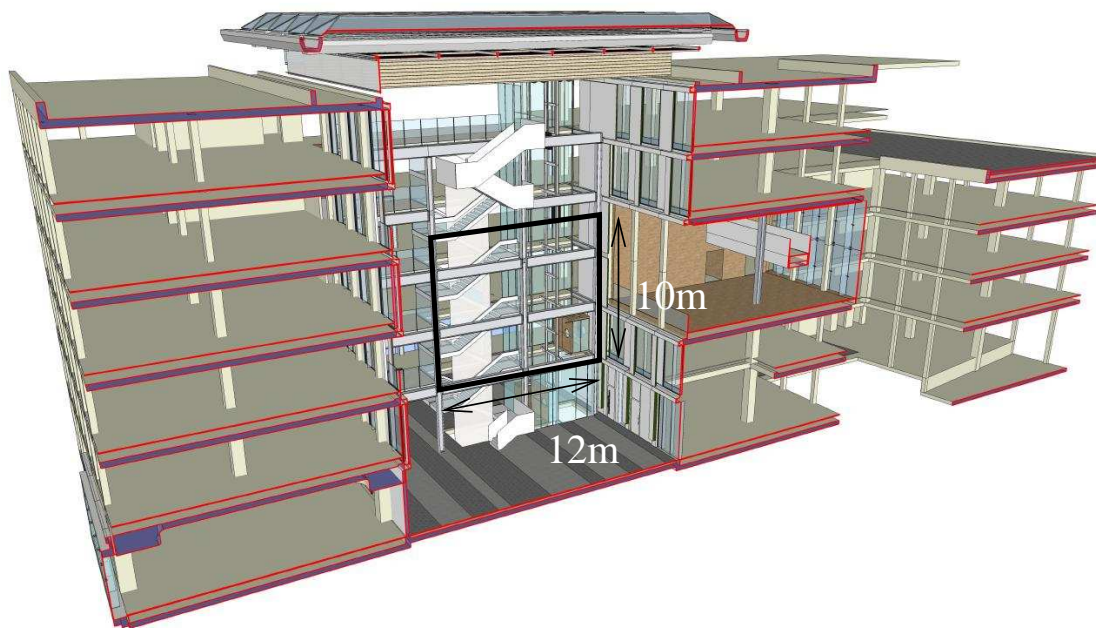


Atrium Robot Swarm

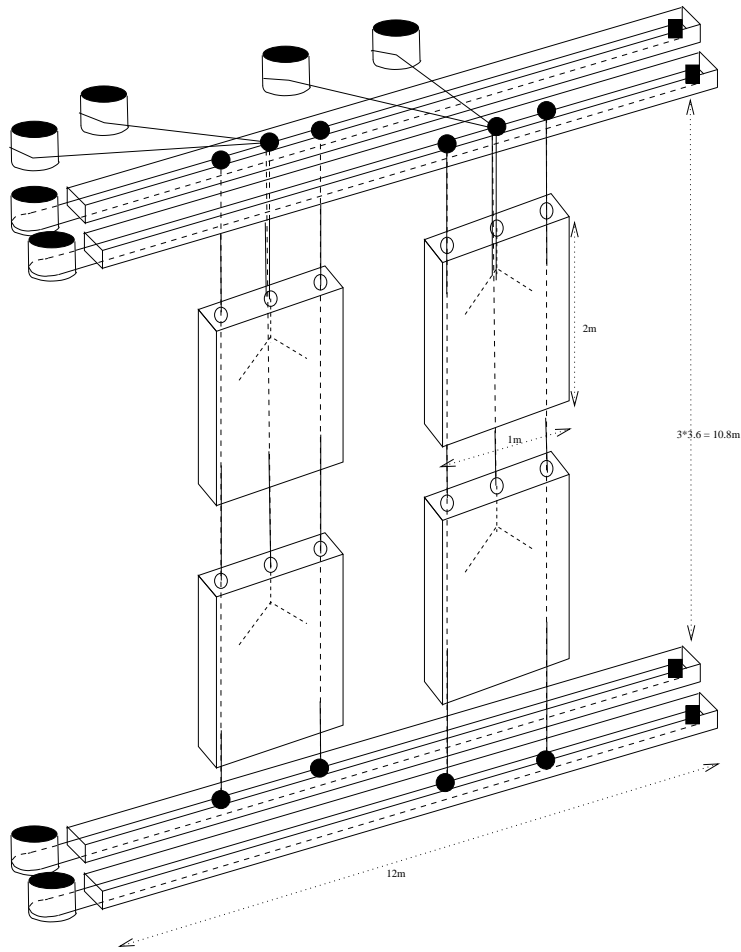
Richard Brown, Bob Fisher

June 28, 2006

The concept is a set (e.g. 2x2-4x4) of sliding panels, each partially independently controlled. Several data projectors will selectively project content onto the panels. The content can be 'art' or 'information' (e.g. all panels can be brought together to create a larger screen). This is mounted on the north (south facing) wall of the atrium. A sketch of a possible placement is here:



A sketch of a possible mechanism is below. All panels on the same vertical chain have the same horizontal position, but can have different vertical positions. Each vertical moves on its own track.



There are 2 (or more) data projectors on the south (north facing) wall, with lenses appropriate to covering 1/2 (or less) of the total screen area. One or 2 PCs are attached to the data projectors.

Under computer control, data flows from PCs to moving rectangular fields on the data projection arrays. These project onto the moving panels on the opposite wall.

Ideas/comments that arose include:

- Probably need some back surface to protect robot and pedestrians. Maybe clear/maybe mesh.
- Stepper motors W/shaft encoders - feedback to video/robot controller.
- 12m rubber belt? What to support it? Elasticity? Alternatives include cable/chain.
- Counter-balancing panels?
- Need software safety checking (speed & position), plus endstops, power disable.
- Layered projectors for increased brightness? What Lux and resolution possible? 1Kx1K projector gives c. 1cm pixel if covering whole target area. Maybe need 2x2 array of projectors?

- Speaker placement?
- Mount onto I-beams for stability?

Action teams (or designated substitutes) to report in 1 month:

- Sandy Colquhoun and Hugh Cameron - sketch out improved electro-mechanical version 2
- Richard Brown and MALTS - specify projector
- Tim Colles and Bob Fisher - specify control software and interfaces
- David Wyse - proposal for mounting, loading and safety
- Jon Oberlander - see PRC on action priority and funding

Open questions include:

1. Panel size, aspect ratio and number
2. Panel mechanism
3. Which projectors and how many and distance
4. Projector lenses
5. Size of projection wall area
6. Projector mounting place & access
7. Projector PC placement
8. Projector screen resolution
9. Content placement control software
10. Content loading
11. Panel placement software
12. Mechanical safety