Expand the Vision: PDLC Designs

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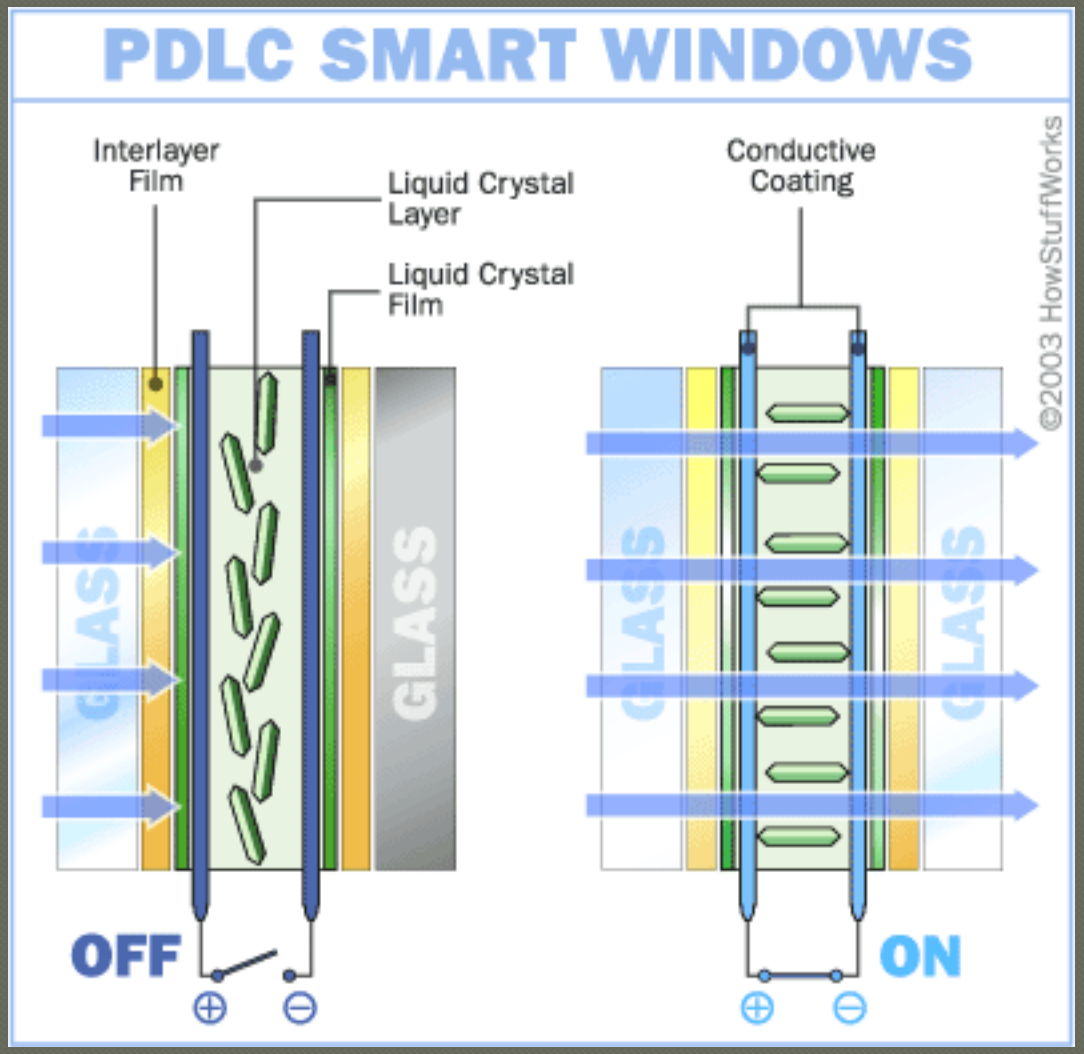
A Layout

