

Lessons Learned from Operating the Large Wind Tunnels at University of Western Ontario

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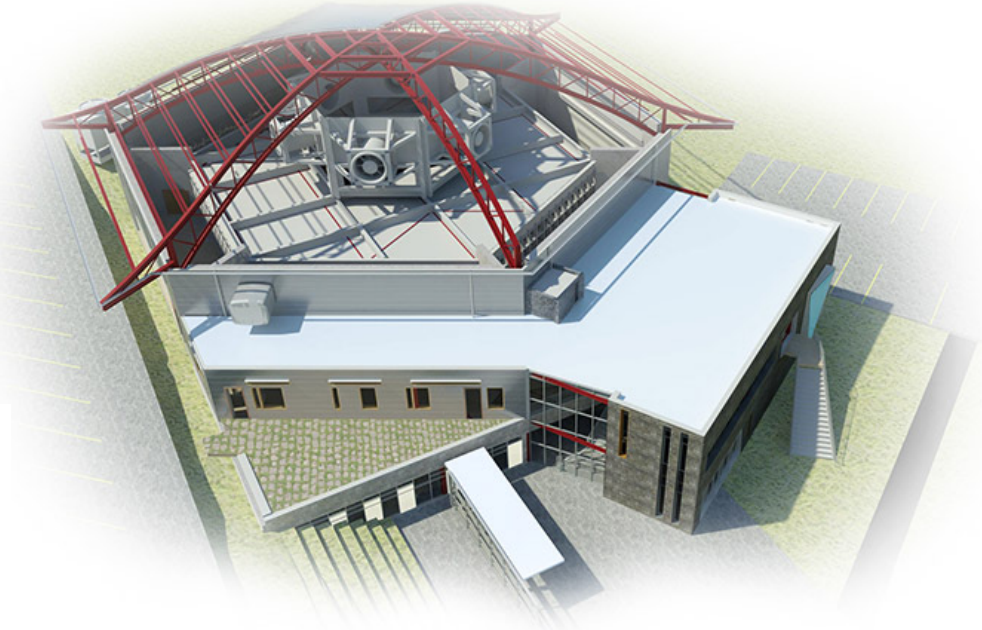


