



# LSAA

LIGHTWEIGHT STRUCTURES ASSOCIATION OF AUSTRALASIA INC.

## LSAA 2011 Conference Collaborative Design of Lightweight Structures

Sydney, October 2011

### PRELIMINARY INFORMATION FLYER FOR POTENTIAL CONFERENCE SUPPORTING ASSOCIATIONS, COMPANIES, AUTHORS AND SPONSORS

Websites: [www.LSAA.org](http://www.LSAA.org) Conference: [www.LSAA2011.LSAA.org](http://www.LSAA2011.LSAA.org)

The Lightweight Structures Association of Australasia (LSAA) is a not for profit Association for members with a passion for designing, fabricating, constructing and supplying materials and components for a range of lightweight structures. The LSAA was created initially as the Membrane Structures Association (MSAA) in 1981 when tensioned fabric structures were in their infancy in Australia. In 1994 the MSAA widened its scope to include other structural materials and structural forms such as cablenets, cable supported roofs, steel arches, high tech glazing wall facades and roofs.

Typical structures of interest are shown in the pictures on the side. They are typically large clear spans over public spaces. They require a deep understanding of structural behaviour and form to create exciting 3D curved spaces where often the structure is the main load supporting system as well as the environmental barrier.

The unique characteristics of such applications – stadia, transport hubs, exhibition spaces, clear span environmental protection – requires an added degree of collaborative design input to be successful. It is also a feature of these structures that the design details are exposed, very variable in 3D geometry and visible which in turn demands an extra level of design input. There is normally specialized expertise needed for the erection or assembly of such delicate but graceful structures.

Iconic Lightweight Structures therefore will only be deemed successful if there is a truly collaborative design team that includes the end client, project managers, architects, engineers (structural and for services in particular), specialized suppliers of high tech fabrics, cables, anchorages, glazing and other components.

Many solutions – particularly those involving architectural fabrics and cable supporting systems – will be prestressed and as such skilled installers are needed and their input is critical early in the design process.

More and more, these team members will need to communicate and build up a 3D virtual structure from which all members can both visualize the details, determine stresses and erection sequencing as well as provide costings and assurances that there are no clashes when constructed. This requires the different software systems to adhere to interoperability standards to reduce errors. The current Building Information Model software concepts and various related standards for information storage are seen to be central to the efficient working of the design team and the final realization of the project. This virtual model should be capable of simulating erection and be available for ongoing asset management of the facility.



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## CONFERENCE PROGRAM AND CONCEPTS

The LSAA has held two day Conferences basically every two years since inception. These events have been coupled with the LSAA Design Awards which are presented at the Conference Dinner on the first night. The Design Awards are for lightweight structures which has had a major design or fabrication component by a Company and has been constructed (completed) since the previous Awards (2 years earlier in general). In 2009 there were 28 entries in the four categories. The Conferences have had the financial support of LSAA members through sponsorship / exhibition packages from \$2,500 to \$5,000.

In every other year (2010 for example), the LSAA holds a smaller Symposium, Workshop or a Seminar. Plans are underway for a day Workshop in Brisbane in October 2010.

The LSAA Conferences have attracted some high profile Keynote Speakers (normally Architects and Engineers) talking about a range of projects or changes in the industry as a whole. In several cases we have had well known International speakers.

The nature of the presentations is generally of practical detail rather than any slant towards academic theory and involved mathematics. Conferences have been viewed as successful as we have given priority to authors who discuss projects being constructed or have recently been constructed. Many papers are given by local people who have played a major role in the design of a significant structure located overseas.

In our 2007 Conference the presentations from the architectural and engineering viewpoints of the Beijing Watercube clearly illustrated the range of design skills and software tools that help generate, visualize, analyse and optimize the iconic structure.

Again at the 2009 Conference there were several keynote speakers that discussed the design development and construction of the new Rectangular Stadium in Melbourne.

These two examples were the inspiration for the LSAA to consider the proposed topic for its 2011 Conference as "Collaborative Design in Lightweight Structures".

As noted in the earlier sections of this information flyer, there would be a number of other potential organizations and associations that would have an interest in this subject.

The purpose of this document is to gauge potential interest for other groups to collaborate or support the Conference.



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## NEXT STEPS – EXPECTATION OF INTERESTED GROUPS

The LSAA would expect some contributions to be made to the success of the Conference by other groups. Example contributions might include one or more of the following:

1. Promotion of the event to its members via eNews, website, Newsletters, Committees etc.
2. Financial Sponsorship to some level (\$5000-\$10,000 as a guide) or the sponsorship of a suitable Keynote Speaker on a relevant topic. Such a speaker might perform other duties for the particular organization prior to or after the Conference (such as seminars in other capital cities – possibly for CPD credits)
3. Organization Members (eg Software Companies etc) taking up some Sponsorship / Exhibition Packages from the Conference
4. Attracting suitable authors and conference attendees to add to the numbers.
5. To provide some members who may assist in the assessment of submitted abstracts / papers in their area of interest.
6. To provide input to early Conference Planning.

## WHAT HAS BEEN DONE

The LSAA has planned the Conference for October 2011 in Sydney. Preliminary Budgets suggest Conference fees of \$500 (Early Bird Member Rate) to \$675 (Late, Non-member)

A Preliminary Conference website has been set up at [www.LSAA2011.LSAA.org](http://www.LSAA2011.LSAA.org)

The Venue has not been decided upon at this stage as it will depend on expected number of attendees and the amount of exhibition space needed. If the LSAA was to conduct the Conference by itself, we would most likely have all papers given in the same auditorium and would anticipate an attendance of 100-120 persons.

For a larger event, it is likely that we would have a number of Plenary sessions (after tea / lunch breaks) followed by some Parallel Sessions. For a larger event, the LSAA is considering holding a technical workshop covering the Design and Construction of Lightweight Fabric Structures on the previous afternoon. The LSAA would look to have a stream of the Parallel Sessions dealing with Lightweight Structures.

For substantial support from other organization(s), the LSAA would consider adjusting the Conference Title to “Collaborative Design of Building Structures” for example. The criteria for papers should still give high priority to papers that are illustrated by real completed projects.

For a much larger event, some adjustment of the LSAA Award Presentations might need to be considered, or additional Awards given specifically for this Conference.