

Proximity Lab | The Exhibit



photo: Jay Childs

Two users interact during a *Loop Holes* session.

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photos: Jay Childs

Users examine the *Proximity Lab* installation before they interact (left) and during (right).

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Visitors prod *Proximity Lab* at the opening reception.



photos: Jay Childs (left), Colin James (right)

Installing the exhibit.

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photos: John Palen

Participants interacting with Proximity Lab; final sequence of *Social Circles* program shown.

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Platform units are moved into the Stephen D. Paine Gallery as installation begins.



Assembling the platform.

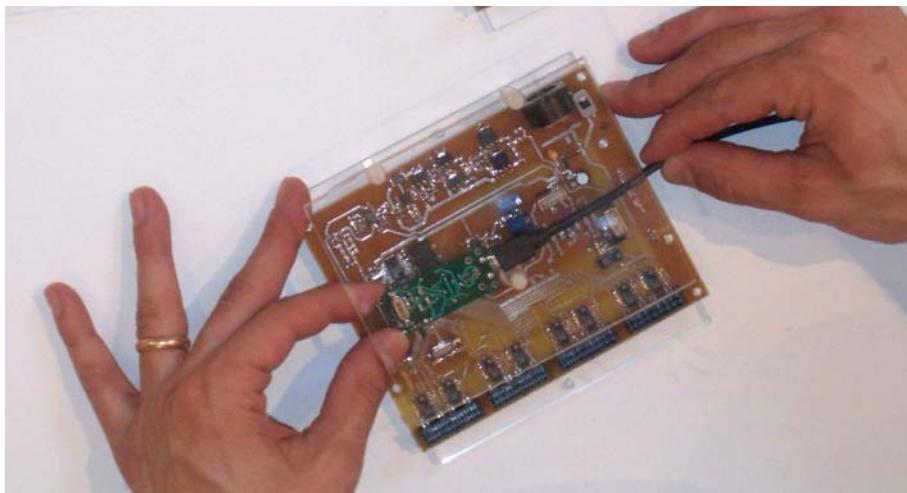
photos: John Palen (top left), Colin James (top right, bottom)



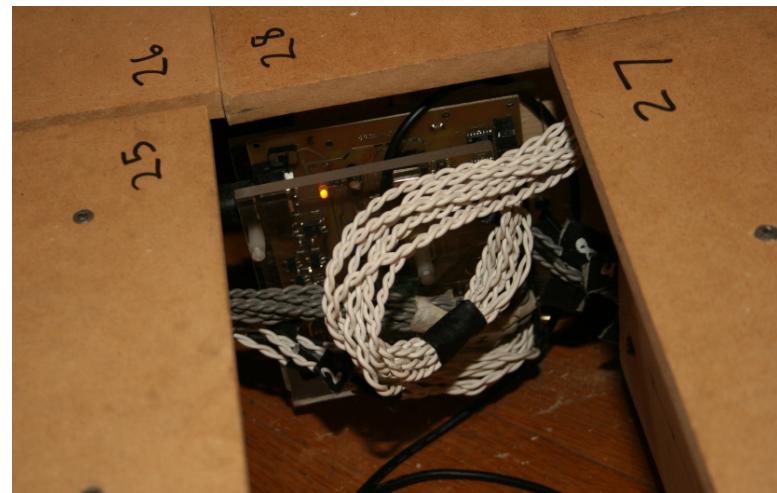
128 individual loops of wire are attached below the platform surface.



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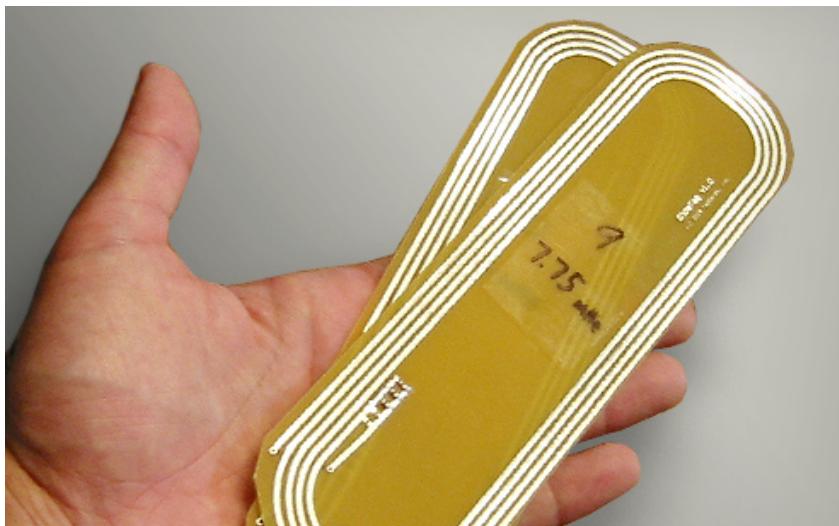
An RFID reader is fitted with a serial USB adapter, allowing it to feed data to the host computer.



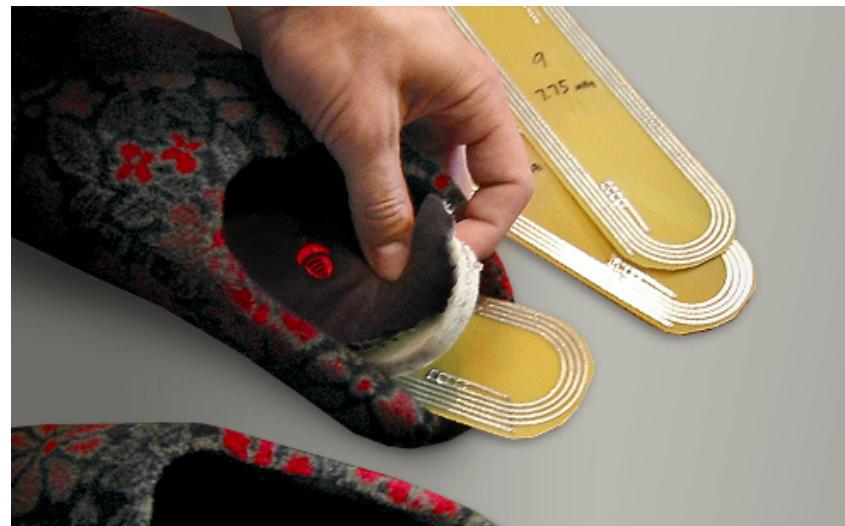
One of four RFID readers mounted beneath the platform surface. Each board connects to 32 antenna loops via a set of four connectors.