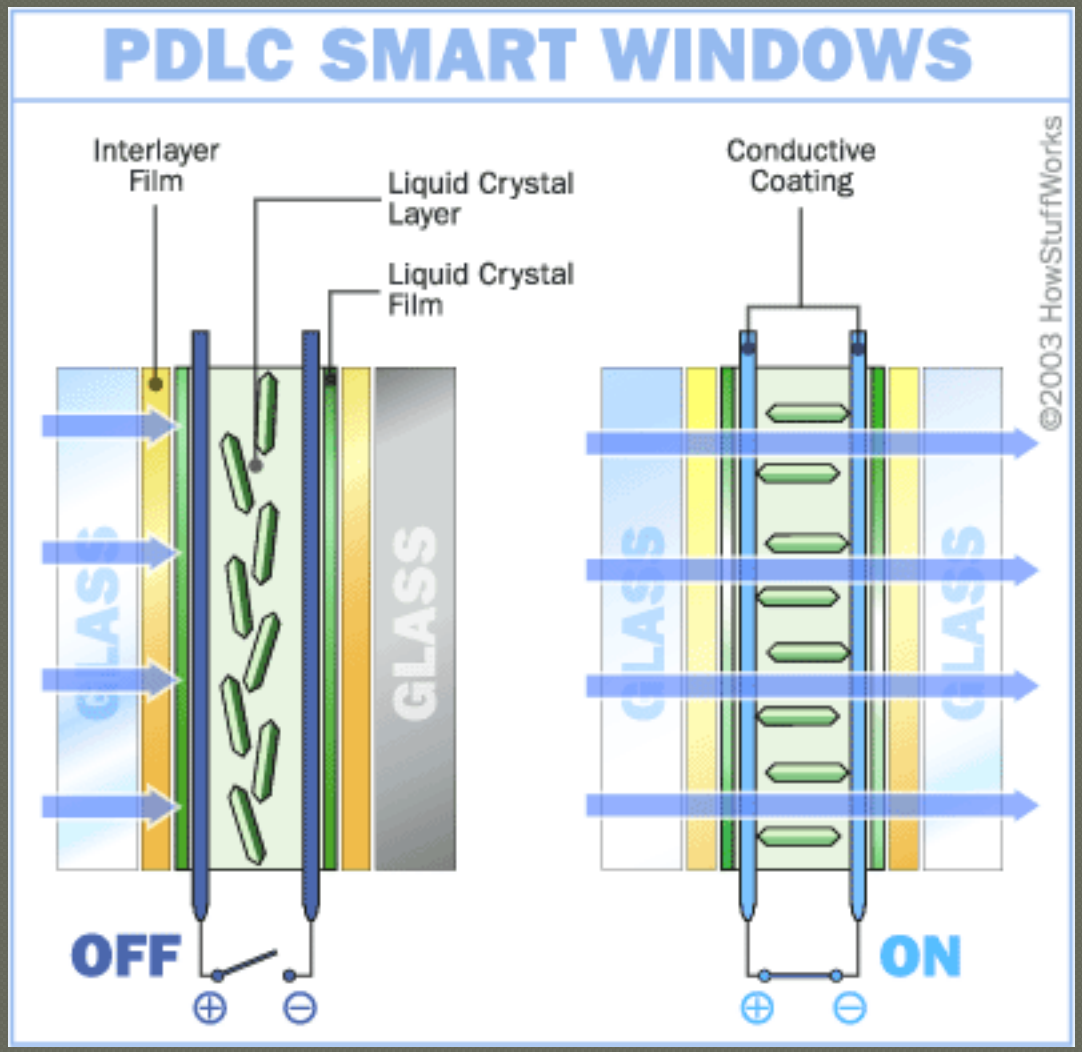
- Installations will be set up in a gallery, preferably with windows.
- The smart glass instillation will be in the middle of the room where visitors will be able to interact with it. (Slide 5)
- The windows will be replaced with smart windows that are controlled by tablet (Slide 9)

Smart Glass: Polymer Dispersed Liquid Crystals



- Liquid crystals are combined with liquid polymer. When polymer becomes solid, liquid crystals form droplets
- Liquid mix of polymer and liquid crystals are placed between two layers of glass
- Liquid crystals are sandwiched between a thin layer of a transparent, conductive material, like Indium tin oxide (ITO)

Smart Glass:
Polymer Dispersed Liquid Crystals



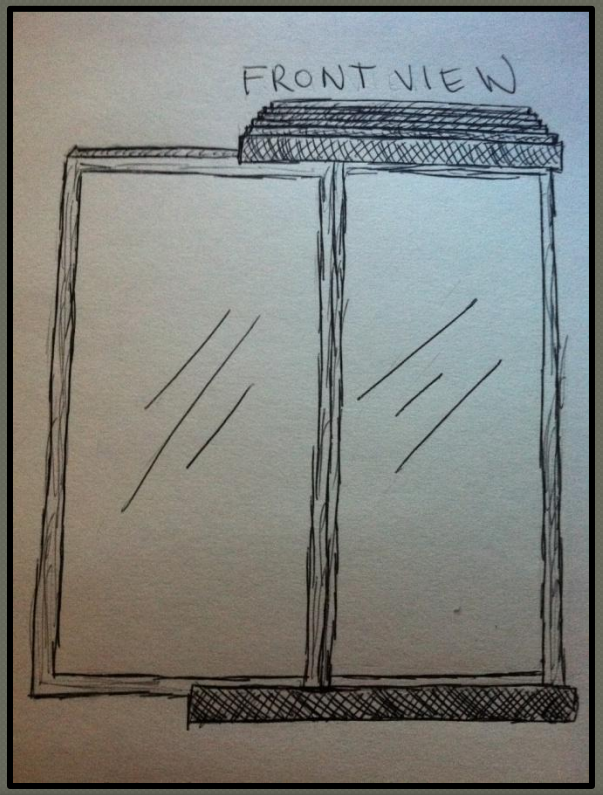
- Electrodes from power supply are attached to the transparent, conductive coating