Wind Tunnel Facilities at Western

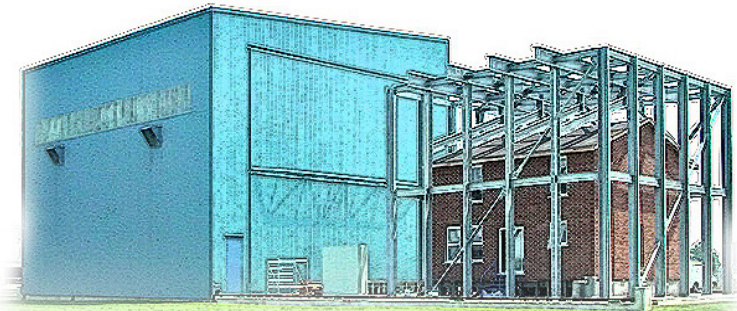
BLWTL+



WinEEE Dome

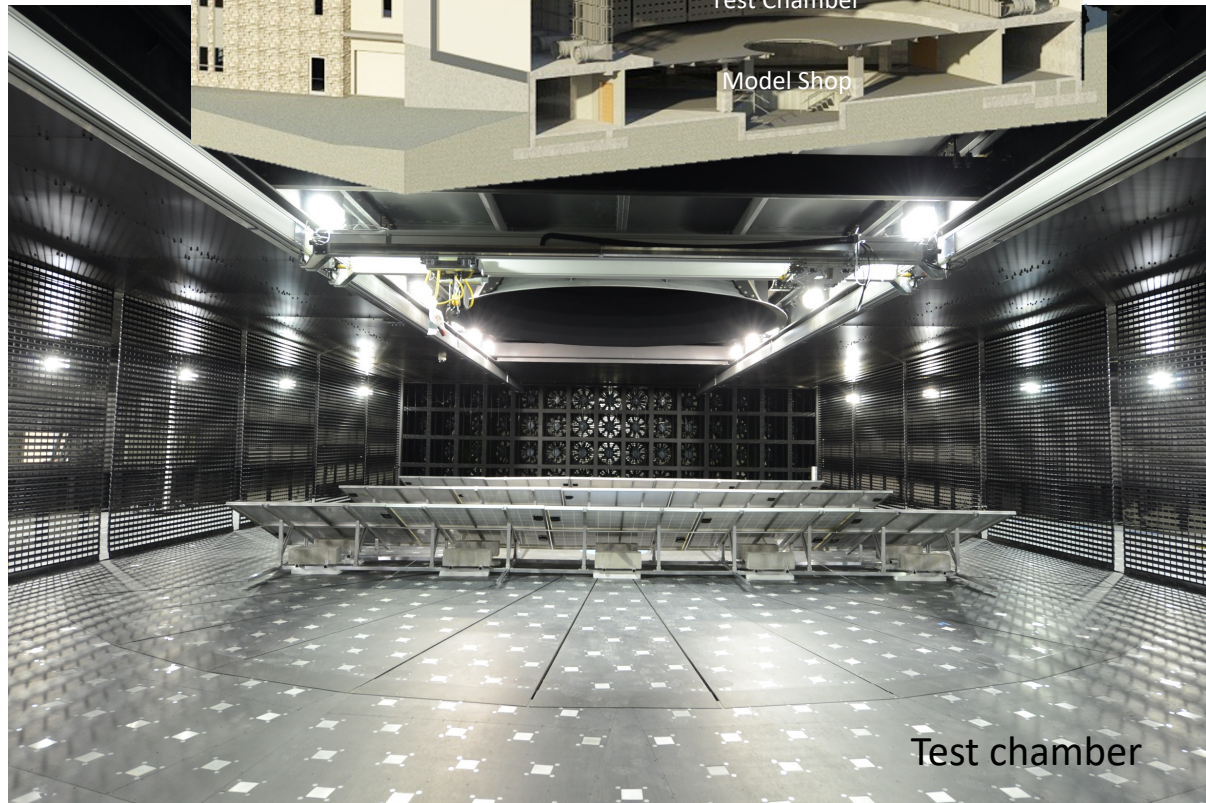
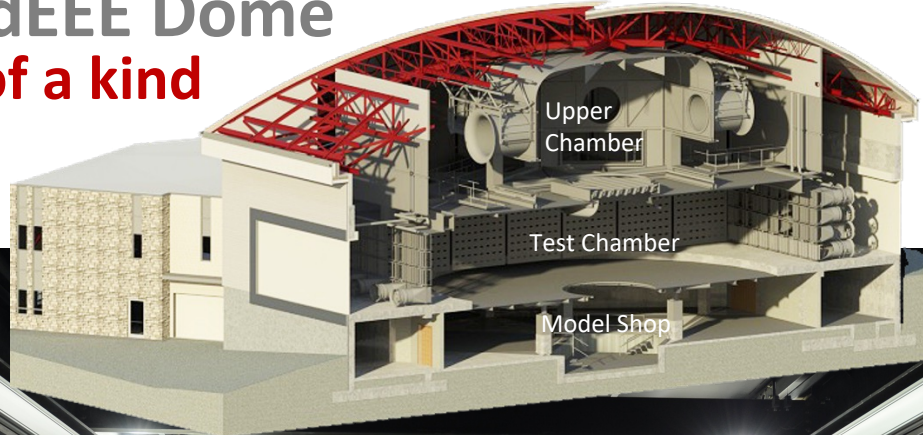