photos: Colin James

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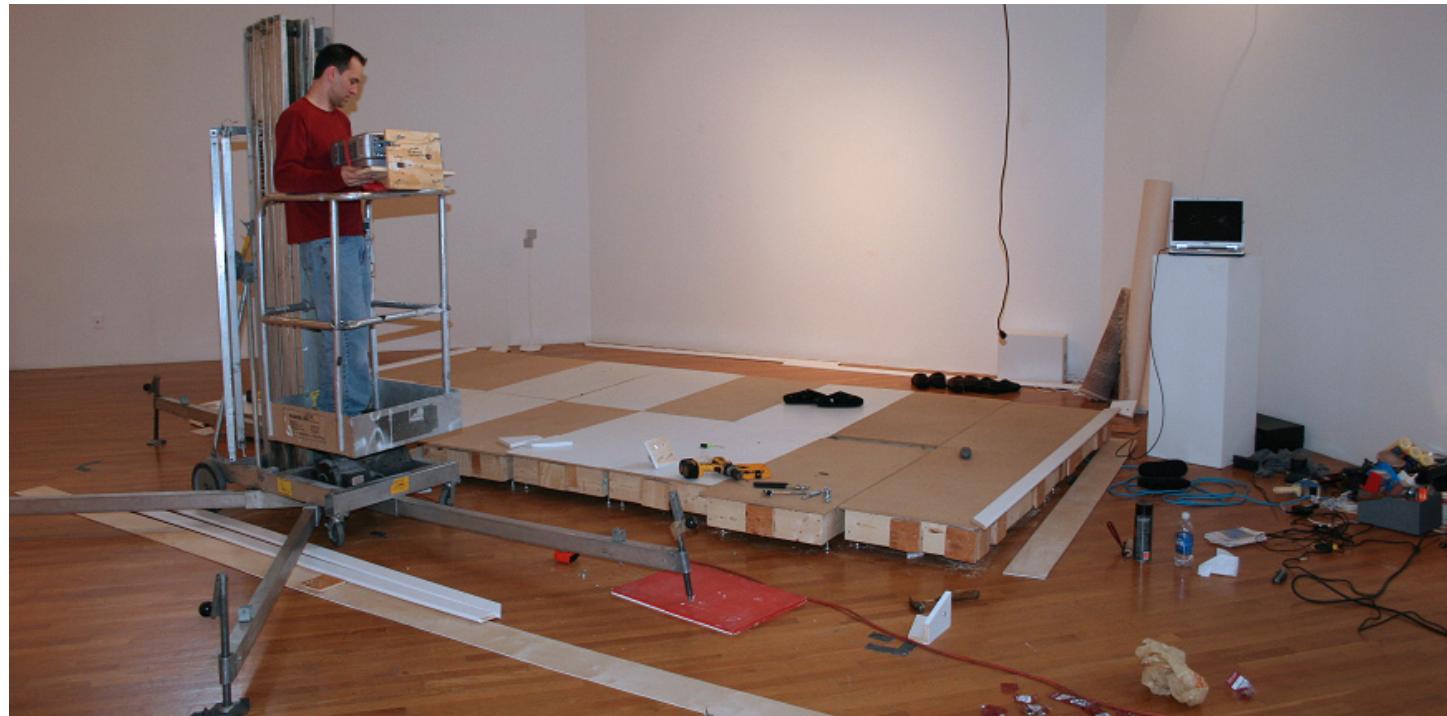
Uniquely tuned RFID tags are detected by the readers when placed near an antenna loop.



The tags are inserted into the soles of slippers. This allows the system to calculate the changing positions of users as they move around the platform.

photos: Evan Karatzas

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photos: Colin James

One tense moment among many during the installation process:
mounting the projector to the 27 foot high gallery ceiling.

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photos: Colin James

The skirt is fitted to the platform before
flooring material is assembled.

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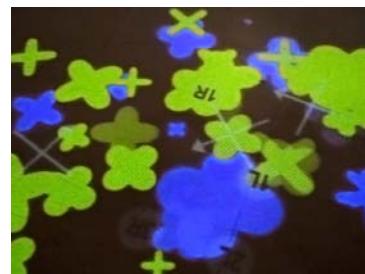


Tag positions and centerpoints displayed on the PC running a mix of Flash and Visual Basic applications that makes *Proximity Lab* work.



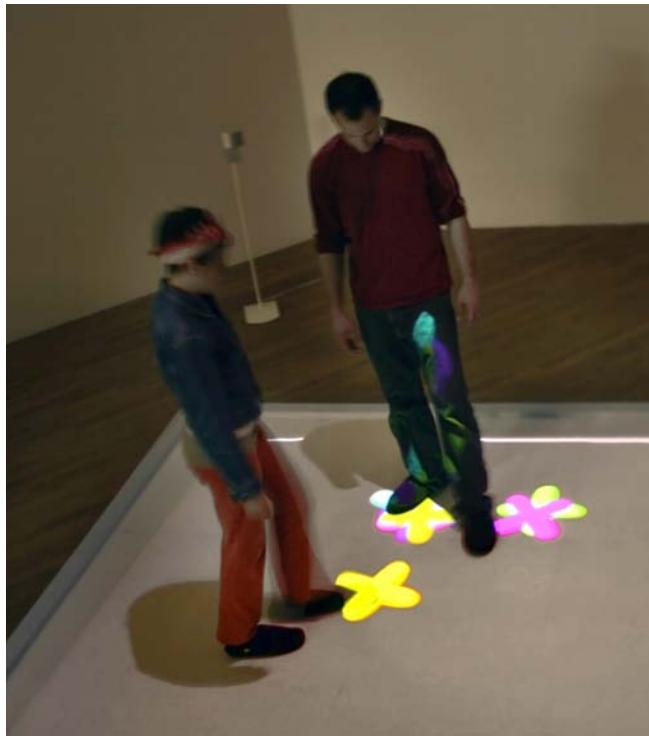
photos: Jay Childs (left), Evan Karatzas (right, bottom)

Tag positions and user centerpoints are revealed (and projected) to show how the system works.



Stills from *Social Circles* showing molecule growth and distribution. Tag positions and centerpoints (usually hidden) are visible.

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Participants interacting with the *Social Circles* program.



Children interacting with the system and each other.

photos: John Palen (left), Evan Karatzas (right)

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photos: Evan Karatzas

A user interacts with the system in unexpected ways.

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Users interacting with the *Loop Holes* program.
Sound spots seek out the user who interacts the least,
prompting more active user to approach.



photos: Evan Karatzas

Loop Holes: a participant creates a relationship with
the system not envisioned by the architect.

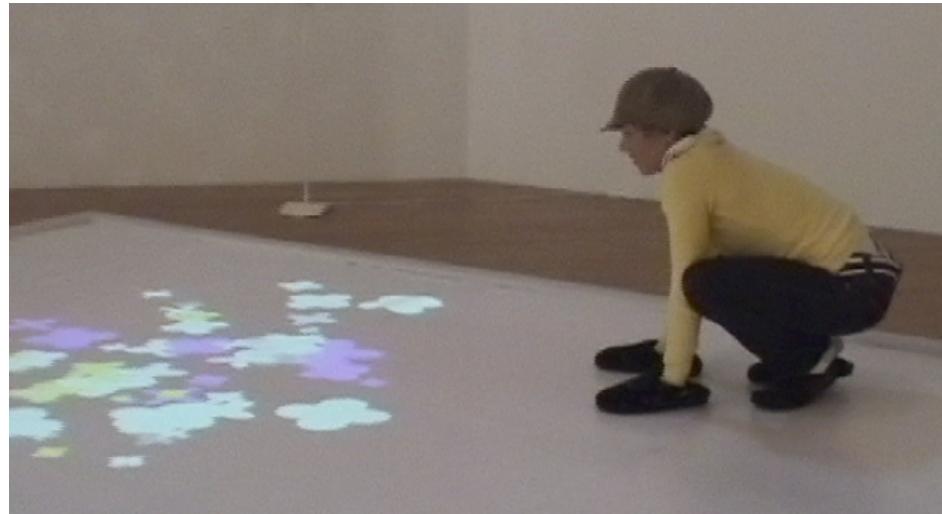
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photos: Evan Karatzas

Users discuss their observations and assumptions as they attempt to understand their relationship to the system at the end of a *Social Circles* session.

