



# DESIGN PORTFOLIO

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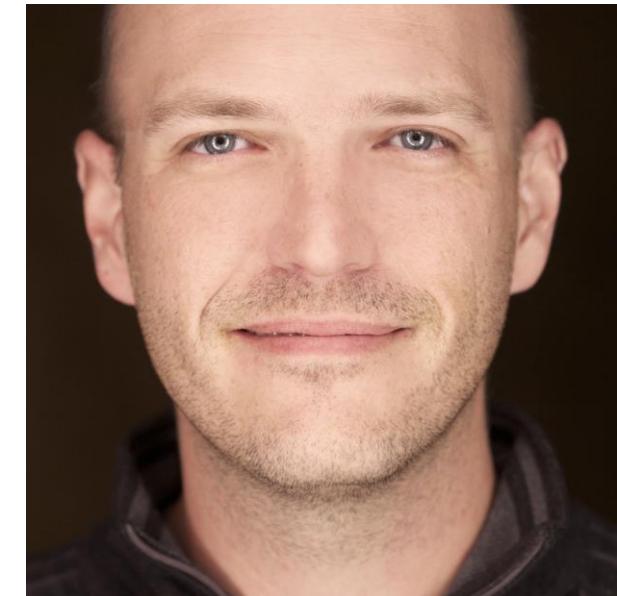
KEVIN CARPENTER

PRODUCTION DESIGN | MECHANICAL SYSTEMS ENGINEERING | CREATIVE CONSULTANT

## CAREER PROFILE

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- Highly qualified Production Designer, Mechanical and Systems Engineer, Artist and Creative Director with over 20 years of professional engineering experience in complex electro-mechanical systems design, production, animatronics, and attraction design.
- Specializes in transforming a creative vision into physical reality, from the blue sky conceptual phase through the design, engineering, fabrication, integration and on-site installation execution.
- Over 15 years of Project and Organizational Management experience leading cross-functional teams in technical engineering, R&D, and creative production design studio environments.
- Excels in highly dynamic environments that offer a wide range of multi-disciplinary creative development projects with the opportunity to combine creative design talents with technical engineering expertise, systems-oriented design methodology, innovative thinking and problem-solving skills, innate leadership and communications abilities, and attention to detail in theming and artistry.



## CORE COMPETENCIES

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- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"><li>• Project Management</li><li>• Robotics   Animatronics</li><li>• 3D CAD Design (Solidworks)</li><li>• Creative Art Direction</li><li>• Scale Prototypes   Models</li><li>• Installation Logistics</li><li>• Technical Drawing Packages</li></ul> | <ul style="list-style-type: none"><li>• Blue Sky Conceptualization</li><li>• Themed Set   Scenic Design</li><li>• Mechanical Engineering</li><li>• Lighting   Sound Design</li><li>• Systems   Functional Analysis</li><li>• Toy Design   Product Ideation</li><li>• Modern Artist   Painter</li></ul> | <ul style="list-style-type: none"><li>• Attraction Design</li><li>• Interactive Exhibits</li><li>• Architectural Design</li><li>• Character Animation</li><li>• Integration   Testing</li><li>• Educational Outreach</li><li>• Strategic Planning</li></ul> |
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## CONTACT INFORMATION

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## PROFESSIONAL EXPERIENCE

### **Paul Bernard Exhibit Design and Consulting (PBE)**

Lead Interactive Design Engineer

Austin, TX

2015 – 2018

### **KumoTek Robotics, LLC**

Operations Manager | Director of Hardware Development | Mechanical Design Engineer

Richardson, TX

2011 – 2015

### **Herrington-Eriksson Productions, Inc.**

Co-Founder | Engineering Contractor | Creative Design Consultant

Dallas, TX

2008 – 2015

### **Hanson Robotics, Inc. (HRI)**

Operations Manager | Director of Hardware Development | Systems and Design Engineer

Richardson, TX

2007- 2010

### **Lockheed Martin Missiles and Fire Control (LM-MFC)**

Sr. Systems Integration Engineer

Grand Prairie, TX

2001 – 2006

### **Parametric Technology Corporation (PTC)**

Implementation Consultant, Mechanical CAD Systems

Dallas, TX

2000 – 2001

### **Southwest Research Institute (SwRI)**

Research Engineer, Aerospace Electronics and Training Division

San Antonio, TX

1997 – 2000

## EDUCATION

### **Southern Methodist University**

- Bachelor of Science: Mechanical Engineering
- Master of Science: Systems Engineering  
*(24 Graduate Credits Earned, No Degree Pursued)*

Dallas, TX

1997

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# 01

## PRODUCTION DESIGN | ENGINEERING

### WIESS ENERGY HALL 3.0

Houston Museum of Natural Science, Houston TX

- Tricone Drill Bit
- Oil Drilling Rig Floor
- Subsea Wellhead Site
- Dar-C - Robotic Host of the EFX-3000
- Energy City
- VTOL – Car of the Future
- Coal Mine

### RED DIRT DINOS (Modular Travelling Attraction)

- Science Museum Oklahoma, Oklahoma City OK
- Leonardo's Discovery Warehouse, Enid OK
- Tulsa Children's Museum Discovery Lab, Tulsa OK
- Jasmine Moran Children's Museum, Seminole OK
- Museum of Great Plains, Lawton OK

### GUARDIANS OF TIME (Modular Travelling Attraction)

- Field Museum, Chicago IL
- Denver Museum of Nature & Science, Denver CO
- Don Harrington Discovery Center, Amarillo TX
- Dino-Solarium, Riverhead NY
- Reading Public Museum, Reading PA
- Science Museum of Virginia, Richmond VA
- ScienceWorks, Ashland OR



## PBE | WIESS ENERGY HALL 3.0 Houston Museum of Natural Science

### OVERVIEW

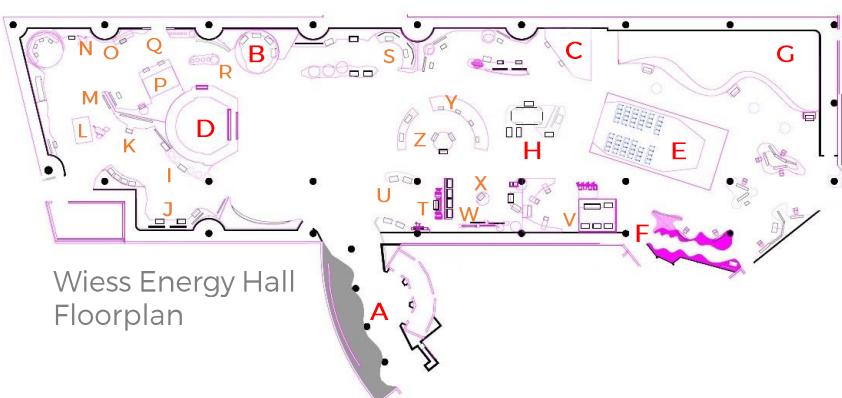
- A 3-year, \$45 million redesign of the Wiess Energy Hall, a 30,000-sq-ft permanent exhibition at the Houston Museum of Natural Science, Houston TX
- The new hall is the most contemporary, comprehensive and technologically advanced exhibition on the Science and Technology of Energy anywhere in the world

### DESIGN | ENGINEERING

- Lead Interactive Design Engineer
- Kevin led a team of artists, fabricators, and welders on the development of 8 massive attractions and immersive themed gallery spaces (A-H) and 17 smaller interactive exhibits and projects (I-Z)

### ATTRACTION DESIGN CONTRIBUTIONS

- Drilling Platform Entry  
**A** | Oil Drilling Rig Floor
- Drilling & Development  
**B** | Tricone Drill Bit
- Reservoirs & Production  
**C** | Subsea Wellhead Site
- The Geovator  
**D** | Motion Platform Theatre
- The Eagle Ford Shale Experience (EFX-3000)  
**E** | 40 Seat Motion Platform Theatre  
| DAR-C Robotic Host
- Coal Power  
**F** | Coal Mine
- Energy City - Dynamic Diorama  
**G** | 3D Printed Assets  
| Wind Turbines
- Future Energy Challenges  
**H** | Car of the Future



### EXHIBIT DESIGN CONTRIBUTIONS

- Geology of Hydrocarbons  
**I** | Plate Tectonics Globe Group  
**J** | Microorganisms Overhead Sculptures
- Geography of Hydrocarbons  
**K** | Hydrocarbon Information Center  
**L** | Satellite - Topography  
**M** | Thermal Imaging Camera
- Geophysics of Hydrocarbons  
**N** | Geophone Demonstration  
**O** | Working Sleeve Gun  
**P** | Exploration Toolbox  
**Q** | Overhead Kinetic Sculpture
- Drilling & Development  
**R** | Evolution of Drilling / Rotary Drill Bit  
**S** | Automated Drilling Interactive
- Electrical Power Generation  
**T** | Power Generation Turbine  
**U** | HydroTurbine
- Transportation & Distribution  
**V** | Pipeline Pigging
- Hydrocarbon Processes & Products  
**W** | "Pachinko Pinball" Refinery  
**X** | Liquefied Natural Gas (LNG)
- Alternative Energy Sources  
**Y** | Solar Energy & Solar Cell  
**Z** | Tokamak Fusion Reactor Model

## TRICONE DRILL BIT | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### OVERVIEW

- A 15-foot diameter rotating Tricone Drill Bit
- The 3300 lbs rotating Drill Bit is cantilevered out into the exhibit hall and suspended over the audience

### ROLES | RESPONSIBILITIES

- Project Lead, exhibit conceptualization, exhibit design and layout, structural and mechanical engineering, artistic direction, fabrication drawings, and installation coordination
- The project took over a year to complete and required the talents of over 40 fabricators



## TRICONE DRILL BIT | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### CONCEPTUALIZATION

- Rotating Model successfully helped sell the concept to Investors and secure funding for the exhibit

### PRODUCTION/FABRICATION MODELS

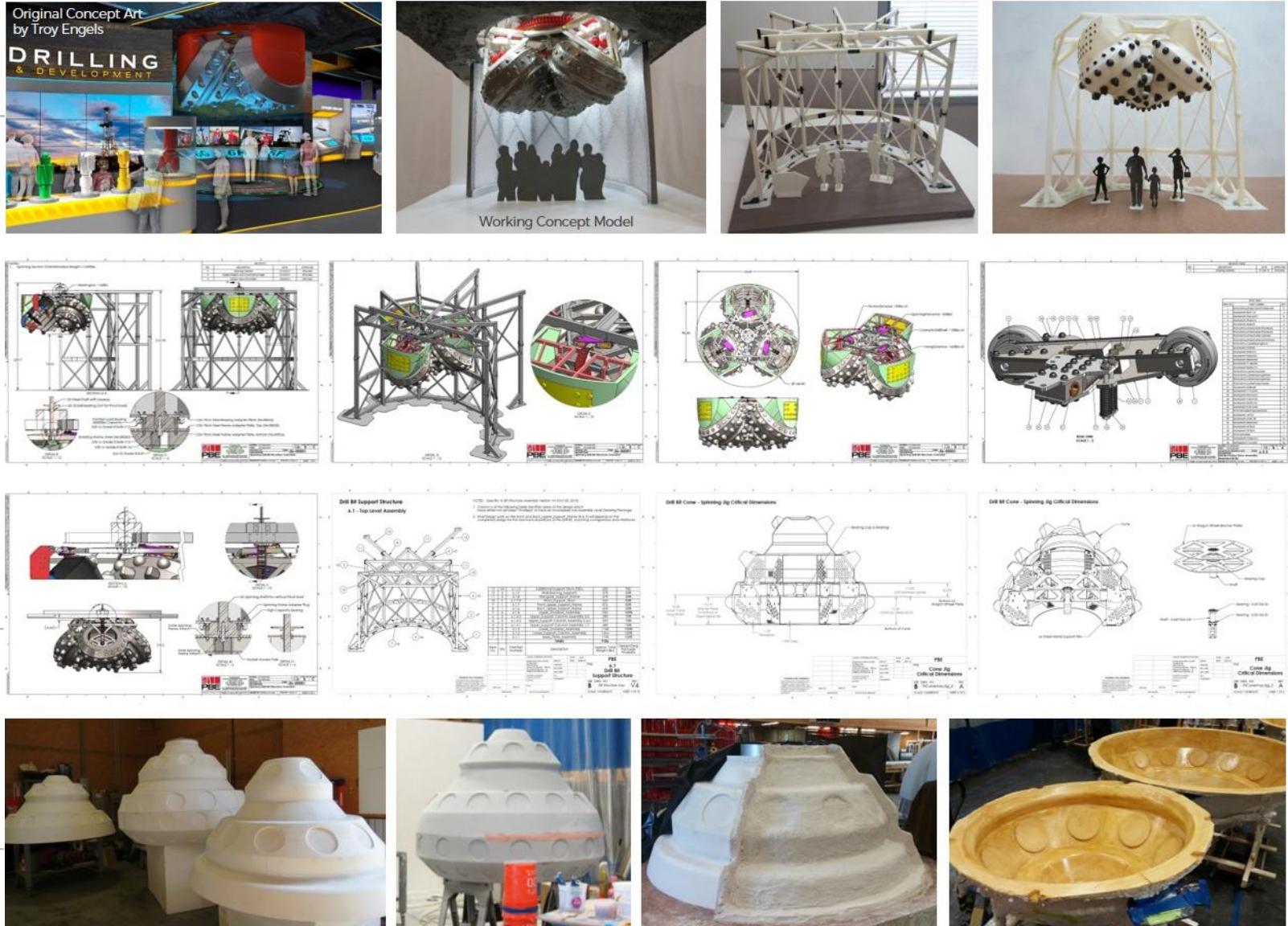
- Scale Models helped the Engineering Team identify problems and solidify the design and production strategy

### TECHNICAL ENGINEERING DRAWINGS

- Completion of technical drawing packages for concept, engineering, fabrication, assembly and installation of all parts and components

### SCULPTURE | FIBERGLASS

- Sculpting, Molding, Casting and Fiberglass Team Coordination



## TRICONE DRILL BIT | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

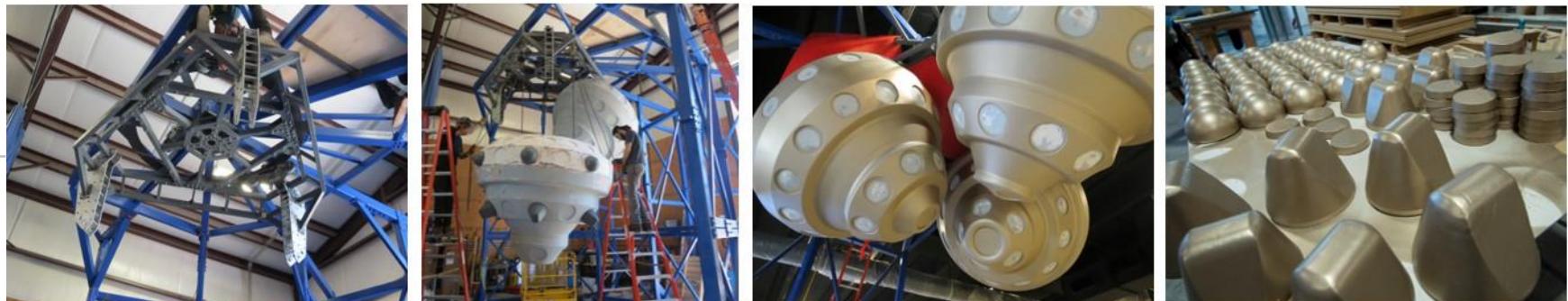
### INTERNAL MECHANICS

- Design and fabrication of rotating internal Cone Mechanisms



### FABRICATION

- Fabrication drawings, structural engineering and fabrication team coordination



### ASSEMBLY

- Assembly Team Lead and shop coordination



### INSTALLATION

- Installation coordination and logistics

## OIL DRILLING RIG FLOOR | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### DESIGN CHALLENGE

- To design a visually stunning immersive Attraction for the Entrance to the “Wiess Energy Hall” that would capture the essence of being on the Drilling Rig Floor of a Drilling Ship in the Gulf of Mexico, complete with automated robotic drilling equipment

