



# VIRTUALSPACE

creating a digital sense of place

## 572 DESIGN THESIS PRESENTATION

May 2013 | North Dakota State University | Jake Williams

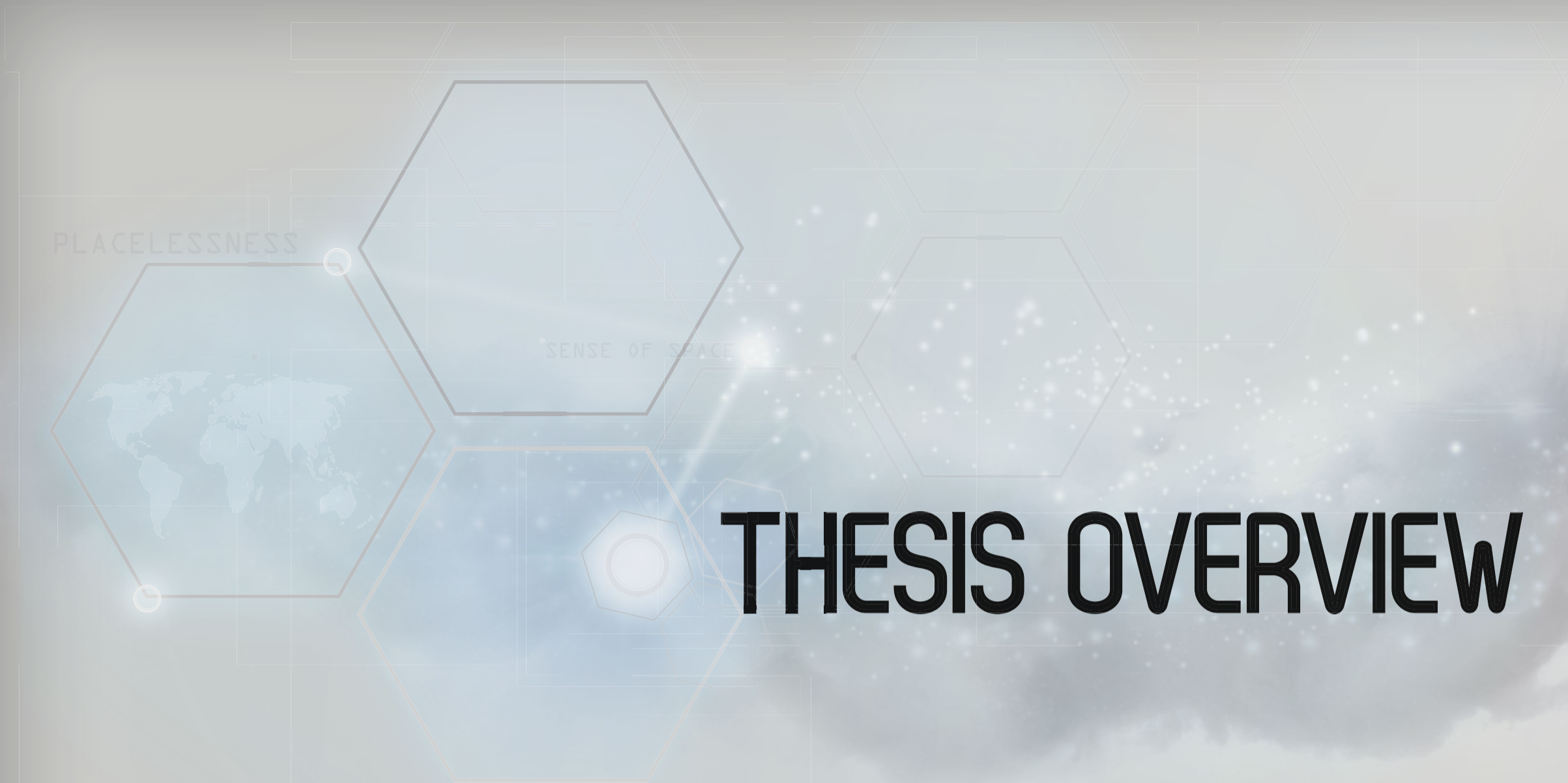
Primary Advisor: Mehran Madani

PLACELESSNESS

SENSE OF SCALE

# THESIS INTRODUCTION





RESEARCH  
METHOD > QUALITATIVE

DATA  
COLLECTION > ARCHIVAL  
INTERVIEW

DATA  
ANALYSIS > DESCRIPTIVE



By comparing the quality of current graphic representations an evaluation was made to identify the most successful methods. By also including audience input and comprehension, an overall result could be reached by describing what has been found.



## PROBLEM STATEMENT

**Current methods of visual representation of built environment design lack user interactivity and engagement.**

Previously in the field of landscape architecture it has been either too time consuming or too difficult to create convincing visual representations of large scale urban designs. While new forms of hybrid drawing methods have been created to show landscape design traits, they're integration with the overall big picture is often disconnected. This research attempts to bridge the gap between previous methods of representation in the field, and new forms of media to more effectively present our work.