Insurance Research Lab for Better Homes



WindEEE Dome

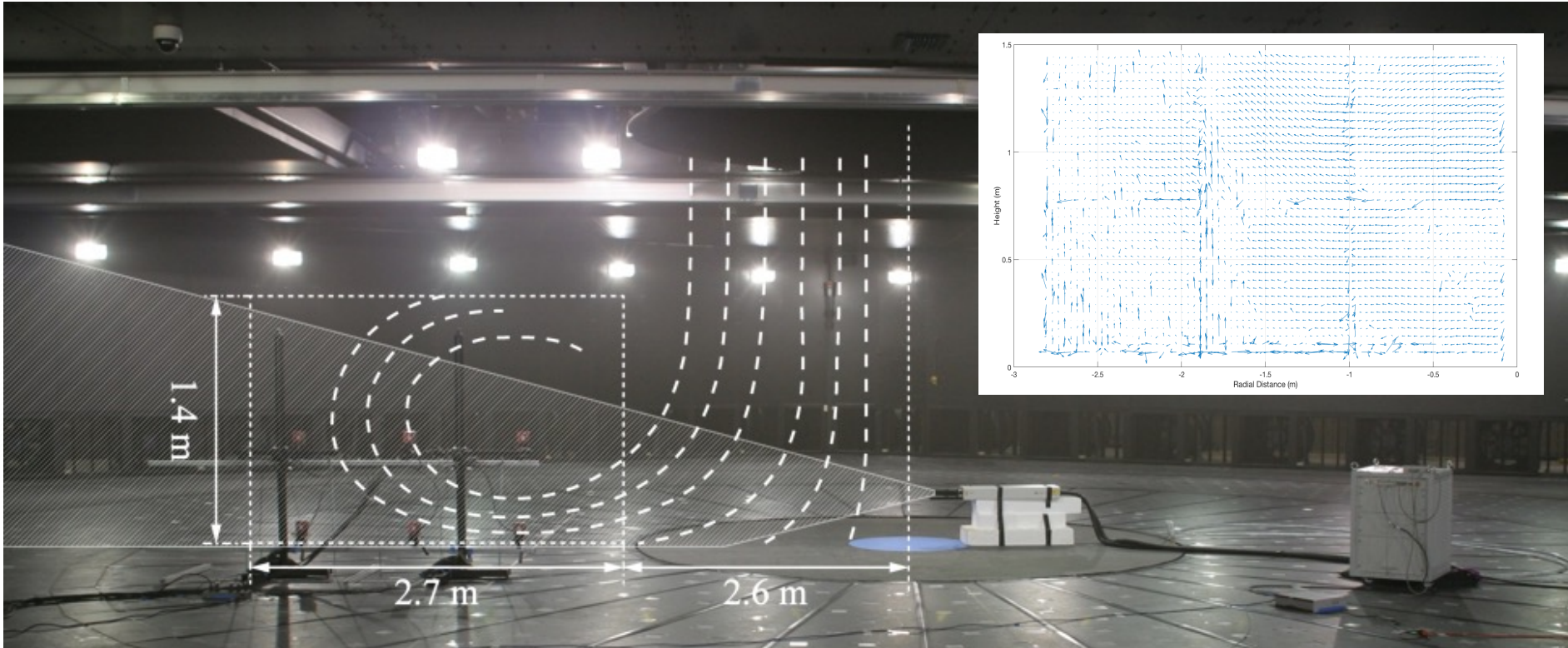
one of a kind





Development

Large Scale PIV



Innovation

Rapid 3D Particle Tracking



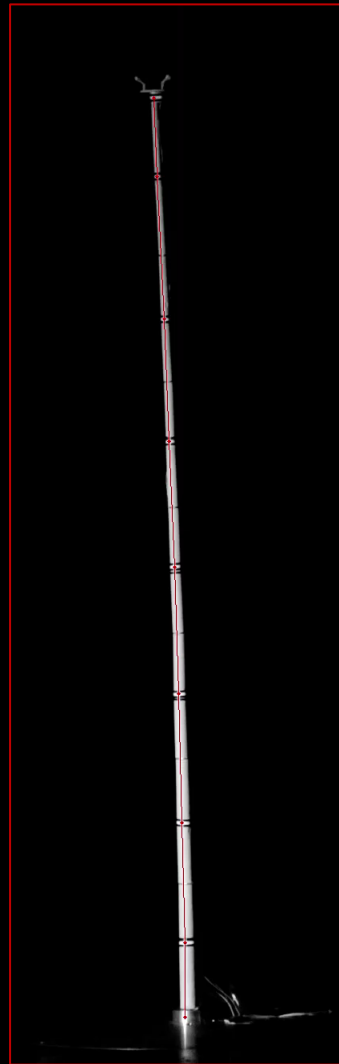
Innovation



1/30 vs 1/800



measure model displacement in 3D space



a



Insurance Research Lab for Better Homes (IRLBH)

