

# REDEFINING DESIGN LANDSCAPES:

Exploring Generative AI's Impact Across  
Visual, Spatial and Semantic Realms

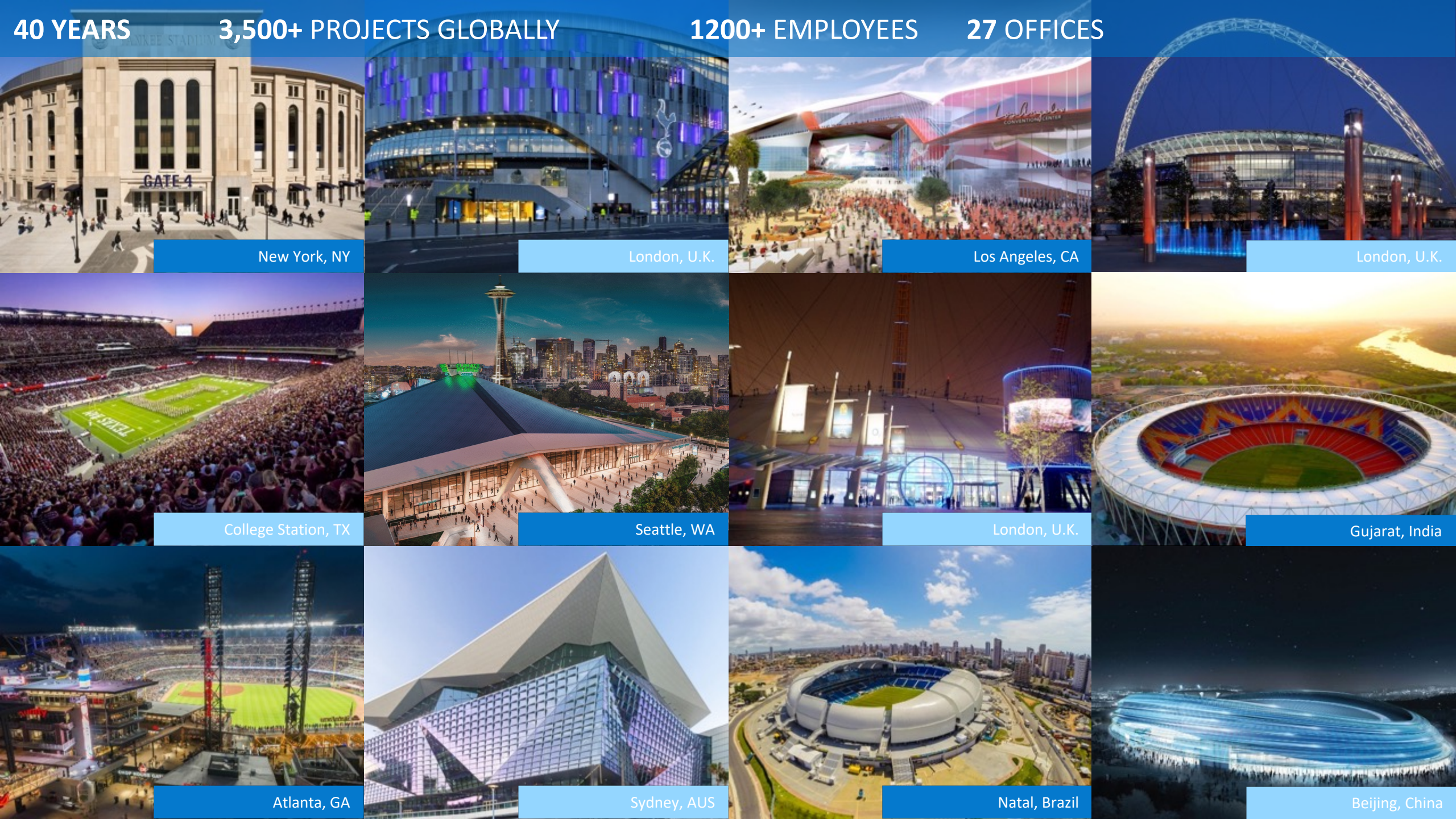
BST Global AI Summit

April 2024

Jonathan Nelson  
Global Head of Digital





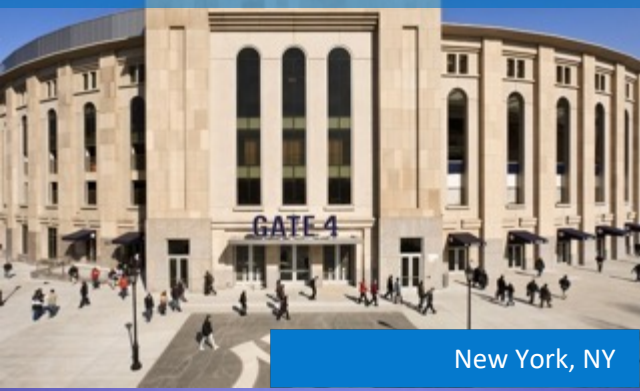


40 YEARS

3,500+ PROJECTS GLOBALLY

1200+ EMPLOYEES

27 OFFICES



New York, NY



London, U.K.



Los Angeles, CA



London, U.K.



College Station, TX



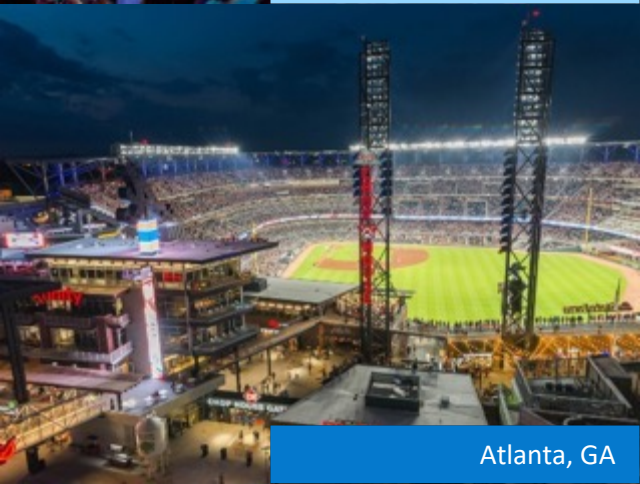
Seattle, WA



London, U.K.



Gujarat, India



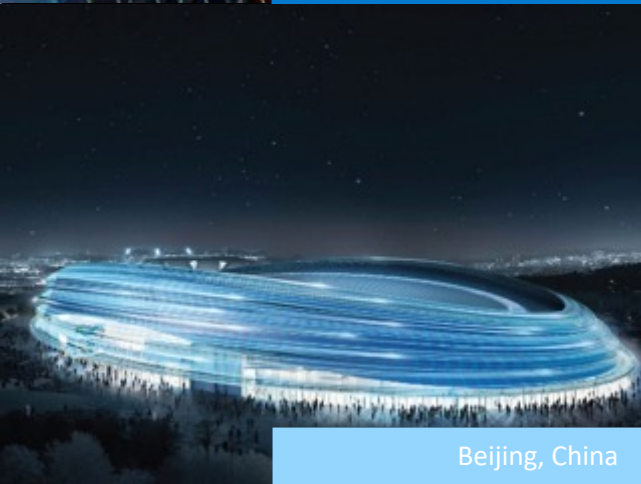
Atlanta, GA



Sydney, AUS



Natal, Brazil



Beijing, China





# HOLISTIC SERVICE OFFERING

**ARCHITECTURE AND DESIGN**  
*Creating the world's most iconic sports, entertainment, events and COEX buildings*

**INTERIOR DESIGN**  
*Experience driven and inspiring interior environments*

**LANDSCAPE ARCHITECTURE**  
*Creating unique event landscapes, which seamlessly integrate venues into the local community*

**BRAND ACTIVATION**  
*Immersive storytelling and experience creation for brands in S&E environments*

**EVENTS**  
*Designing and delivering spectacular major events from start to finish*

**URBAN DESIGN**  
*Creating a long-term vision for cities, communities and campuses*

**WAYFINDING**  
*Insight-driven user flow analysis and fully-integrated signage systems*

**SUSTAINABILITY**  
*Environmentally responsive and impactful sustainable design solutions*

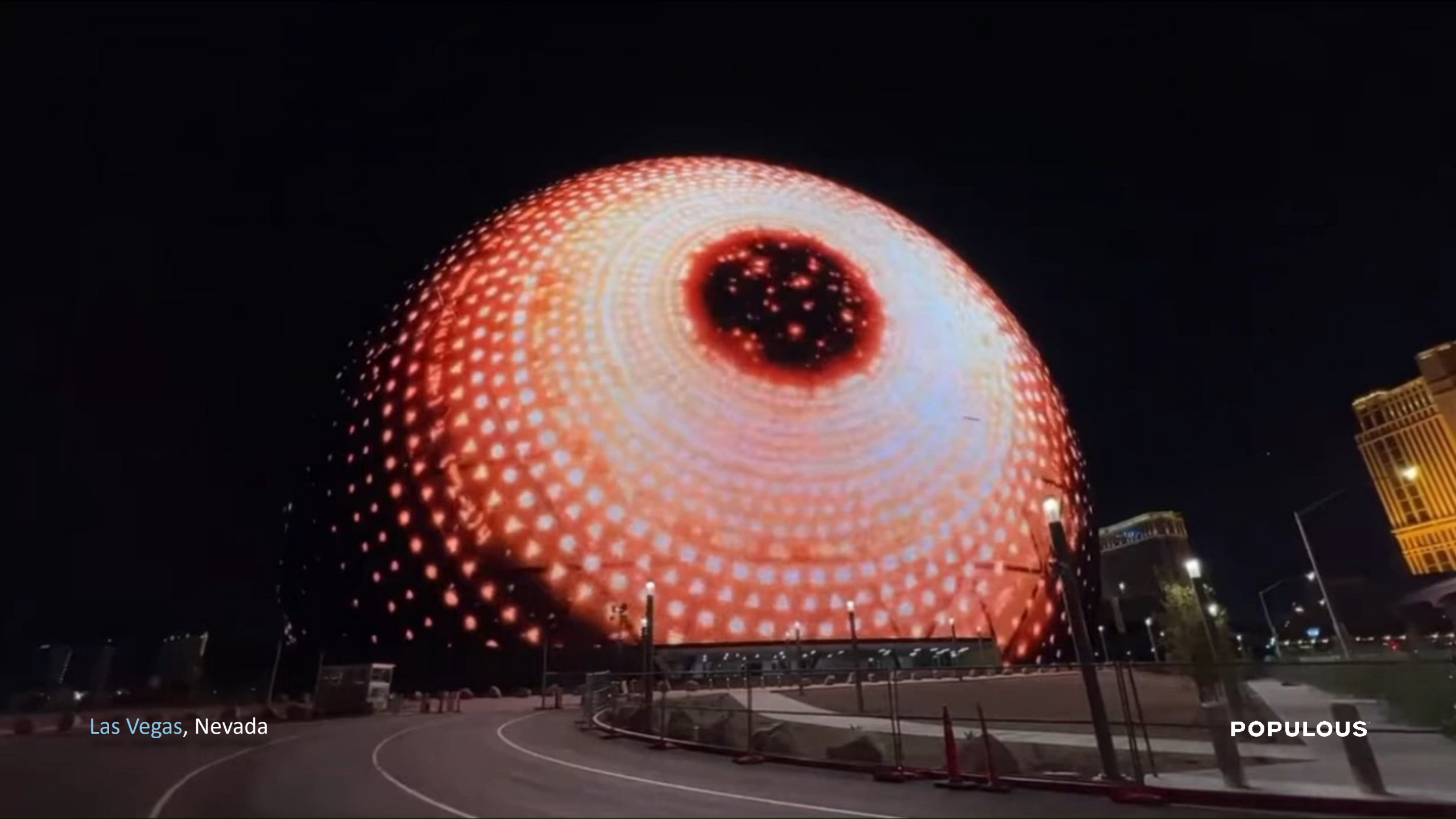
**PRODUCT DESIGN**  
*Bespoke furniture and products for the sports and entertainment industry*

**EXPERIENCE STUDIOS**  
*Bringing people together through exceptional experiences*

**BUSINESS CONSULTING**  
*Strategic design led business planning and consulting*

**DESIGN & BUILD**  
*Turnkey delivery of sports, entertainment and hospitality environments*





Las Vegas, Nevada

POPULOUS



## TECHNOLOGY DRIVERS

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- Industry at peak of Gen AI Hype Cycle
- Ready access to technology
- All use-cases are open to exploration

## INDUSTRY DRIVERS

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- Complexity is increasing
- Client demands are increasing
- Large market / small world
- Competition is getting more intense
- Many clients are sophisticated data-wise

## POPULOUS DRIVERS

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- We work in very specific market segments
- We generate and consume a large amount of specialized data
- We operate along the entire asset lifecycle
- Our culture is one of experimentation, entrepreneurship, and innovation.