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photos: Evan Karatzas

A user interacts with *Loop Holes* (left) and *Social Circles* (right) using two pairs of slippers on her hands and feet.

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Users interact with *Social Circles*. Jumping and other exaggerated movements are initiated by users as they investigate the system.



Users interacting with *Loop Holes*.

photos: Evan Karatzas

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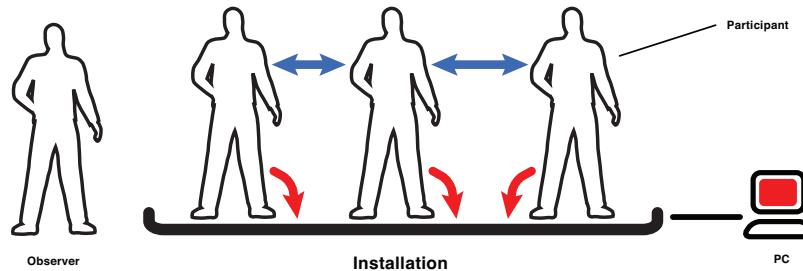
Two users interact with each other during a *Social Circles* session. Color identities of each user are revealed.



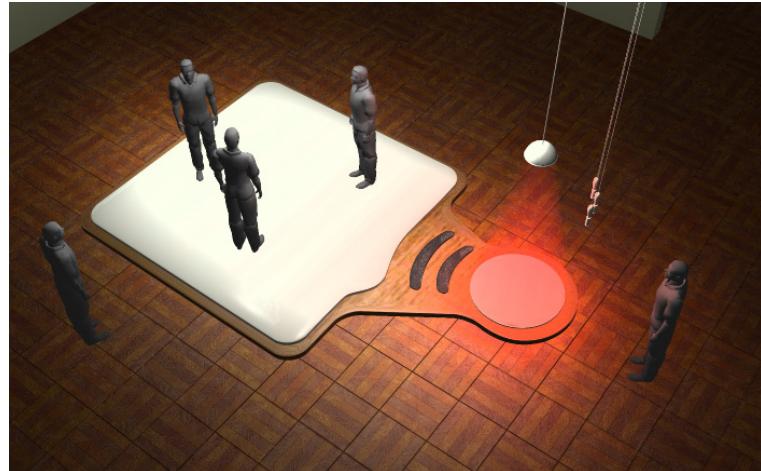
The session ends as the forms grow larger and modulate.

photos: Evan Karatzas

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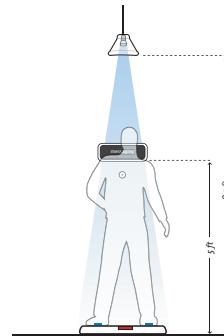


Simplified interaction diagram highlighting duality of interaction: user-to-user and user-to-system.



Early conceptual rendering showing integrated platform and encoding station.

Sketches like this helped to establish the platform area required to support 3-4 users.

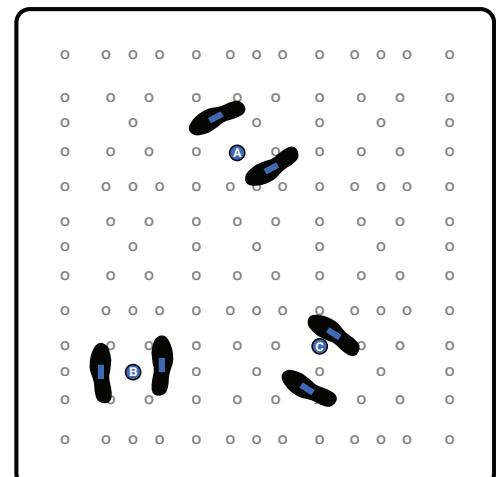
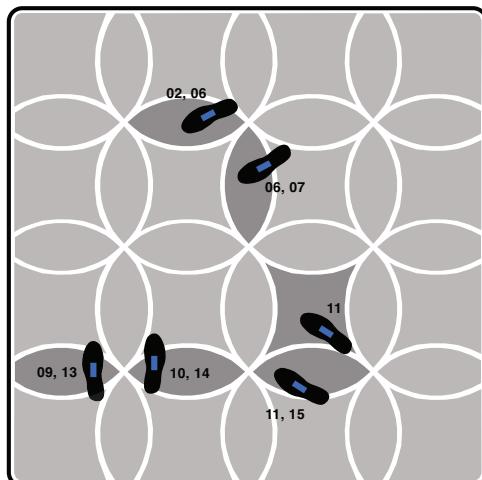
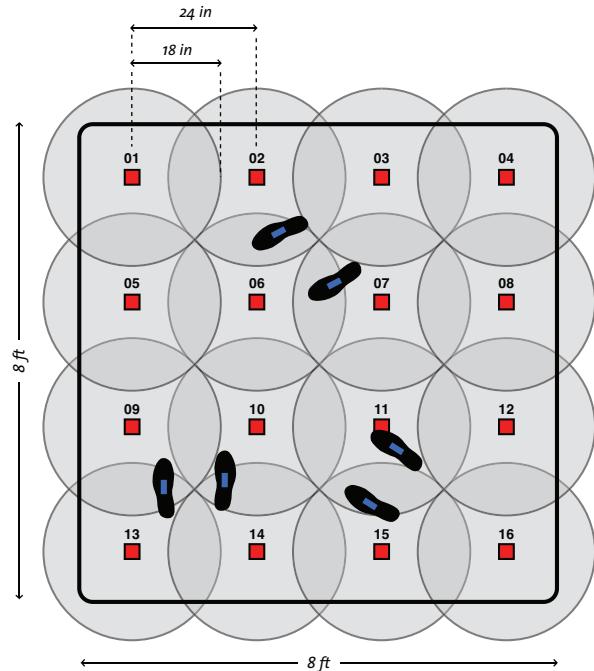


Early concept for an encoding station where users answered questions to inform representation of their identities during platform interaction.