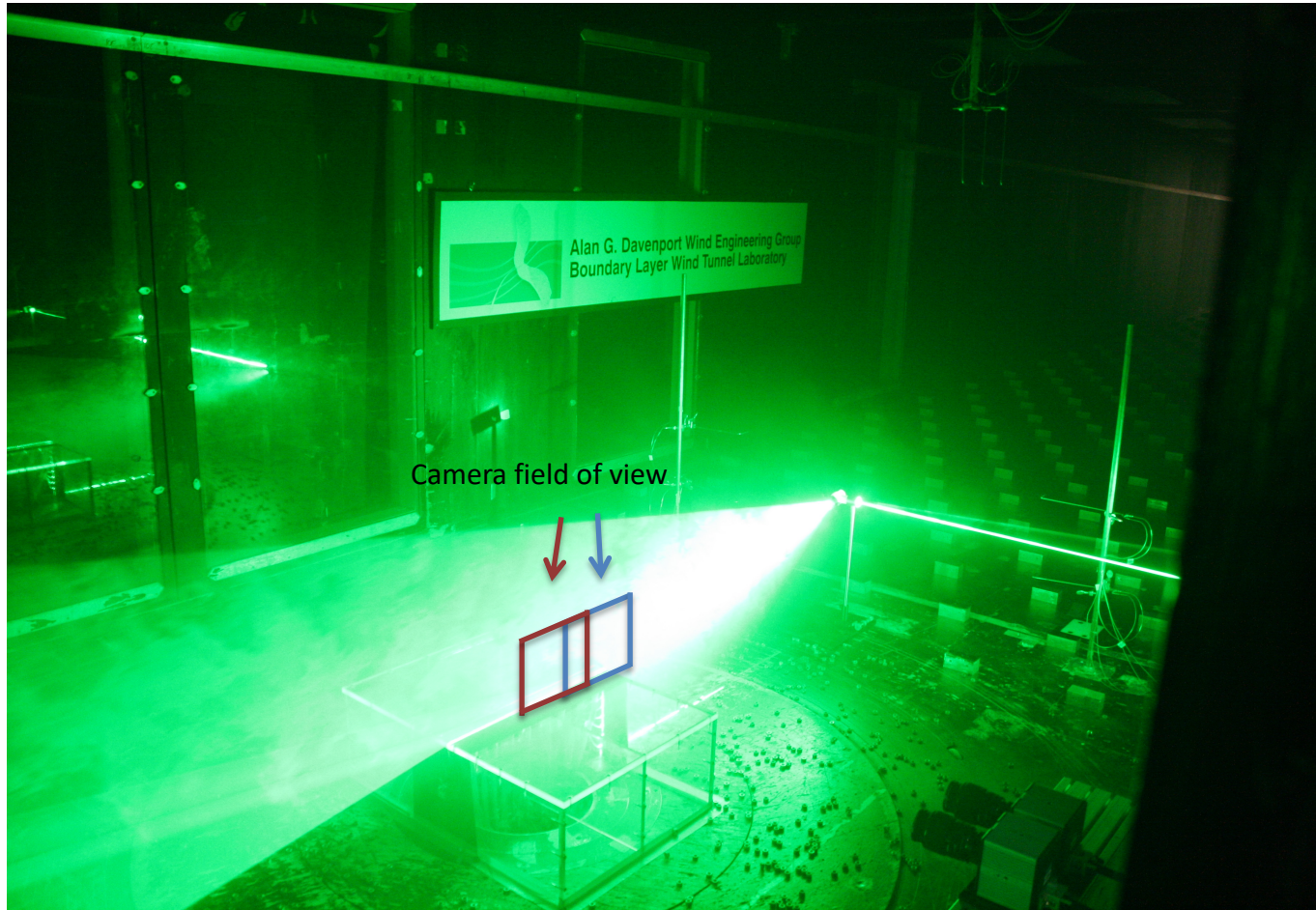


Test building in 3LP facility (a) full scale testing of a residential building, (b,c) PLAs and air bag set up for a garage door testing, and (d) video of a full scale metal roof testing.