Introduction

# CONTEXT + ARGUMENT

**POPULOUS**



## TECHNOLOGY CHALLENGES

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- True value and use-cases are not well fleshed-out
- Technology Costs – we are not a FAANG company
- Uncertainty about legal / regulatory ramifications
- Immaturity of some aspects (ie Hallucinations)

## INDUSTRY CHALLENGES

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- Huge range of digital maturity
- Slow to adapt
- An industry of cottage industries
- Complicated Systems / Regulations
- Complex RACI arrangements

## POPULOUS CHALLENGES

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- What is the story we tell our clients?
- How do we govern usage internally?
- How do we incorporate with our partners / consultants?
- What are the new risks involved?

Introduction

# CONTEXT + ARGUMENT

**POPULOUS**





Introduction

# HYPE CYCLE FOR ARTIFICIAL INTELLIGENCE

POPULOUS



Google, Microsoft and Amazon on why AI may not meet ‘expectations’ at current levels

Exclusive

Amazon, Google Down Generative AI Expectations

TOI Tech Desk / TIMESOFINDIA.COM / Mar 13, 2024, 20:07 IST

SHARE PRINT AA FOLLOW US

By Anissa Gardizy and Aaron Holmes

Mar 12, 2024, 7:00am PDT

Comments by Peter Gostev, Mike Alwill, and

Home

SURVEY REVEALS SLOW ADOPTION OF GENERATIVE AI IN BUSINESS. DESPITE HIGH EXPECTATIONS

2 mins read

AI Agenda

Where Have All The AI Returns Gone?

WWD | WWD

A Lot of Retailers Are Bungling Generative AI, Report Says

f

Adriana Lee

Tue, 19 March 2024 at 12:02 pm AEDT · 3-min read

X

ATION > ENTERPRISE TECH

Expectations For Gen AI  
er Than Planned?

Peter Bendor-Samuel Contributor @

Follow

0

Mar 11, 2024, 08:29am EDT

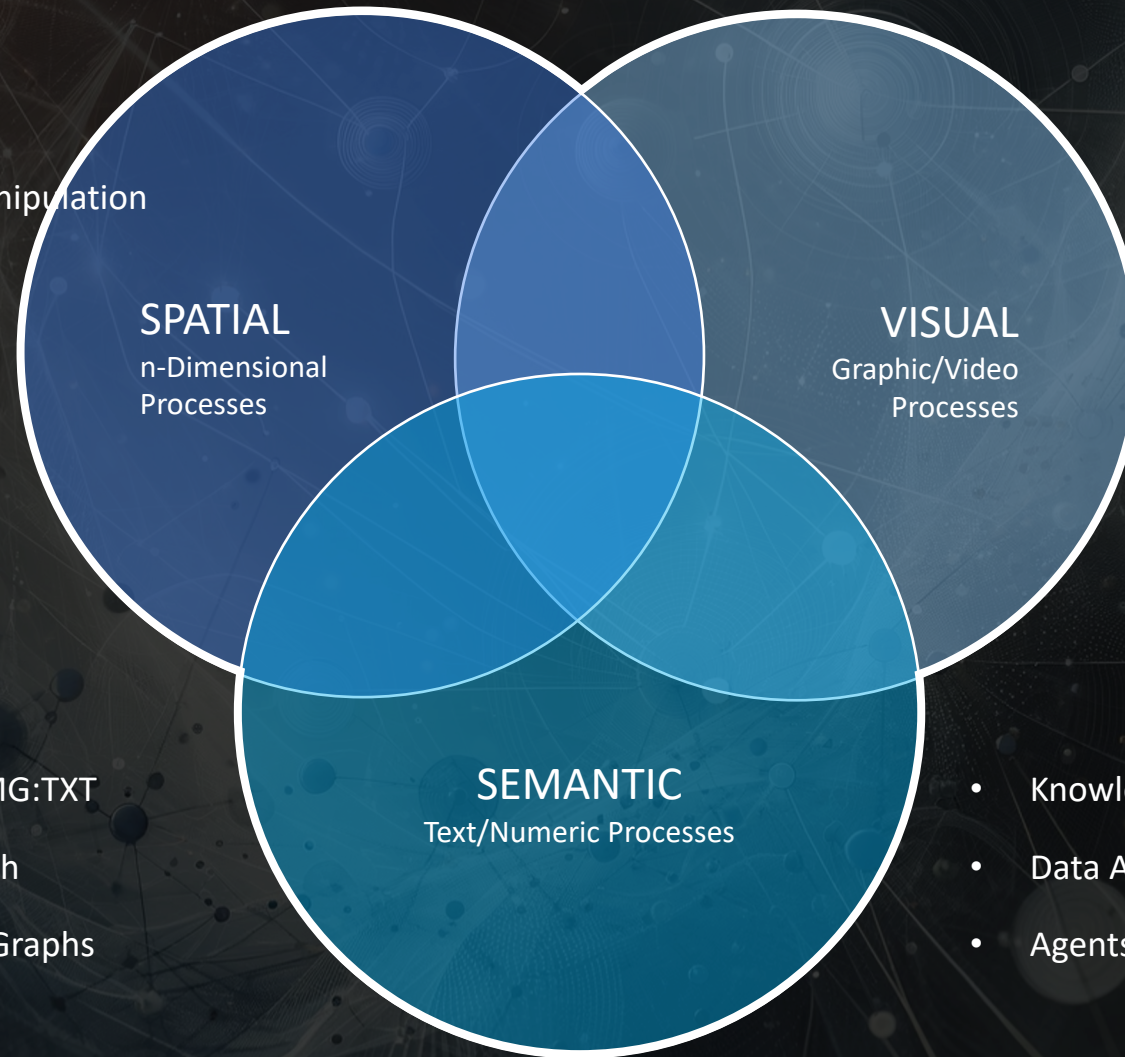
Introduction

HYPE CYCLE FOR ARTIFICIAL INTELLIGENCE

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- 3d Model Generation + Manipulation
- Spatial Layouts
- Documentation
- Visual Analysis



- TXT:IMG + IMG:IMG
- 2d Image Generation + Manipulation
- Video Generation

- TXT:TXT + IMG:TXT
- Vector Search
- Knowledge Graphs

- Knowledge Capture
- Data Analysis
- Agents & Assistants

Introduction

**CONTEXT + ARGUMENT**

**POPULOUS**



We use a 3-stage process for finding use-cases and working with technology vendors and partners

**1. Value Discovery**

Rapid experimentation (POCs) on a variety of topics and data with any available technology. Continual surveys of product Landscape

**2. Prioritization**

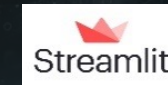
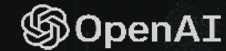
Rank POCs by value and apply Make/Buy/Partner framework.

**3. Scaling and Rollout**

Work with infrastructure partner to scale internally or move to formal product/service.

Introduction

PRODUCTS & PARTNERS



POPULOUS





**Bridging the gap** between human communication and machine understanding to allow a more sophisticated interaction between the two.

Research

**SEMANTIC AI**

**POPULOUS**




- Enhance Design Research + Benchmarking
- Improve Information Management, Documentation and Quality Assurance
- Enhance Collaboration and Knowledge Sharing
- Analyse, Optimise and Accelerate Business Practices

SEMANTIC AI OPPORTUNITIES

POPULOUS

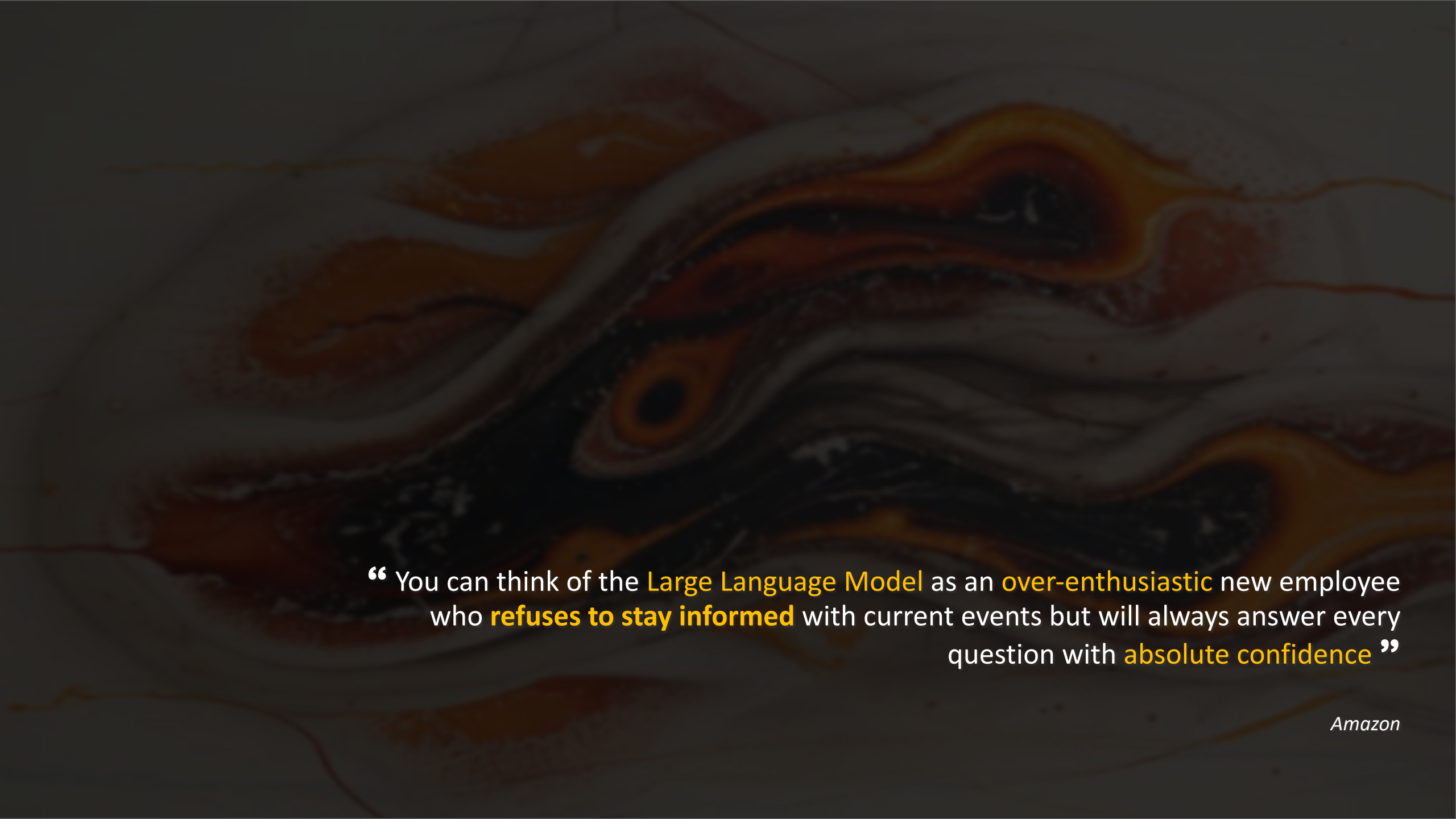


- 
- The background is a dark, abstract digital landscape. It features numerous glowing, semi-transparent circles and spheres of varying sizes, some with internal patterns. A prominent padlock icon is visible within one of the larger circles. The overall aesthetic is futuristic and technological, with a sense of depth and complexity.
- Data Privacy and Security
  - Bias and Ethical Concerns
  - Dependence on Data
  - Integration with Existing Systems
  - Co-creation and Finding Balance