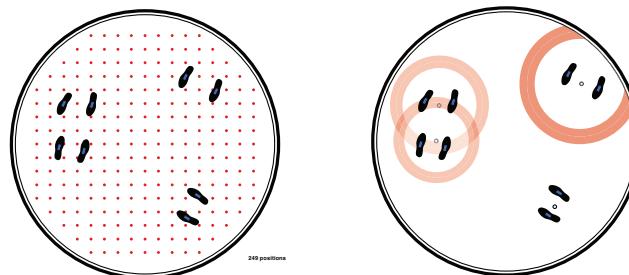
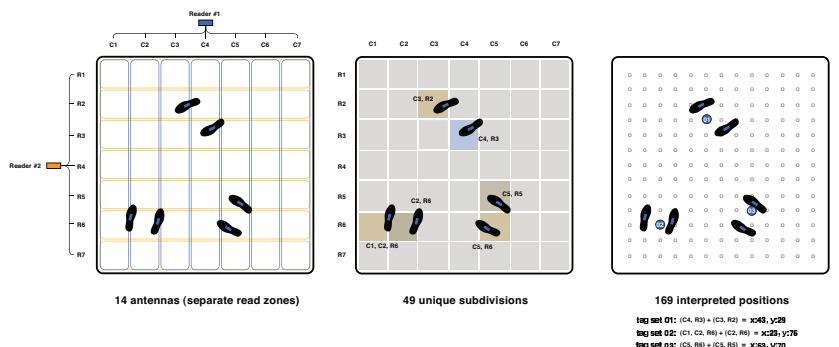
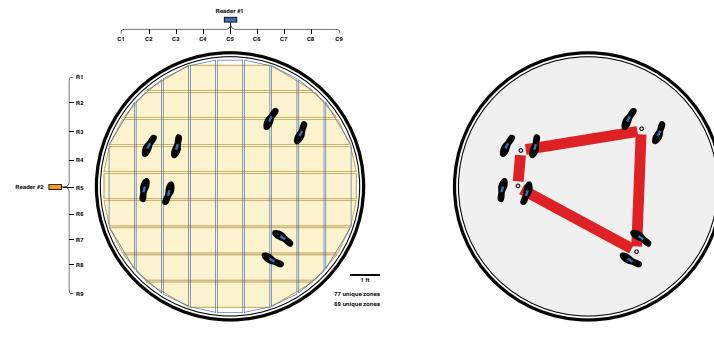
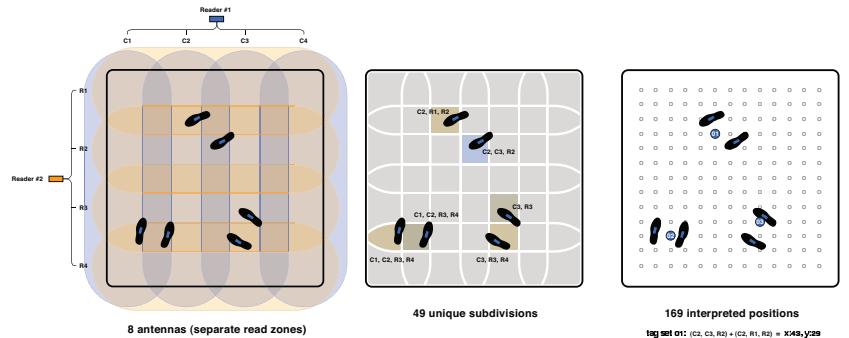
Top-down view of encoding station; discarded in final installation.

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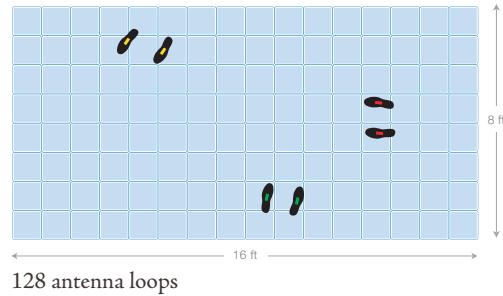
Original RFID antenna configuration diagram.
Collaboration with Rich Fletcher of TagSense led
to revised design proposals, tests, and ultimately
to the final design.

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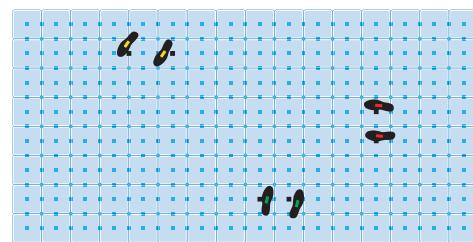


Exploration of RFID antenna configuration,
location numbering system, platform shape
and early visualization sketches.

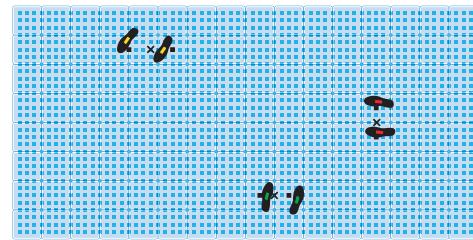
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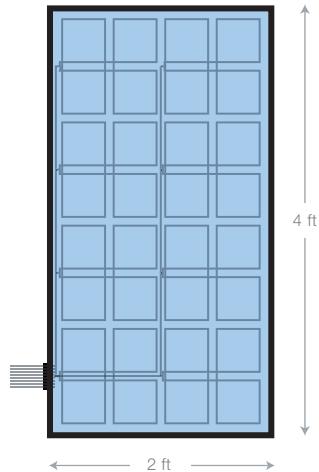
128 antenna loops



256 unique tag positions



1953 interpreted centerpoints



Each platform unit contains eight antenna loops. 16 units are used to form the 8 ft x 16 ft platform surface.

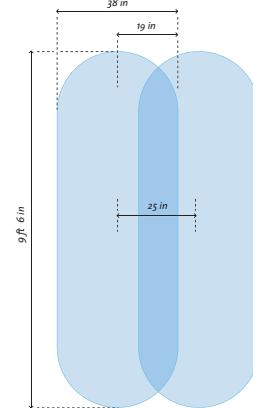
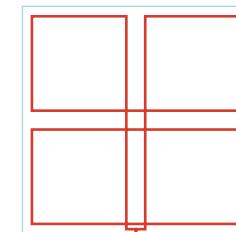
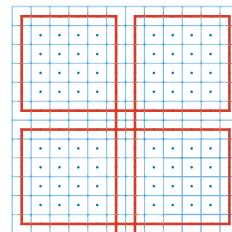
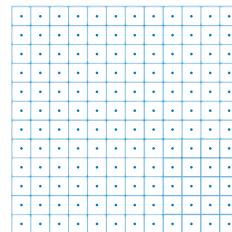


Diagram from study to test feasibility of overlapping regions created by separate RFID fields.



Pegboards were used to experiment with antenna design. A clover-leaf pattern was chosen for its ability to efficiently fill a 12" square area.

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data position 1
x=2 y=4

tag ID#

*0cccccc88 d3d4dcbb9d2e2b9d3 d3d4dcbb9d2e2b9d3 d3d4dcbb9d2e2b9d3 d3d4dcbb9d2e2b9d3
 *0d555510 d4d4dbbad3eeeb9d3 d4d4dbbad3eeeb9d3 d4d4dbbad3eeeb9d3 d4d4dbbad3eeeb9d3
 *0ddddd98 d4d4dabb3efbad3 d4d4dabb3efbad3 d4d4dabb3efbad3 d4d4dabb3efbad3
 *0e666620 d5d5dabca4efbbd4 d5d5dabca4efbbd4 d5d5dabca4efbbd4 d5d5dabca4efbbd4
 *0eeeeea8 d6d6debfd5efbdd5 d6d6debfd5efbdd5 d6d6debfd5efbdd5 d6d6debfd5efbdd5
 *0f777730 d8d7ebc2d6efc0d6 d8d7ebc2d6efc0d6 d8d7ebc2d6efc0d6 d8d7ebc2d6efc0d6
 *0fffffb8 d8d8efc8d7efc4d7 d8d8efc8d7efc4d7 d8d8efc8d7efc4d7 d8d8efc8d7efc4d7
 *10888840 dbdbf0c8d9efc7d9 dbdbf0c8d9efc7d9 dbdbf0c8d9efc7d9 dbdbf0c8d9efc7d9
 *111110c8 dedeefcbdcf0cbdc dedeefcbdcf0cbdc dedeefcbdcf0cbdc dedeefcbdcf0cbdc

data position 32
x=4 y=8

A sample of raw data sent by the RFID reader with notation of relationship of data position to cartesian coordinates.