## RESEARCH QUESTIONS

- How can designers of the built environment use new software and immersive technology together to create a dynamic virtual sense of place?
- Additionally, how can landscape architects effectively use design traits to engage and interact with an audience?

- > CREATING A VIRTUAL SENSE OF PLACE FOR THE BUILT ENVIRONMENT
- > ENGAGING THE AUDIENCE IN A TRANSACTIVE EXPERIENCE



## DESIGN HYPOTHESIS

**By embracing new hybrid forms of visualization designers of the built environment will have the ability to create more widely used and visually engaging graphic presentations.**

Technology advancements have allowed for various types of new software to be adapted for use in other fields; by embracing this idea it would allow a wider range of recipients the ability to experience new proposals. The result will be beneficial to the field of landscape architecture by using new media methods to promote and raise public awareness for large scale urban projects. Informative visuals could also be helpful to publicly display projects which deal with environmental issues. Future research could identify more ways to use and promote landscape design through new media, and as technology continues to advance more efficient methods of representation could be found.



PLACELESSNESS

SENSE OF SPACE

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## [ SENSE OF PLACE ]

'Spirit of Place and Sense of Place in Virtual Realities'

"The depth of the meaning that places have for us are informed by the qualities of their settings, which I will refer to as spirit of place and by our sense of place, or ability to appreciate those qualities. In everyday experience spirit and sense of place are inextricably intertwined, but its helpful to distinguish them so that their relevance for virtual places can be made clear."

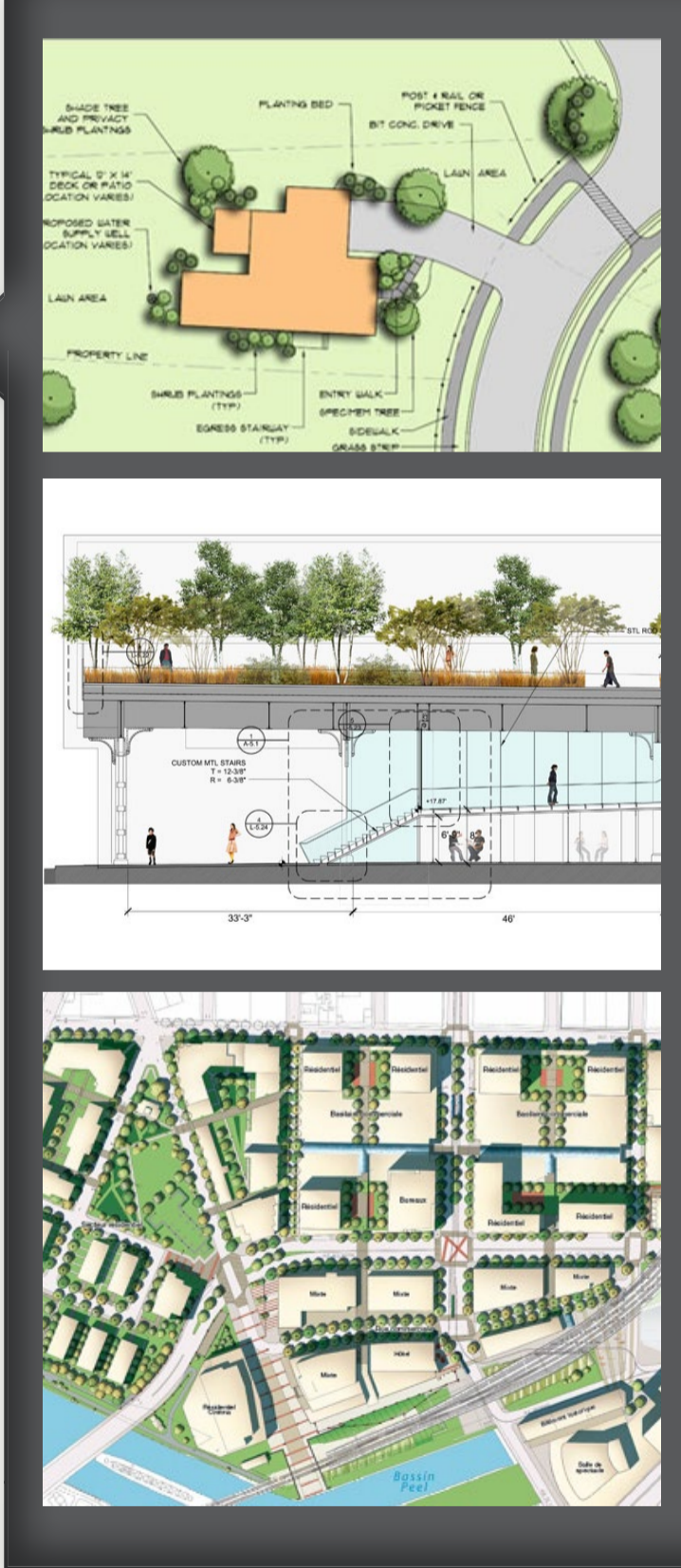
-Edward Relph



# CURRENT TECHNIQUES OF VISUALIZATION

## > TRADITIONAL GRAPHICS SCHEMATIC DESIGN

For every design project traditional graphics are used throughout the process to help designers collaborate and document their work. These graphics are most commonly plan and section drawings, which are notational graphics used to detail and envision 3D space in a 2D form.