## SEMANTIC AI CHALLENGES

POPULOUS





“ You can think of the **Large Language Model** as an **over-enthusiastic** new employee who **refuses to stay informed** with current events but will always answer every question with **absolute confidence** ”

*Amazon*



## Leveraging LLMs for data modelling and code generation to automate Knowledge Graph creation

## Data Ingest Tool

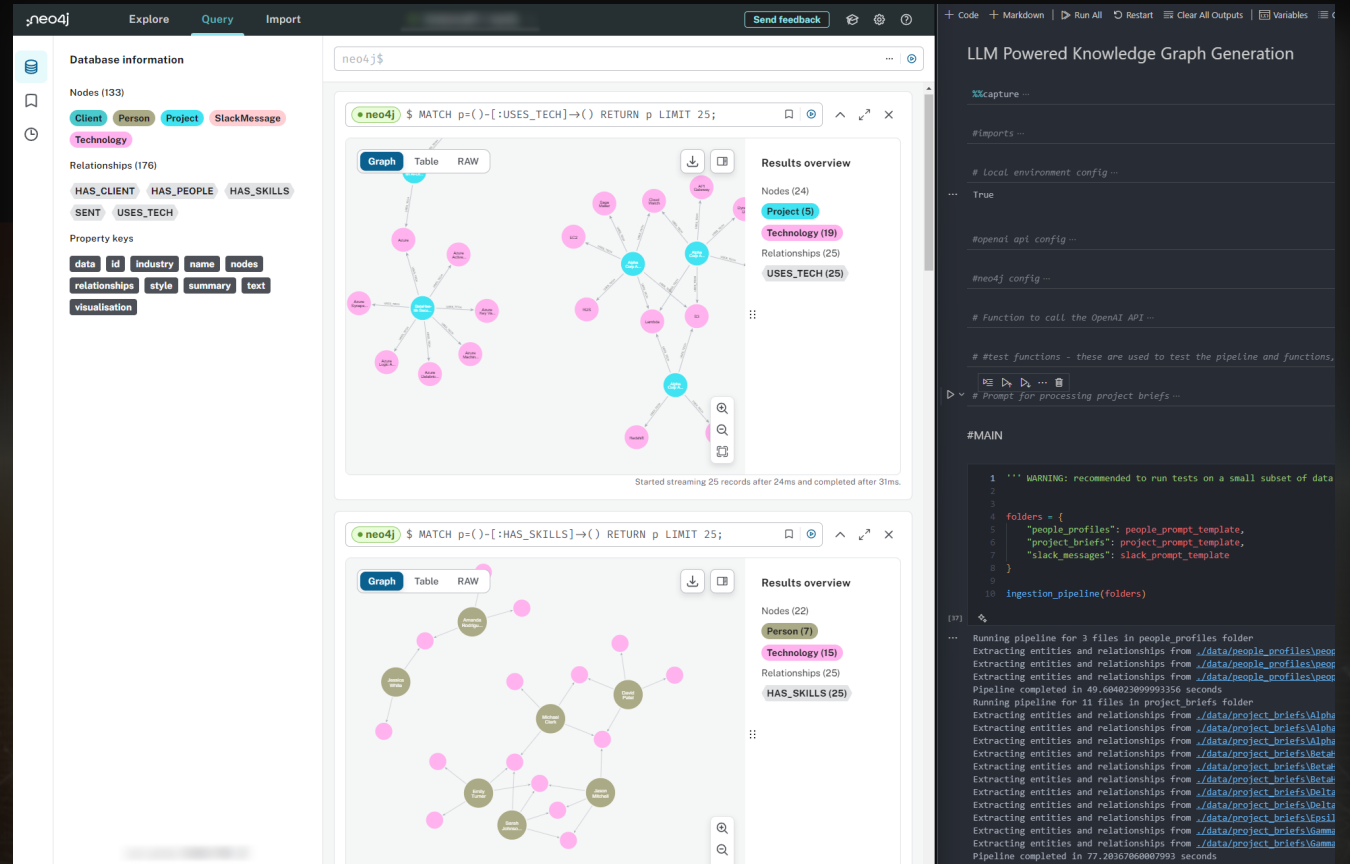
LLMs used to analyse and classify the entities, relationships and properties of a large dataset, generate cypher queries to model the data as a Knowledge Graph, **creating a feedback loop.**

## Core Goals

- Increase reliability and accuracy of agents and assistants.
- Accelerate the initial generation and merging of Knowledge Graphs across departments datasets
- Rapidly build explorable benchmarking datasets of Building Information Models to enable further analytics and quality assurance workflows.

## SEMANTIC AI

# GENAI + KNOWLEDGE GRAPHS



**POPULOUS™**



## Role Specific Agents & Assistants with Retrieval Augmented Generation (RAG)

Tailoring the system prompting of current generation foundation models to better guide responses for specific roles and applications.

Leveraging the developing collection of Knowledge Graphs and Vector Databases to improve grounding and provide access to in-house knowledge for AI Agents & Assistants. Fast and lightweight framework to rapidly test, iterate and deploy locally or in the cloud.

### Benefits & Goals:

- Reduce the time involved in searching, analysing and synthesising information from documents
- Test, monitor, evaluate and refine LLM Models to find the best fit for supporting staff roles

The image displays three side-by-side screenshots of AI agent interfaces, each representing a different role: BIDS AGENT, BIM AGENT, and HR AGENT. Each interface features a header with the agent's name, a 'Chat with your pdf file' button, and a 'POP' logo. Below the header is a file upload section with a 'Drag and drop file here' instruction and a 'Limit 200MB per file • PDF' note. A file icon and name are shown below the upload area. The BIDS AGENT interface shows a file named 'new-perth-stadium-dbfm-project-summary (1).pdf' (0.6MB). The BIM AGENT interface shows a file named '190219\_POP\_KTSP BEP COMMENTS.pdf' (36.2KB). The HR AGENT interface shows a file named '240213\_Equal Employment Opportunity Policy\_Draft for Consultation (2).pdf' (0.6MB). Each interface has a text input field for asking questions about the PDF file. The BIDS AGENT input contains 'what are the key criteria for success in this RFP'. The BIM AGENT input contains 'can you summarize the items marked high importance'. The HR AGENT input contains 'can you make some recommendations on how to condense this policy into a single page'. Below the input field, each interface displays a generated response. The BIDS AGENT response is a list of criteria for success in the RFP. The BIM AGENT response is a list of items marked as high importance. The HR AGENT response is a list of recommendations for condensing the policy into a single page. The POPULOUS logo is visible in the bottom right corner of each interface.

**BIDS AGENT**

Chat with your pdf file POP

Upload your PDF

Drag and drop file here  
Limit 200MB per file • PDF

new-perth-stadium-dbfm-project-summary (1).pdf 0.6MB

Ask questions about your PDF file

what are the key criteria for success in this RFP

Based on the provided context, the key criteria for success in the RFP can be identified as:

1. Overall delivery approach: This criterion assesses the respondent's overall strategy in delivering the DBFM Project, including their project management skills, experience,
2. Interface management: This criterion evaluates the respondent's ability to manage interface between different stakeholders, including the State project team, other contractors, community.
3. Design proposal: This criterion assesses the respondent's design proposal, including appeal, functionality, and compliance with the DBFM Project's technical requirements.
4. Design and build project management: This criterion evaluates the respondent's project management skills and experience in delivering complex projects, including their risks, timelines, and budgets.
5. Qualitative and quantitative criteria: These criteria assess the respondent's technical financial capacity, and compliance with relevant regulations and standards. They also assess the respondent's commitment to sustainability, innovation, and community engagement.

By evaluating these criteria, the State can determine which respondent is best positioned to deliver the DBFM Project successfully.

**BIM AGENT**

Chat with your pdf file POP

Upload your PDF

Drag and drop file here  
Limit 200MB per file • PDF

190219\_POP\_KTSP BEP COMMENTS.pdf 36.2KB

Ask questions about your PDF file

can you summarize the items marked high importance

Based on the provided context, the following items are marked as high importance:

1. Verifying compliance of qualifications for BIM Modelers.
2. Providing training syllabus for review and submission.
3. Producing drawings in ".dwg(x) format for milestone submission (HK mandate or stip project).
4. Developing the BIM model to LOD350 and 400 right (principle should be further developed design stage BIM model).
5. Confirming ownership/copy monitor of fire extinguisher, hose reels, and fire hydrant architect (modelled by MEP and coordinated by architect).
6. Adhering to the requirement for architectural / structural elements to be built as per category, and MEP elements to be built with MEP system (Populous will adhere to this elements).
7. Simulating construction activities with very high to extreme risk level identified from Risk Management (SRM) (all comments regarding construction simulation and sequencing).

**HR AGENT**

Chat with your pdf file POPULOUS

Upload your PDF

Drag and drop file here  
Limit 200MB per file • PDF

240213\_Equal Employment Opportunity Policy\_Draft for Consultation (2).pdf 0.6MB

Ask questions about your PDF file

can you make some recommendations on how to condense this policy into a single page

Based on the provided context, I can see that the policy is quite extensive and covers various aspects of the company's operations. To condense it onto a single page, here are some recommendations:

1. Use a clear and concise format: Use headings, subheadings, bullet points, and short paragraphs to make the policy easy to read and understand.
2. Prioritize key elements: Identify the most critical aspects of the policy and highlight them prominently. This could include the company's values, goals, and key responsibilities.
3. Use visual aids: Consider using diagrams, flowcharts, or other visual aids to help illustrate complex concepts and relationships within the policy.
4. Provide examples: Offer concrete examples of how the policy applies in different situations to help employees understand how to follow it.
5. Keep it simple: Avoid using overly technical language or jargon that may be difficult for non-experts to understand. Use plain language and avoid unnecessary complexity.
6. Make it interactive: Consider adding interactive elements, such as quizzes or checklists, to help employees engage with the policy and retain the information better.
7. Provide resources: Offer additional resources, such as links to relevant documents or training materials, to help employees understand the policy and its implications in more detail.
8. Review and update regularly: Set a schedule for reviewing and updating the policy to ensure it remains relevant and effective over time.

By following these recommendations, you can create a concise and user-friendly policy document that effectively communicates the company's values and expectations to its employees.

SEMANTIC AI

# ROLE SPECIFIC RAG AGENTS & ASSISTANTS

POPULOUS



## Software Development teams using LLMs to assist in development.

### Working Between Platforms and building on top of Systems

Multiple platforms is the de facto state of our industry and compatibility and interoperability are key to success. Using baseline LLM functionality allows us to quickly write code and apps across multiple SDKs, Languages, APIs, and Libraries.