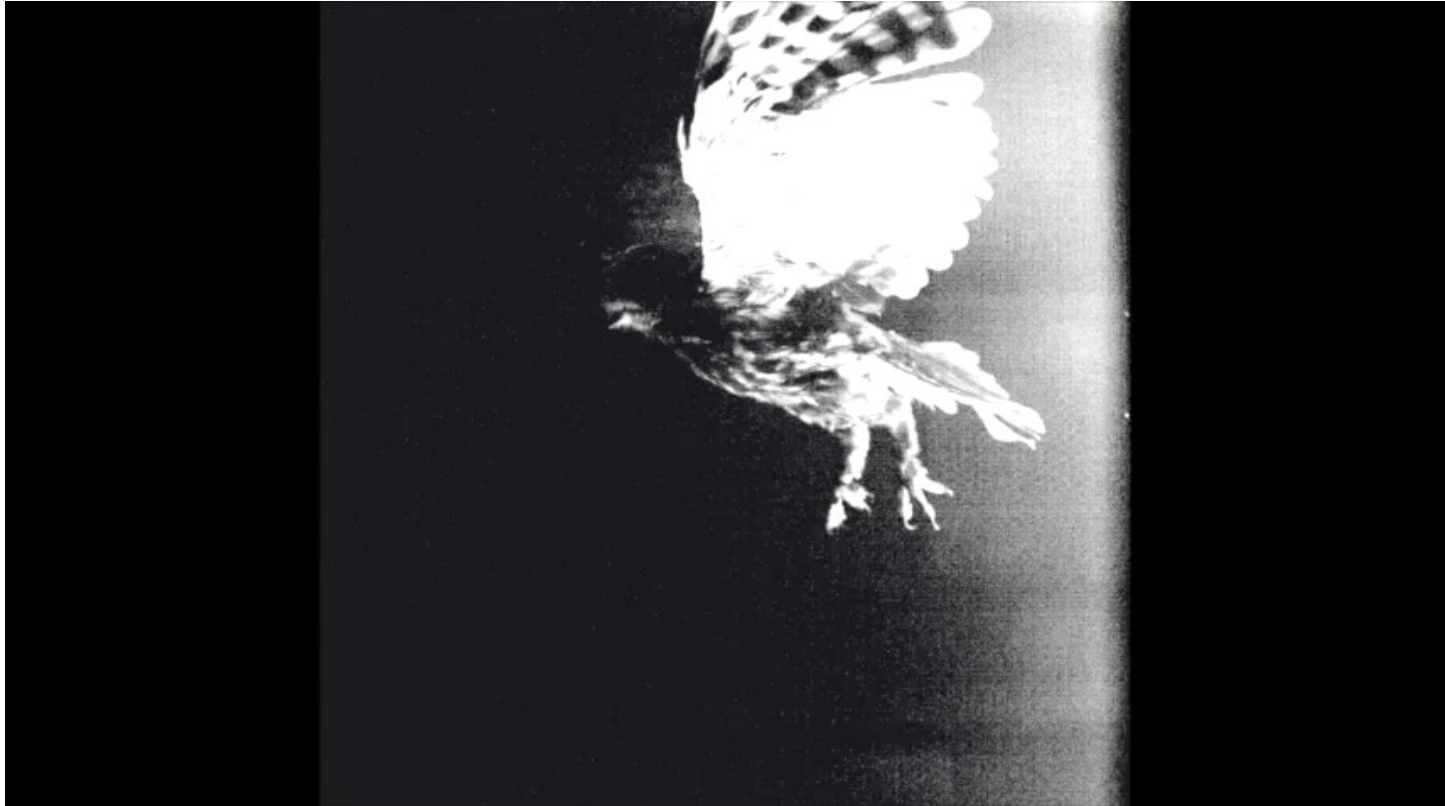


Boundary Layer Wind Tunnel Laboratory (BLWTL)