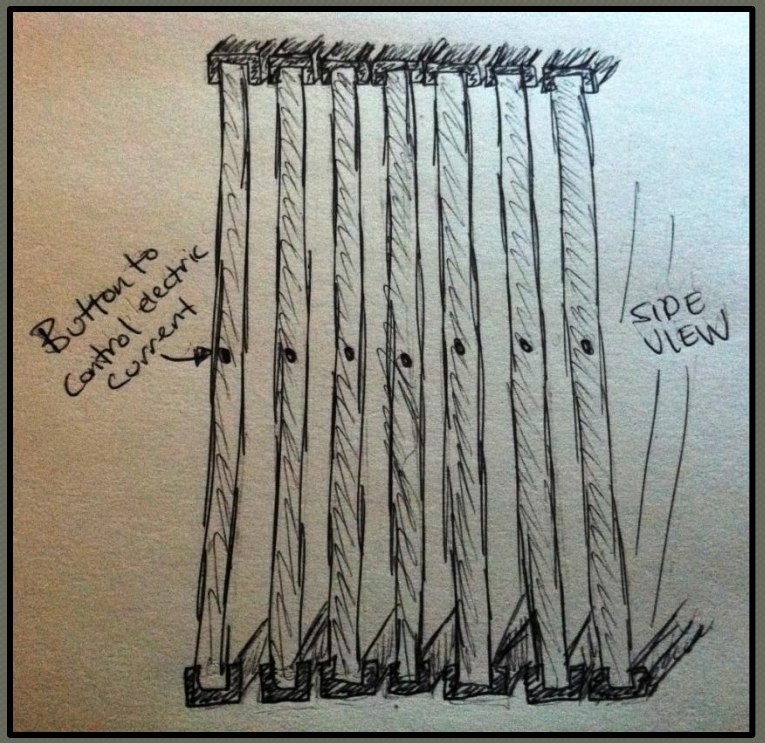
- When there is no electrical current, liquid crystals are arranged randomly, creating a frosted, milky white look.

- When there is an electrical current, the liquid crystals align to let light show through, making the glass transparent.

Smart Glass Installation

Six PDLC smart windows are placed on glass door sliders one in front of the other.