### Value Proposition of AI Pair Programming

- Building a Self-feeding process: developers using GPTs to build tools to utilize GPTs better.
- Useful across common languages and tools for web, server and desktop development.
- Usefulness scales with expertise!

```
6 using System.Runtime;
7 using System.Text;
8 using System.Threading.Tasks;
9
10 namespace CarverComponents
11 {
12
13     public class SectionToolOverride : GH_Component
14     {
15         /// <summary>
16         /// Embed License Check here
17         /// </summary>
18
19         public SectionToolOverride()
20             : base("Settings Override", "Settings Override",
21                 "Overrides the Advanced Settings of the Bowl Section Tool",
22                 "Carver", "02 BOWL SETUP")
23         {
24         }
25
26         protected override void RegisterInputParams(GH_Component.GH_InputParamManager pManager)
27         {
28
29             JsonHelper data = new JsonHelper();
30             SectionToolSettings settings = data.LoadDefaultJSONData();
31             int units = Units.UnitTypeNumber();
32
33             string[] propertyNames = {
34
35                 "Eye_Point_Height",
36                 "Eye_Point_Offset_From_Back",
37                 "Minimum_Riser_Height",
38                 "Riser_Height_Increment",
39                 "Maximum_Raker_Angle",
40                 "Minimum_Intermediate_Step",
41                 "Maximum_Intermediate_Step",
```

SEMANTIC AI

# ACCELERATING PRODUCTIVITY

POPULOUS



## Data Extraction, Classification and Pipeline Construction using LLMs

### Streamlining ingest of data from external providers

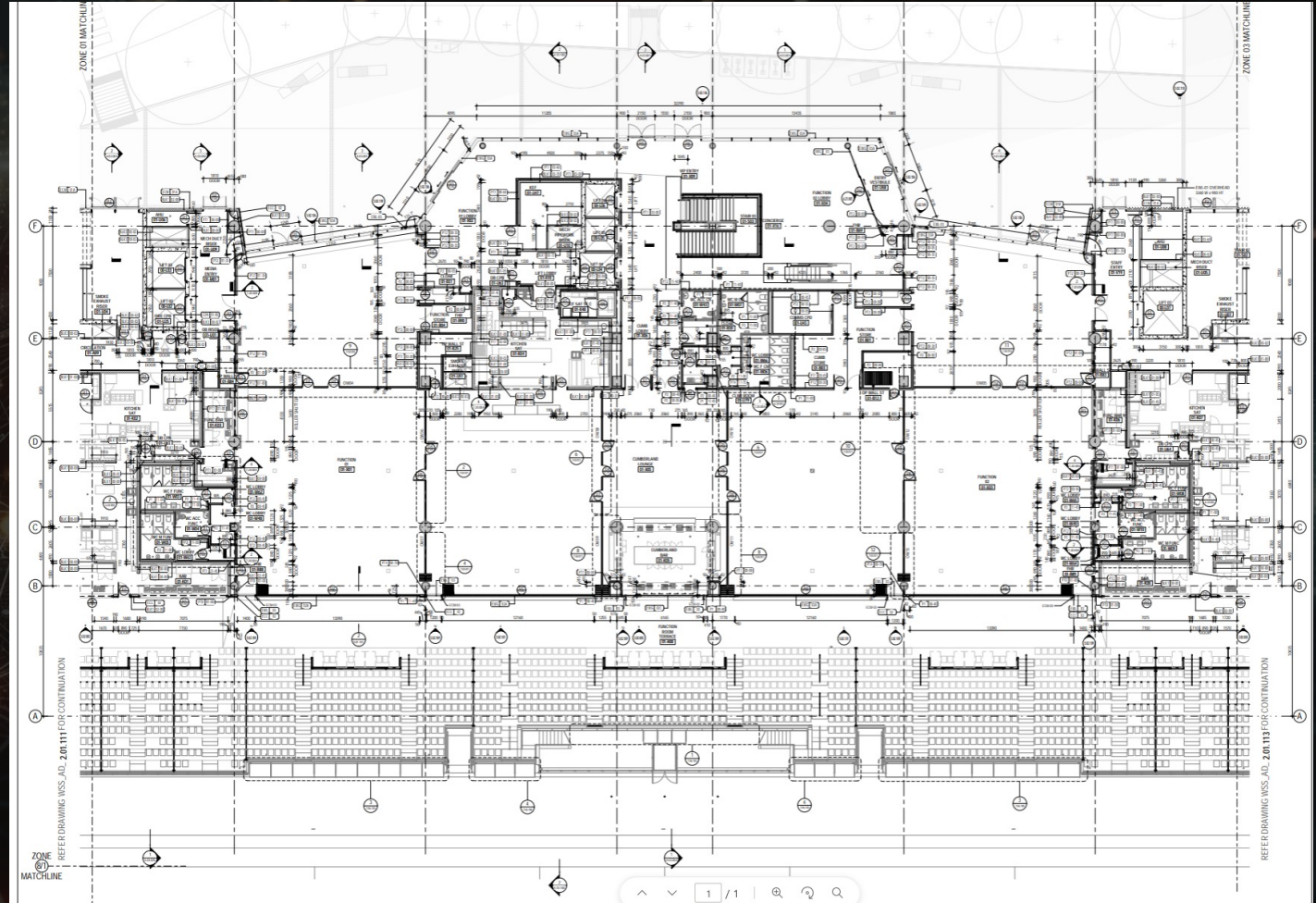
We are building an ETL and analysis pipeline to ingest, extract, and analyze data in multiple formats for end-to-end processes used in assessing long, complex documents, sourced from fragmented external sources.

### Value Proposition

- Extracting useful data from Drawings (difficult!)
- Extracting data from sources with self-similar formatting (contracts, emails, estimates, and specifications) from other parties.
- Reduces time required to organise data to align to Populous systems for use on projects.

SEMANTIC AI

# DATA CLASSIFICATION



POPULOUS

## Machine learning for predictive analysis of value-engineering opportunities

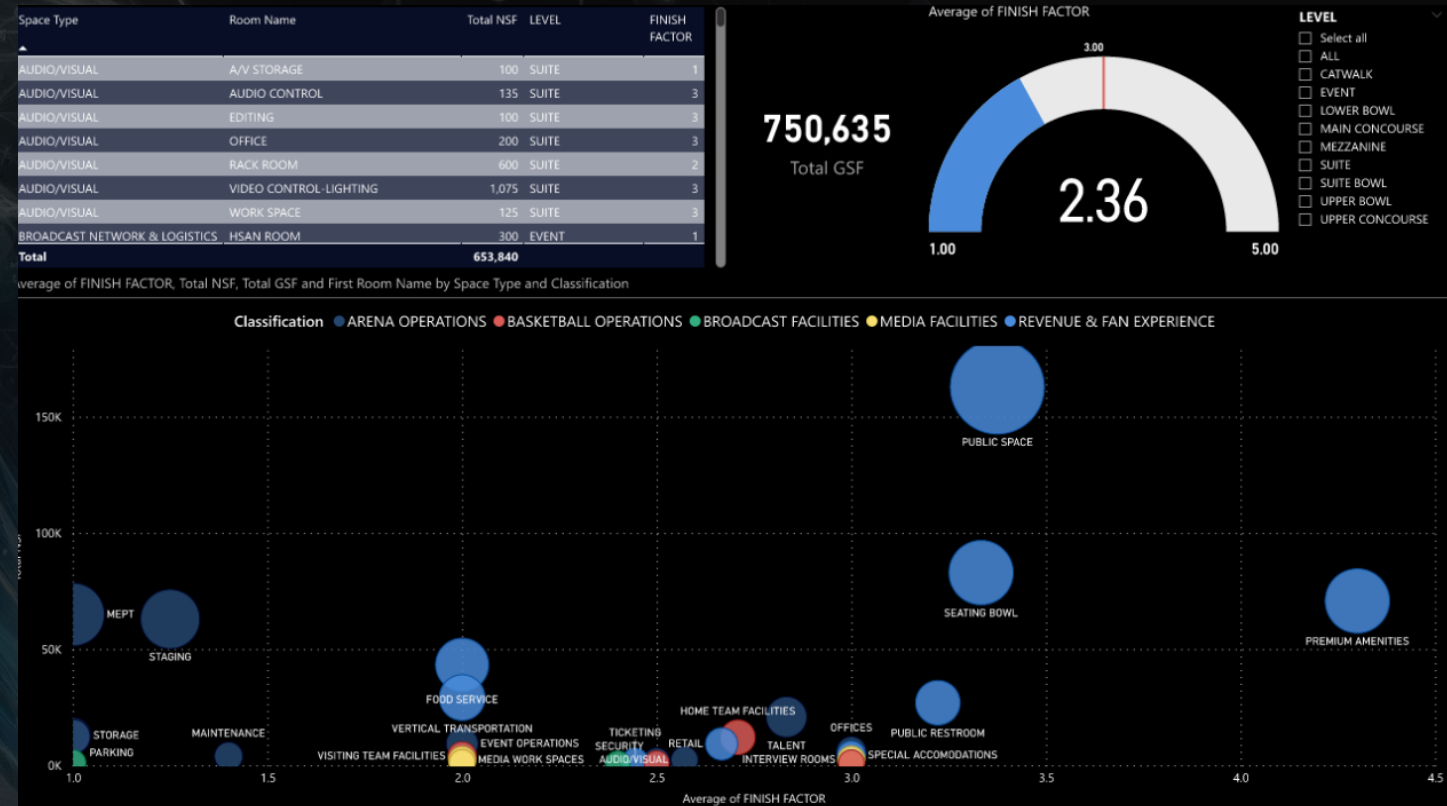
### Reusing legacy data to inform current solutions

Using historic data to guide current project data we can efficiently target areas for the inevitable value-engineering process.

This data is aggregated via knowledge graphs and GPTs from a variety of sources including estimates, BIM models, specifications, etc.

### Value Proposition

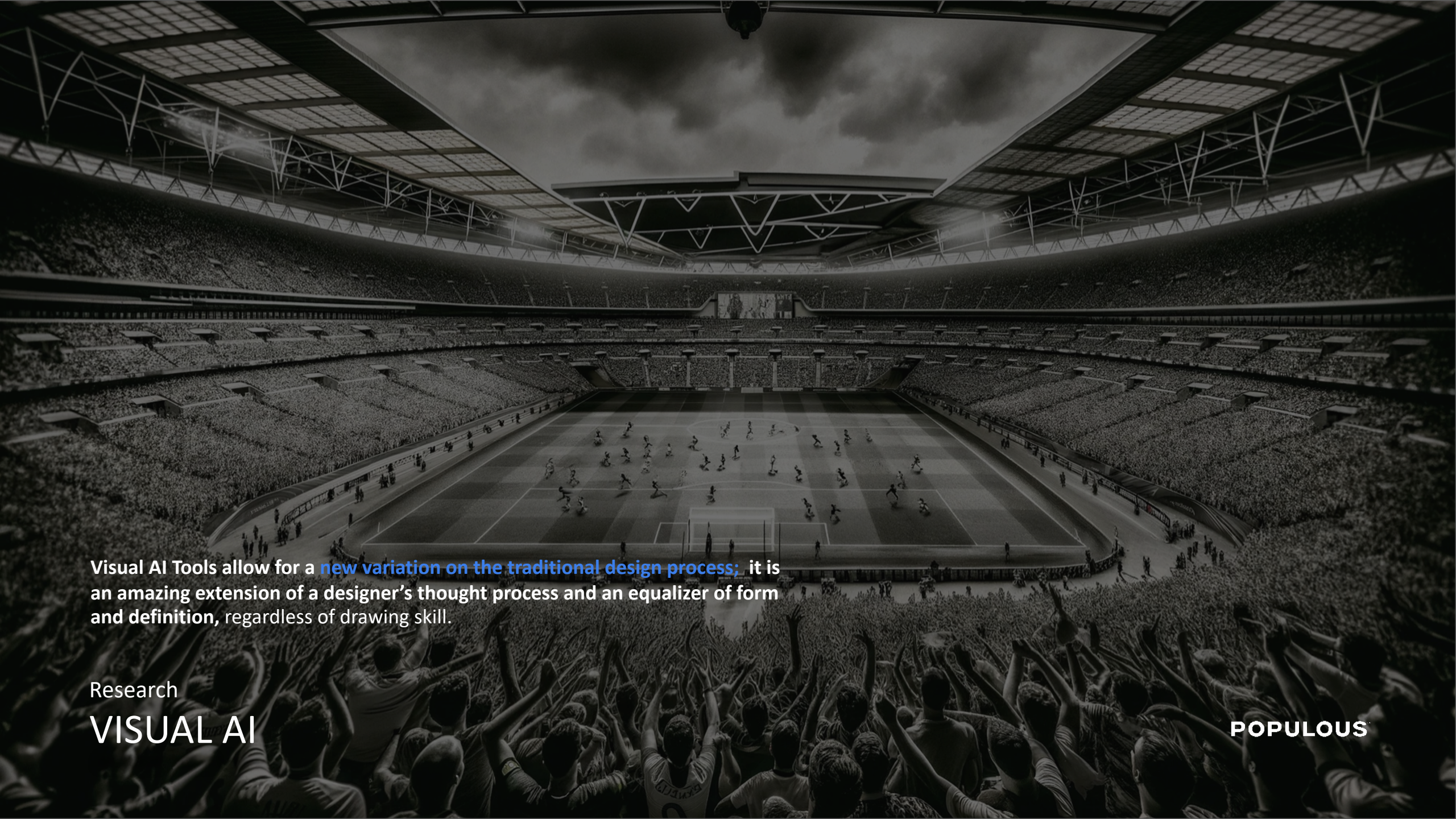
- Maintain design intent through VE process
- Ensure user experience remains at expected levels
- Increase cross-party coordination and buy-in



SEMANTIC AI  
MULTI CRITERIA OPTIMIZATION

POPULOUS





Visual AI Tools allow for a **new variation on the traditional design process**; it is an amazing extension of a designer's thought process and an equalizer of form and definition, regardless of drawing skill.