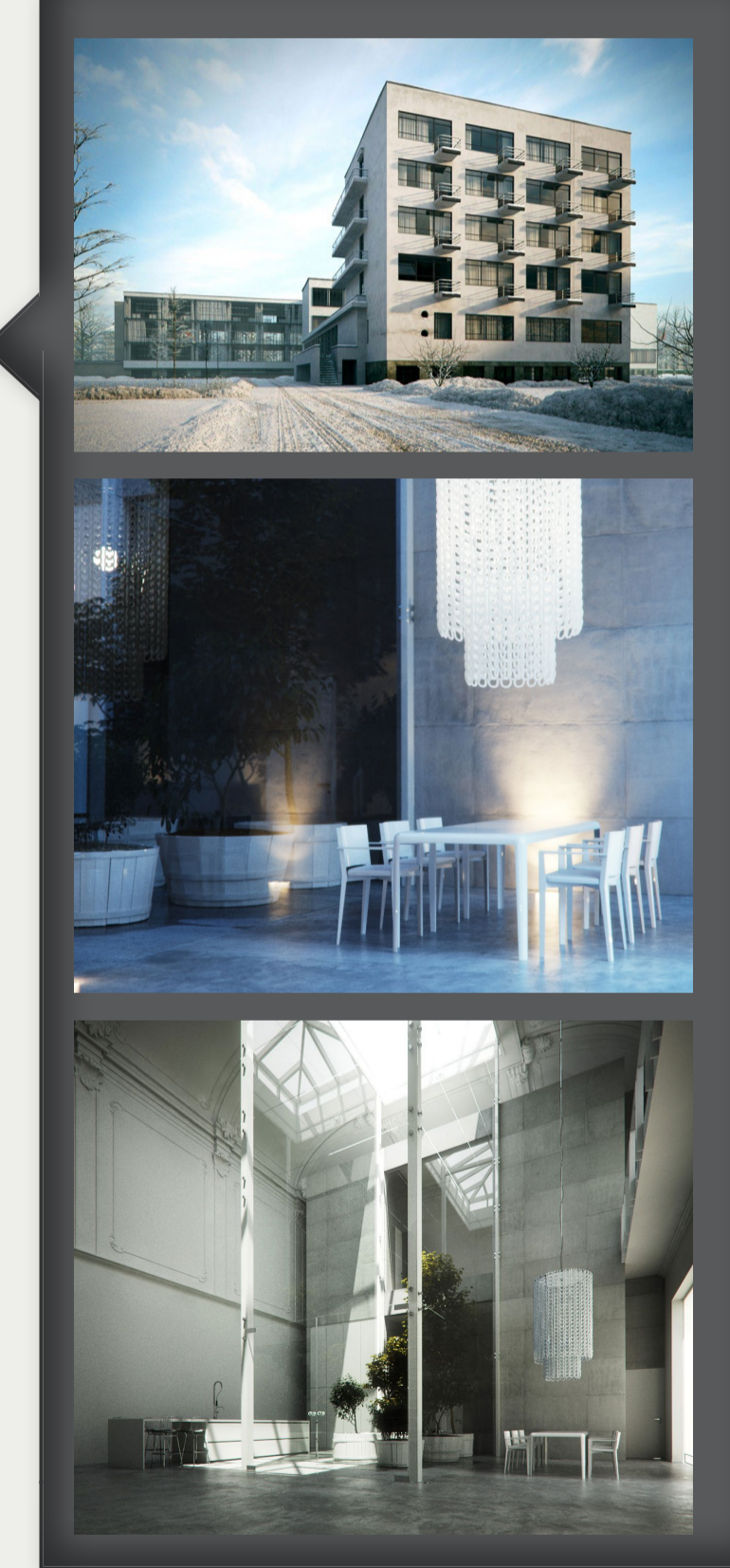
## > HYBRID STYLES CONCEPTUAL + FINAL DESIGN

Commonly used for large scale Landscape Architecture projects, hybrid styles of perspective drawing show design traits and convey an overall feeling for the space being shown. These styles are often mixed media visuals or photo-montages to show a sense of space. This type of visualization does not rely on a high level of detail to achieve realism, but instead on an atmosphere to show the life of a design.