### OVERVIEW

- A working scale replica of an automated Oil Platform Drilling Rig Floor
- Rig Floor consisted of 4 major mechanical components
  - A moving Top Drive (up/down) with spinning pipe
  - A working Iron Roughneck Robot (extend/retract) with torque wrench and pipe spinner mechanism
  - A HydraRacker with spinning pipe
  - A static Pipe Rack with 40 pipes and a drillers cabin
- Attraction backed by a large LED screen (16x42 ft), providing the visual effect of being in the Gulf of Mexico

### ROLES | RESPONSIBILITIES

- Blue Sky Concept Originator (aside from the LED screen)
- Project Lead, exhibit conceptualization, exhibit design and layout, structural/mechanical engineering, artistic direction, fabrication, scenic set dressing and installation

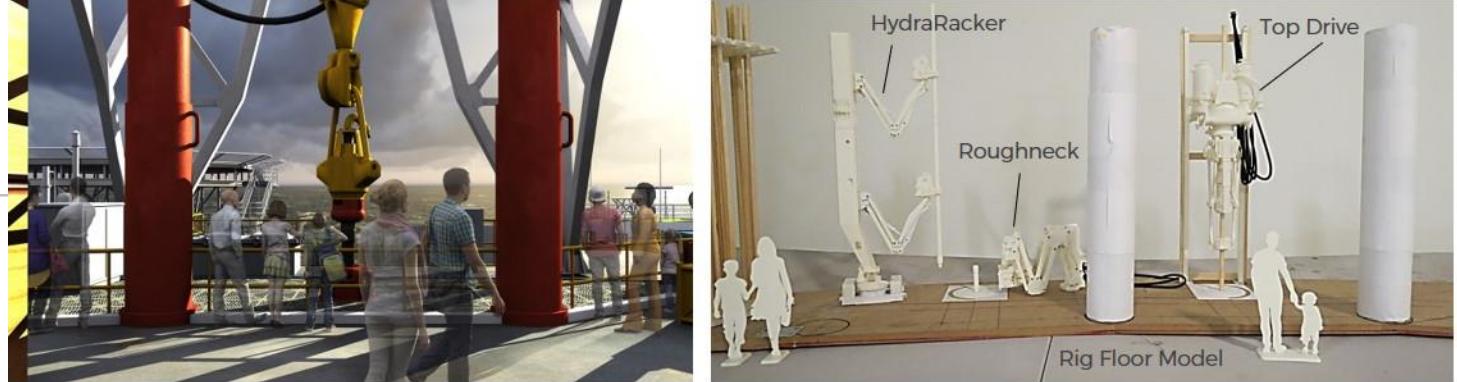


# OIL DRILLING RIG FLOOR | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

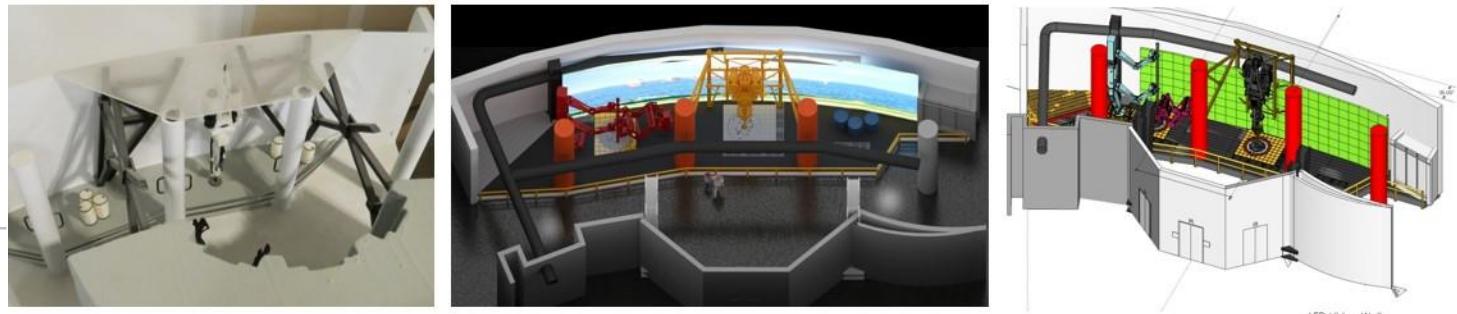
## BLUE SKY IDEATION

- Blue Sky Concept Originator (aside from the LED screen)
- The Rig Floor Concept Models helped sell the Blue Sky Concept to Management and the Creative Director



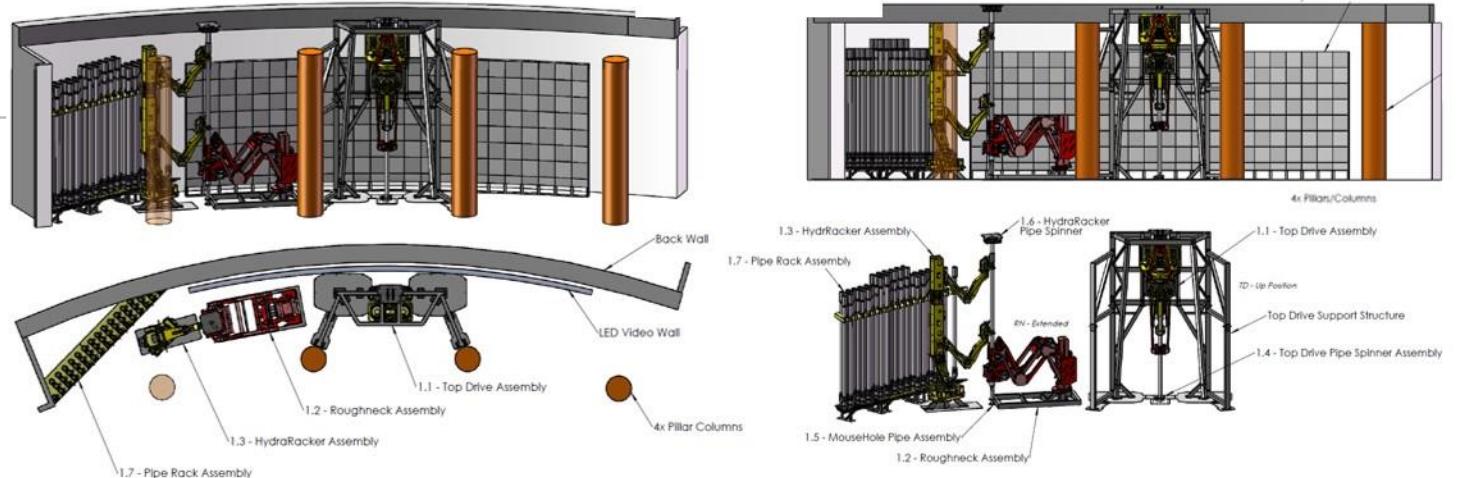
## CONCEPT MODELS

- Models used for Production Team brainstorming sessions
- Helped determine Scale & Layout for equipment
- Helped the Engineering Team identify problems and solidify the design and production strategy



## CONCEPT DRAWINGS

- Models directly helped the Fabrication Team with the construction and assembly of the Drill Bit Structure



# OIL DRILLING RIG FLOOR | 2017

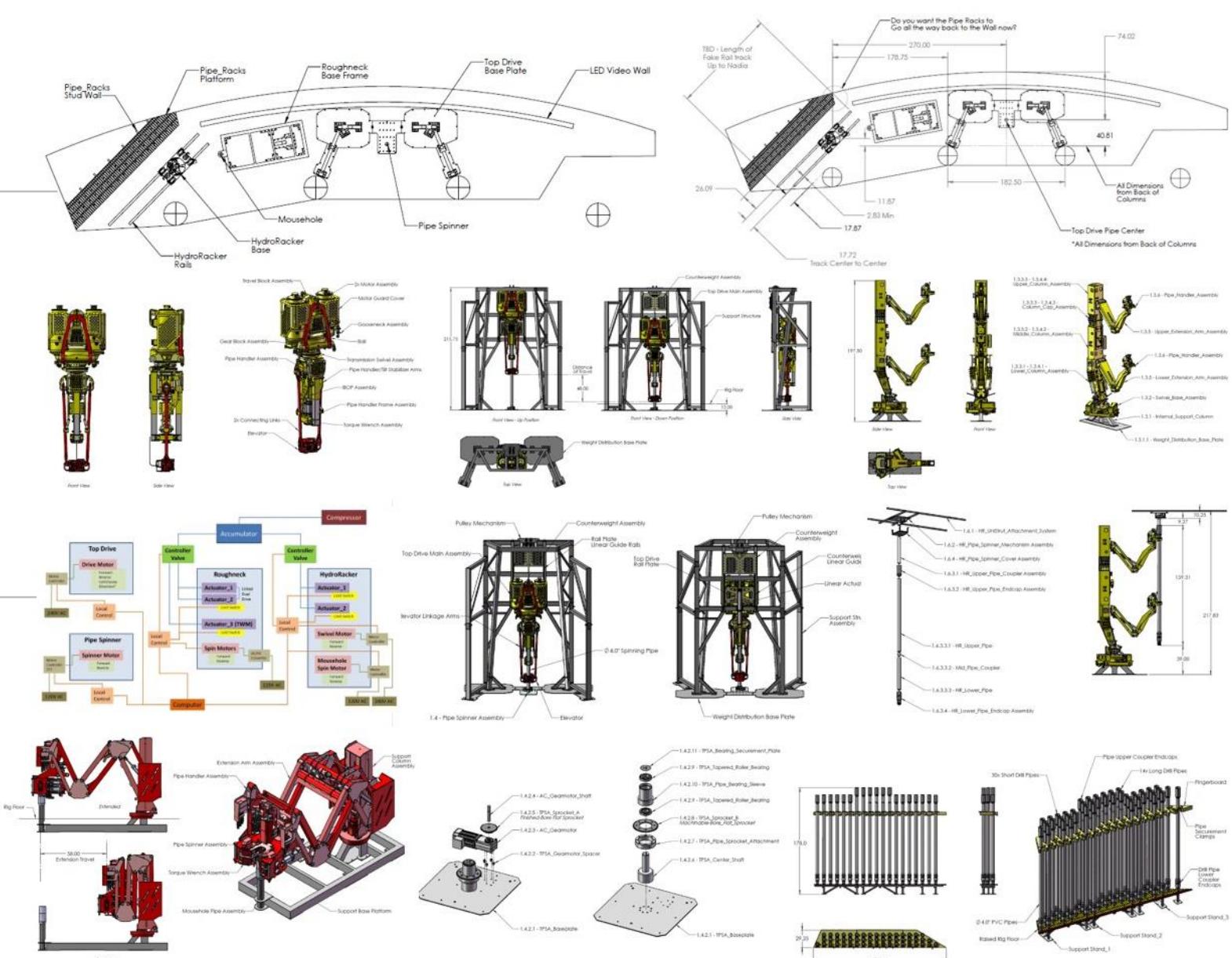
PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

## DESIGN | ENGINEERING

- Project Lead, overall design and layout, structural engineering, mechanical engineering and fabrication drawings
  - Iron Roughneck
  - Top Drive
  - HydraRacker
  - Rig Floor Layout

## TECHNICAL ENGINEERING DRAWINGS

- Completion of scale models, technical drawing packages for concept, engineering, fabrication, assembly and installation of all parts and components



## DRILLING RIG FLOOR | TOP DRIVE | 2016

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### DESIGN | ENGINEERING

- Lead CAD Designer, mechanical and structural engineering, and technical fabrication drawings of all Top Drive components and parts
- Design and Fabrication of up/down counterweight mechanism and rotating pipe mechanism

### FABRICATION | 3D PRINTING

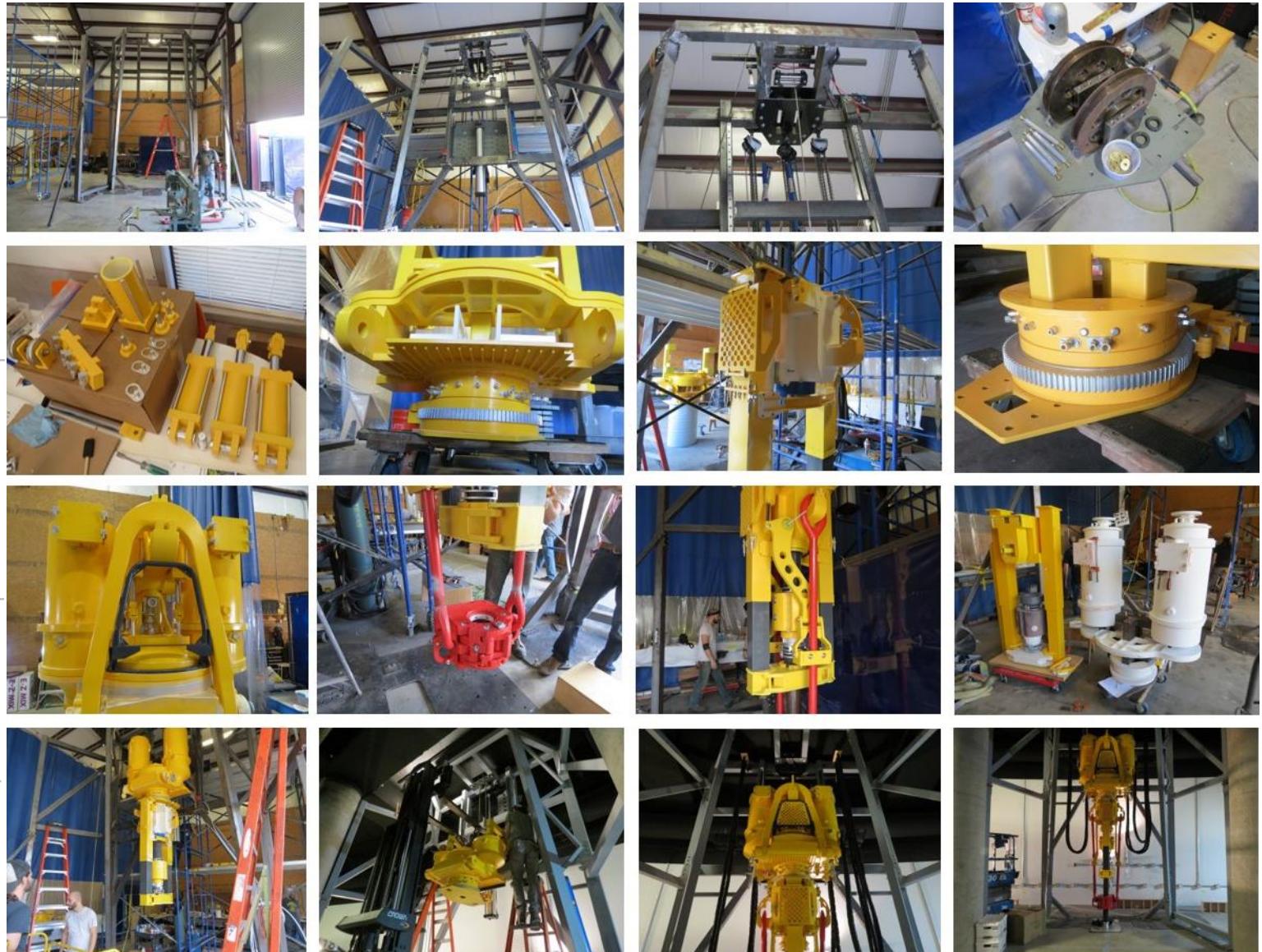
- Fabrication Team Lead and Coordination
- 3D Printings and assembly coordination of all component parts

### ASSEMBLY

- Assembly Team Lead and Coordination

### INSTALLATION

- Installation coordination and logistics, final aesthetics, painting, thematic set dressing



