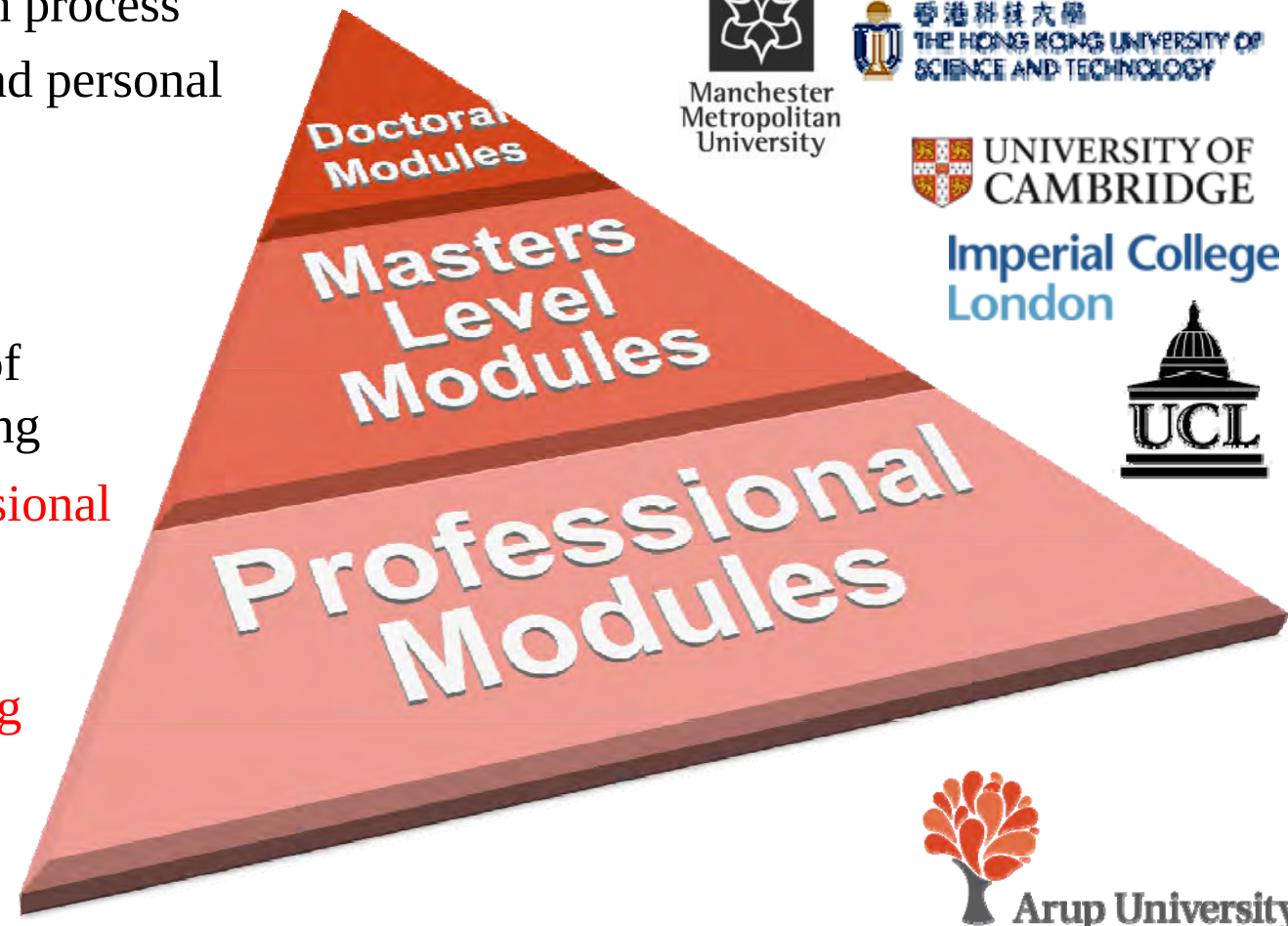
Sharing

Empowerment

- Cross-discipline training
- Course accreditation process
- Meeting business and personal development needs