## > PHOTO-REALISTIC FINAL DESIGN

Ultimately the most popular trend in visualization today is achieving the most photo-real renderings imaginable. This type of style focuses on the small details to achieve an extremely high level of realism. The material textures and virtual lighting are highly important in the process of creating these visuals, which makes them very tedious projects to work on.



Bertrand Beniot

## > ANIMATION FINAL DESIGN

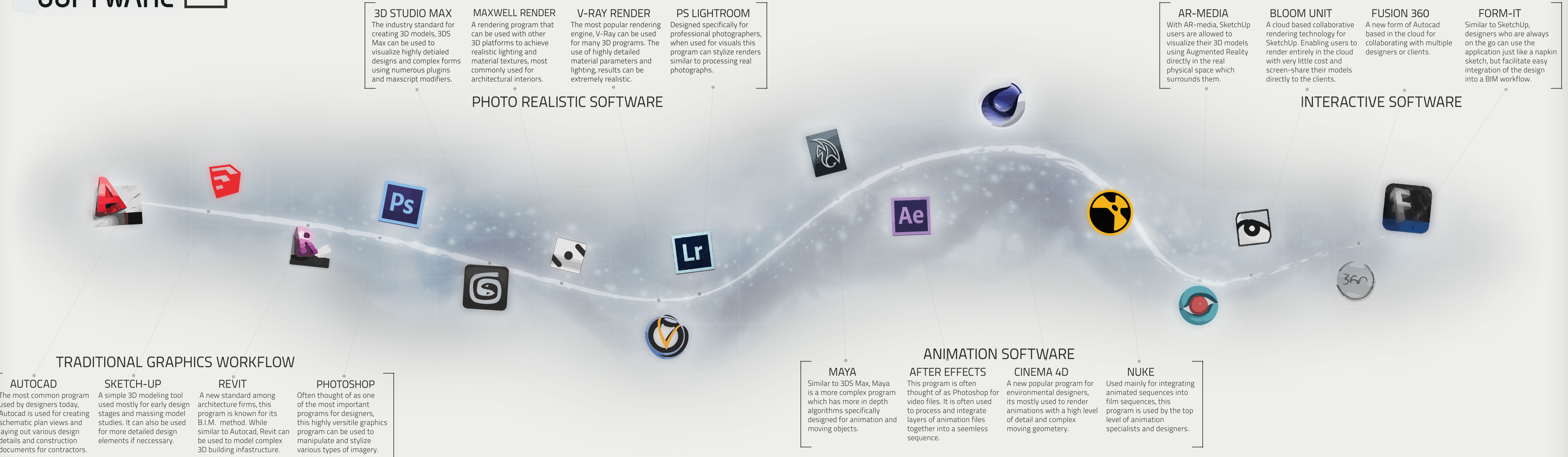
The most time consuming, yet rewarding method of visualization is photo-realistic animation. This style will display a project through moving visuals and sequences that guide you on a virtual tour of a design. Simple virtual walkthroughs are common for showing designs, but more recent animations emulate cinematic features composed of slow panning shots and lens focusing techniques.



Alex Roman

1. ronbekerman.com/wp-content/uploads/2010/09/hybrid-render-les-chylinski-preview.jpg 2. www.b3designers.co.uk/wp-content/uploads/2010/06/Photomontage-of-proposed-park.jpg 3. static.dezeen.com/uploads/2007/10/zha\_zorrozaurre-masterplan\_crop.jpg 4. www.ronbekerman.com 5. www.cgtextures.com/designdetails12-masterplan.jpg 6. http://friendsoftheline.files.wordpress.com/2008/08/gansevoort-section\_1000.jpg

# EXISTING SOFTWARE



**TRADITIONAL GRAPHICS WORKFLOW**

**AUTOCAD**  
The most common program used by designers today, Autocad is used for creating schematic plan views and laying out various design details and construction documents for contractors.

**SKETCH-UP**  
A simple 3D modeling tool used mostly for early design stages and massing model studies. It can also be used for more detailed design elements if necessary.

**REVIT**  
A new standard among architecture firms, this program is known for its B.I.M. method. While similar to Autocad, Revit can be used to model complex 3D building infrastructure.

**PHOTOSHOP**  
Often thought of as one of the most important programs for designers, this highly versatile graphics program can be used to manipulate and stylize various types of imagery.

**3D STUDIO MAX**  
The industry standard for creating 3D models, 3DS Max can be used to visualize highly detailed designs and complex forms using numerous plugins and maxscript modifiers.

**MAXWELL RENDER**  
A rendering program that can be used with other 3D platforms to achieve realistic lighting and material textures, most commonly used for architectural interiors.

**V-RAY RENDER**  
The most popular rendering engine, V-Ray can be used for many 3D programs. The use of highly detailed material parameters and lighting, results can be extremely realistic.

**PS LIGHTROOM**  
Designed specifically for professional photographers, when used for visuals this program can stylize renders similar to processing real photographs.