Research

**VISUAL AI**

**POPULOUS**



### Explore the “Fuzzy Front End”

The design process is highly abstract and conceptual at the outset. Exploring in ideas in various levels of detail helps designers clarify their guiding themes and concepts early.

### Rapid Iteration

Design is also about iteration; using AI tools helps designers ‘riff’ on concepts much faster and more freely than ever before.

### Converge on a Design Vision Faster

Visual AI tools have been instrumental in aligning the vision of the design teams and the clients much earlier in the process.

### Rapid Fine-Tuning

The ability to make small but meaningful changes to parts of a design

# VISUAL AI OPPORTUNITIES

POPULOUS



### Client Expectations

Response from clients exists within a very wide domain, from “why can’t you give me 1000 options” to “what are we paying you for”

### Intellectual Property / Copyright

Lack of overall legal precedent means this is the ‘wild west’ from an IP standpoint; both as a service provider and a client. This makes it difficult to share or publicly reveal content.

### Buildability

There is still no guarantee of relative ‘buildability’ (either financially or physically) in generation of images – this still relies on the expertise of experienced personnel.

### Tech Maturity

This is still rapidly developing and evolving technology so while the barrier to entry is low, generating high quality output requires significant training and expertise.

# VISUAL AI CHALLENGES

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TEXT-TO-IMAGE  
CONCEPTUAL DESIGN



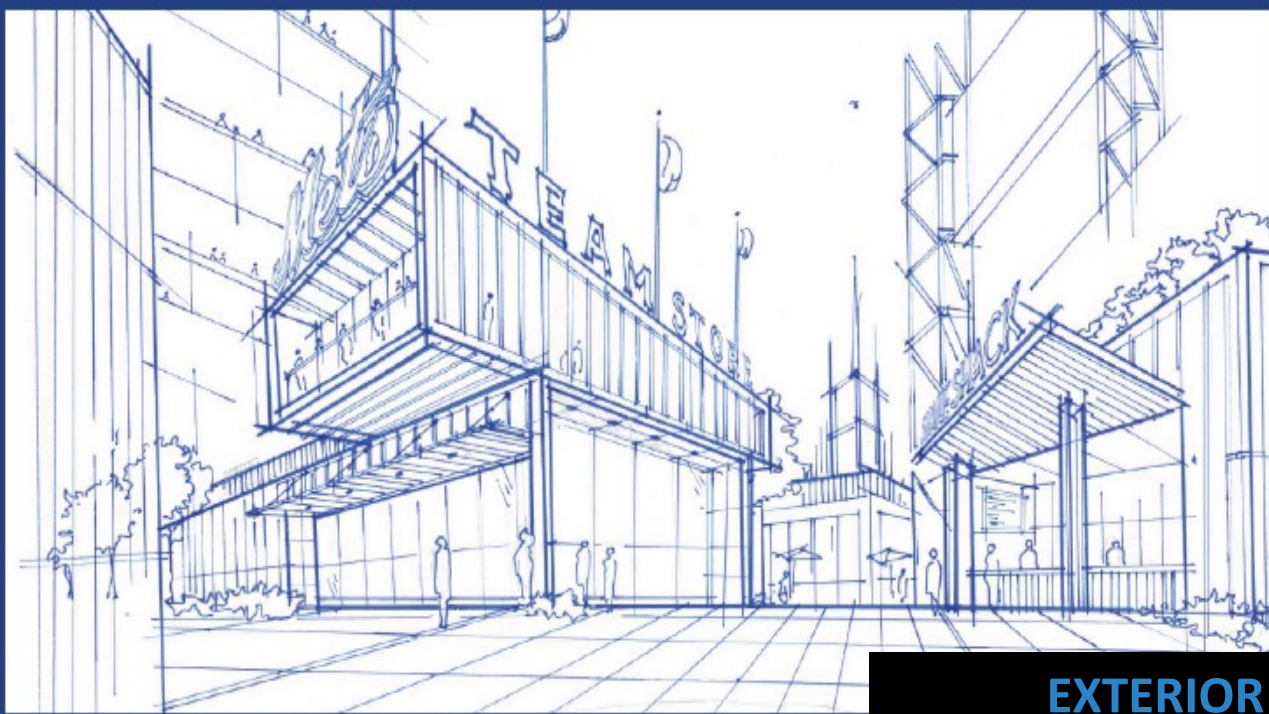




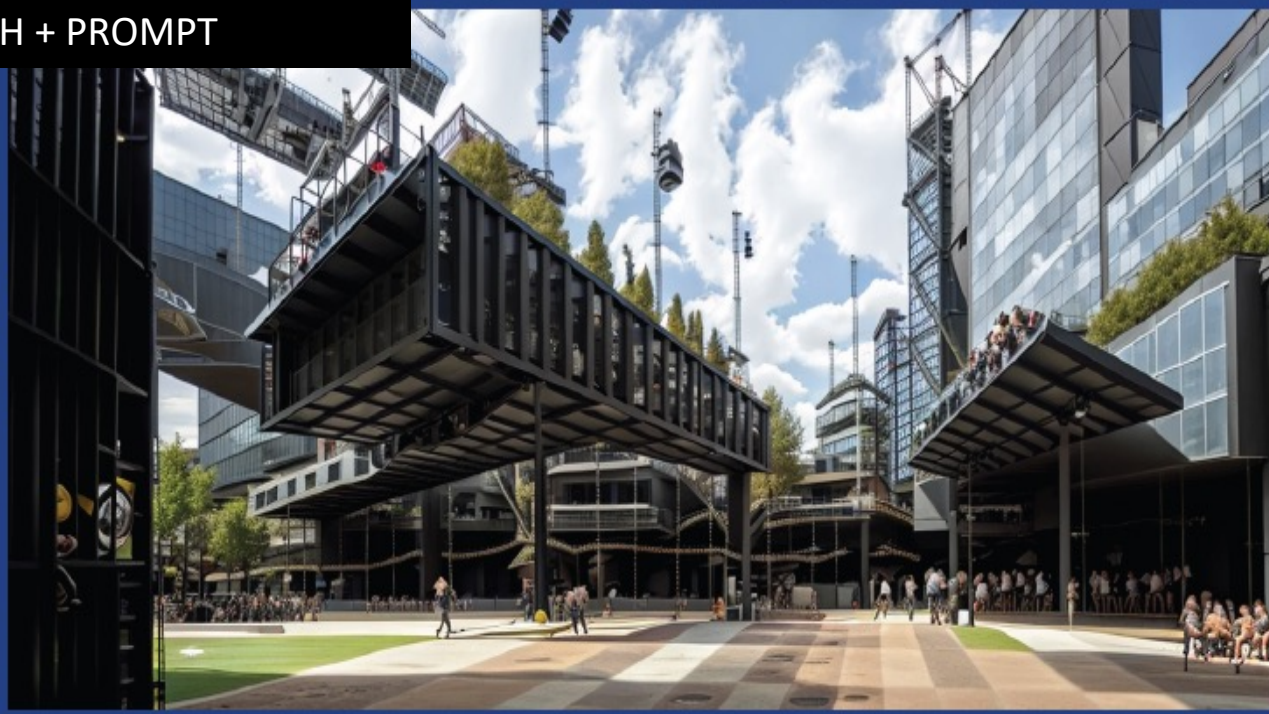
TEXT-TO-IMAGE  
STORY TELLING



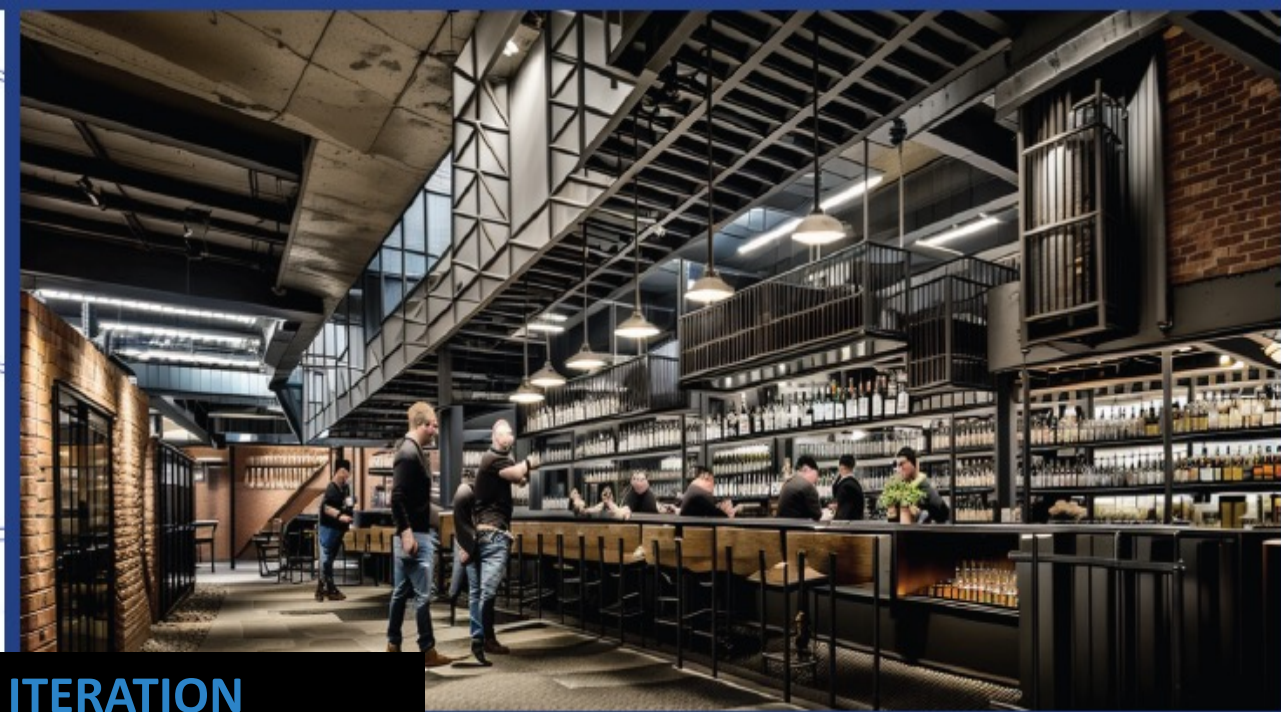
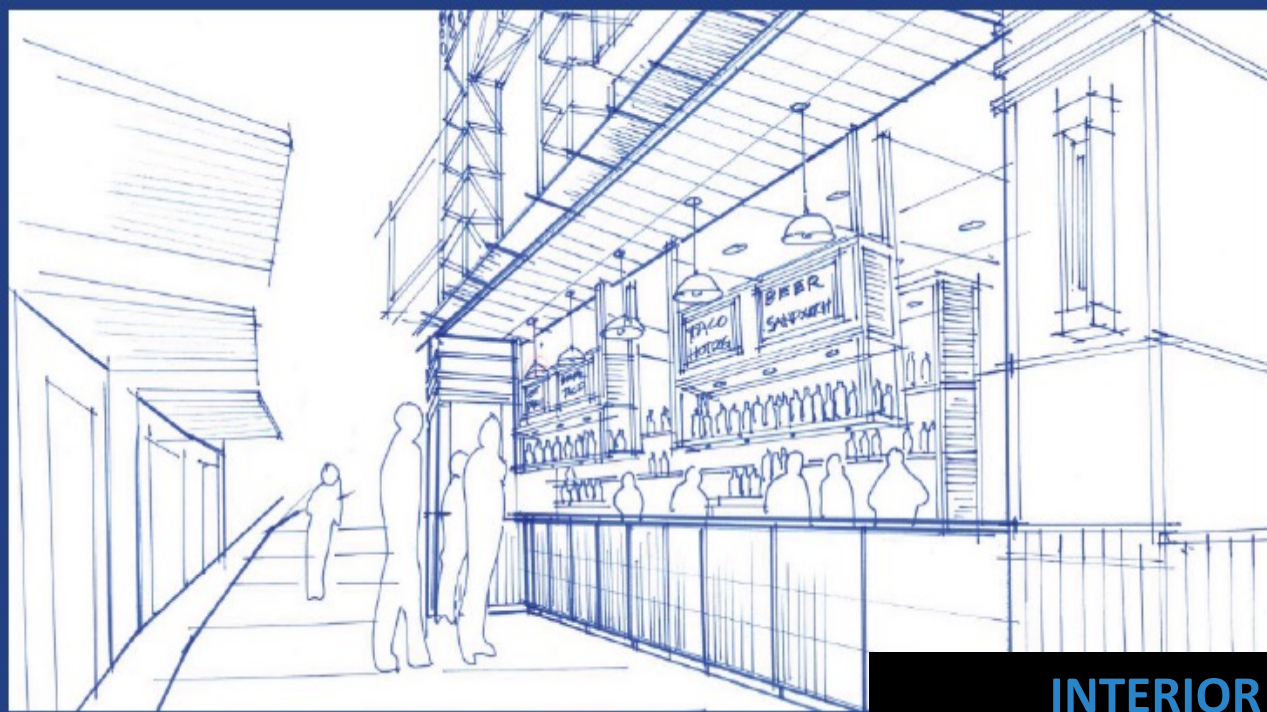