Build upon our years of experience in organizing

- Continuous Professional Development
- Management and Leadership Training



Disseminating Knowledge

Creation

Sharing

Empowerment

Arup Fellows Lecture Series

Jack Pappin

- Fellows Intro
- Alisdair McGregor
- Andy Sedgwick
- Brian Simpson
- Corinne Swain
- Davar Abi-Zadeh
- Jack Pappin**
- Martin Manning
- Mike Glover
- Michael Willford
- Naeem Hussain
- Pat Dallard
- Peter Johnson
- Tristram Carfrae

Related content

[Arup Fellows on the internet](#)

ARUP



Earthquake Hazard and Risk
An illustrated story

Jack Pappin
April 2010

ARUP

Jack's Arup Fellows talk, introduced by Andrew Chan.

The Arup Fellows Lecture series are an opportunity for the Arup Fellows to give their unique perspectives on their work at Arup and their many and varied influences. These lectures represent personal journeys, and are very much a celebration of what life is like to be an Arup Fellow.

Arup Fellows Lecture Series

Design School

- Annual 3-day event in a hotel focusing on design & innovation

DESIGN SCHOOL

Rethinking Design - Antiquity versus Modernity

The 2008 East-Asia Design School will focus on rethinking
ends of a scale, w



Design Competition

- Invite wild but feasible engineering solutions

Two challenges to design and build structures from rapidly renewable materials that can be grown in under a year.