## PHOTO REALISTIC SOFTWARE

**MAYA**  
Similar to 3DS Max, Maya is a more complex program which has more in depth algorithms specifically designed for animation and moving objects.

**AFTER EFFECTS**  
This program is often thought of as Photoshop for video files. It is often used to process and integrate layers of animation files together into a seamless sequence.

**CINEMA 4D**  
A new popular program for environmental designers, its mostly used to render animations with a high level of detail and complex moving geometry.

**NUKE**  
Used mainly for integrating animated sequences into film sequences, this program is used by the top level of animation specialists and designers.

## ANIMATION SOFTWARE

**AR-MEDIA**  
With AR-media, SketchUp users are allowed to visualize their 3D models using Augmented Reality directly in the real physical space which surrounds them.

**BLOOM UNIT**  
A cloud based collaborative rendering technology for SketchUp. Enabling users to render entirely in the cloud with very little cost and screen-share their models directly to the clients.

**FUSION 360**  
A new form of Autocad based in the cloud for collaborating with multiple designers or clients.

**FORM-IT**  
Similar to SketchUp, designers who are always on the go can use the application just like a napkin sketch, but facilitate easy integration of the design into a BIM workflow.

## INTERACTIVE SOFTWARE

DATA COLLECTION:

# NEW MEDIA TECHNOLOGY



## REAL-TIME RENDERING >>

### Caustic Professional/Imagination Technologies

The Caustic Professional card is proprietary hardware raytrace acceleration card that consume only 30-60W of power and are capable of processing up to 160 million incoherent rays per second. Significantly more speed and less power than any current GPU offering by either NVIDIA or AMD. What makes the acquisition of this technology by Imagination Technologies so relevant is the fact that they own nearly 80% of the mobile GPU market.

### CASE STUDY: NANTES MASTERPLAN DESIGN

The work of MGDesign shows how large scale landscape projects can be visualized through new types of media to better organize the vast amounts of data and design information included. While in Nantes, France in February of 2012, I had the opportunity to experience the Euronantes project first hand through the use of the touchscreen interface created. The navigation through the virtual masterplan was immediately engaging and exciting. The simple and smooth interface had absolutely no lag time which allowed for the ability to quickly understand how to operate the various movements and functions. Within moments it was easy to unconsciously manipulate the viewing angle in any way imagined without any effort. By zooming into an area the virtual model became more detailed with the appearance of environmental textures and aerial imagery. The integration of detailed site information and imagery created a greater interest in the project by breaking down the large design into smaller and more comprehensible spaces. While some interactive experiences can be hindered by poorly designed interfaces and user controls, the use of touchscreen technology creates a much more intuitive relationship between the technology and user. By embracing this type of user interaction for landscape designs it will be more effective and exciting for audiences to learn about proposed projects.



## AUDIENCE COMPREHENSION

### PUBLIC PROCESS

By simplifying the public presentation process, designers will be able to receive better feedback from their clients based on the method of representation.



PUBLIC PROCESS  
INTEGRATION

### CURRENT TECHNIQUES

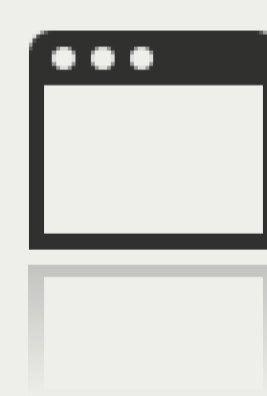
The current techniques do not depict the tacit knowledge needed to fully understand a project from a non-designers point of view. By embracing new interactive techniques visuals can be more easily understood by the general public.



MODIFYING CURRENT  
TECHNIQUES

### EXISTING SOFTWARE

Current software interfaces are much too complex for every-day users to understand and navigate. By adapting current software to new types of interfaces the result will be more interactive and dynamic representations.



ADAPTING EXISTING  
SOFTWARE

### SOCIAL MEDIA

The online collaboration of social media can be embraced for new methods of built environment representation. The relationship between the client and designer will be made stronger through the use of new types of virtual design communities.



INVOLVING VIRTUAL  
COMMUNITIES

### NEW MEDIA TECHNOLOGY

The ability to create a virtual sense of place at the fingertips of users with tablets will encourage the public to become more interested in design projects. Integrating visualization with the various mobile devices will create new ways for the people to engage in public projects.



EMBRACING  
NEW MEDIA

# RESEARCH SYNTHESIS

## HYPOTHESIS

By embracing new hybrid forms of representation designers of the built environment will have the ability to create more widely used and visually engaging visualizations.