## DRILLING RIG FLOOR | ROUGHNECK | 2016

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### DESIGN | ENGINEERING

- Lead CAD Designer, mechanical and structural engineering, and technical fabrication drawings of all Roughneck components and parts

### INTERNAL MECHANICS

- Design and Fabrication Lead of Roughneck main extension/retraction mechanism, torque wrench assembly and rotating pipe mechanism

### FABRICATION | 3D PRINTING

- Fabrication Team Lead and Coordination
- 3D Printings and assembly coordination of all component parts

### ASSEMBLY

- Assembly Team Lead and Coordination

### INSTALLATION

- Installation coordination and logistics, final aesthetics, painting, thematic set dressing



## DRILLING RIG FLOOR | HYDRARACKER | 2016

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### DESIGN | ENGINEERING

- Lead CAD Designer, mechanical and structural engineering, and technical fabrication drawings of all HydraRacker components and parts
- Design and Fabrication Lead of rotating pipe mechanism

### FABRICATION | 3D PRINTING

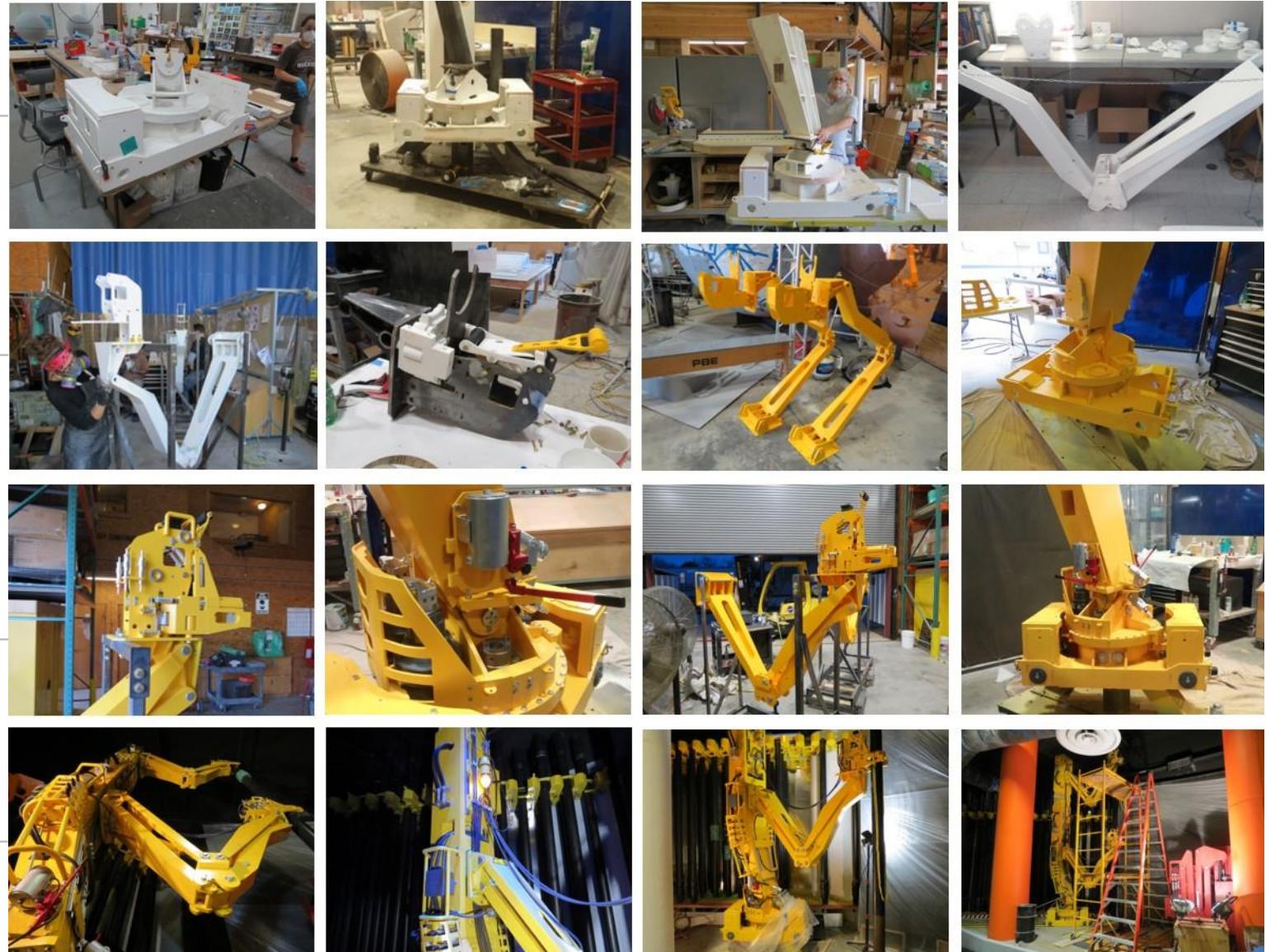
- Fabrication Team Lead and Coordination
- 3D Printings and assembly coordination of all component parts

### ASSEMBLY

- Assembly Team Lead and Coordination

### INSTALLATION

- Installation coordination and logistics, final aesthetics, painting, thematic set dressing



## DRILLING RIG FLOOR | PIPE RACKS | 2016

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### DESIGN | ENGINEERING

- Lead CAD Designer, mechanical and structural engineering, and technical fabrication drawings of all Pipe Rack components and parts

### FABRICATION | 3D PRINTING

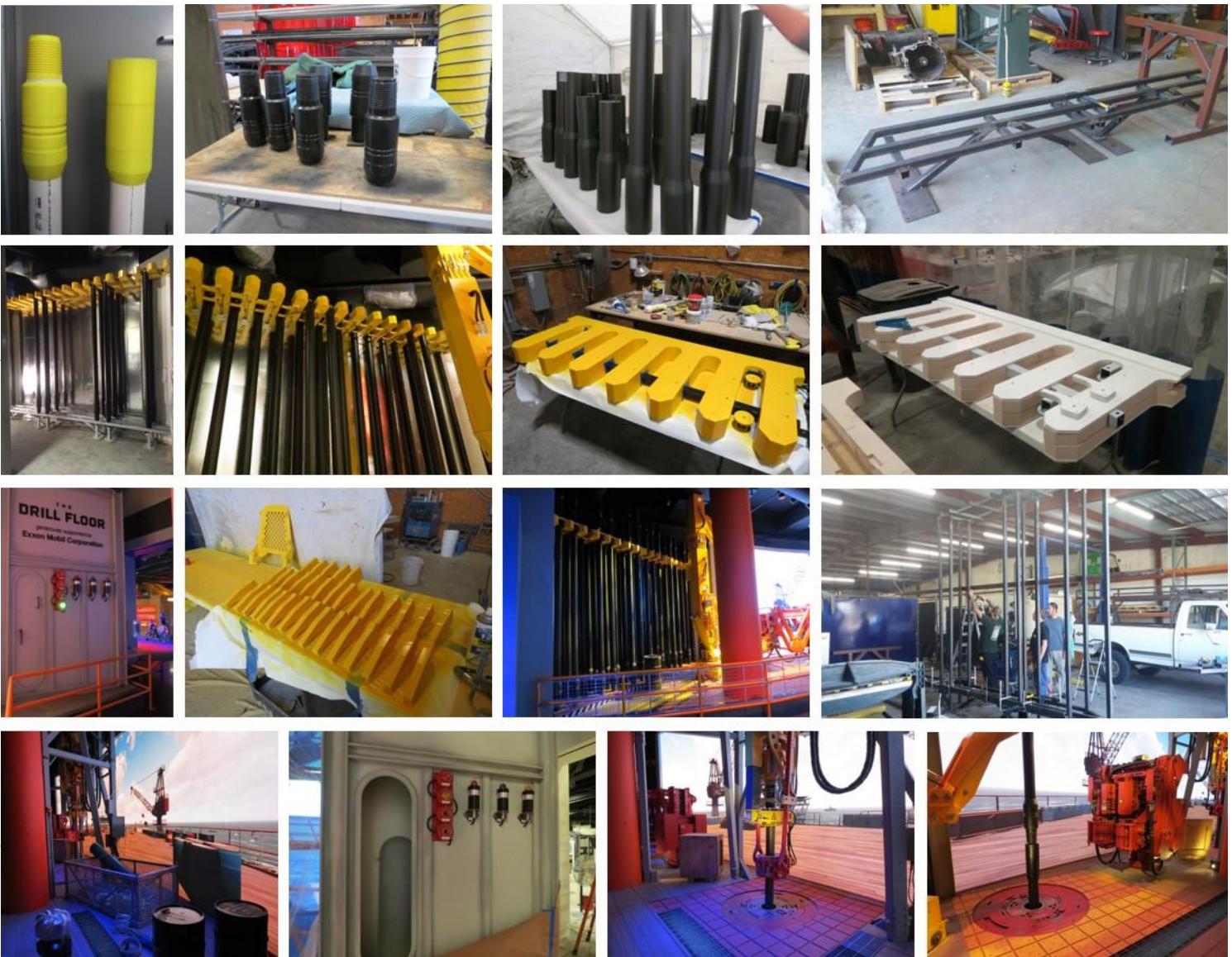
- Fabrication Team Lead and Coordination
- 3D Printings and assembly coordination of all component parts

### ASSEMBLY

- Assembly Team Lead and Coordination

### INSTALLATION

- Installation coordination and logistics, final aesthetics, painting, thematic set dressing



## SUBSEA WELLHEAD SITE | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### OVERVIEW

- A working scale replica of an underwater Wellhead Installation
- Attraction consists of 3 major components
  - A real ROV with spinning propellers, working robotic arm (controlled by guests), lights and a camera
  - An underwater WASP suit with working arms, lights and propellers and intercom system
  - A BOP Wellhead scenic element with moving levers
- Interactive game for the audience to work the ROV robotic arm to move the levers on the BOP Wellhead to shut off valves

### IDEATION

- Blue Sky Concept Originator
- The Subsea Model successfully helped sell the Blue Sky Concept to Investors and secure funding for the exhibit and an In-Kind Donation of both an real ROV and WASP Suit by Oceaneering International, Inc

### ROLES | RESPONSIBILITIES

- Project Lead, exhibit conceptualization, exhibit and mechanism design and layout, structural and mechanical engineering, artistic direction, fabrication, scenic set dressing and installation



# SUBSEA WELLHEAD SITE | 2017

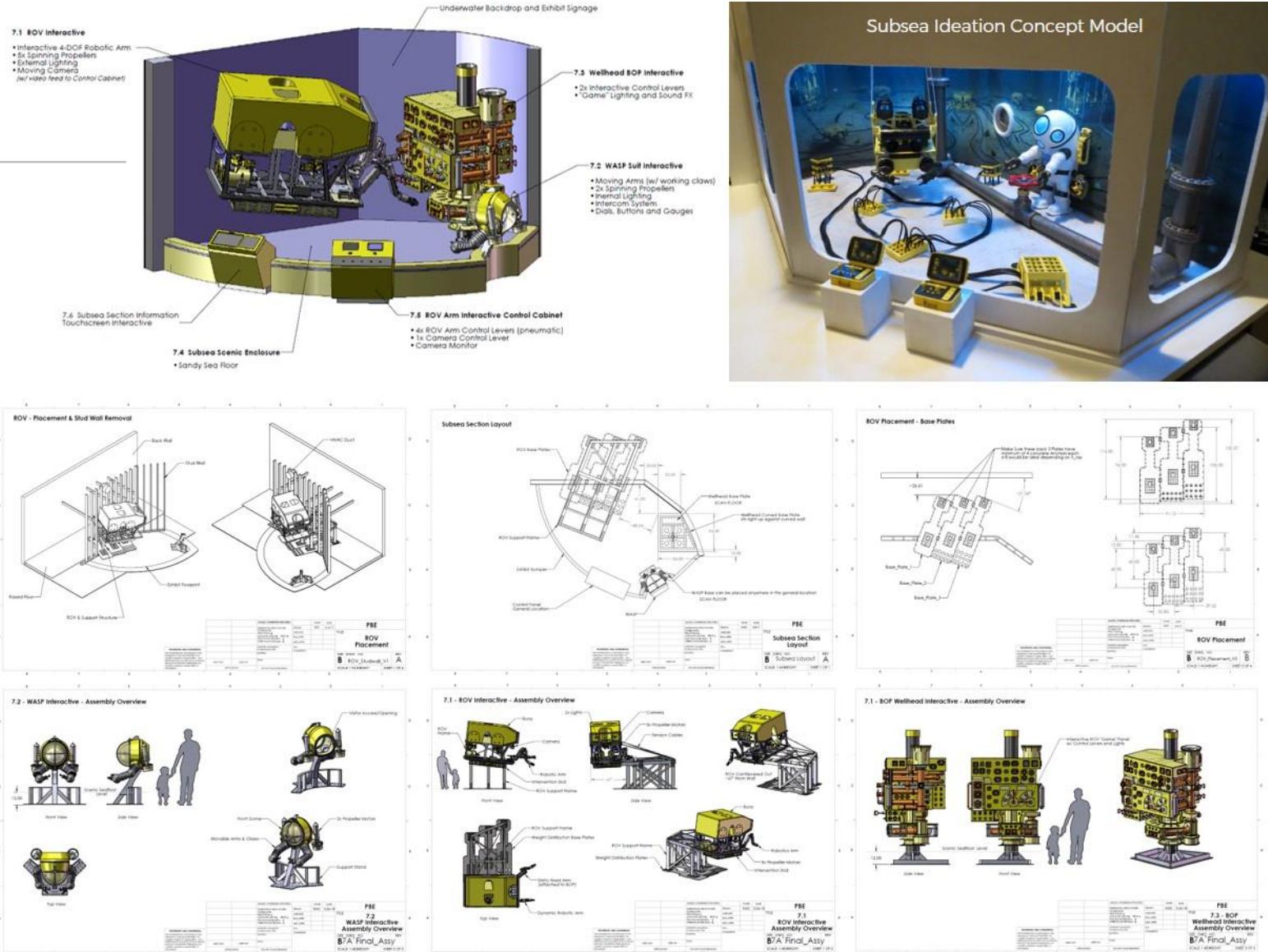
PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

## DESIGN | ENGINEERING

- Project Lead, overall design and layout, structural engineering, mechanical engineering and fabrication drawings
  - ROV
  - WASP
  - BOP Wellhead

## TECHNICAL ENGINEERING DRAWINGS

- Completion of scale models, technical drawing packages for concept, engineering, fabrication, assembly and installation of all parts and components



## SUBSEA WELLHEAD SITE | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### DESIGN | ENGINEERING

- Lead CAD Designer, mechanical and structural engineering, and technical fabrication drawings of all Subsea components and parts
- Design and Fabrication of ROV robotic arm components, propellers, camera and lighting