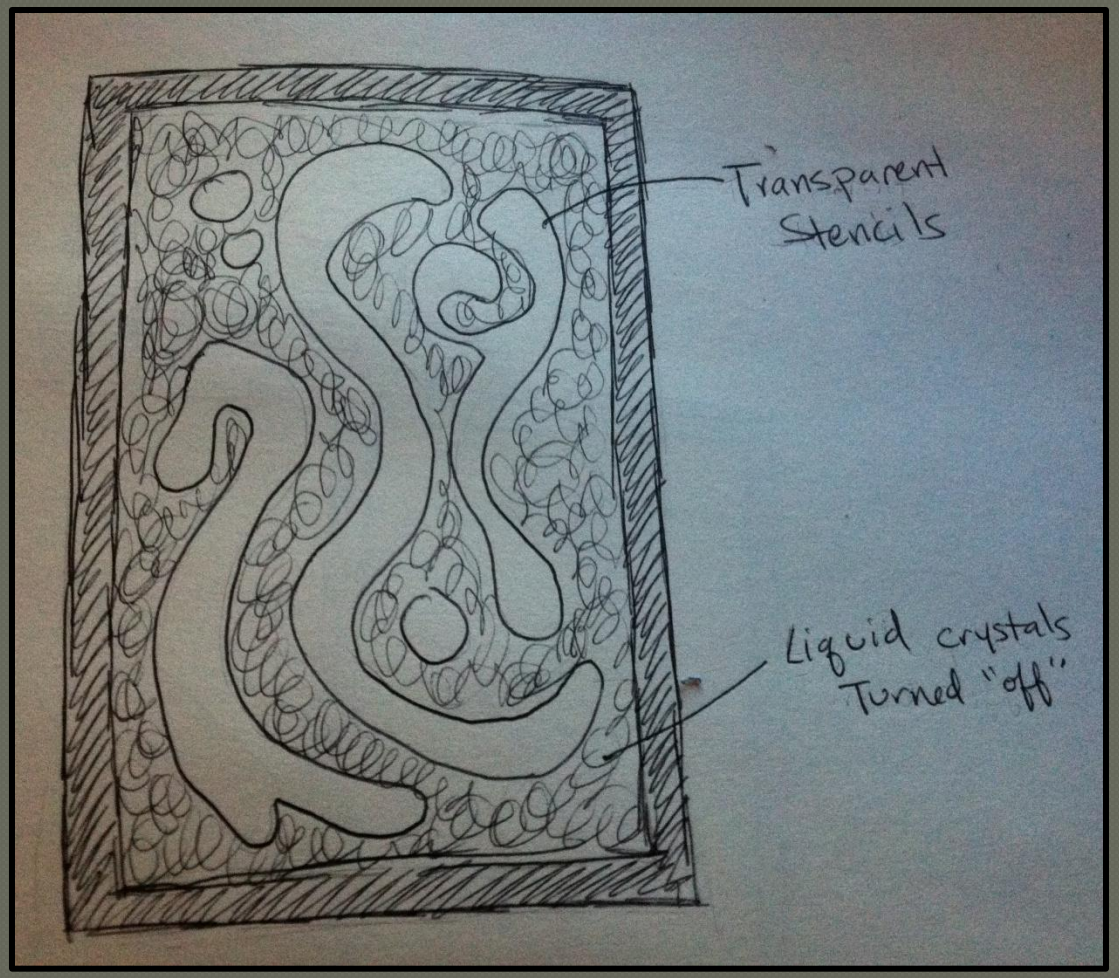




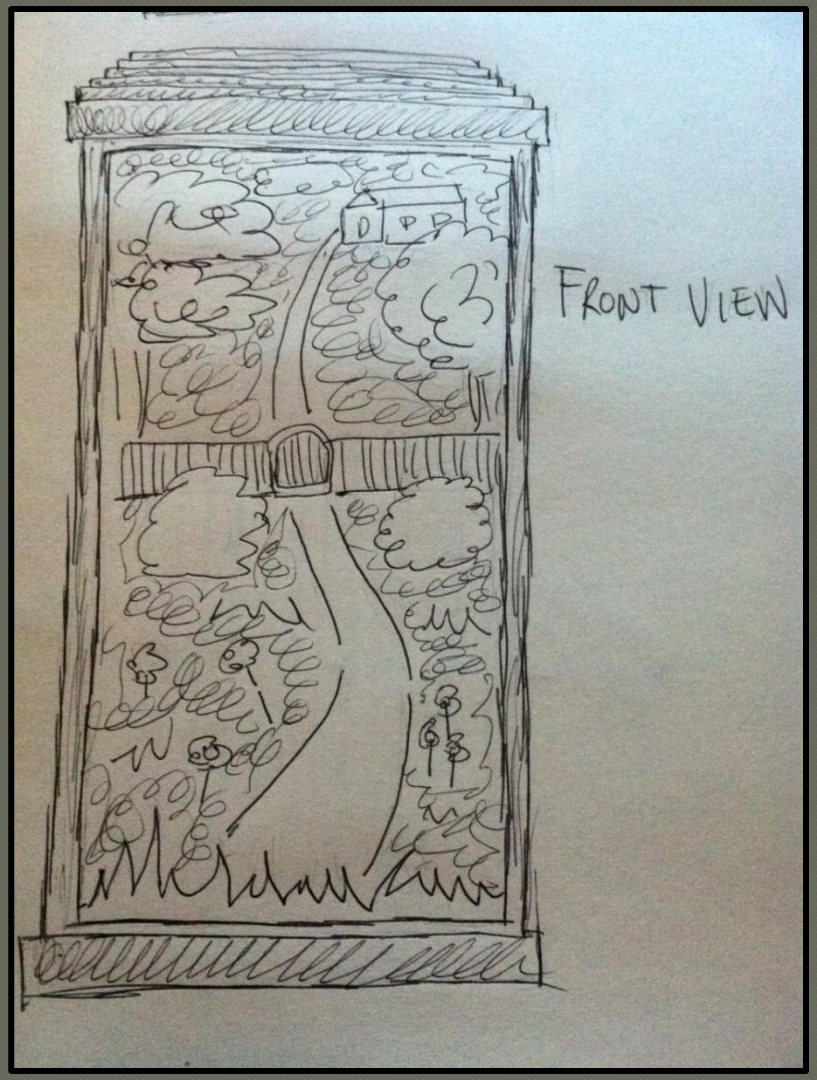
A covering will be placed on the sides of the glass which will hide the electrical source and have the button to turn it on and off

Smart Glass Installation

Each smart window will have a different design. Design will be created by having a transparent plastic stencil sandwiched between the two glasses which will cause the liquid crystals to form around it.