**EXTERIOR ITERATION**  
SAME SKETCH + PROMPT








**INTERIOR ITERATION**  
SAME SKETCH + PROMPT







Generating multi-dimensional forms that bridge spatial understanding with artificial creativity to go beyond selling a still vision to create identifiable objects.

process architectural forms and 2D plans to create meaningful spaces, deep learning models are able to draw relationships between design inputs.

Spatial generation asks for a deeper understanding of form and the interconnectivity of the human experience.

Research

**SPATIAL AI**



The background image is a dark, atmospheric photograph of a modern museum or aquarium interior. A central escalator leads upwards, flanked by large digital displays showing underwater scenes with fish and coral. The ceiling is a large, curved digital screen displaying a school of fish. The overall lighting is dim, with highlights from the displays and ceiling lights.

## Accelerate & Enhance Design Workflows

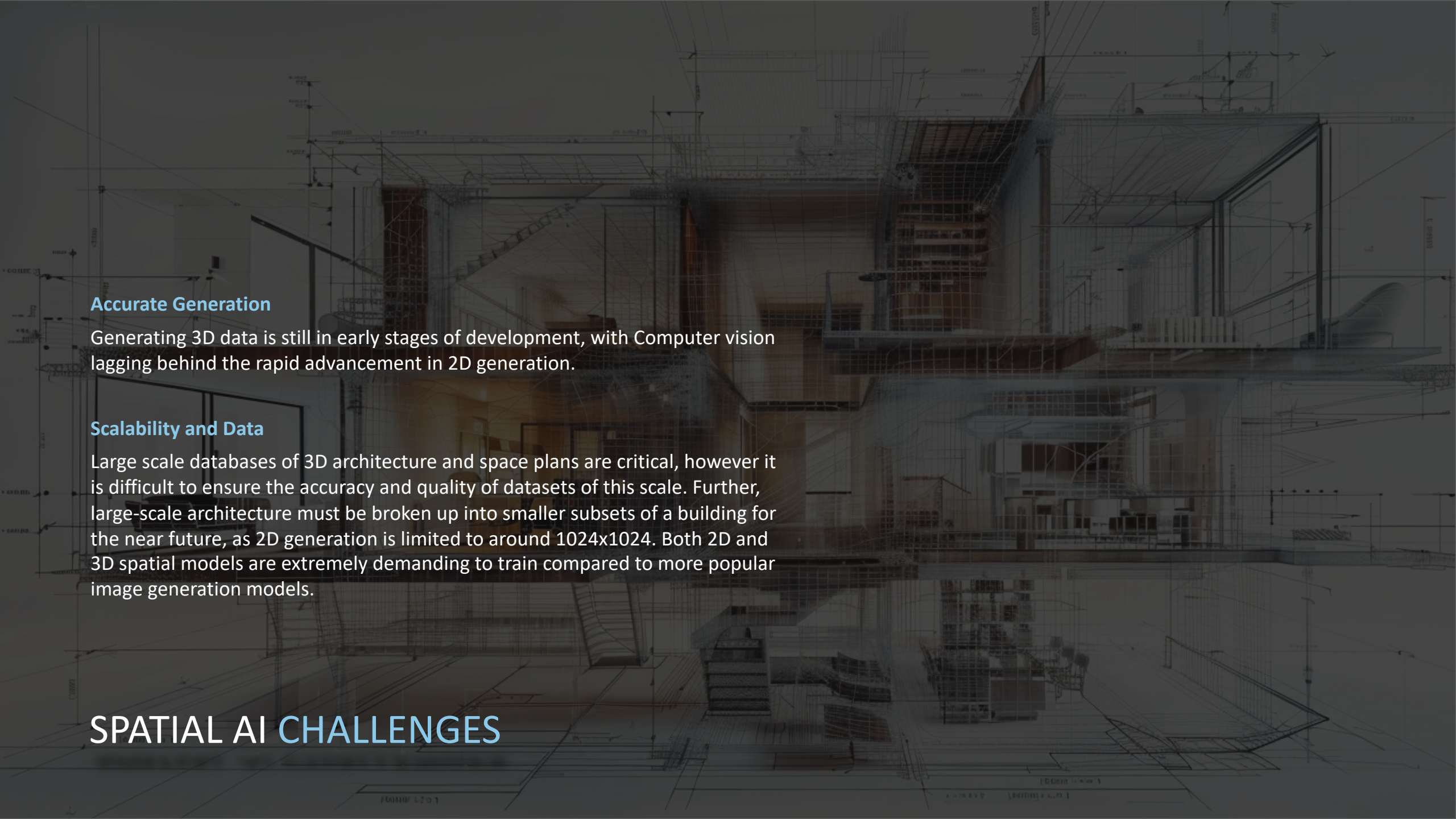
Generating both 3D and 2D forms has the potential to accelerate the design process while increasing accuracy and efficiency of spaces. We are able to ideate forms and designs faster and create a truly co-creative design process.

### Criteria-based generation

Further, by layering spatial analysis tools and regulatory frameworks we are able to support designers to create more efficient designs and layouts that are always compliant to regulation.

# SPATIAL AI OPPORTUNITIES



The background of the slide is a complex architectural wireframe or technical drawing of a building. It features multiple levels, rooms, and structural elements, rendered in a light gray or white line style against a dark background. The drawing is dense and detailed, showing various architectural components like walls, floors, and structural supports.

### Accurate Generation

Generating 3D data is still in early stages of development, with Computer vision lagging behind the rapid advancement in 2D generation.

### Scalability and Data

Large scale databases of 3D architecture and space plans are critical, however it is difficult to ensure the accuracy and quality of datasets of this scale. Further, large-scale architecture must be broken up into smaller subsets of a building for the near future, as 2D generation is limited to around 1024x1024. Both 2D and 3D spatial models are extremely demanding to train compared to more popular image generation models.

## SPATIAL AI CHALLENGES



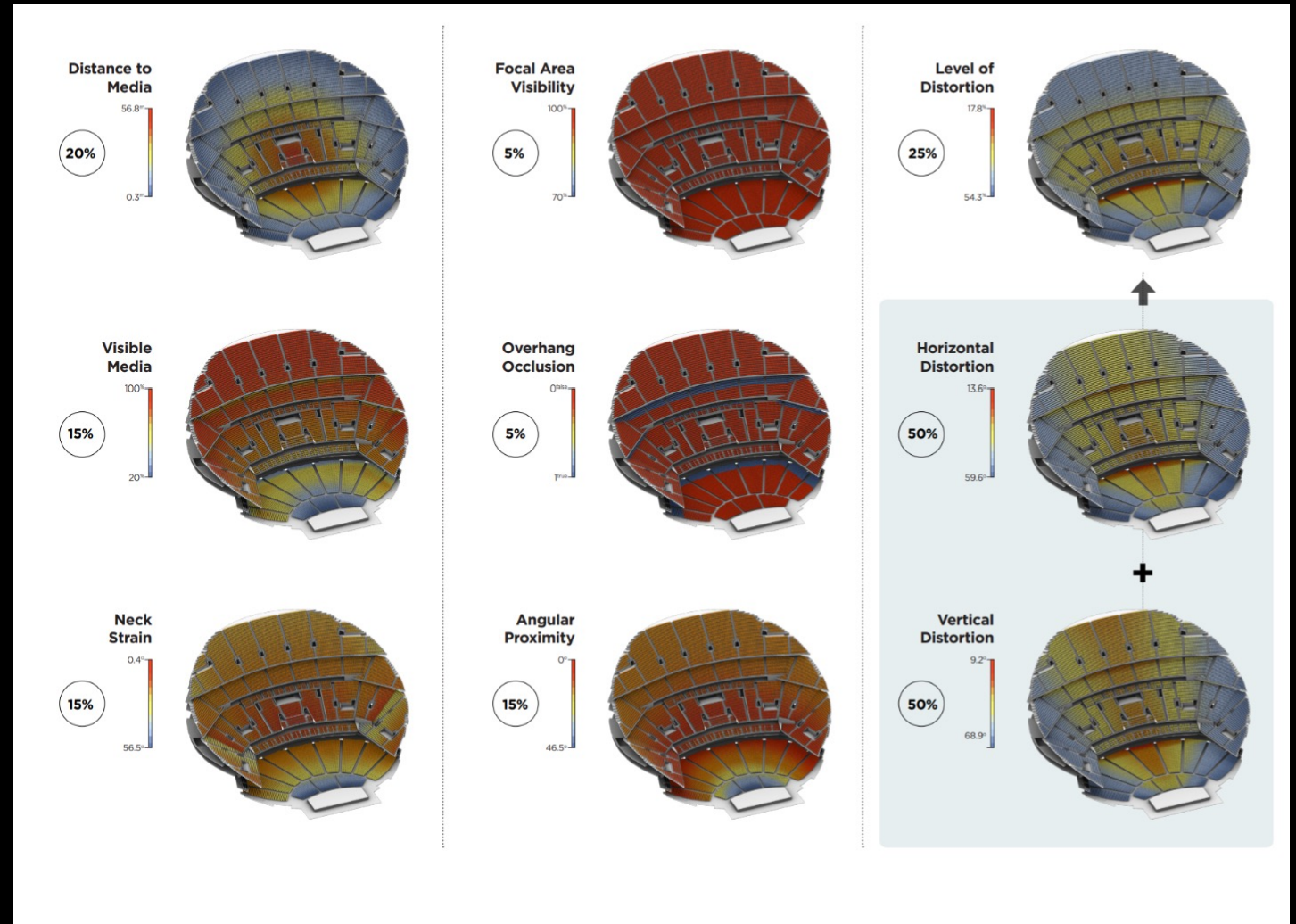
## Leveraging BIMs to support RAG and speed development of Digital Twins

### Spatial Planning for the next Generation

With our large base of BIMs and drawing sets we can run in-house custom analysis tools to build large datasets for use in Knowledge Bases and ML driven analytics

### Value Proposition

- Accelerated Ideation and Optioneering
- Effectively mix flexibility, compliance, and experience.