### FABRICATION | 3D PRINTING

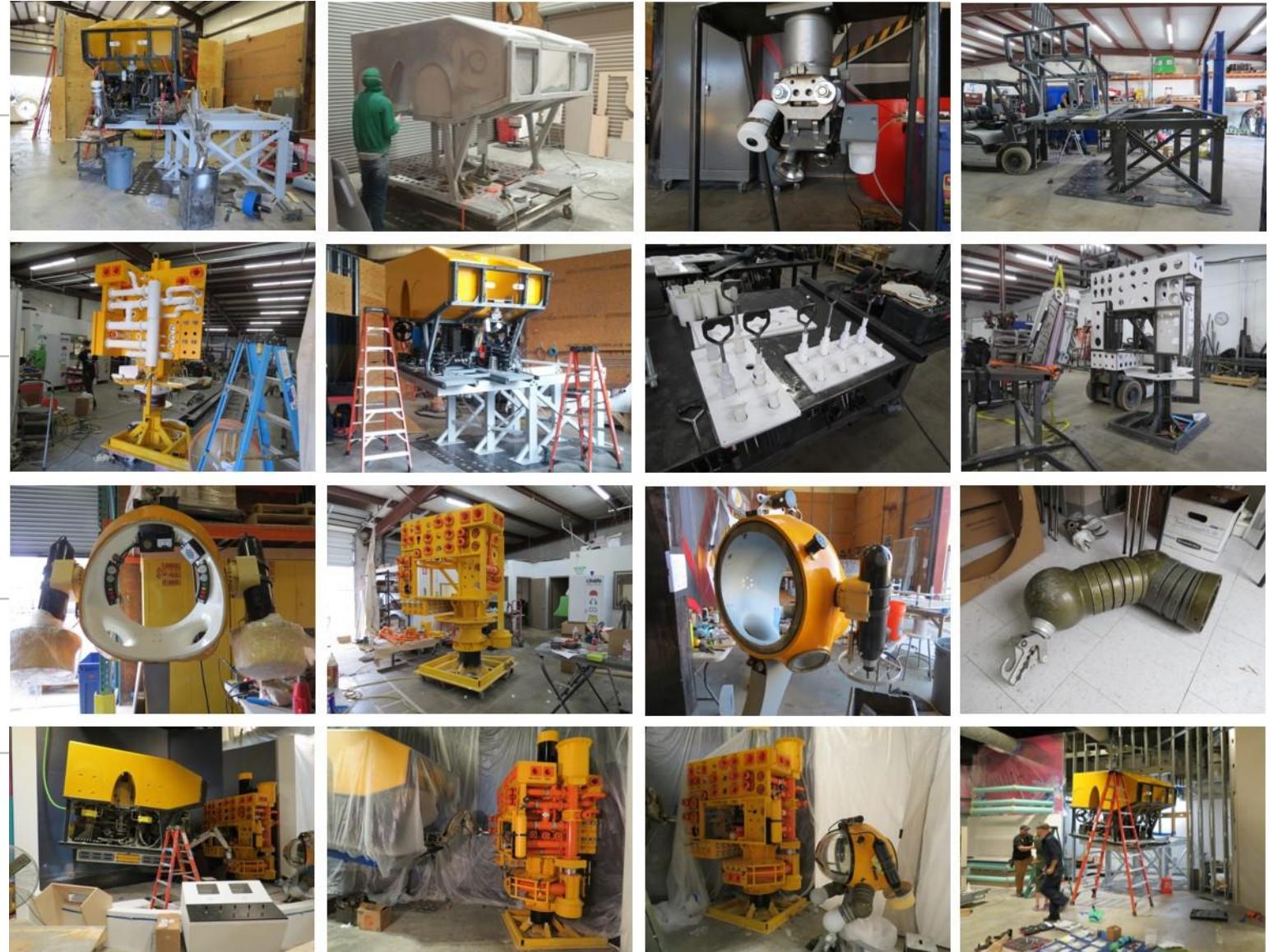
- Fabrication Team Lead and Coordination
- 3D Printings and assembly coordination of all component parts

### ASSEMBLY

- Assembly Team Lead and Coordination

### INSTALLATION

- Installation coordination and logistics, final aesthetics, painting, thematic set dressing
- The project took over a year to complete requiring the talents of over 15 artists and fabricators to construct, assemble, and install



## THE GEOVATOR | 2017

### PBE | WIESS ENERGY HALL 3.0 Houston Museum of Natural Science

#### OVERVIEW

- A 20-person immersive Motion Platform Theatre Ride Attraction that provides the experience of riding the Geovator back in time and through the earth's crust

#### ROLES | RESPONSIBILITIES

- Early exhibit conceptualization, motion platform R&D, preliminary models and external frame structural engineering



## EAGLE FORD SHALE EXPERIENCE | EFX-3000 | 2017

#### OVERVIEW

- A 40-Seat -immersive Motion Platform Theatre Ride Experience
- The EFX-3000 Experience takes guests on a fun-filled journey down into a well to tell the story of the technology of Fracking at the Eagle Ford Shale Formation

#### ROLES | RESPONSIBILITIES

- Early exhibit conceptualization, motion platform R&D, preliminary models, technical support, technical drawings of window sections and monitor support system, design of portions of the exterior shell, interior aesthetic and theming



# DAR-C ROBOT | EFX-3000 | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

## OVERVIEW

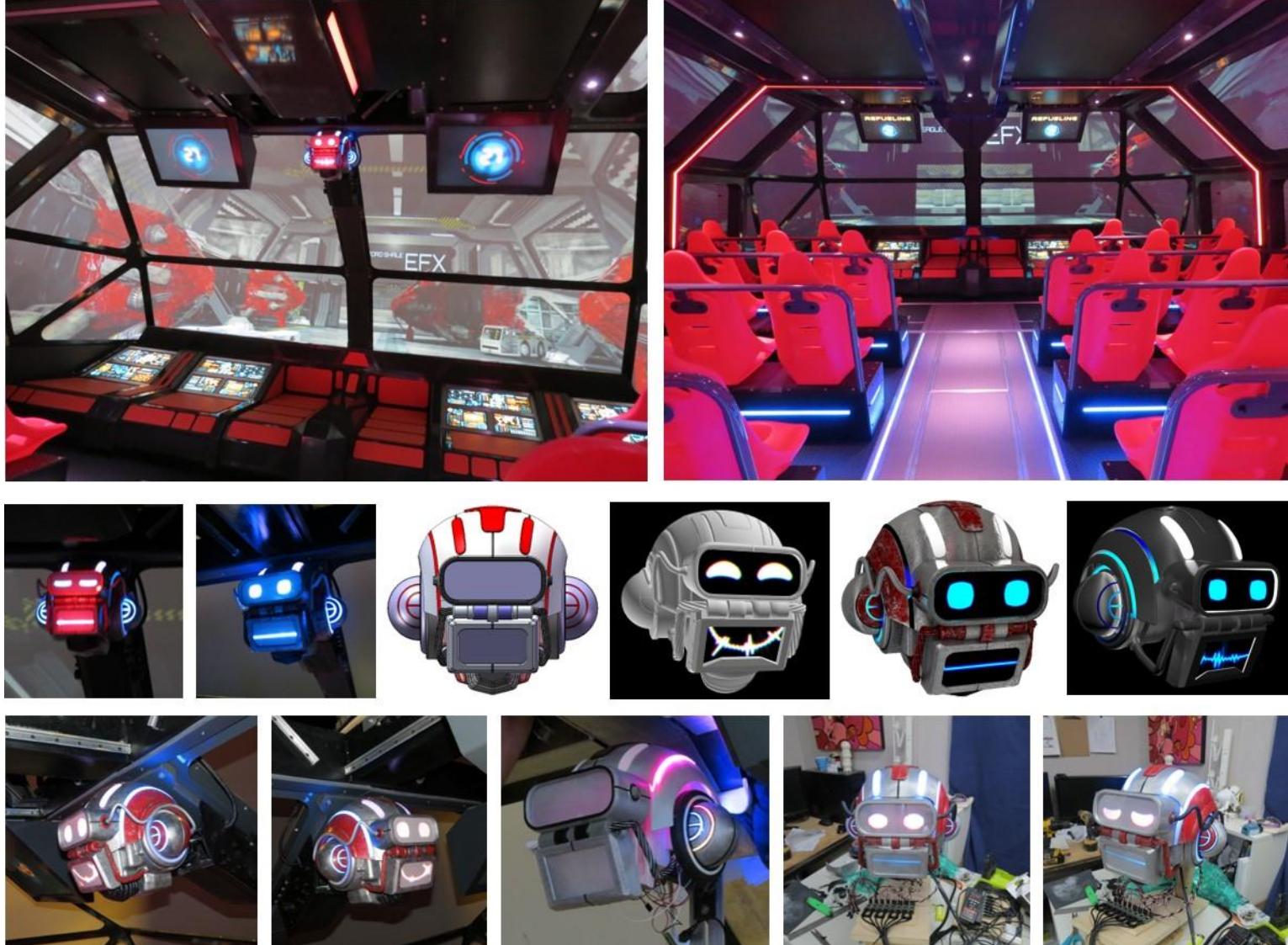
- DAR-C, the Robotic Host and Co-Pilot of the EFX-3000 Motion Platform Theatre Ride Experience, narrating the story of Fracking in the Eagle Ford Shale

## FEATURES

- At the start of the ride, the protective Shell Doors at the front of the EFX open to reveal DAR-C, who acts as the Host and Co-Pilot of the EFX-3000 craft
- During a portion of the ride, the Shell Doors close and a digital version of DAR-C takes a swim out in the oil surrounding the craft

## ROLES | RESPONSIBILITIES

- Project Lead, blue sky ideation, exhibit conceptualization, CAD design, layout, engineering, prototyping, 3D printing, artistic direction, fabrication, installation, testing and scenic theming of DAR-C the Robot and the motor driven protective Shell Door assembly



# DAR-C ROBOT | EFX-3000 | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

## DESIGN | ENGINEERING

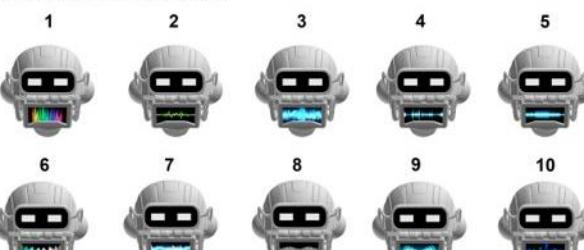
- Responsible for all tasks required to take DAR-C from Blue Sky Concept to physical reality
- DAR-C mouth and eye animations are projected from a set of micro-projectors through a series of mirrors and onto a semi-translucent film allowing the robot to be fully expressive
- Motor-driven Shell Door design and engineering

## FABRICATION | ASSEMBLY | INSTALLATION

- 3D printing of 2 prototypes and the final version of DAR-C
- Motor-driven Shell Door fabrication, installation and integration into the EFX-3000



Mouth Waveform Variations



## ENERGY CITY | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### OVERVIEW

- Energy City is an animated 2,500-square-foot (1/150th scale) model of a city
- The model consists of 750 model buildings
- It is the largest, most intricate projection mapping project ever created, utilizing 32 laser projectors and 168 laser fiber optic sensors to bring the city to life

### ROLES | RESPONSIBILITIES

- 3D Print technology research consultant and developer, in charge of 3D printing over 450 individual model assets
- Most assets printed and assembled off-site at Kevin Carpenter's home studio
- Installation of 22 rotating wind turbines

### FABRICATION | ASSEMBLY

- Energy City was conceived by PBE and was a collaboration with Green Hippo, Rabcup and Radar Creative
- The project took over 2 years to complete

Video Link: <https://www.youtube.com/watch?v=5URNMvbfoI&t=2s>



## VTOL | CAR OF THE FUTURE | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### OVERVIEW

- A flying Future Car, stylized ramp and light ribbon
- Ramp initially designed for a Tesla Car, then a Delorean DR-7 VTOL car prototype, then an R-Loop hyperloop pod, and finally a custom designed VTOL flying car

### ROLES | RESPONSIBILITIES

- Early exhibit conceptualization, ramp design and layout, structural engineering (to support a 6000 lb Tesla Car), fabrication drawings, interface design, car conceptualization and installation support

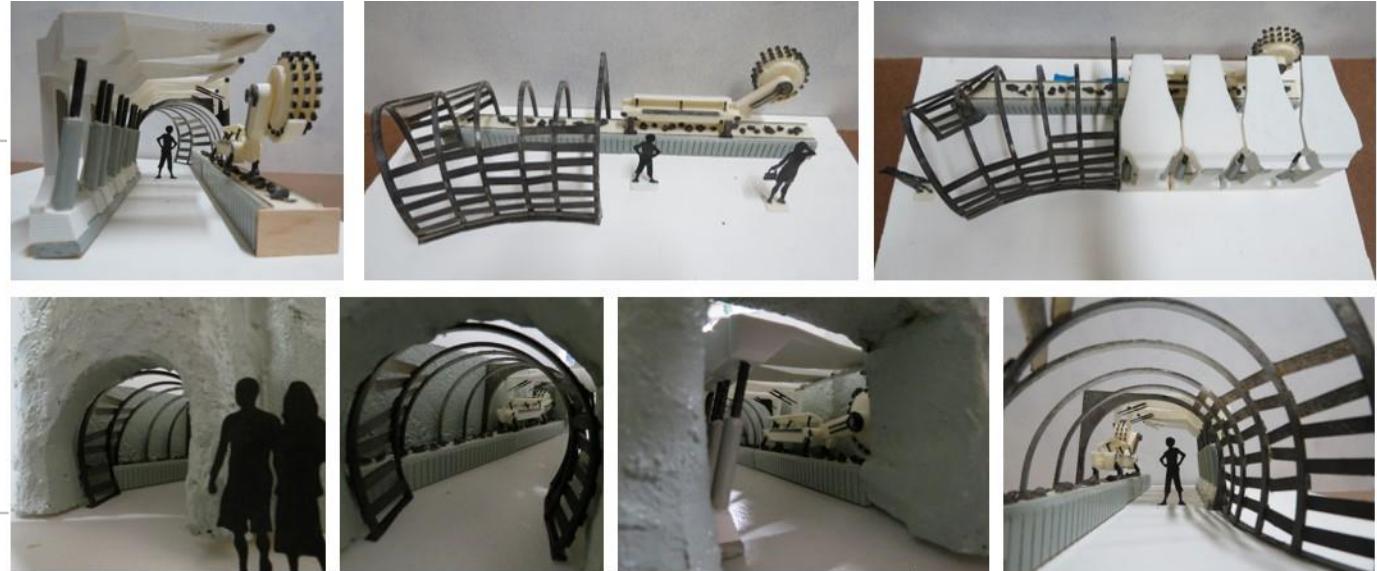


## COAL MINE ATTRACTION | 2015

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

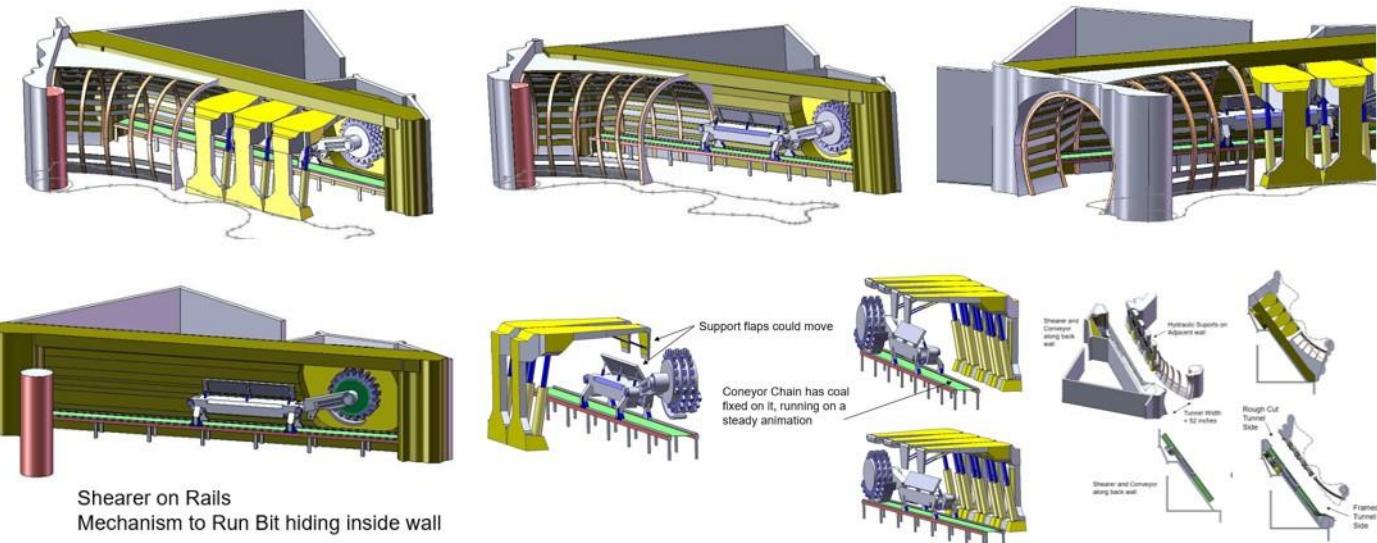
### DESIGN CHALLENGE

- To conceptualize and design an immersive and interactive walk-through Coal Mine Attraction