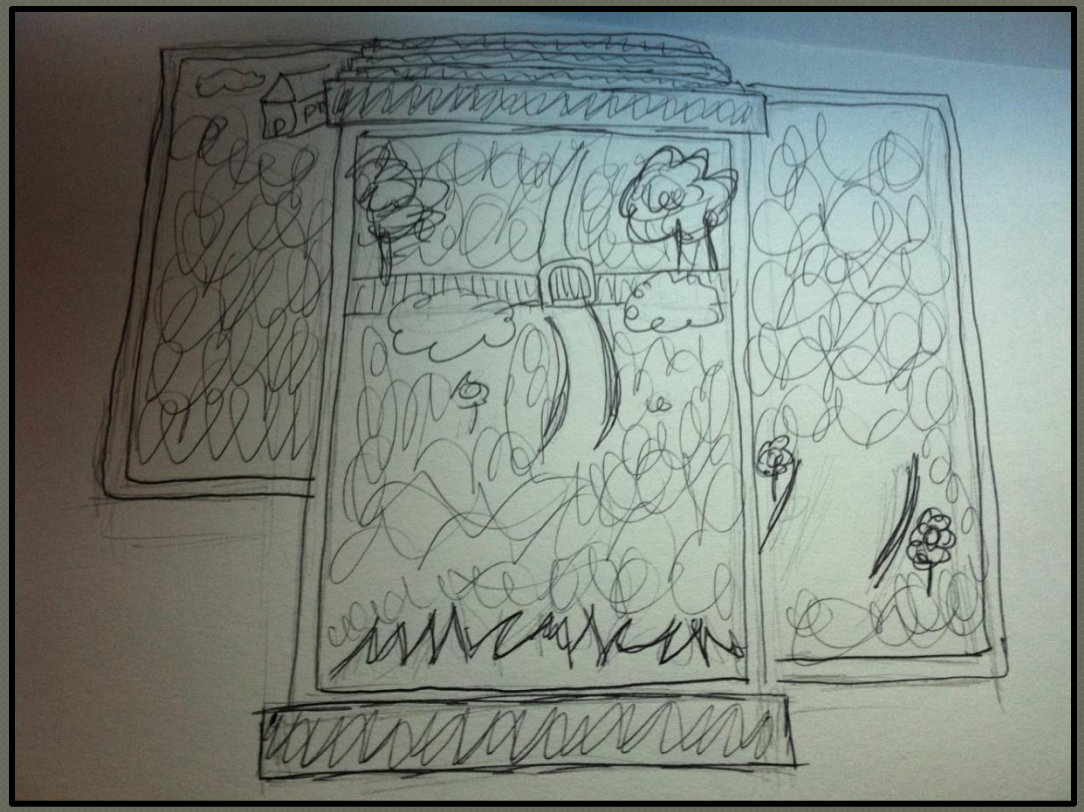


Smart Glass Installation



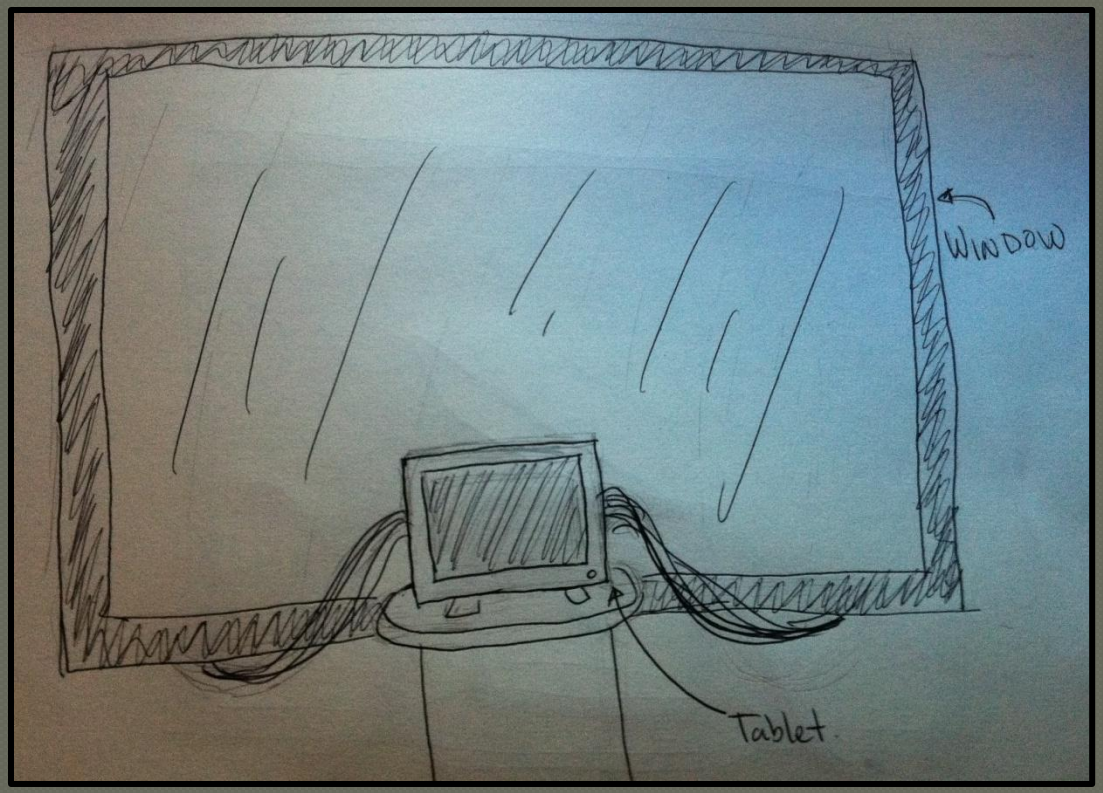
With the electrical current off, the stenciled area will remain clear while the rest of the glass will be frosty Together, with all the windows "turned off," it will created a receding, almost 3-D image.

