

the STEEL centre

technology workshop recap

Thank you for providing your time on August 19 to explore barriers and opportunities to increase competitiveness for our members. The Steel Centre Technology Workshop uncovered new possibilities for streamlining design and construction processes and directions for research.

Three central themes emerged:

information flow between individuals and companies,
coordination of both software and people, and
automation for design & construction.

now

Productivity software is ubiquitous
BIM tools and 3D modelling are prevalent
but fragmented
Early fabrication automation has begun

future

Computational/generative design;
eventually machine learning & AI
Robotic fabrication & erection
Better use of 3D visualization tools
Single-model process throughout
Seamless software interoperability

we hate it when...

Information is unclear, missing, or
never communicated
Incomplete designs lead to clashes
Each group works with no regard for
others

...so we want to

Encourage integrated knowledge &
information sharing
Start using integrated design &
visualization tools
Automate tedious or time-
consuming tasks

next steps

Research

Computational design; move toward useful AI

Collaboration

Leverage the Steel Centre's growing industry
network to rethink the construction workflow,
improving information exchange and increasing
overall efficiency

most pressing needs

information flow

- Improve knowledge transfer and collaboration, especially across companies
- Implement lessons-learned between construction and design
- Use real-time collaborative BIM tools to communicate with all stakeholders simultaneously
 - Ensure correct and complete information throughout
 - Reduce liability

coordination

- Exploit rapidly emerging technologies for better coordination from concept to top-out
- Improve interoperability of software
- Unify the vision of project goals, budget, safety, schedule, and operability

automation

- Automate design, fabrication, and construction
- Make more creative designs possible with AI tools

proposal

The technology workshop uncovered two distinct areas of need: better tools to automate design and fabrication, and better communication among the users of those tools. The Steel Centre is uniquely positioned to contribute in both of these areas.

research

Expand and grow the Computational/Generative Design research stream at the Steel Centre to capitalize on the Research and Development opportunity. Develop the expertise to make cutting-edge technologies accessible to our members and the industry at-large. Understand, develop, and validate tools to integrate Generative Design and bring AI-assisted design and fabrication to the industry to increase competitiveness, reduce costs, prevent errors, and save time.

collaboration

Launch an interdisciplinary working group, hosted by the Steel Centre at the University of Alberta, to bring together leaders in the construction and technology industries. The mandate of the working group would be to conceptualize how collaboration processes could be reinvented to propel the industry forward, and identify what technologies must be developed to achieve this goal. The Steel Centre serves as a cross-sector hub for representatives to communicate their needs and goals.

Let's create a movement at the Steel Centre to close the technology gap!



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