### BLUE SKY IDEATION | SCALE MODEL

- The Coal Mine Model showcased several potential design ideas
  - Automated Longwall Shearer
  - Working Conveyor belt with bits of Coal



### ROLES | RESPONSIBILITIES

- Project Lead, exhibit conceptualization, design and development, layout and technical R&D
- The project proved technically feasible after engineering completed, but was not completed due to budget restrictions

## RED DIRT DINOS | 2013 - 2016

KUMOTEK ROBOTICS | VEE CORPORATION | GUJO |  
OKLAHOMA MUSEUM NETWORK

### OVERVIEW

- A 5000 sq-ft Modular Immersive and Interactive Animatronic Dinosaur Attraction
- Travelling Attraction installed in 5 Museums in Oklahoma from 2013-2016
- Collaboration with the Oklahoma Museum Network, Gujo (Japan) and Vee Corporation

### INSTALLATIONS

- |  |           |
|--|-----------|
| • Science Museum Oklahoma, Oklahoma City       | 2013-2014 |
| • Leonardo's Discovery Warehouse, Enid         | 2014      |
| • Tulsa Children's Museum Discovery Lab, Tulsa | 2014-2015 |
| • Jasmine Moran Children's Museum, Seminole    | 2015      |
| • Museum of Great Plains, Lawton               | 2015-2016 |

### PRODUCTION DESIGN | ENGINEERING

- Kumotek Project Manager and Art director, content development/storyboards, attraction design and layout, modular landform design, mechanical engineering, animatronics development, interaction design, lighting/ sound design, fabrication, testing, scenic set dressing and aesthetics, on-site coordination and installation, and travel logistics

### FEATURES

- Animatronic Dinosaurs animations triggered by guest actions
- Face tracking and gesture detection



- Auxiliary Exhibit Elements suggested by the Kumotek, designed and fabricated by Vee.
- Tent, Egg Scanner, Crawl Log, slide, Dino Dig, Fossils



## RED DIRT DINOS | 2013 - 2016

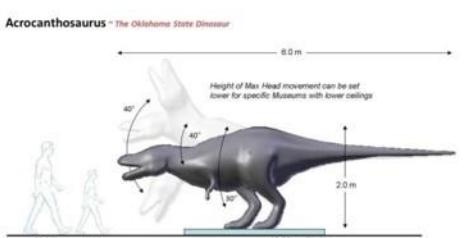
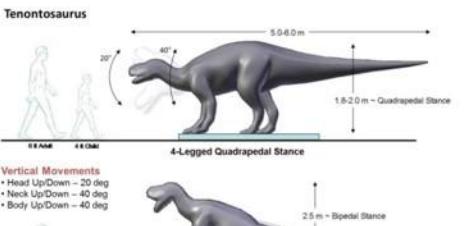
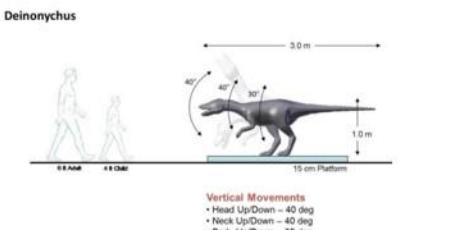
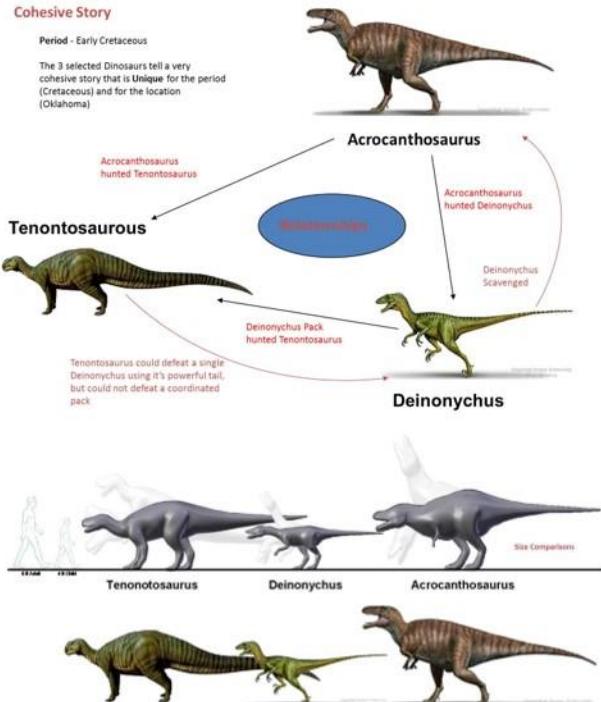
### KUMOTEK ROBOTICS | GUJO

#### BLUE SKY CONCEPTUALIZATION

- Concept, Theme and Story Ideation
- Selection of Dinosaurs

#### PRODUCTION DESIGN | ENGINEERING

- Interaction Design, Guest Experience Design
- Vision, Sensor, Sound, Power and Computer requirements and specifications



#### Tenontosaurus

##### Vision System

- The dinosaur will have a series of motion sensors and TBD cameras that will all work in tandem to trigger dinosaur responses and animations

##### Computer System

- The Computer and speakers will need to be hidden within a container, such as a fake rock or log

**Motion Sensor area – Sensor location depends on Exhibit Layout**

Quadrant A

Quadrant B

Quadrant C

#### Tenontosaurus

##### Measurements

- Measurements of Base Platform will be determined by February 2013

##### Sound Design

- Speakers
- 2 monitor speakers
- The Speaker will need to be hidden within a container, such as a fake rock

##### Computer System

- The Computer and speakers will need to be hidden within a container, such as a fake rock or log

**Deinonychus**

**Motion Sensor area – Sensor location depends on Exhibit Layout**

#### Deinonychus

##### Sound Design

- Speakers
- 1 monitor speaker

##### Computer System

- The Computer and speakers will need to be hidden within a container, such as a fake rock or log

**Camera area**

3.0 m

Camera mounted in tree at eye level

#### Acrocanthosaurus

##### Vision System

- The dinosaur will have a camera mounted either on the wall, within a broken tree branch in front of the dinosaur, or other TBD location

##### Computer System

- The Computer and speakers will need to be hidden within a container, such as a fake rock or log

**Camera area**

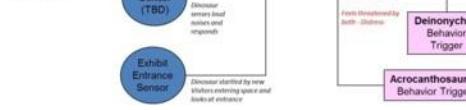
Camera mounted in broken tree branch at eye level

#### Tenontosaurus

##### Interaction System

1 Visitor ~ 1 Quadrant  
1-5 Visitors ~ 2 Quadrants  
Crowds ~ 3 Quadrants

Dinosaur reacts based on number of visitors

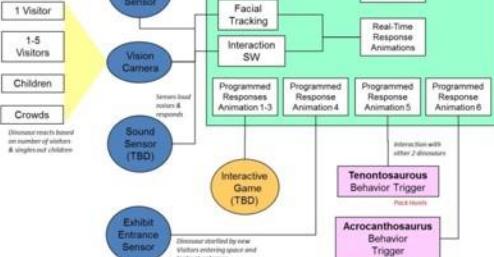


#### Deinonychus

##### Interaction System

1 Visitor  
1-5 Visitors  
Children  
Crowds

Dinosaur reacts based on number of visitors & age/gender

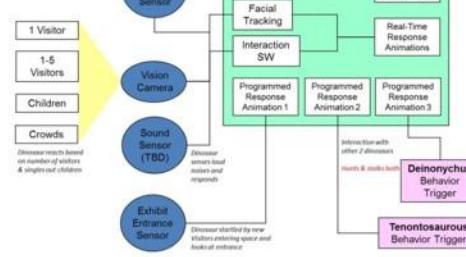


#### Acrocanthosaurus

##### Interaction System

1 Visitor  
1-5 Visitors  
Children  
Crowds

Dinosaur reacts based on number of visitors & age/gender

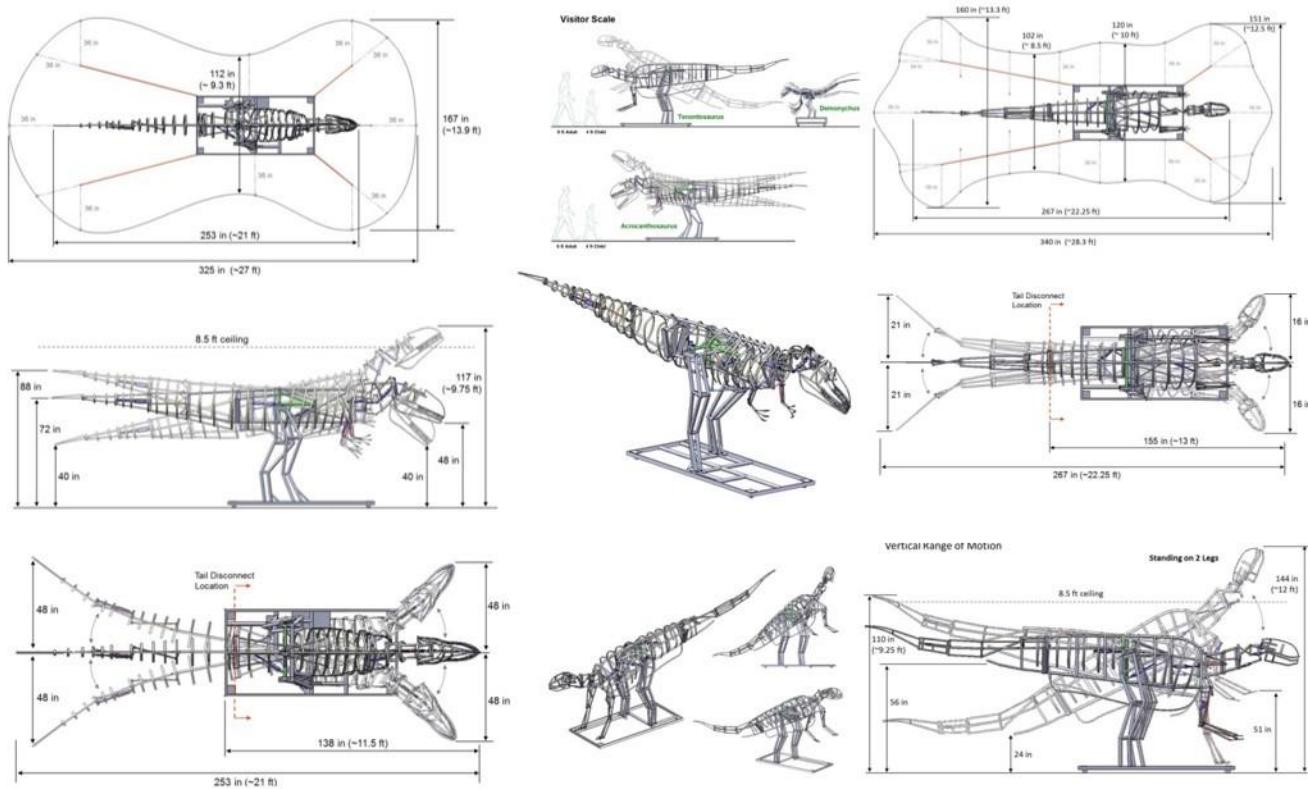
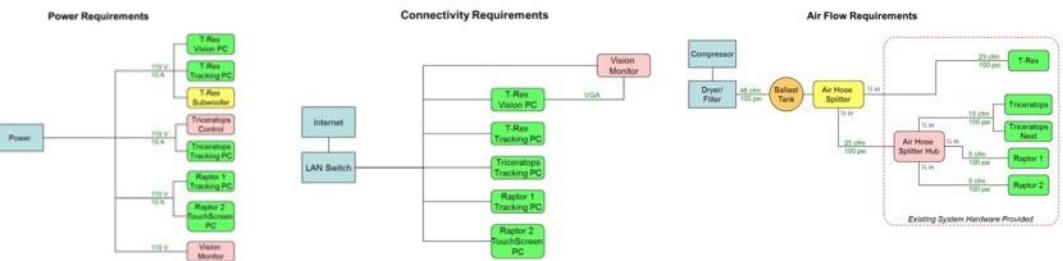


# RED DIRT DINOS | 2013 - 2016

## KUMOTEK ROBOTICS | GUJO

### PRODUCTION DESIGN | ENGINEERING

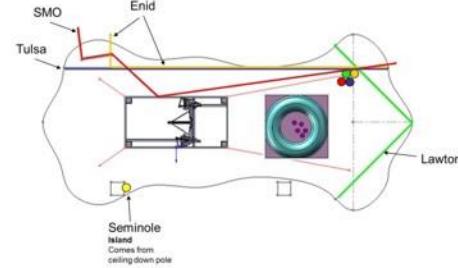
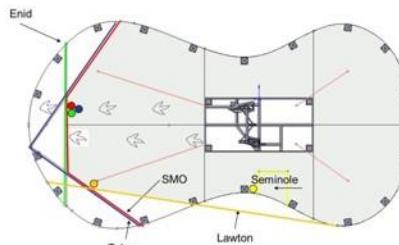
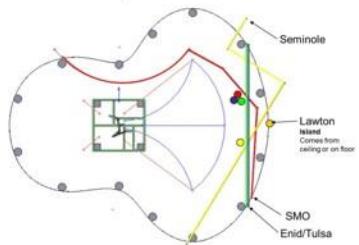
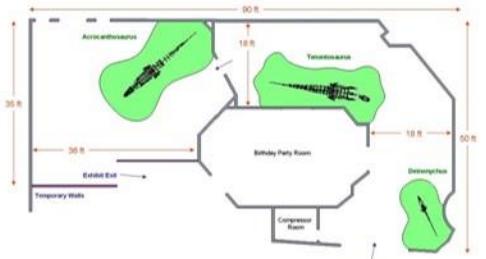
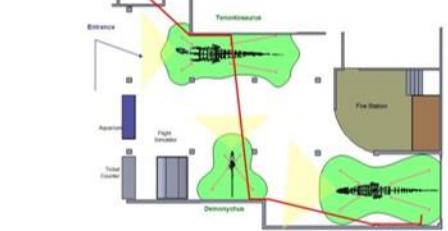
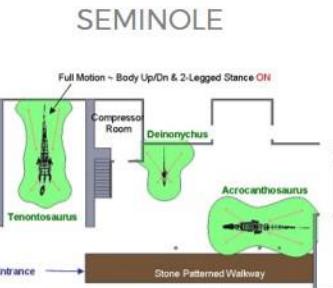
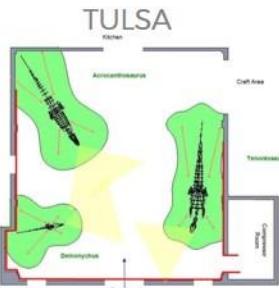
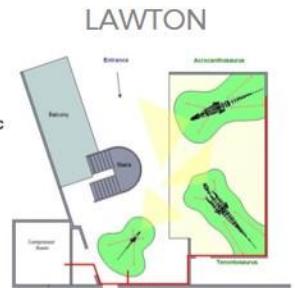
- Animatronics, Mechanical/Systems Engineering, Dinosaur Design
- Dinosaurs fabricated by Gujo in Japan based on the completed technical CAD data package, interfaces, requirements and specifications



## KUMOTEK ROBOTICS

### MODULAR LANDFORM DESIGN

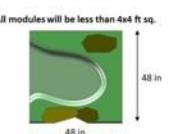
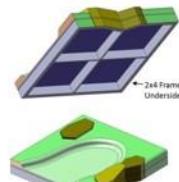
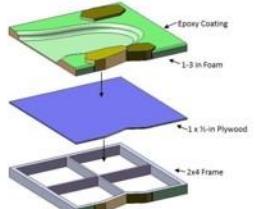
- Modular Exhibit Layout and Landform Design for 5 Museums
- Designed to be easily assembled and disassembled for travel
- Modular sections allow for multiple configurations for each Museum
- Lead Fabricator of 3 complete modular Landforms