Smart Glass Installation



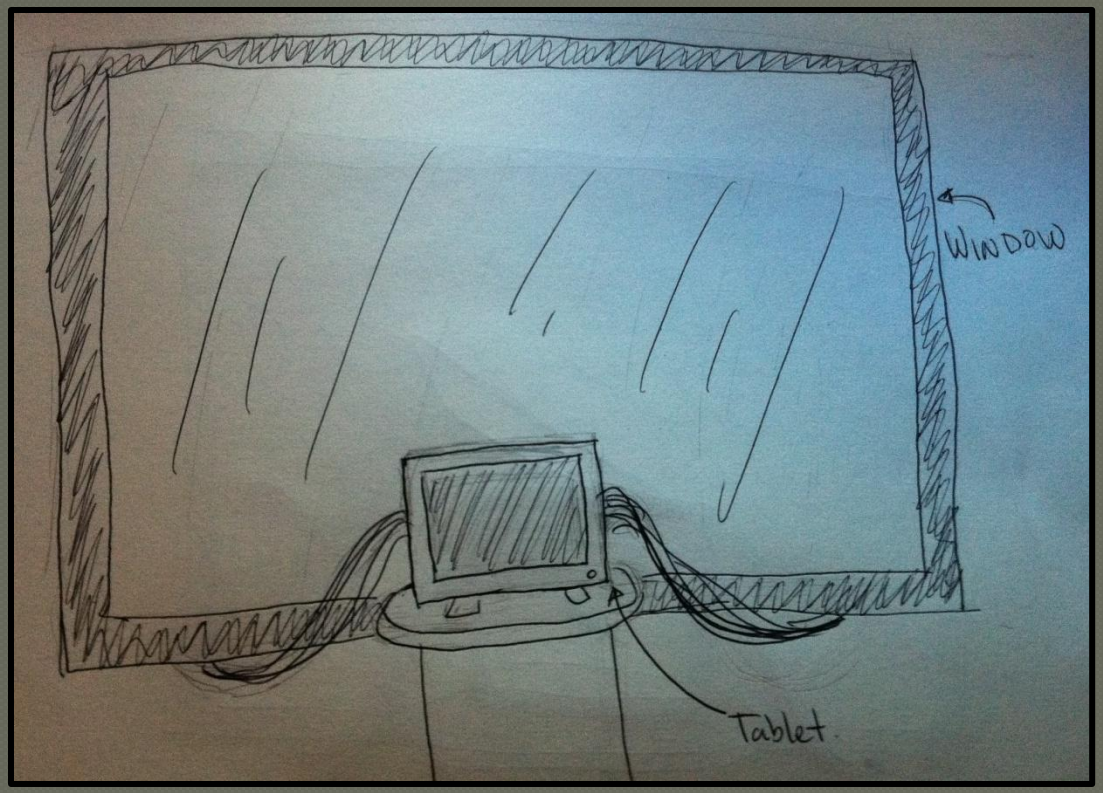
Visitors will be able to interact with the piece. They can slide any of the windows out of formation to see the individual designs. They can also turn on or off any of the windows to see how it alters the original image.