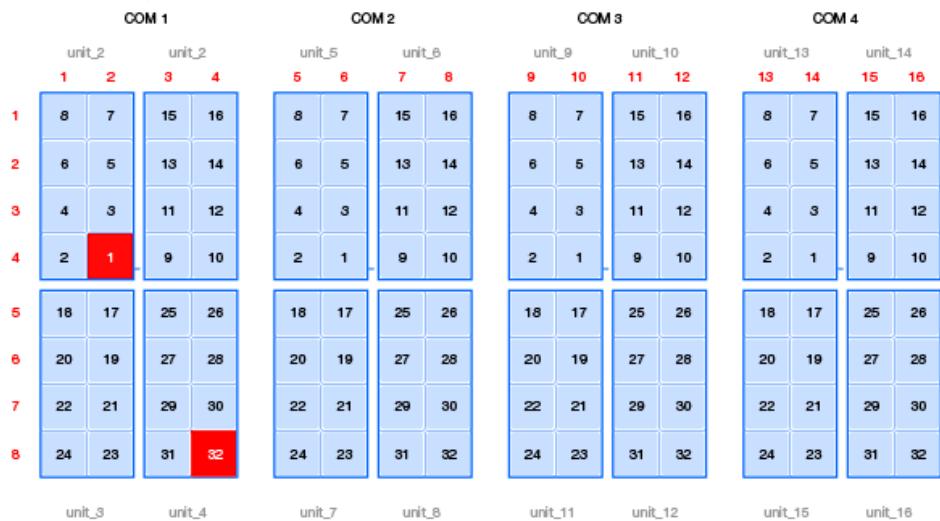
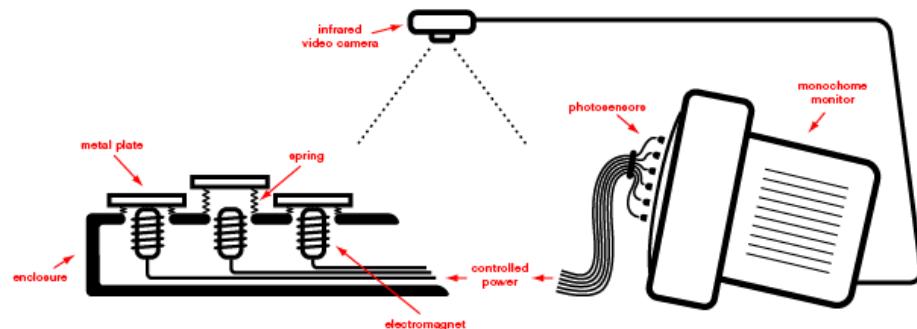


Diagram showing relationships between antenna loop positions and Cartesian coordinates on platform.

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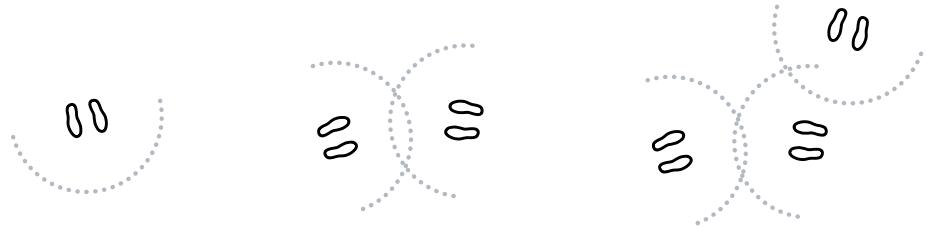
Early experiment using video tracking
to test concept of "users as interface."



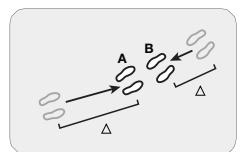
Experimentation with analog inputs and outputs was intended to contrast intensive data and system logic approach pursued in primary thesis investigation.

The prototype worked but had minimal influence on thesis investigation.

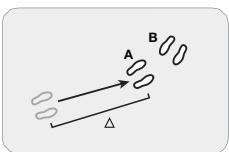
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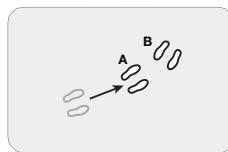
Exploring geometry as a representation of personal space. From a computation perspective, intersections of user shapes would trigger certain events.



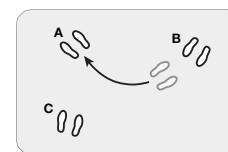
i. initiated encounter



ii. uninitiated encounter



iii. social departure



iv. non-social departure

A small set of observable conditions comprise the underlying system rules for evaluating socialization on an individual and collective basis.

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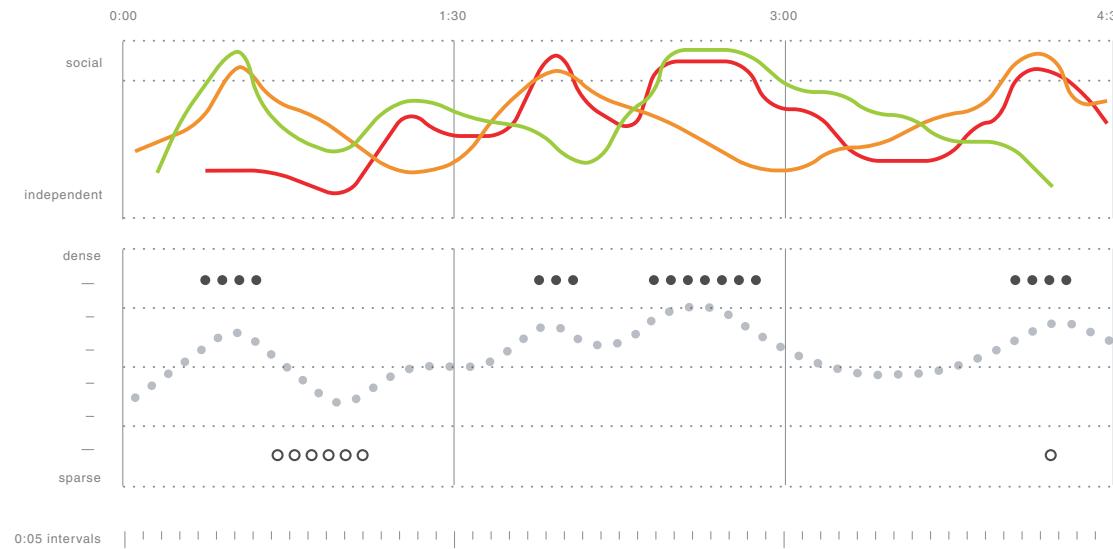
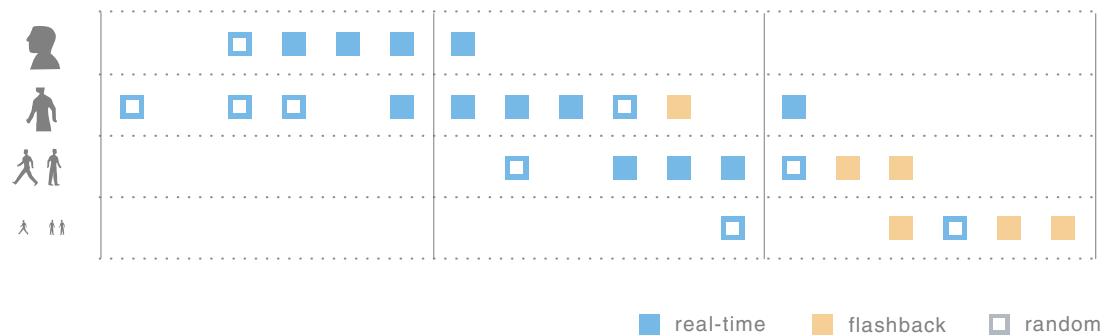