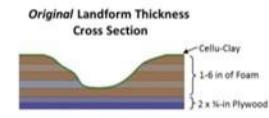
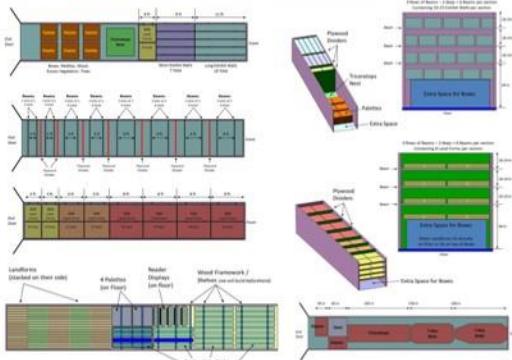
Modular Travelling Landform Design

#### Landform Modules

New design will have a hollow frame structure and less foam and hard coated epoxy covering that will make the sections much lighter

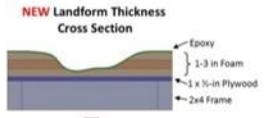


#### Travelling Exhibit Logistics and Loading Layout for Semi-Trucks

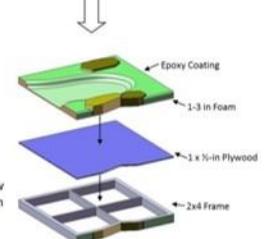


Original had 2x 3/4-in plywood overlaid with 1-6 inches of foam

This thickness contributed greatly to the overall weight of each section

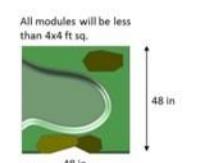


New design will have a hollow frame structure and less foam that will make the sections much lighter

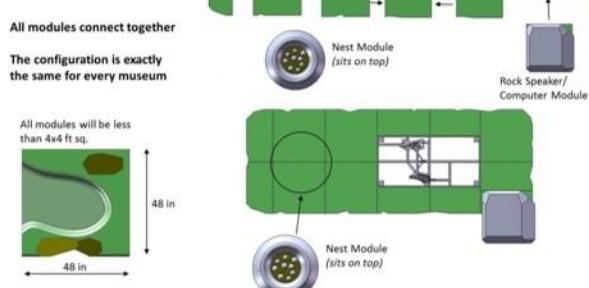


All modules connect together

The configuration is exactly the same for every museum



All modules will be less than 4x4 ft sq.

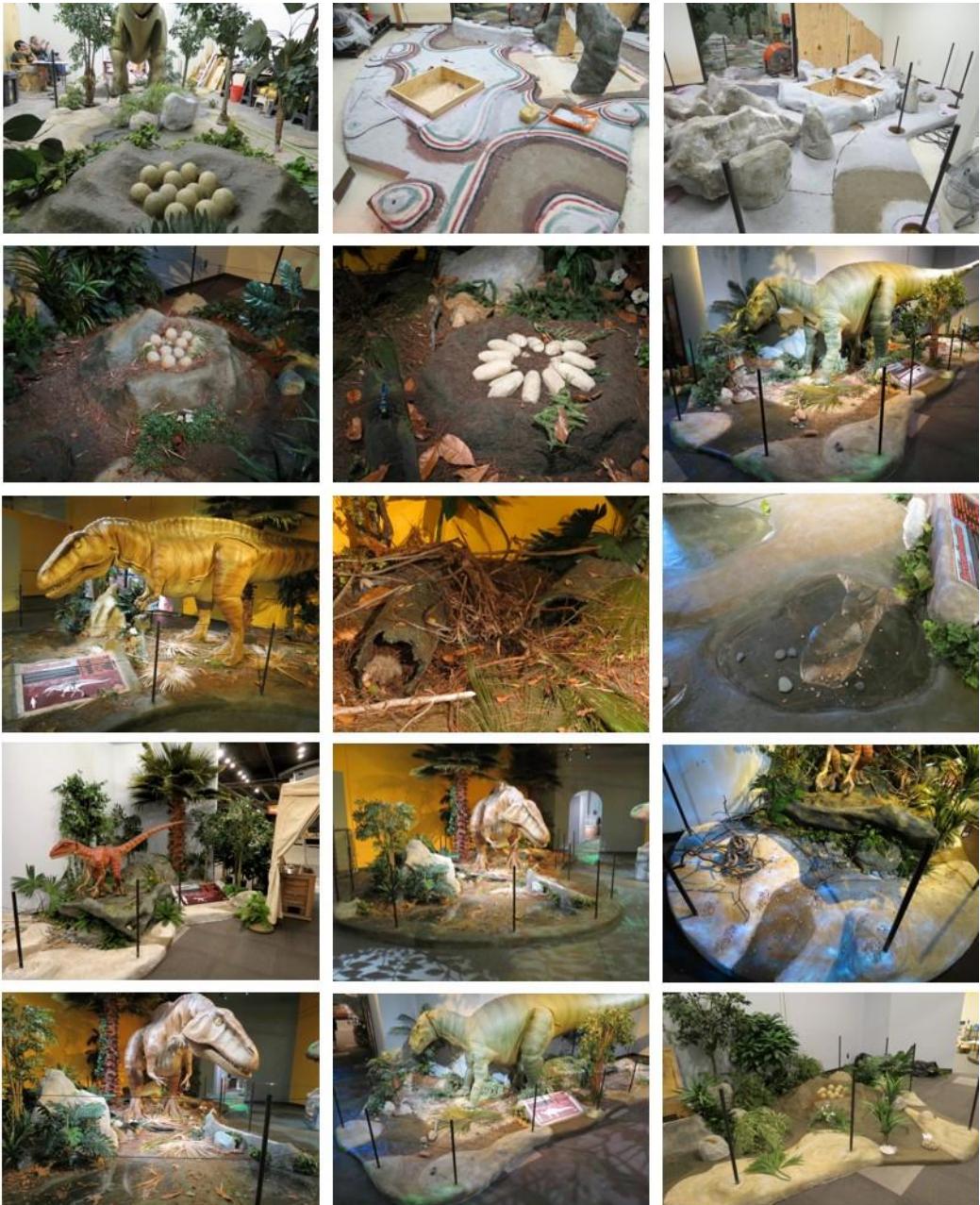


## RED DIRT DINOS | 2013 - 2016

### KUMOTEK ROBOTICS

#### ART DIRECTION

- Scenic and Thematic Set Design and Aesthetics
- Lead Fabricator of 3 complete modular Landforms
- Fabricated 2 nests full of eggs, rocks, pools of water and picked, procured & installed vegetation and trees



## ROBO-SUE | GUARDIANS OF TIME | 2011 - 2014

KUMOTEK ROBOTICS | FIELD MUSEUM |  
KOKORO-DREAMS | DYNAMITE FILMS

### OVERVIEW

- A 10,000 sq-ft Modular Immersive and Interactive Animatronic Dinosaur Attraction
- Travelling Attraction installed in 7 Museums from 2011-2014
- Collaboration with Dynamite Films, the Field Museum and Kokoro-Dreams (Japan)

### INSTALLATIONS

- |   |      |
|---|------|
| • Field Museum, Chicago IL                        | 2011 |
| • Denver Museum of Nature & Science, Denver CO    | 2011 |
| • Don Harrington Discovery Center, Amarillo TX    | 2012 |
| • Dino-Solarium   Robotics New York, Riverhead NY | 2012 |
| • Reading Public Museum, Reading PA               | 2012 |
| • Science Museum of Virginia, Richmond VA         | 2014 |
| • ScienceWorks, Ashland OR                        | 2014 |



### PRODUCTION DESIGN | ENGINEERING

- Kumotek Project Manager and Art director, content development/storyboards, attraction design and layout, modular landform design, mechanical engineering, animatronics integration, interaction design, scenic set fabrication and aesthetics, on-site coordination and installation, and travel logistics

### FEATURES

- Animatronic Dinosaurs animations triggered by guest actions
- Face tracking and gesture detection



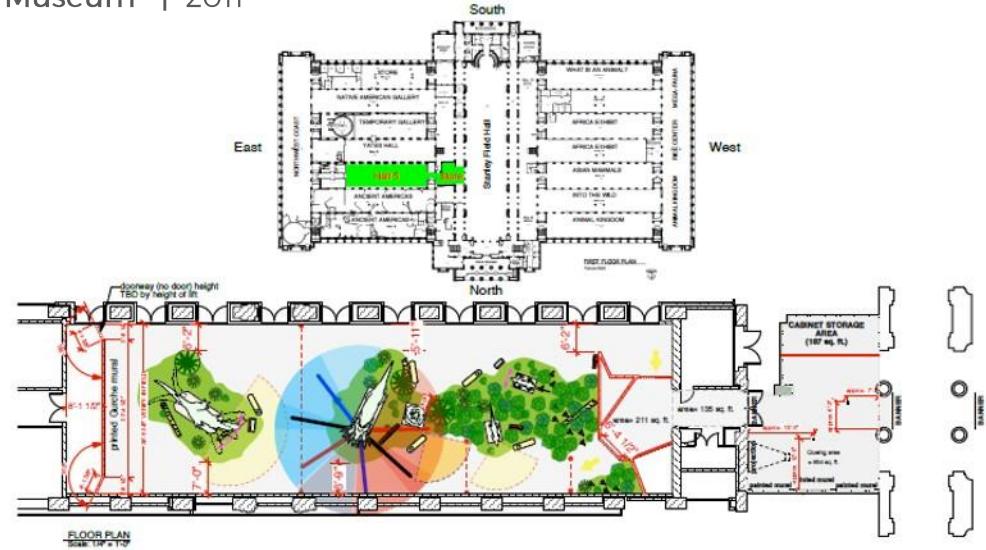
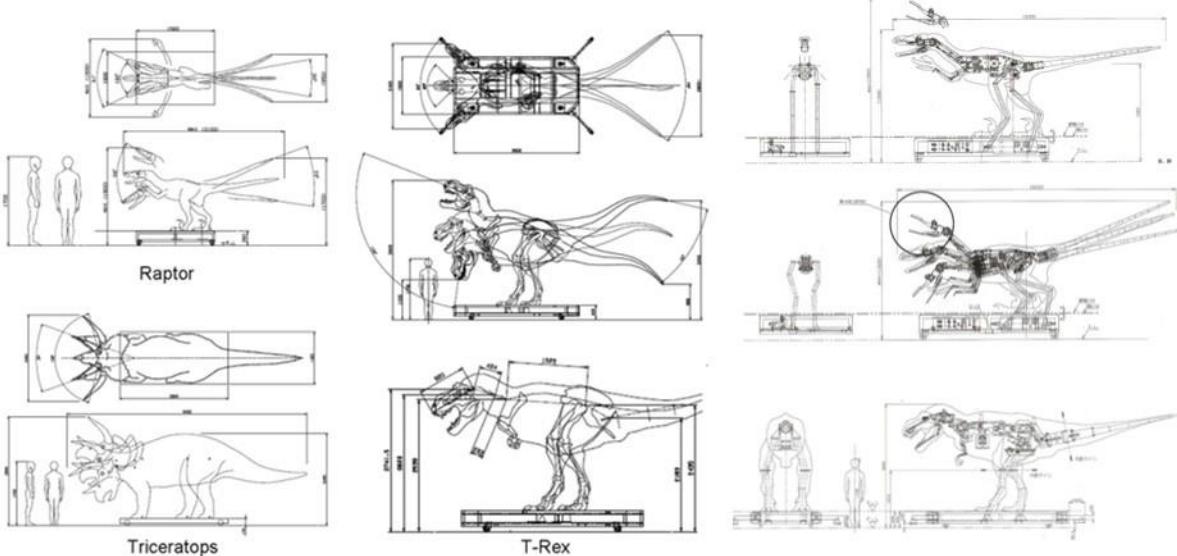
KUMOTEK ROBOTICS | KOKORO-DREAMS

**ANIMATRONICS INTEGRATION**

- interactive Animatronic Dinosaur System using 5 Kokoro-Dreams Dinosaurs
- Development of interface diagrams, specifications and technical drawing packages

**PRODUCTION DESIGN | EXHIBIT LAYOUT**

- Attraction design and layout, modular landform design, scenic set fabrication and aesthetics, on-site coordination and installation, and travel logistics



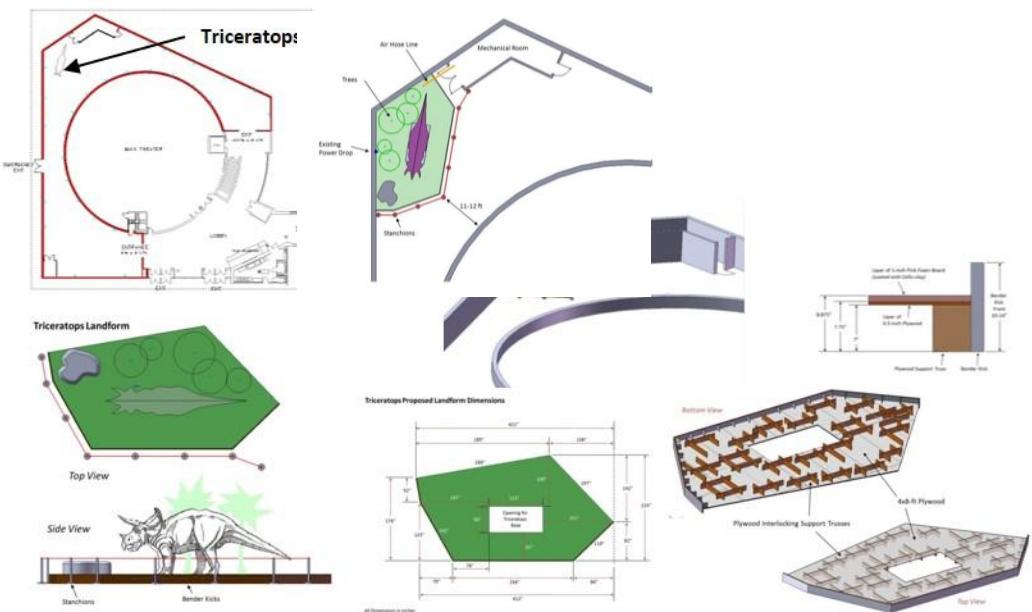
## GUARDIANS OF TIME | 2011 - 2014

### KUMOTEK ROBOTICS

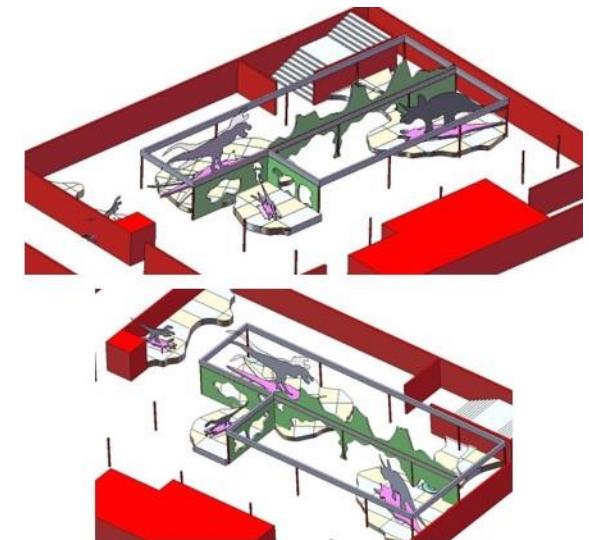
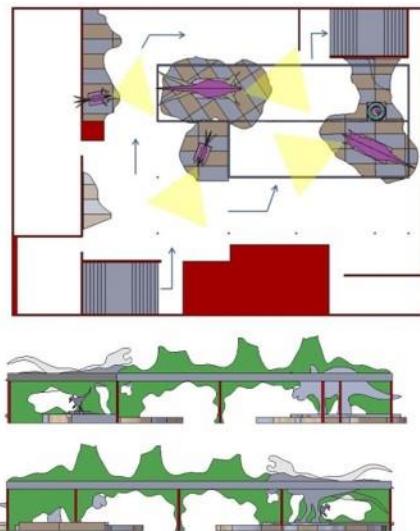
#### PRODUCTION DESIGN | EXHIBIT LAYOUT