Long-duration, high-speed particle image velocimetry (PIV) ($f_s=500$ Hz), synchronized with pressure measurements



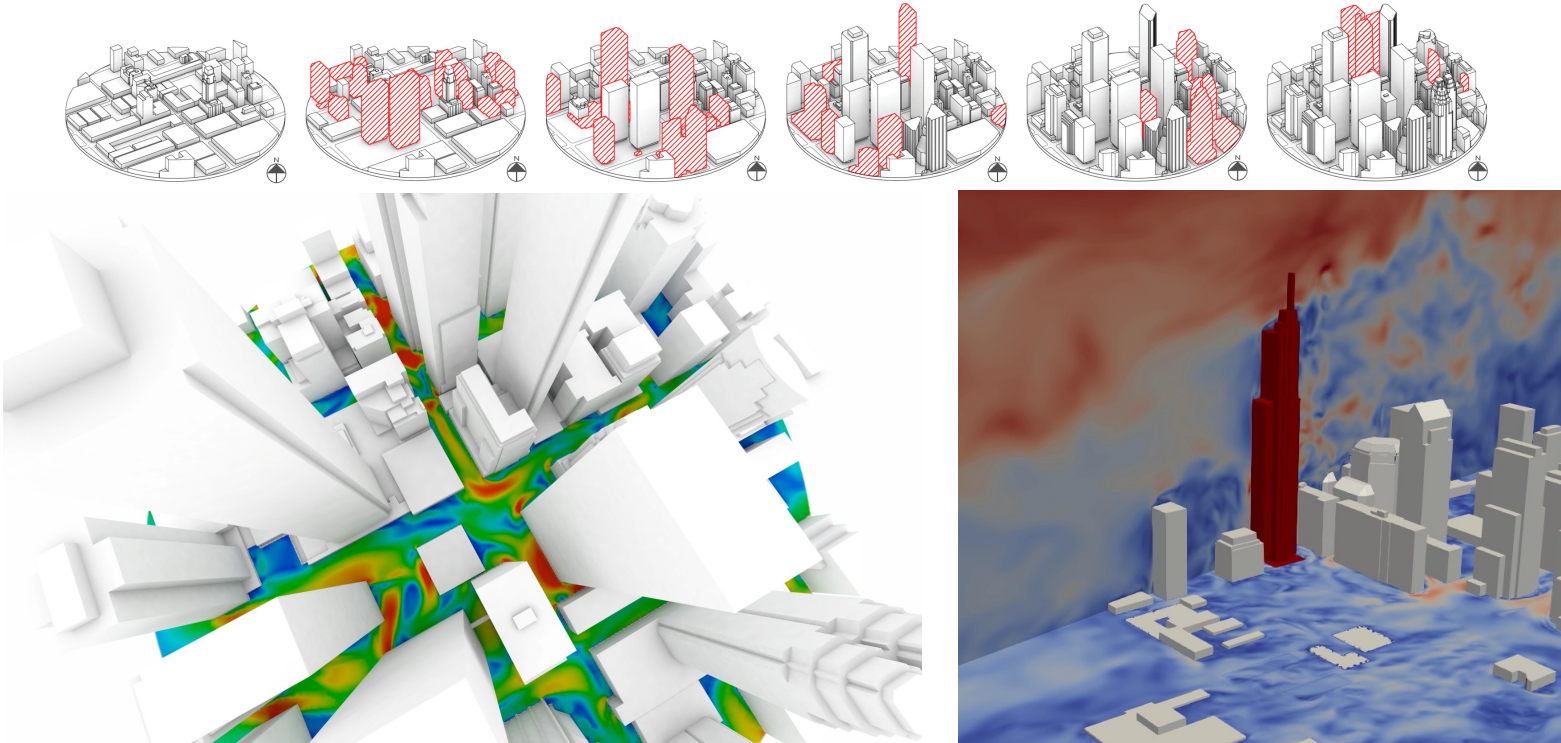
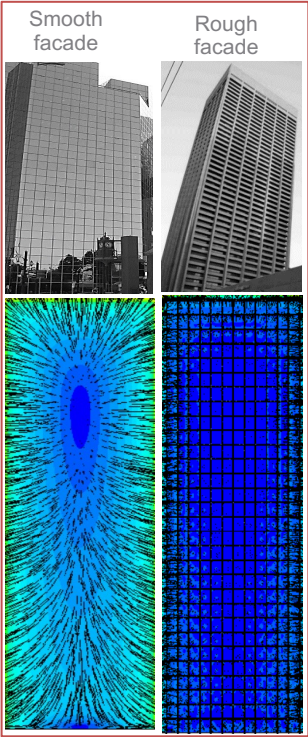
Other Uses:

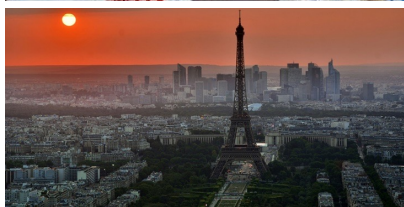


Other Uses:



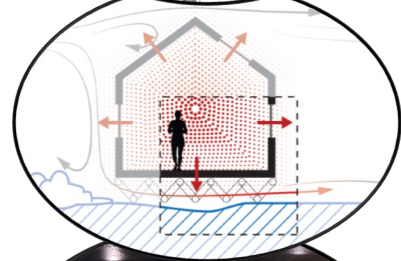
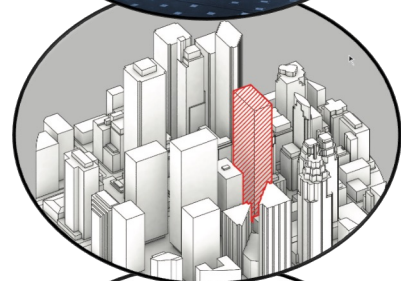
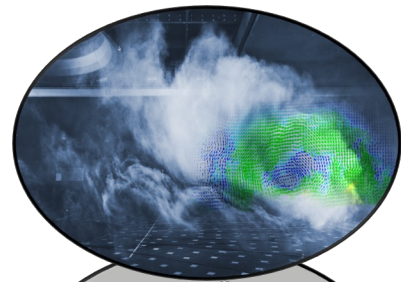
Advanced Research Computing





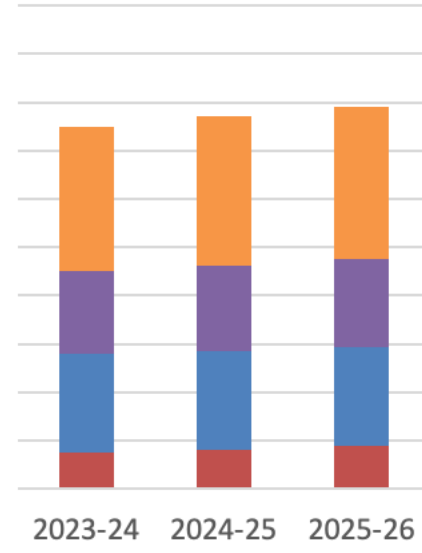
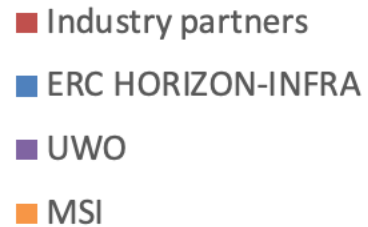
Strategic research areas

- i. Severe storm hazards
- ii. Computational modeling
- iii. Wind damage mitigation and passive architectural design
- iv. Performance-based design
- v. Climate change impact assessment
- vi. Training the next generation





funding sources



Some Observations

- The search for resources, funding, and talented technical personnel is never-ending. One needs a diverse group for support including industry contracts, research grants, and institutional support. One needs a network of partners.
- Model-making and instrumentation support is challenging to make operational for visiting researchers without expertise. It is one thing to do this as your own research, it is another thing to make it reliably available for others.
- Maintenance is expensive and also never-ending