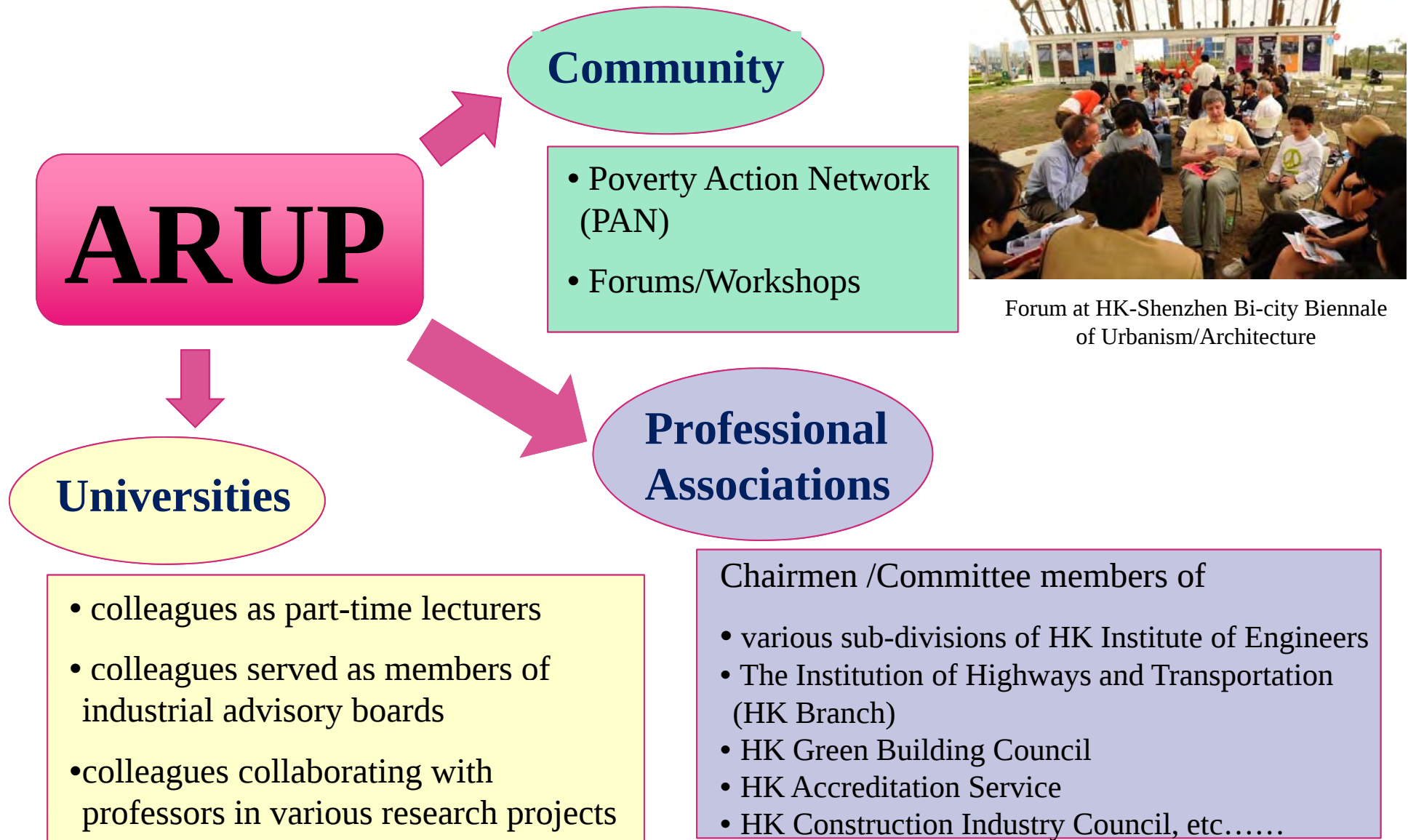


Industry/Community Network

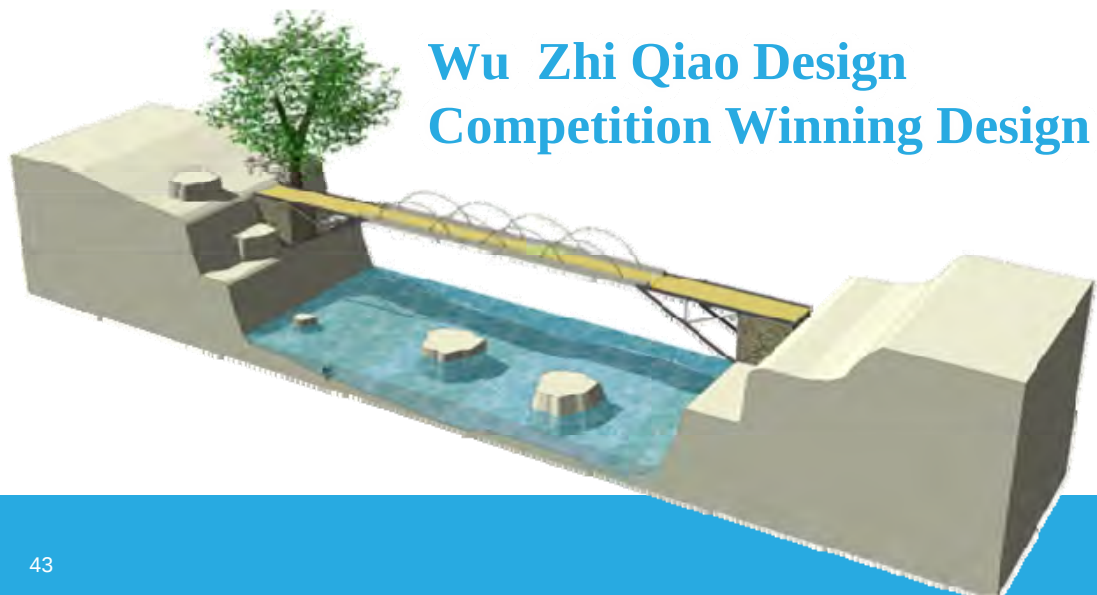
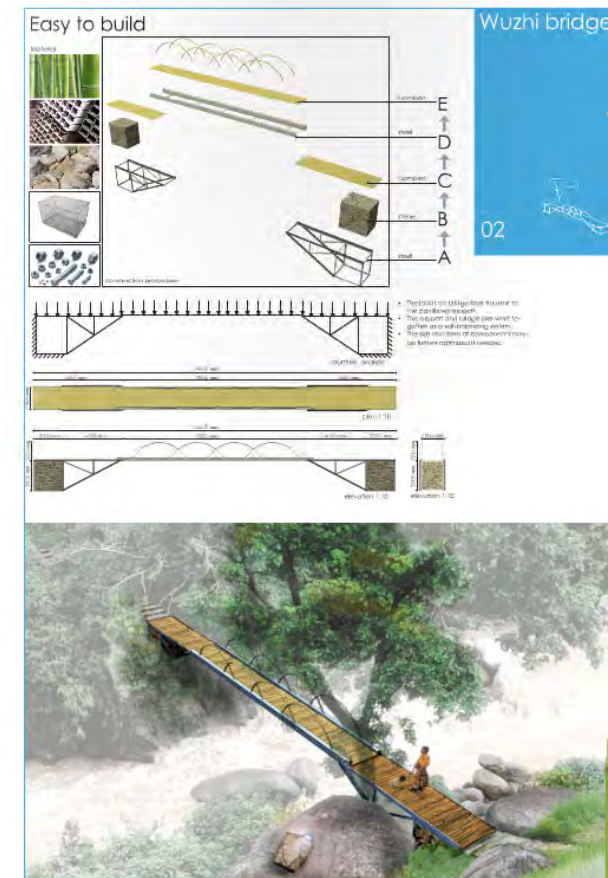
Creation