- Attraction design and layout, art direction, modular landform design, scenic set fabrication and aesthetics, on-site coordination and installation, and travel logistics

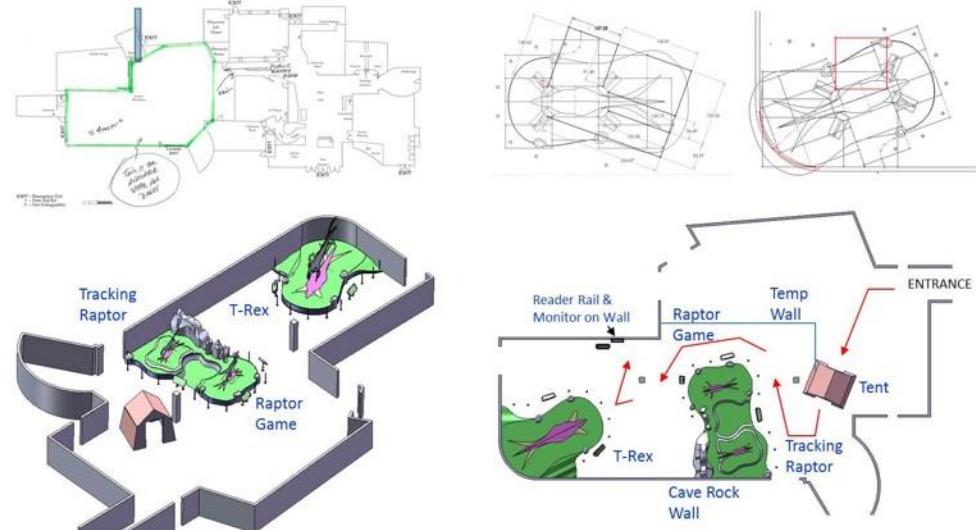
#### Science Museum of Virginia | 2014



#### Dino Solarium | Robotics New York | 2012



#### ScienceWorks Hands-On Museum | 2014



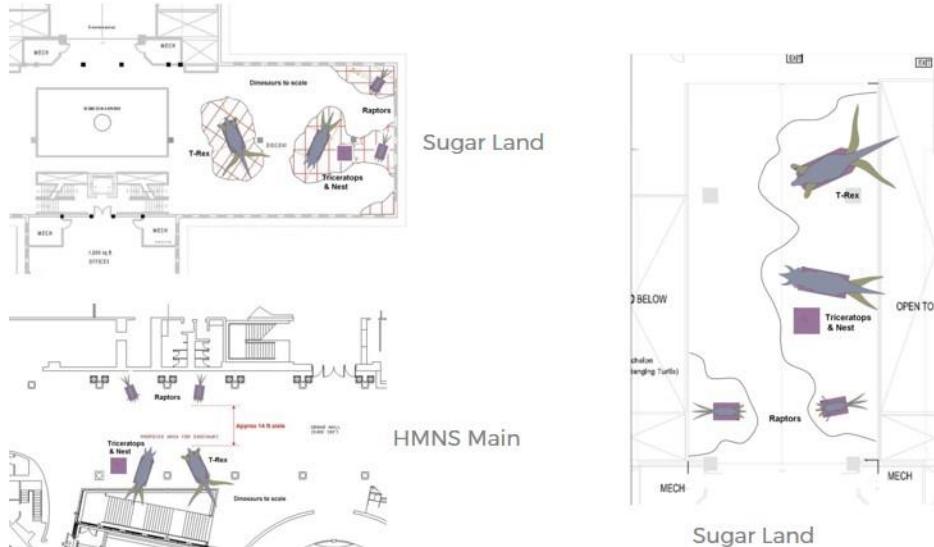
## GUARDIANS OF TIME | 2011 - 2014

### KUMOTEK ROBOTICS

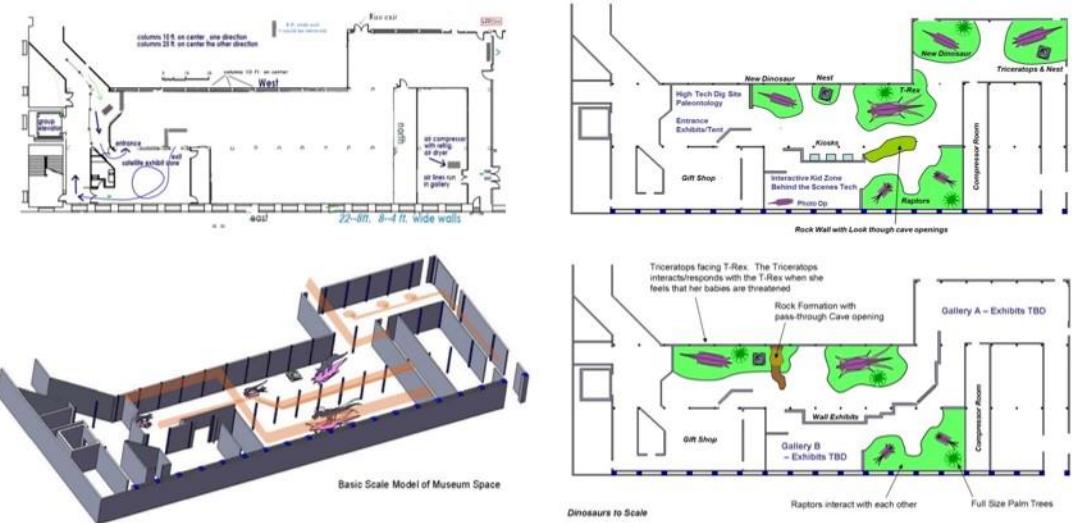
#### PRODUCTION DESIGN | EXHIBIT LAYOUT

- Attraction Design Proposals | Exhibits Designed but Not Awarded
  - Attraction design and layout, guest experience, museum coordination, pre-production, planning and logistics
    - Houston Museum of Natural Science, Houston TX
    - Houston Museum of Natural Science, Sugarland TX
    - South Carolina State Museum, Columbia SC
    - Center of Science and Industry, Columbus OH
    - Rochester Museum and Science Center, Rochester NY
- |  | 2012 | 2012 | 2013 | 2014 | 2014 |
|--|------|------|------|------|------|
|  |      |      |      |      |      |

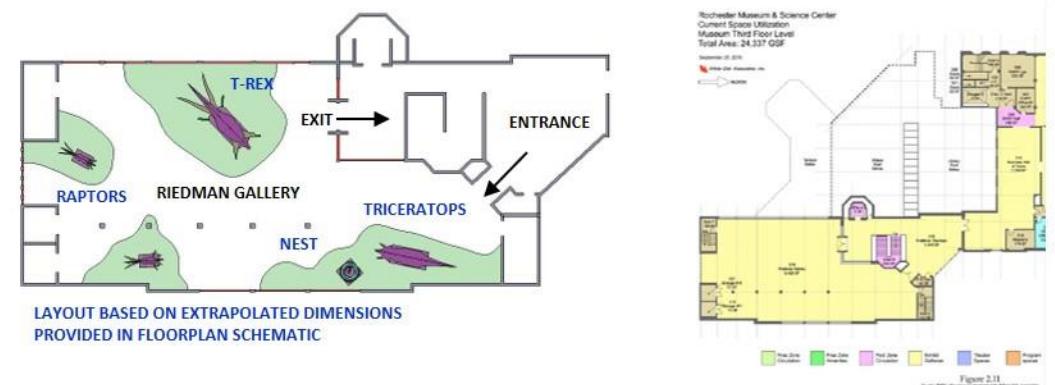
#### Houston Museum of Natural Science | 2012 Proposed Attraction Layout



#### South Carolina State Museum | 2013 Proposed Attraction Layout



#### Rochester Museum and Science Center | 2014 Proposed Attraction Layout



# 02

## INTERACTIVE EXHIBIT DESIGN

### WIESS ENERGY HALL 3.0

Houston Museum of Natural Science, Houston TX

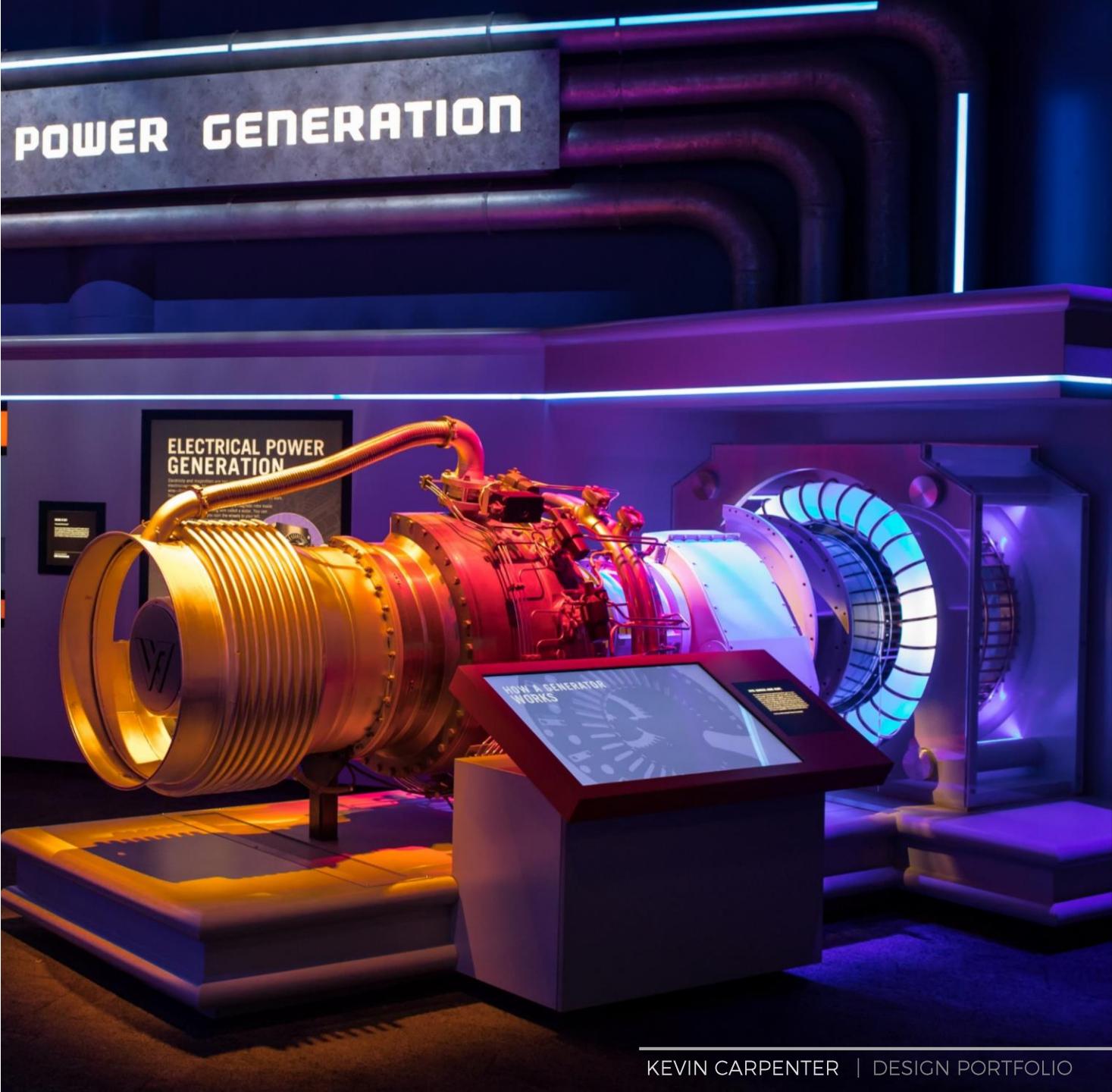
- Satellite
- Electrical Turbine Generator
- Sleeve Gun
- Geophone Demonstration
- Pig Race
- Pachinko Pinball Refinery
- Overhead Kinetic Sculpture
- MicroOrganism Overhead Sculptures
- Plate Techtonics Globes
- Global Energy Information Center
- HydroTurbine

### ATTURAIF LIVING MUSEUM

Old Diriyah, Saudi Arabia

### LAQ EXHIBIT BOOTH

Toy Fair 2013, New York NY



## ELECTRICAL TURBINE GENERATOR | 2017

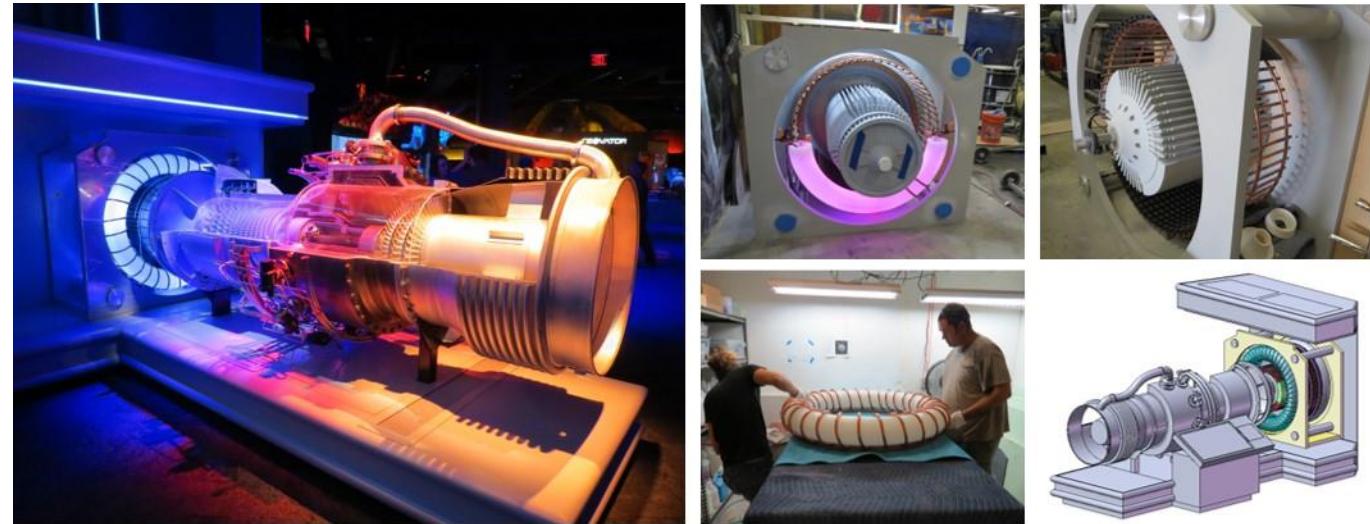
PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### OVERVIEW

- A rotating scale replica of an Electrical Turbine Generator, which is attached to a real Turbine

### ROLES | RESPONSIBILITIES

- Project Lead, exhibit conceptualization, design and layout, mechanical engineering, fabrication drawings, artistic direction, installation coordination



## SATELLITE | 2016

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### OVERVIEW

- A scale replica of a WorldView-4 Earth Imaging Satellite
- The Satellite rotates and moves across the ceiling (a span of 40 ft) on a custom designed track above the audience, with a spot lit grid pattern directed down onto the floor

### ROLES | RESPONSIBILITIES

- Project Lead, exhibit conceptualization, design and layout, mechanical engineering, artistic direction, fabrication, installation coordination



## SLEEVE GUN INTERACTIVE | 2017

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### OVERVIEW

- A working Seismic Sleeve Gun used for Marine Seismic Data Acquisition
- Sleeve Gun is submerged in a tank of water and fires when a lever is pumped to a set pressure



### ROLES | RESPONSIBILITIES

- Early exhibit conceptualization, design, technical support and coordination

## GEOPHONE DEMONSTRATION | 2017

### OVERVIEW

- A working Geophone exhibit with a geophone placed in a rock with seismic wave monitoring software and readout monitor
- A knocker mechanism on the rock allows for guests to understand the function of seismic wave data acquisition