Window Instillation: A Theory



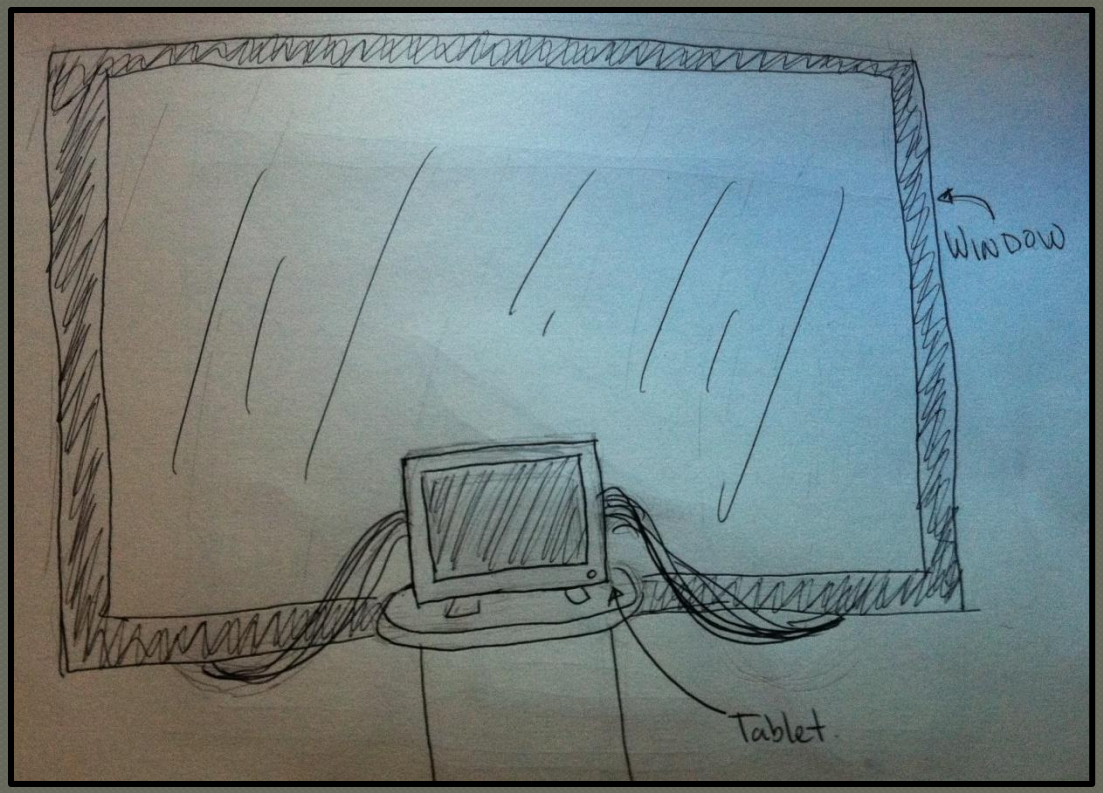
Unlike the previous instillation, this piece will allow the viewer the freedom to create their own design. This is created, in theory, by combining the smart window technology and a drawing tablet.

Window Instillation: A Theory



The windows (only one of them in the gallery, maybe two) are created the same way as the windows in the instillation, however the conductive coating will be solely controlled by a computer/drawing tablet.