SPATIAL AI

## Data Generation – Toolsets to feed RAG & Analytics



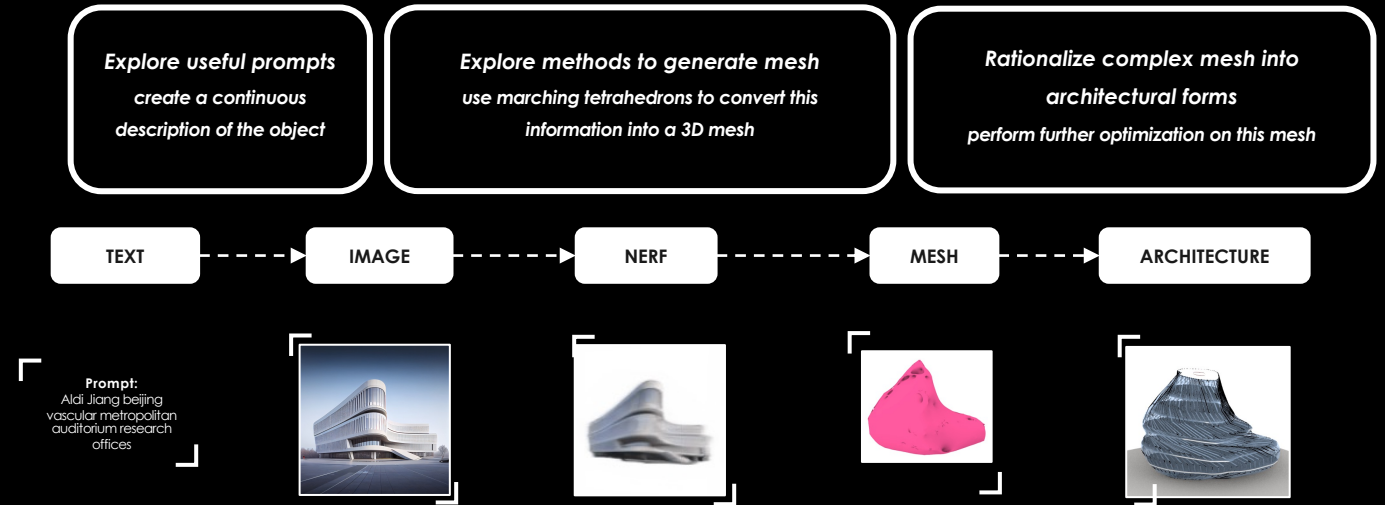
## Capturing the 3D object generation process and leveraging it for architectural form finding.

### The future of ideation in 3D

Leveraging Neural Field Representation to recreate 3D objects from 2D imagery can be used to reconstruct existing objects from photographs. However, we take that a step further by generating hundreds of frames from one image, allowing us to use AI generated imagery and convert it into 3D models.

### Value Proposition of Text2Mesh

- Create 3D forms at the same speed as generating a single AI image
- Iterate designs faster rather than remodelling
- Generate artefacts for animation and renders



SPATIAL AI

# Text2Mesh - 3D Artifact Generation



## Automating Architectural Layouts by embedding regulation

### Internal Layouts Optimised

Graphical representations of 3D and 2D objects allow us to analyse and automate internal layouts of spaces, and ensure they are always compliant to regulation.

### Value Proposition of Internal Layouts

- Optimised and fast layouts
- Always comply with regulation
- Iterate over options quickly
- Integration into BIM allows object information to be generated with layouts
- Can work with Prescriptive and Performance-based codes.

SPATIAL AI

## Automated Internal Layouts

WC Layout Generator

Generate Washroom Regulations and Requirements

WC Ratio (Female / Male): 50%

Capacity: 3960

Regulations: UK Regulations

Number of Facilities:

Female WCs:  
# WCs : 57  
# Sinks: 29  
Male WCs:  
# WCs : 4  
# Sinks : 7  
# Urinals: 29

Generate Layout

Kitchen & Dining 211

Interior - Partition

800 x 2100

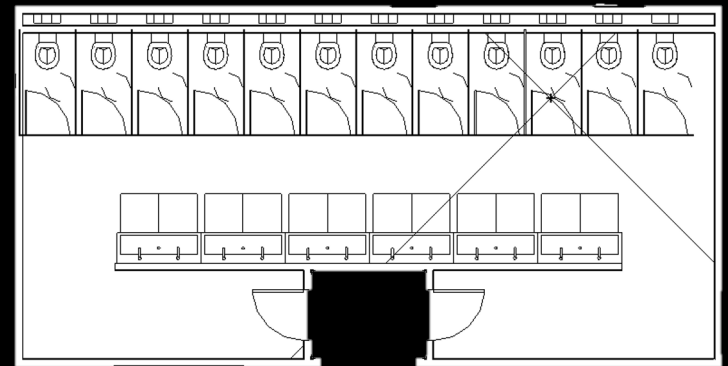
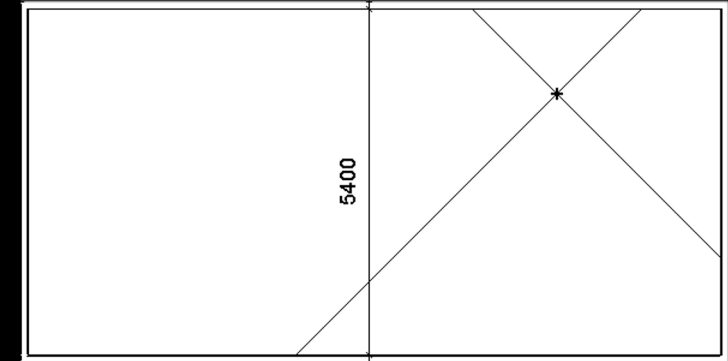
Typical

1200mm

2 positions

RUN

Error goes here.





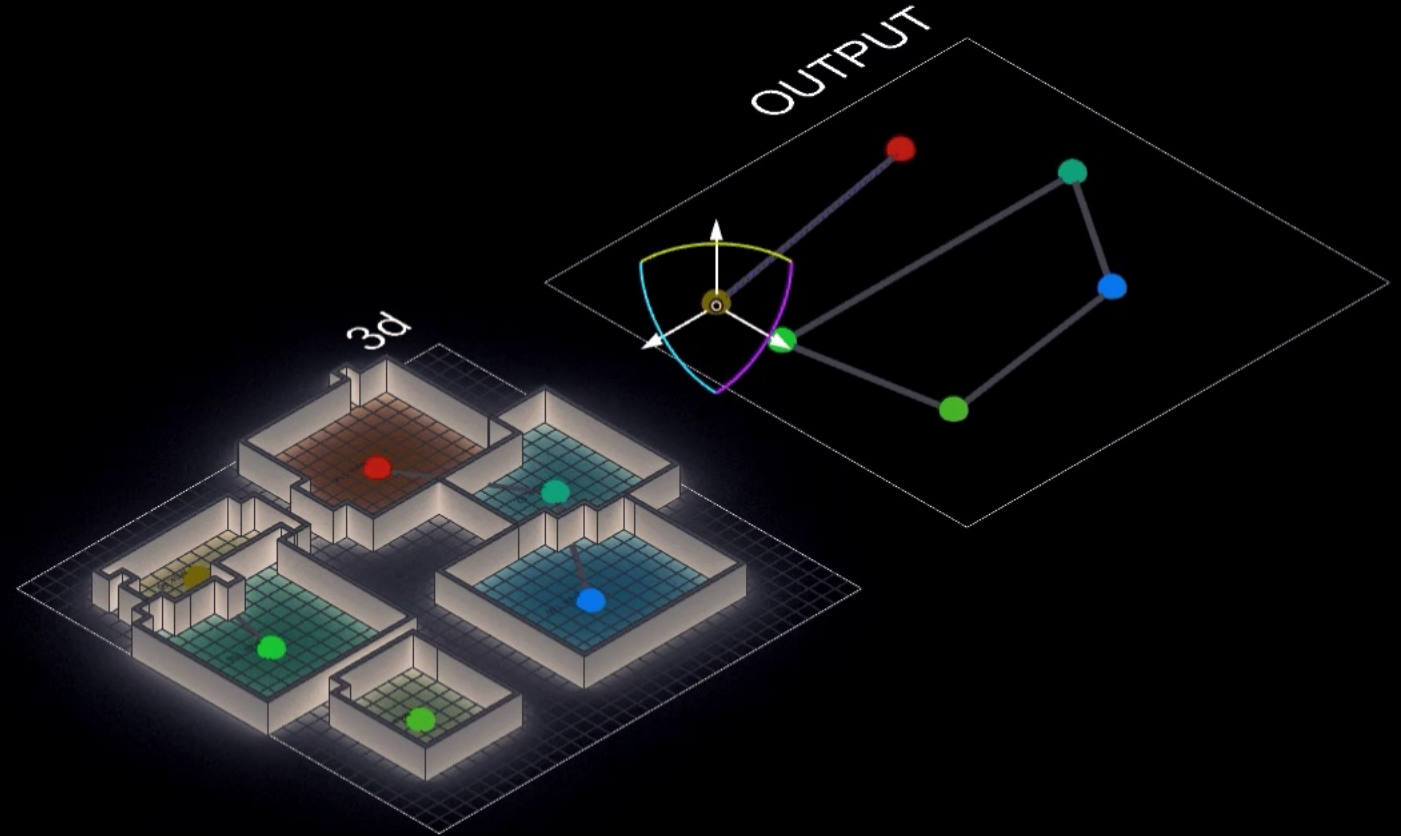
## Powered by Big-Data, Specialised through Sports Architecture Knowledge

### Spatial Planning for the next Generation

Use Transformer-based multimodal learning with attention to embed spatial graph information, such as location, area, and adjacency, into a Vector Quantised-Variational Autoencoder (VQ-VAE) to generate architectural spaces

### Value Proposition of Spatial Planning Generation

- Accelerated Ideation Process
- Less reliance on data, more weight placed on user input and creating viable spaces
- Ability to generate complex but self-similar spatial programmes and organizations.



SPATIAL AI

# DALL-G - Automated Space Planning



## Data-driven venue design optimization using in-house data and ML

### Optimization of Capacity / Revenue / Quality

Using multiple sources of data from historical sales, market demographic, and live-designs we can help optimize the customer experience and value proposition.

#### Use Cases

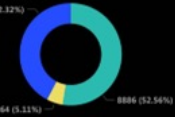
- Machine Learning Optimization of ticket grades.
- Multi-event optimization for venues.
- Streamlined business-cases for revenue management.