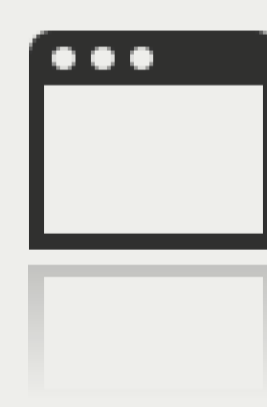
Through the use of new media technology, design concepts and traits can be shown through a transactive method allowing for greater audience comprehension, resulting in more successful design proposals. Finding new creative solutions for design visualization will allow for additional ways of interaction between designers and clients.



PUBLIC PROCESS  
INTEGRATION



MODIFYING CURRENT  
TECHNIQUES



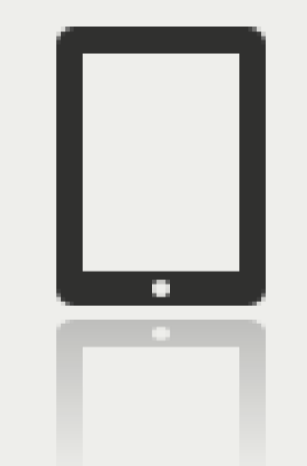
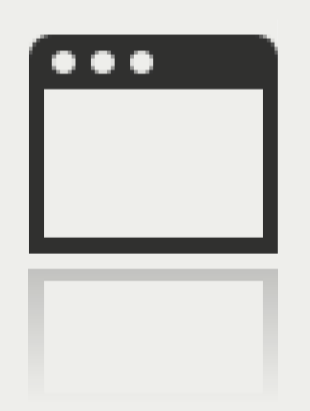
ADAPTING EXSISTING  
SOFTWARE