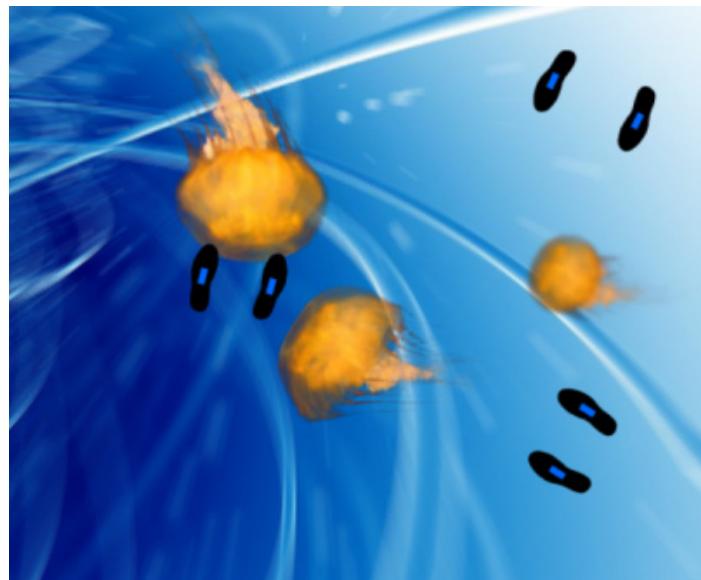
Diagram used to explore potential user interactions and system responses.

Top: abstraction of envisaged user activity.
Bottom: momentary sound events and continuous ambient sound (varied intensity based on collective user activity).

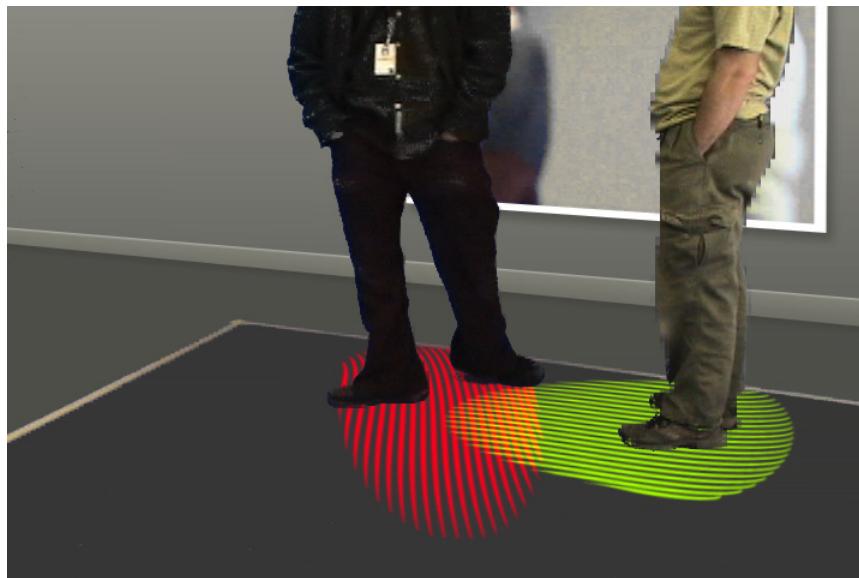


Exploring rules-based control of camera selection, zoom and crop selection as direct application of cinematic vocabulary.

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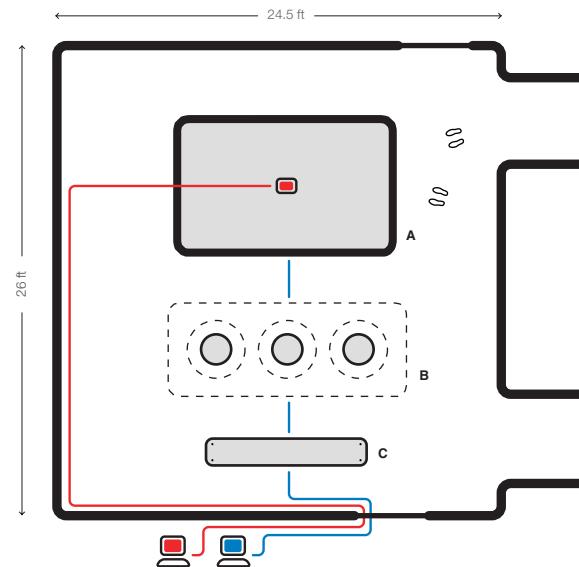
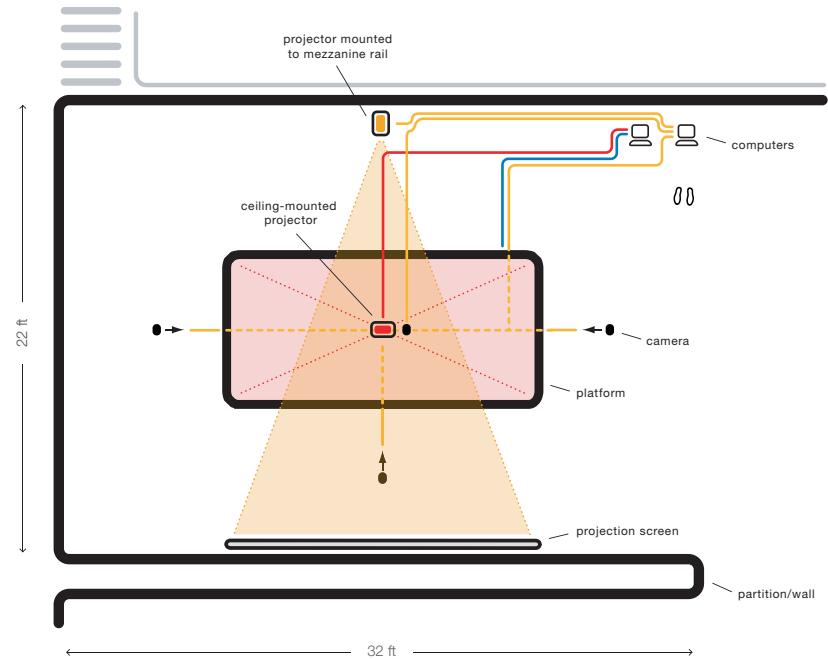


Early concept: jellyfish swarm users with high socialization rating.