Sharing

Empowerment



Using Knowledge for Corporate Social Responsibility



Arup Knowledge Centre



Arup Library Catalogue

Hong Kong Knowledge Centre

Daily News Clippings

PHOTO LIBRARY IMAGE BASE



- Full-time librarians
- Technical paper
- Publication
- Design codes
- Bidding support
- News Clipping
- Knowledge coaching

Knowledge Handbook

- Telling colleagues how to use Arup Knowledge Tools



Applying
Arup
knowledge
to your
advantage

Knowledge Handbook

ARUP

Knowledge Strategy & Executives

Design &
Technical
Executive

DTX

Knowledge
Team



East Asia
Knowledge
Activist



East Asia
Knowledge
Enthusiast



Arup Fellow



Network
Leader



Arupian



Together, We develop the Arup Knowledge Culture

Selection of Knowledge Management Award

- **Asian Most Admired Knowledge Enterprise (MAKE) Award Winner (2010)**
- **Hong Kong MAKE Award Winner (2010) - Top Winner**
- Managing Partners Forum European Practice Management 'Management of Knowledge' Award (2010)
- Short listed Management Consulting Association Award (2009)
- Innovation in Knowledge Management Award Winner (2006)
- Best Business Partner in Using Communities of Practice to Drive Organisational Performance & Innovation Award (2005)
- Innovation in Knowledge Management Award Winner (2003)
- Knowledge Management Project of the Year Runner Up (2002)



MTRC Knowledge Management

Arup helped MTRC's Projects Division:

- Align Knowledge & Information Management (K&IM) with corporate strategy
- Connect people, enhancing explicit and tacit knowledge sharing
- Capture lessons learnt and avoid reinventing the wheel
- Enable a collaborative working culture across a multi-project organization
- Develop a communications programme to promote engagement
- Ensure K&IM became part of normal activities

“Overall the project has delivered more than I had hoped for.”

Malcolm Gibson, Head of Project Engineering, MTRC



Thank You

ArupUniversity
KnowledgeCentre
KnowledgeStrategy
ProjectReview
People
Seminars
On-jobTraining
Research
KnowledgeActivists
InductionTalk
Day-to-dayAssignment
Essentials
Talks
ExternalCollaboration
KMStrategy
Forums
ArupCafe
ArupFellows
Knowledgehandbook
Insight
KnowledgeEnthusiast
Networks
KnowledgeActivists

Applying
Arup
knowledge
to your
advantage
Knowledge
Handbook
ARUP