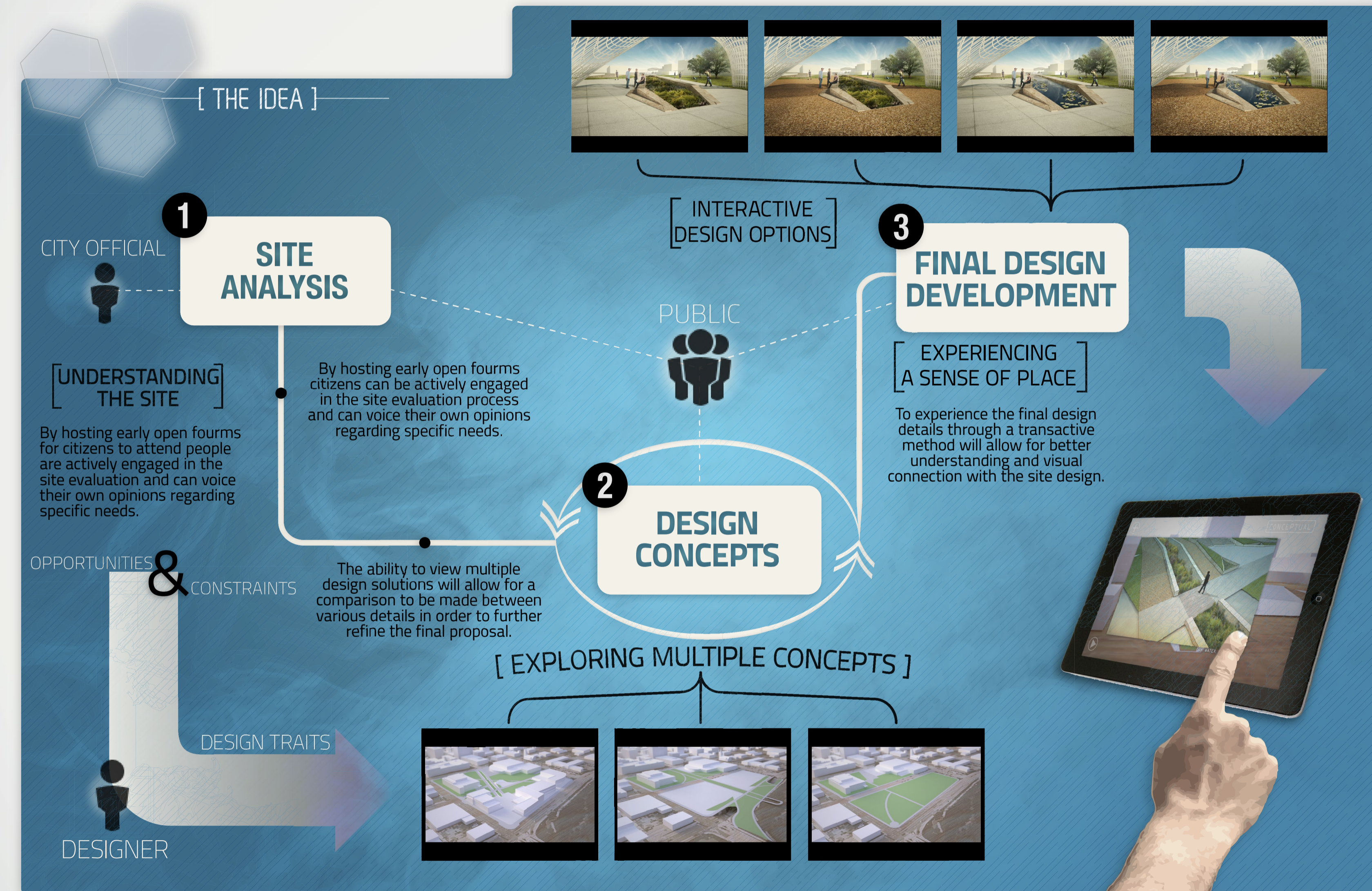
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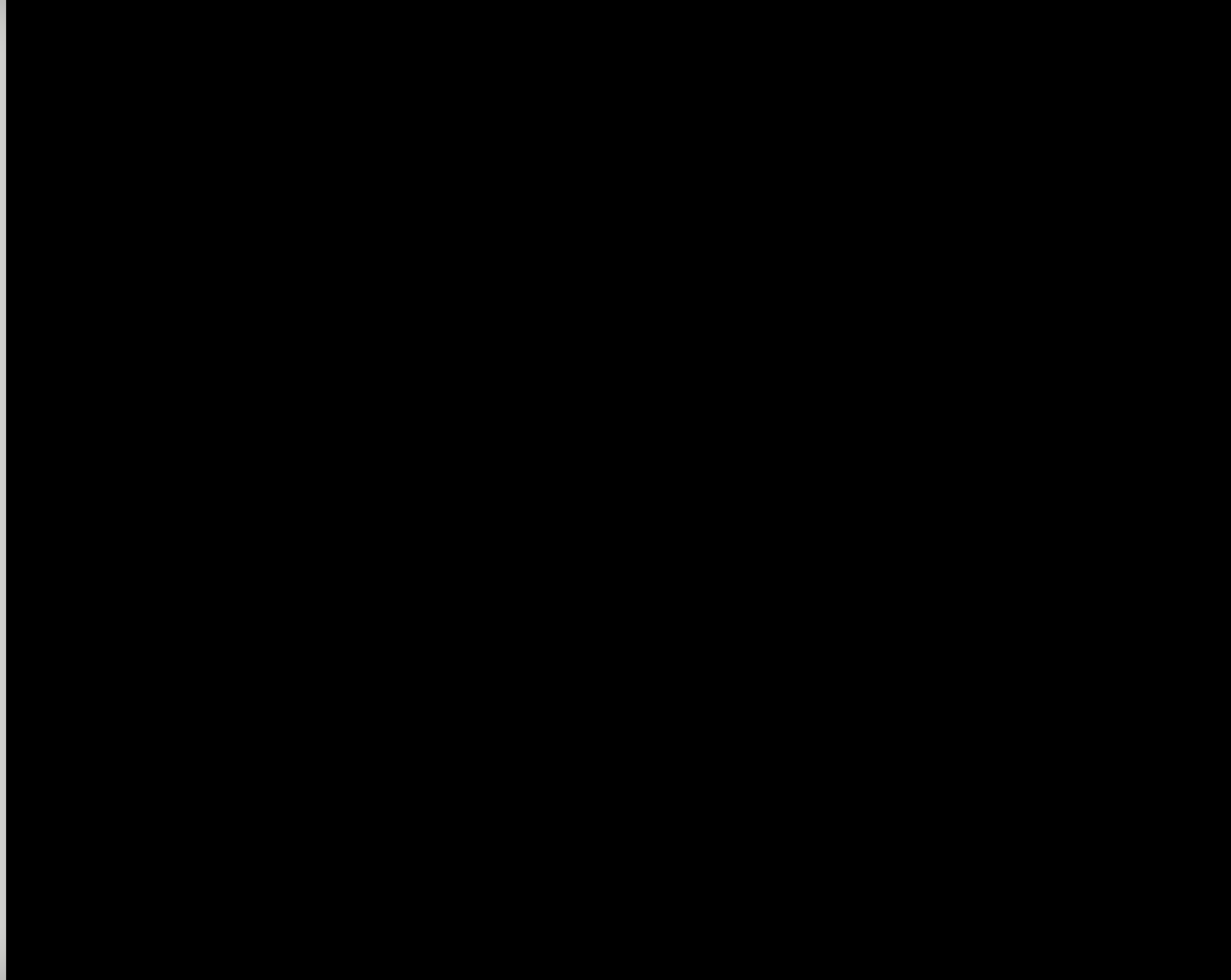
# DESIGN MODEL



PRECEDENT  
STUDY



[FARGO URBAN DEVELOPMENT]





# SITE ANALYSIS

## 1. SITE INTRODUCTION & ANALYSIS

By first engaging an audience in the initial inventory and analysis stage, this will ensure a greater understanding of site opportunities and constraints which will lead to design traits.



DESIGN  
CONCEPTS

2. CONCEPTUAL DEVELOPMENT

The ability to view and compare multiple conceptual designs will allow for more public feedback and help to identify specific programming needs.