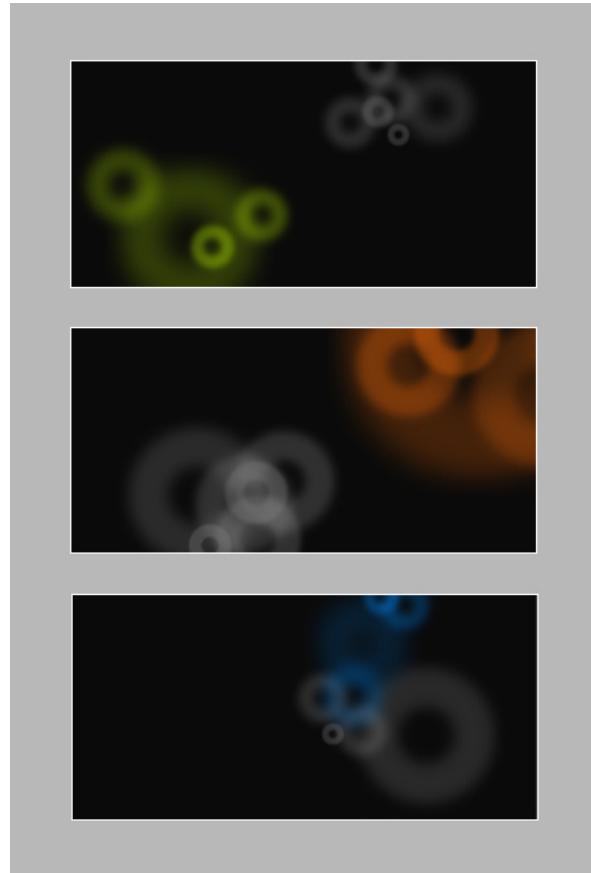
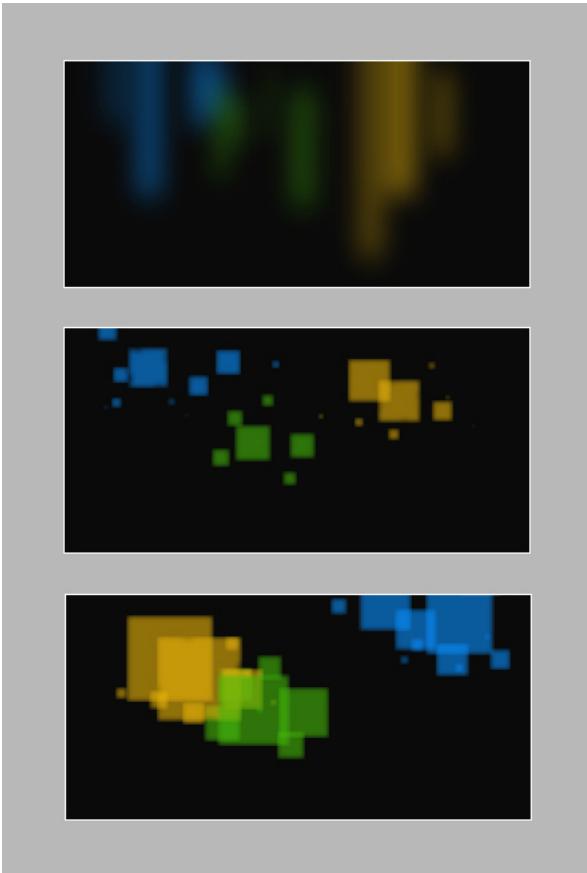
Stitched blue screen shots and vector animation to test concept of rules-based camera control.

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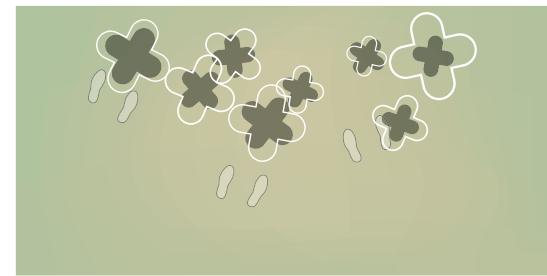
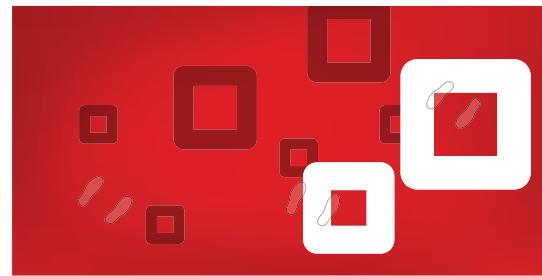
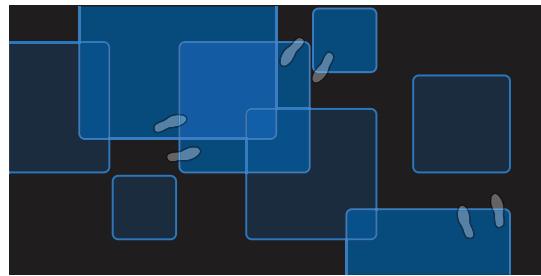
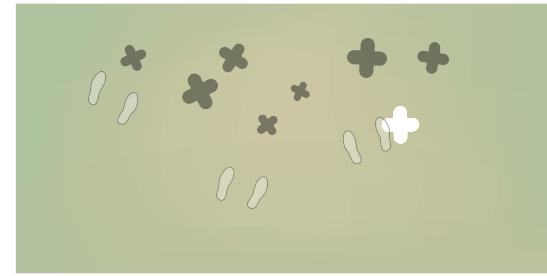
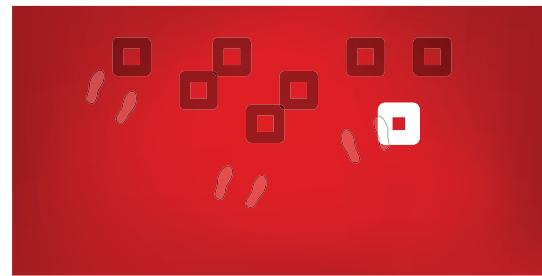
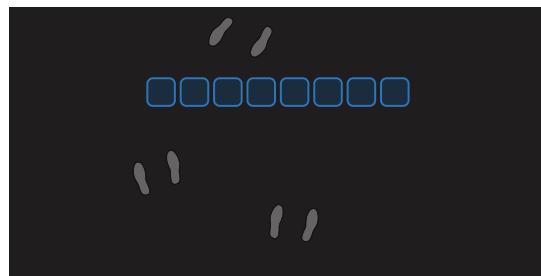
Physical layout sketches of
the installation.

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Form and color studies for *Loop Holes*.

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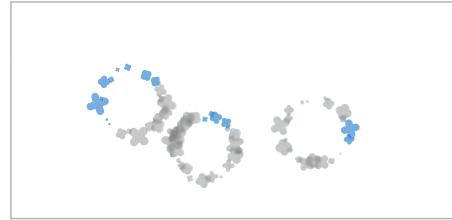
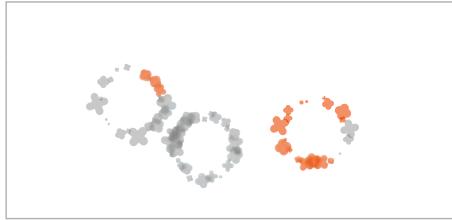
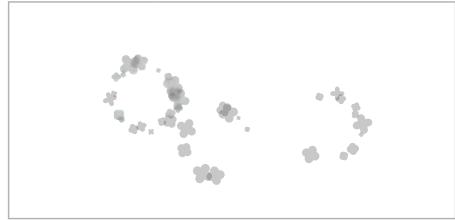
Form and color studies for *Loop Holes*. The idea of sound spot reconfiguration was first explored in these sketches.

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Form studies developed in parallel with kinetic studies, motion tests and sound experiments. Molecular shapes were inspired by the sound of rattling ice cubes in a glass.