CODE	PRODUCT	PREMIUM	UNITS	PRICE	SEATS/UNIT	CAPACITY	AVG PRICE	GAME AVG	STP	REVENUE
A	BUNKER SUITES	YES	8	525000	16	128	676.25	43.00	26,144.47	5,733,208.16
B	MAIN SUITES	YES	30	325000	16	480	538.87	43.00	23,214.41	11,742,916.80
C	THEATER BOX TIER 1	YES	20	125000	4	80	581.40	43.00	25,000.20	2,000,016.00
D	THEATER BOX TIER 2	YES	28	120000	4	112	465.12	43.00	20,000.16	2,240,017.92
E	THEATER BOX TIER 3	YES	32	80000	4	128	312.50	43.00	15,986.67	2,240,016.00
F	THEATER BOX TIER 4	YES	8	80000	4	32	340.04	43.00	15,000.12	960,007.00
G	CLUB SEATS TIER 1	YES	1214	28000	43.00	52,202	12,540.00	14,616,540.00		
H	CLUB SEATS TIER 2	YES	734	24000	43.00	31,562	10,320.00	7,574,880.00		
I	DASHER SEATS TIER 1	YES	233	40000	43.00	10,100	17,200.00	4,027,400.00		
J	DASHER SEATS TIER 2	YES	73	20000	43.00	3,141	10,700.00	734,000.00		
K	LOGE SEATS TIER 1	YES	218	20000	43.00	9,414	8,815.00	1,904,940.00		
L	LOGE SEATS TIER 2	YES	216	18000	43.00	9,318	7,915.00	1,718,280.00		
M	SKYBAR LOUNGE	YES	486	130.00	43.00	21,018	5,824.00	2,871,210.00		
N	LOWER BOWL TIER 1 (2X)	NO	2495	120.00	43.00	107,185	5,375.00	12,271,520.00		
O	LOWER BOWL TIER 2	NO	2522	90.00	43.00	108,446	4,045.00	11,938,370.00		
P	LOWER BOWL TIER 3	NO	1024	75.00	42.00	43,008	3,150.00	3,225,600.00		
Q	MID BOWL TIER 1	NO	1407	75.00	42.00	59,294	3,150.00	4,526,550.00		
R	UPPER BOWL TIER 1	NO	2074	90.00	43.00	89,202	4,045.00	8,472,290.00		
S	UPPER BOWL TIER 2	NO	1976	80.00	42.00	83,052	2,720.00	5,394,480.00		
T	SRO MAIN CONCOURSE	NO	100	800.00	43.00	4,300	2,400.00	240,000.00		
U	SRO SKYBAR LOUNGE	NO	792	100.00	43.00	33,984	2,000.00	1,317,120.00		
Total			126	1239000	48	16005	275.00	42.00	228,313.23	304,096,754.92

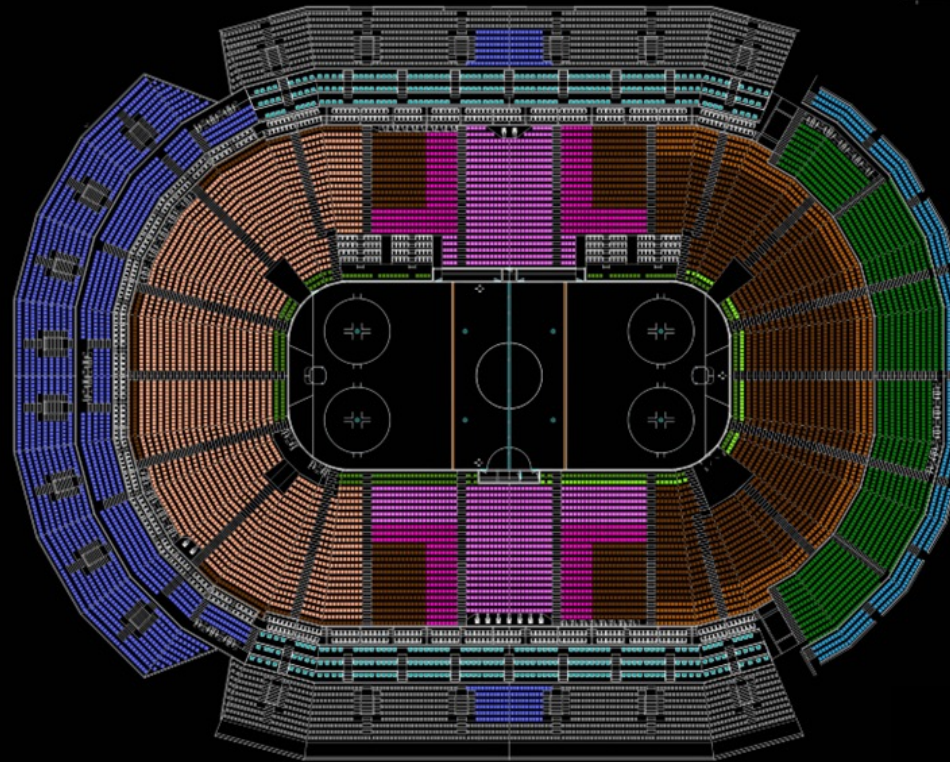
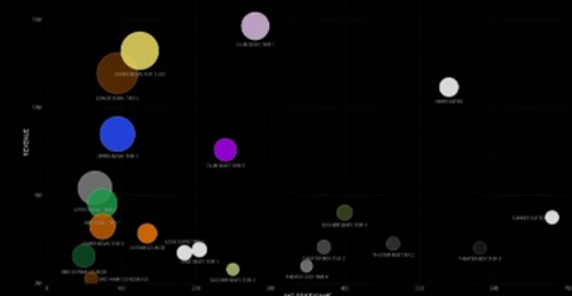
CAPACITY by PREMIUM



BOWL DISTRIBUTION



AVG PRICE/GAME, REVENUE and CAPACITY by PRODUCT

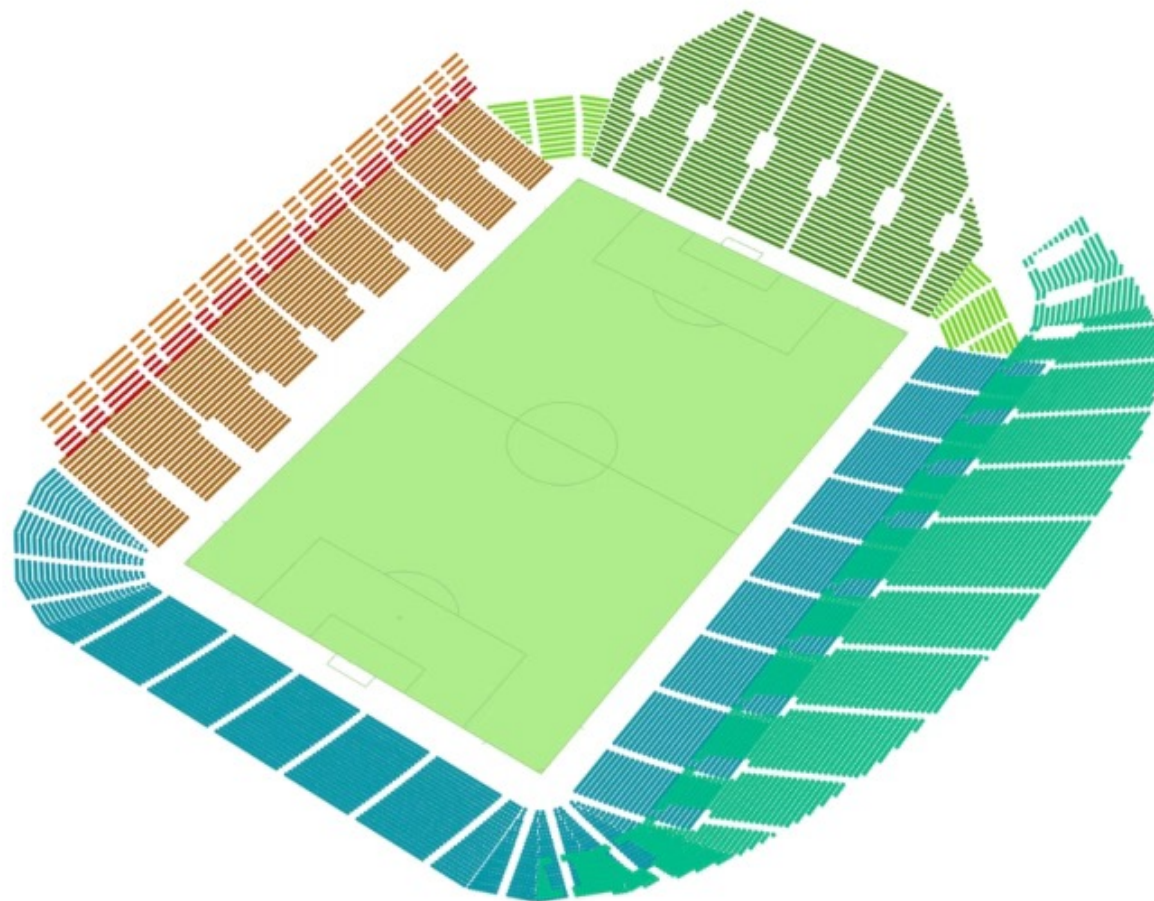


A	BUNKER SUITES
B	MAIN SUITES
C	THEATER BOX TIER 1
D	THEATER BOX TIER 2
E	THEATER BOX TIER 3
F	THEATER BOX TIER 4
G	CLUB SEATS TIER 1
H	CLUB SEATS TIER 2
I	DASHER SEATS TIER 1
J	DASHER SEATS TIER 2
K	LOGE SEATS TIER 1
L	LOGE SEATS TIER 2
M	SKYBAR LOUNGE
N	LOWER BOWL TIER 1 (2X)
O	LOWER BOWL TIER 2
P	LOWER BOWL TIER 3
Q	MID BOWL TIER 1
R	UPPER BOWL TIER 1
S	UPPER BOWL TIER 2
T	SRO MAIN CONCOURSE
U	SRO SKYBAR LOUNGE

SPATIAL AI

AI-Based Revenue /Seating Manifest Optimization





TOTAL 25,000

Upper Bowl -- 7,500

Suite ----- 500

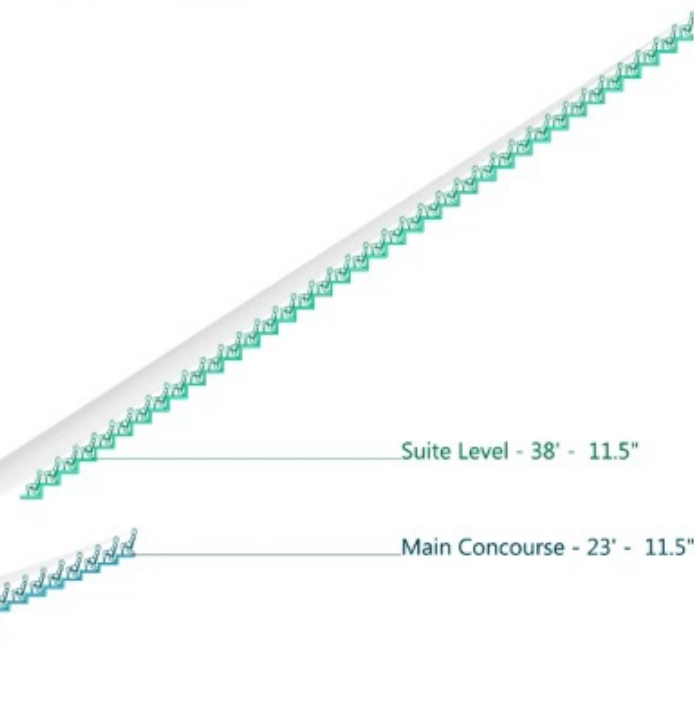
Suite ----- 500

Club ----- 3,000

Corners ----- 500

Supporters --- 4,000

Lower Bowl -- 9,000



Suite Level - 38' - 11.5"

Main Concourse - 23' - 11.5"





Populous AI  
**CONCLUSIONS**

**POPULOUS**



Good Data is key. Establish a data estate sufficient to support RAG through Knowledge Bases and Semantic Search, Machine Learning, etc.

Get sharp about what data and knowledge we are handing over to others that supports AI workflows. Also what data we gather from others...

## CONCLUSIONS DATA



The Technology Landscape is rapidly evolving with regards to tools, services, products.

Use cases and business value will come from our industry, but we aren't leading technological development at scale and we probably won't be.

Partnership(s), investments, and research with companies across aec vendors and tech vendors (mfst, aws, g ++ startups)

## CONCLUSIONS INDUSTRY



**The Iceberg Effect;** We don't know what we don't know and we need to have a solid framework of experimentation.

**Finding a balance** between experiments and testing of open source and commercial products & services.

**These are just tools** at the end of the day. Humans are still a fundamental part of the process.

**Quality of the final deliverables** is what we will ultimately be judged by, not the tools we use to create them.

## CONCLUSIONS PROCESS



THANK YOU

**POPULOUS<sup>®</sup>**

DRAWING PEOPLE TOGETHER<sup>®</sup>