CONCEPT 1



"STREET LEVEL VITALITY"

CONCEPT 2



"CONNECTING TO THE RIVER"

CONCEPT 3



"FARGO PERFORMING ARTS CENTER"

DESIGN  
DEVELOPMENT

3. FINAL DESIGN DEVELOPMENT

Creating a sense of place through high quality graphics and user interaction will actively engage viewers to experience the final design for themselves.



CONCEPT 1



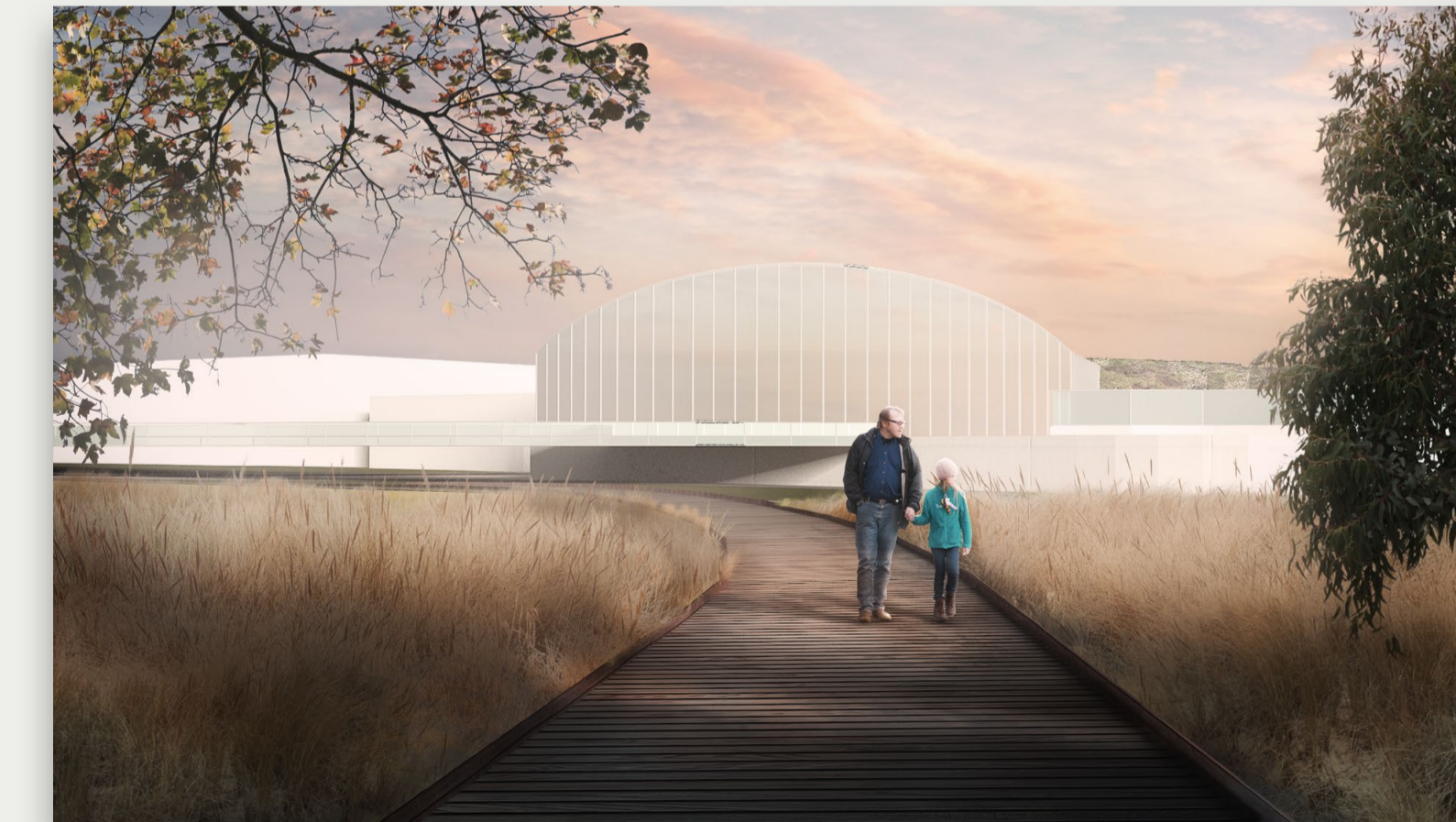
"STREET LEVEL VITALITY"

CONCEPT 2



"CONNECTING TO THE RIVER"

CONCEPT 3



"FARGO PERFORMING ARTS CENTER"



DISCUSSION &  
QUESTIONS

"A sense of virtual place will develop through such participation and engagement and it should not be unlike a sense of real place. It will involve many senses and emotions because it is mediated electronically, it will vary between individuals and it will also have a community expression"

-Edward Relph