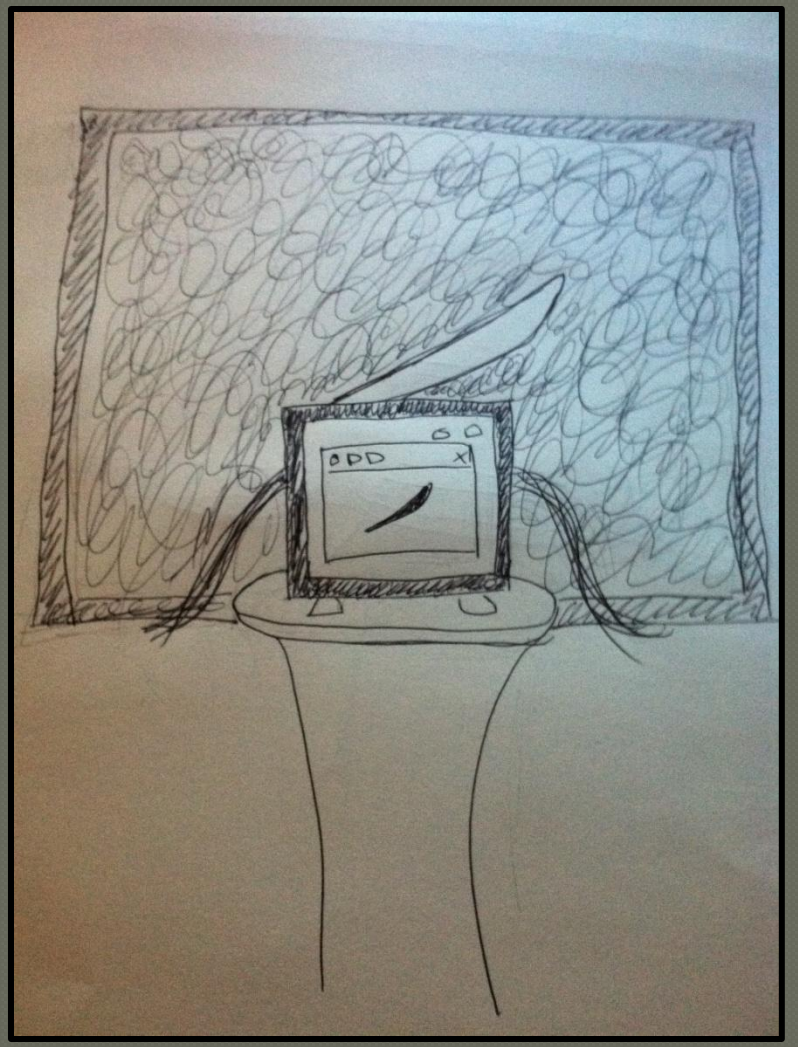
Window Instillation: A Theory



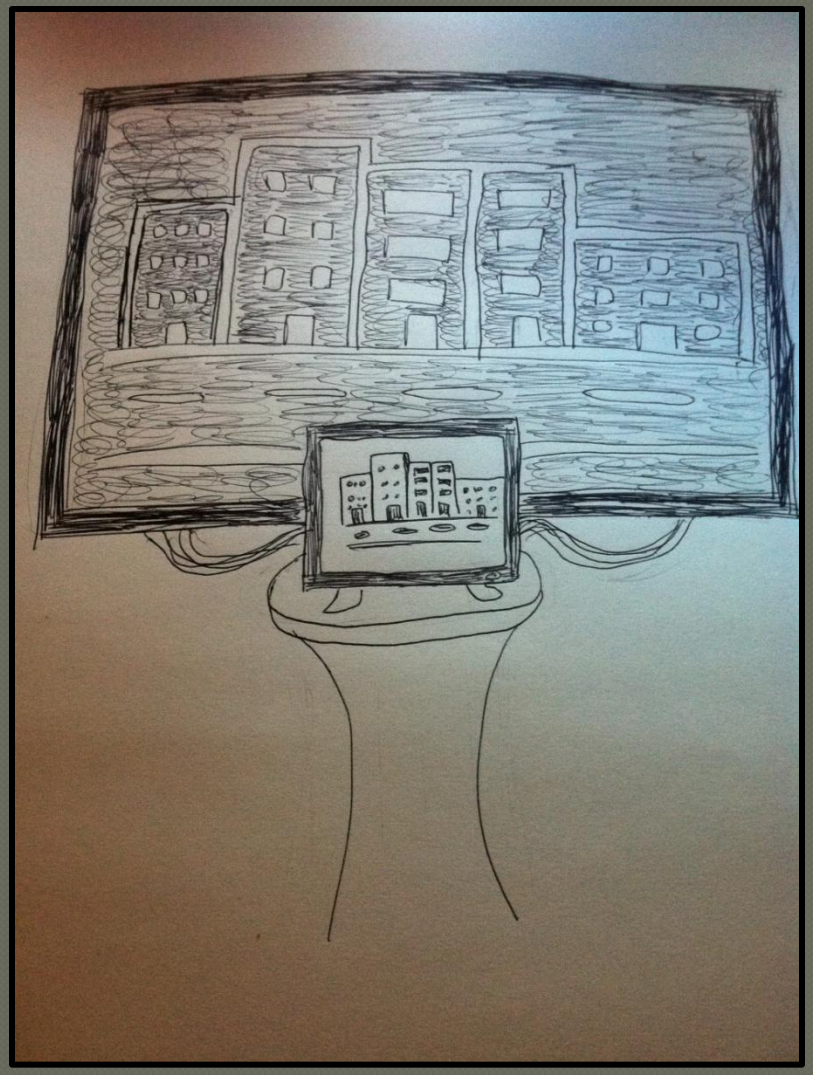
The idea is to let someone draw their own design on the tablet which, instead of a computer screen, will be projected onto the windows. The conductive coating will, instead of a button, be connected to and controlled by the tablet.

Window Instillation: A Theory

Every mark made on the drawing tablet with the stylus generates an electromagnetic signal, which will be transferred as an electrical current through the electrodes connected to the conductive coating. The mark will be transparent while every "unmarked" surface will be frosted.



Window Instillation: A Theory



Viewers will be able to recreate the world outside or decorate the windows with their own design. There will be a command to erase a previous design to create a new blank window.

Conclusion

The installation in the middle of the room will serve as an example of the artist's own art work that can be observed and altered to an extent by the visitors. The windows will be a blank canvas for the creativity of the audience. These two installations will create a playful aspect to a new, energy conserving technology.

References and Video Examples

References:

- http://home.howstuffworks.com/home-improvement/construction/green/smart-window.htm
- http://plc.cwru.edu/tutorial/enhanced/files/pdlc/prep/prep.htm
- http://en.wikipedia.org/wiki/Smart_glass
- http://www.drawing-factory.com/how-drawing-tablets-work.html

Videos:

- http://www.youtube.com/watch?v=-aliXxhFmd8
- http://www.youtube.com/watch?feature=fvwp&v=S6ZeSeNTeqU&NR=1
- http://www.youtube.com/watch?feature=endscreen&v=VFG2Rvgx7Og&NR=1