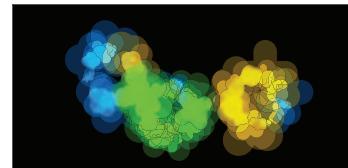
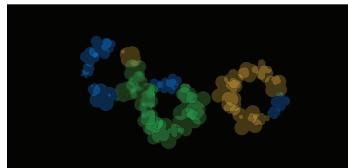
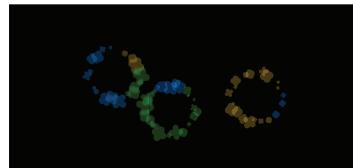
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Visual studies for *Social Circles* to explore occasional color reveals to show distribution.

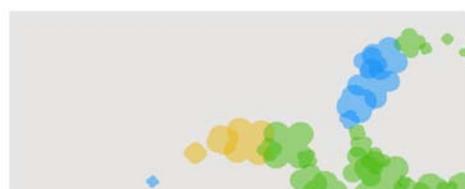
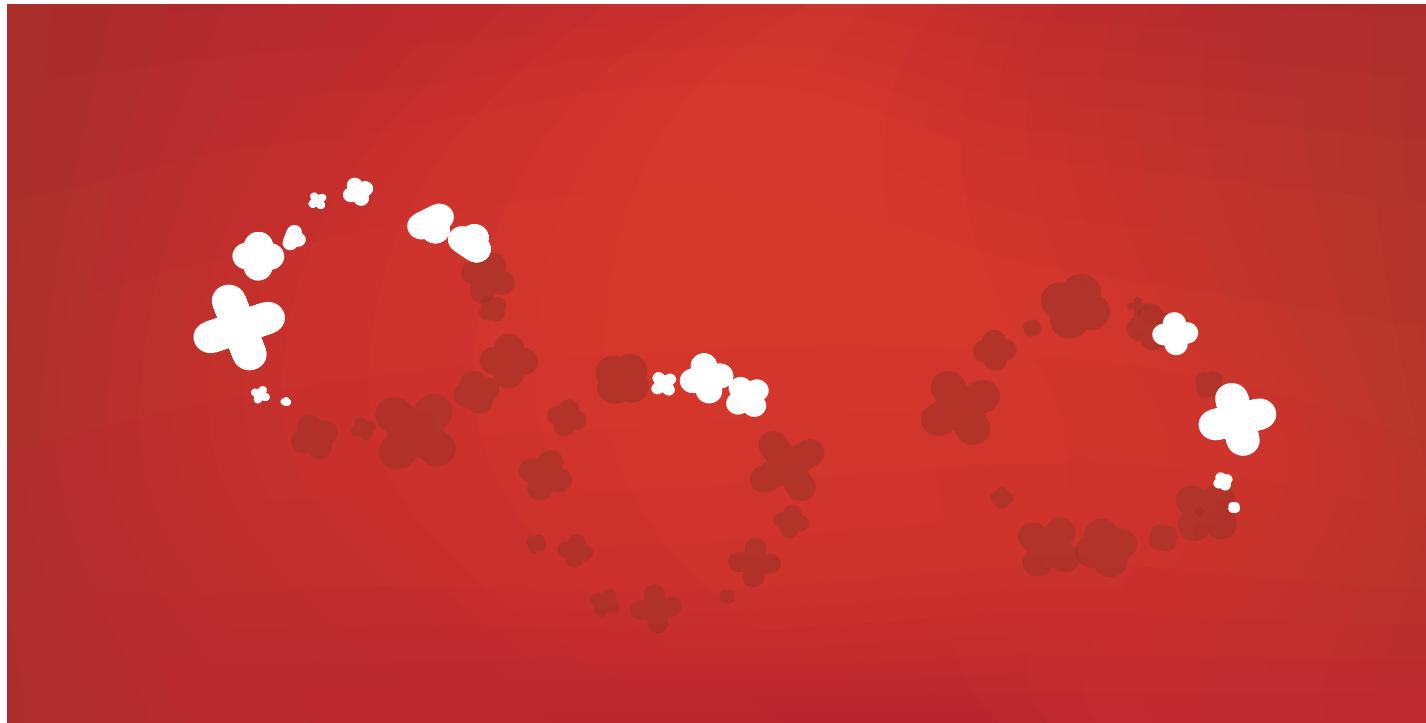


Early studies for *Loop Holes*, initially envisioned as smoke rings.



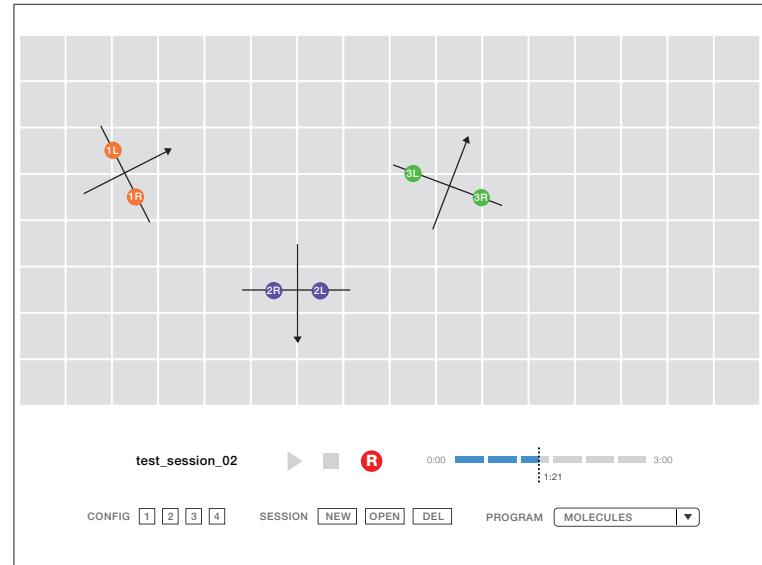
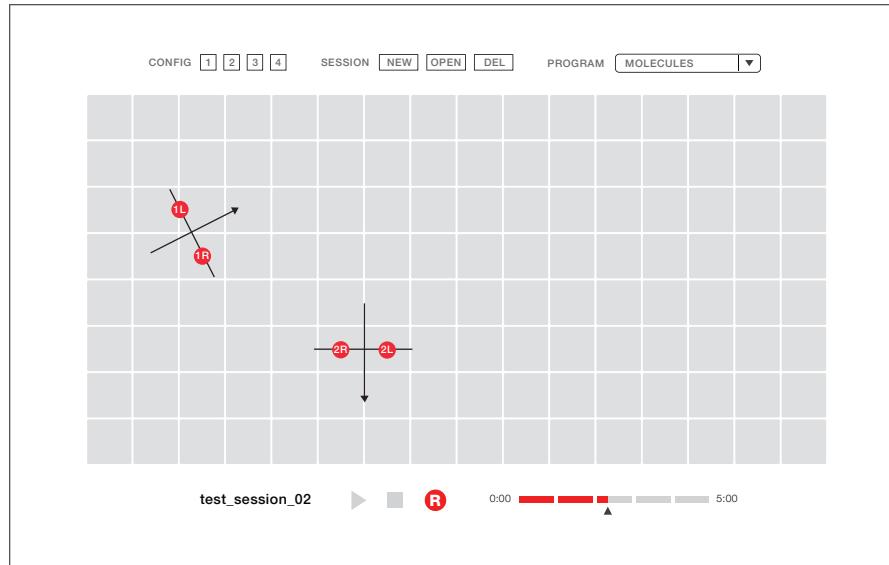
Visual studies for *Social Circles*.

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Evolved visual studies for *Social Circles*.

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Application interface sketches including hardware setup functions, session controls, and dragable tag markers.