### ROLES | RESPONSIBILITIES

- Exhibit Conceptualization, 3D design of geophone casing, technical support and coordination

## PACHINKO PINBALL REFINERY | LNG | 2015

### OVERVIEW

- A fun "Pachinko Ball" inspired interactive that visually represents the separation and refinement process

### ROLES | RESPONSIBILITIES

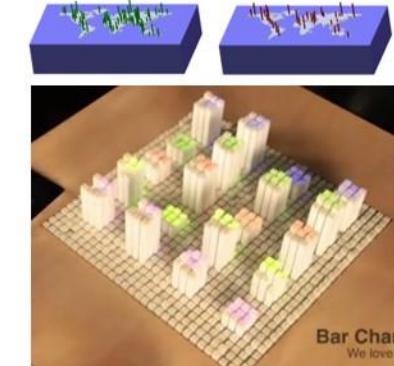
- Early exhibit conceptualization, design and development, functional analysis, and technical support



## GLOBAL ENERGY INFORMATION CENTER | 2016

### OVERVIEW

- A physical interactive which translates global information data on energy resources and represents the data physically on a "Dynamic Shape Display" Tile Table
- Concept proved unfeasible within budget



### ROLES | RESPONSIBILITIES

- Early exhibit conceptualization, extensive technical R&D, early exhibit design/development, and prototypes

## PIG RACE | 2015

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### OVERVIEW

- A series of large interactive globes representing 4 periods of earth's geographic history

### ROLES | RESPONSIBILITIES

- Early exhibit conceptualization, early exhibit design and track layout, functional analysis, technical support



## OVERHEAD KINETIC SCULPTURE | 2016

### OVERVIEW

- A scenic sculptural element visually depicting the look of seismic wave patterns
- Initially conceived as being a moving kinetic sculpture, but proved unfeasible within budget
- Final version is a static representation

### ROLES | RESPONSIBILITIES

- Early exhibit conceptualization, kinetic sculpture R&D, early exhibit design/development, and prototypes



## PLATE TECTONICS GLOBES | 2016

### OVERVIEW

- A series of large interactive spinable globes representing 4 periods of earth's geographic history

### ROLES | RESPONSIBILITIES

- Early exhibit conceptualization, 3D Print Consultant on printing of Globe sections, mechanism design support



## MICROORGANISMS OVERHEAD SCULPTURES | 2015

### OVERVIEW

- A series of scenic sculptural elements depicting large-scale versions of Marine Microorganisms

### ROLES | RESPONSIBILITIES

- Early exhibit conceptualization, scaling of fossils, technical support, lighting tests, sculpture team support



## HYDROTURBINE | 2015

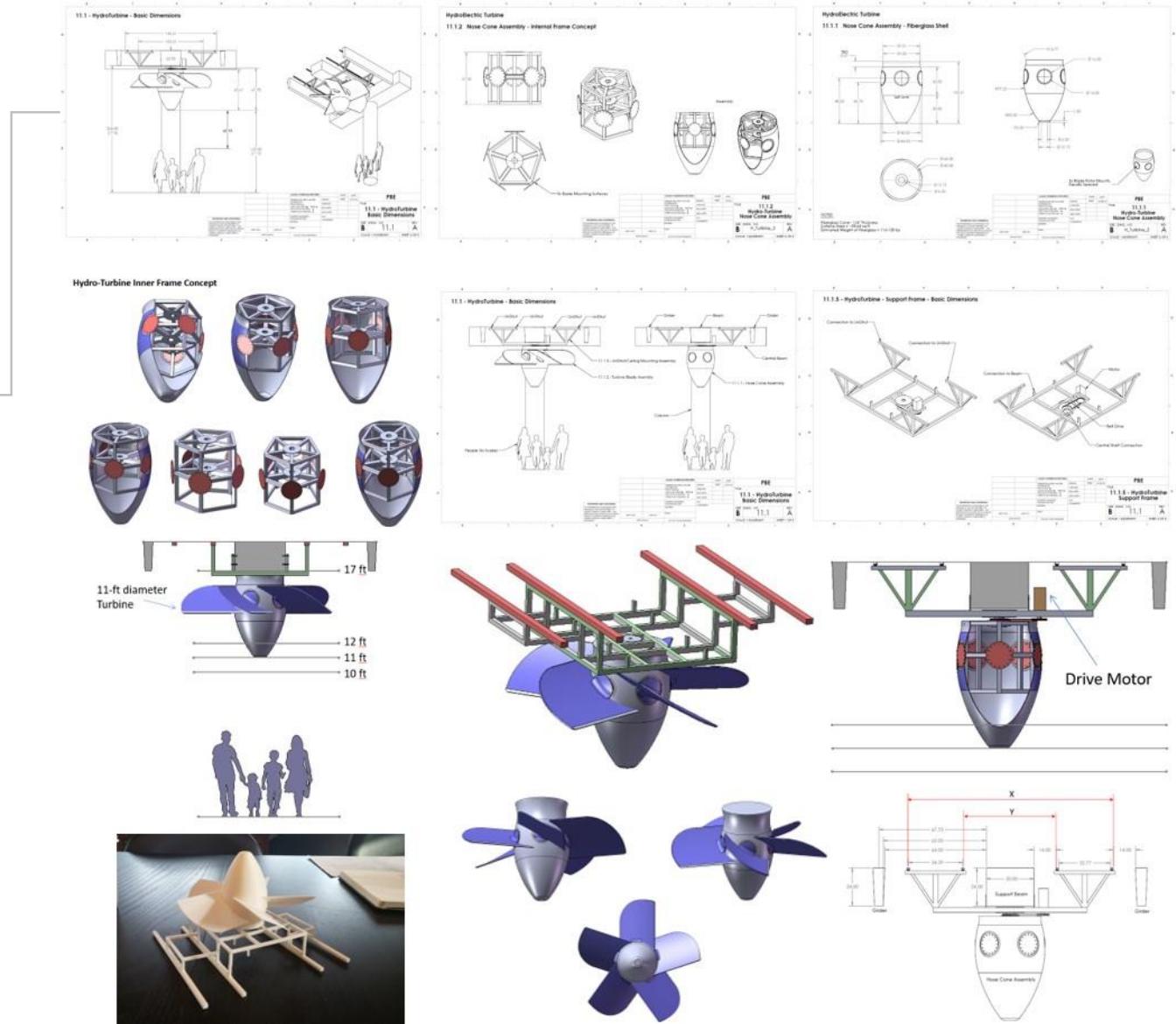
PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### OVERVIEW

- A 6-ft diameter large spinning overhead 5-Blade HydroTurbine exhibit for the "Wiess Energy Hall"

### ROLES | RESPONSIBILITIES

- Project Lead, exhibit conceptualization, design and development, layout, structural/mechanical engineering, and technical R&D
- The project proved technically feasible after engineering completed, but was not completed due to budget restrictions



## THERMAL PROPERTIES EXHIBIT | 2018

### PBE | ATTURAIF LIVING MUSEUM

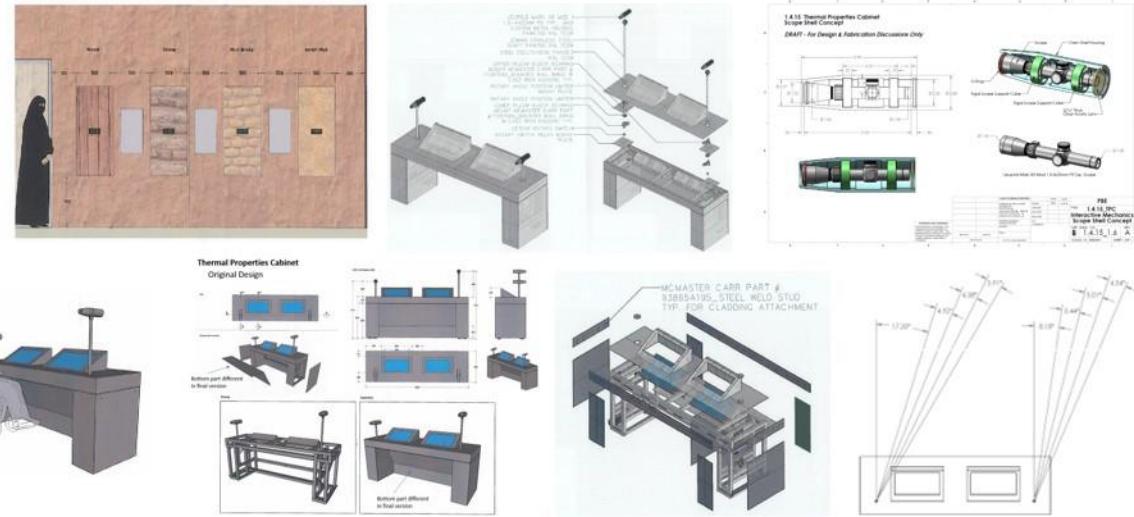
Old Diriyah, Saudi Arabia

#### OVERVIEW

- Design and development of a Thermal Properties interactive exhibit for the Atturaif Living Museum, a UNESCO World Heritage Site in Old Diriyah, Saudi Arabia

#### DESIGN | ENGINEERING

- Lead CAD Design Engineer, fabrication drawings and coordination



## LAQ TOY FAIR DISPLAY EXHIBIT | 2013

### LAQ

Nara, Japan | Richardson TX

#### DESIGN | FABRICATION

- Freelance Design and Fabrication of the Toy Fair Trade Show exhibit display for LaQ
- LaQ is an award winning construction toy block made in Japan
- Exhibit Design for a conceptual idea for how the construction toy pieces could be displayed for events in toy stores, malls and museum construction play areas



# 03

## ANIMATRONICS PROJECTS

### HANSON ROBOTICS

HumanKind | Humanoid Animatronic Robots

- Bina-48
- Charles
- Mia-Pisa (The F.A.C.E. Robot)
- Ibn-Sina
- Young Einstein
- Philip K. Dick
- Einstein.V3
- Voice of Julio - Museo Reina Sofia
- Mira-Alice
- Alpha-M
- Joey Chaos
- Aleph-Null
- Swami
- Frankie
- Jules
- Einstein.V2
- A.R.T.I. Robot - Intel Museum

### KUMOTEK ROBOTICS

- Farish Hall of Texas Wildlife | Animatronic Animals



## HANSON ROBOTICS | 2007 - 2010

### HUMANKIND HUMANOID ROBOTS | OVERVIEW

Robotic Design Collaborations with Dr. David Hanson

### DESIGN | ENGINEERING

Project Manager, Lead Mechanical/Systems Engineer, Lead CAD Designer, Lead Fabricator, Assistant Artistic Director and Lead Animator on the development of 16 internationally acclaimed and recognized biologically-inspired realistic humanoid robots

### FEATURES

Face tracking, facial recognition, voice recognition, speech synthesis, and the HRI patented character engine software (the robotic brain), which enables the robot make eye contact, identify users, access the internet for information, carry on a conversation, chat and answer questions, tell stories, express emotion in response to users emotional state, and store information about conversations

### ACADEMIC RESEARCH

Robotic Design Collaborations delivered to prestigious international laboratories and research institutions

Serving as test platforms in a wide range of scientific and engineering research, including autism therapy, artificial intelligence, machine perception, neuroscience, cognitive science, social robotics interactions and artificial muscle actuator research

This research has resulted in hundreds of academic peer reviewed publications.

### EXHIBITIONS

Robotic Design Collaborations showcased in several major Science and Technology Museums including the Smithsonian, the Exploratorium, the Museum of Science and Industry and the Reina Sofía

### PRESS | ACCOLADES

Robotic Design Collaborations exhibited at over 35 international symposiums and technology conferences, and have been featured in over 100 international publications, in major news and television broadcasts, and in documentary films

- Popular Mechanics, Discover Magazine, Robot, Forbes, Servo, Museum Road, National Geographic, The Smithsonian, Neiman Marcus, Wired, IEEE, and GQ
- 2010 TED Conference, Long Beach CA
- Ray Kurzweil's Film Transcendent Man
- Connor Chronicles Television Series
- Good Morning America, Discovery Channel, Today Show, NOVA
- VPRO Dutch TV Documentary Film Owls in Daylight
- Bina-48 featured prominently in the Philosophy of Love class at Norte Dame de Namur College, Belmont CA
- Bina-48 is the subject of a new Untitled Documentary by 41-Media's Peter Sillen



## BINA-48 | 2010

HANSON ROBOTICS | TERESEM FOUNDATION | KURZWEIL AI TECHNOLOGIES

### OVERVIEW

- Robotic android portrait of Bina Rothblatt
- Designed and fabricated for Dr. Martine Rothblatt, the Teresem Foundation and Kurzweil AI Technologies

### DESIGN | ENGINEERING

- Project Manager, Customer Coordination, Lead Mechanical/Systems Engineer, Lead CAD Designer, Lead Fabricator, Assistant Artistic Director, Lead Animator, Content Development

### PRESS | ACCOLADES

- Debuted at 2009 TED Conference
- Featured in Discover Magazine and New York Times Science Section
- Bina-48 featured prominently in the "Philosophy of Love" class at Norte Dame de Namur College, Belmont CA
- Bina-48 is the subject of a new Untitled Documentary by 41 Media's Peter Sillen



## CHARLES | 2010

HANSON ROBOTICS | UNIVERSITY OF CAMBRIDGE

### OVERVIEW

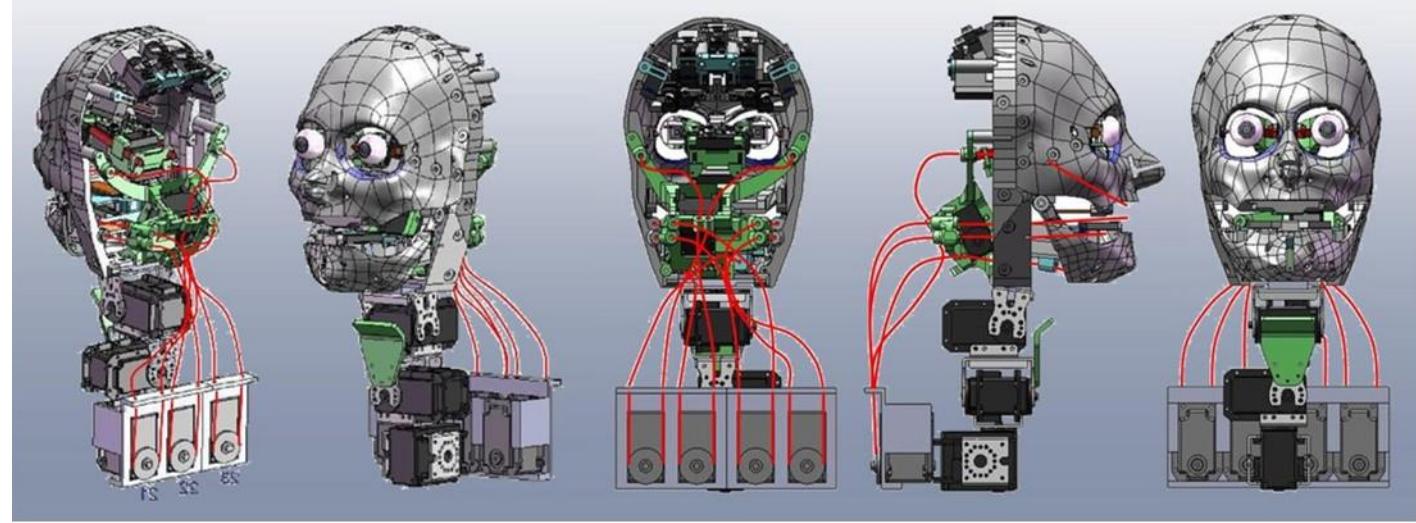
Interactive robotic android designed and fabricated for the Machine Intelligence Laboratory at University of Cambridge, England

### DESIGN | ENGINEERING

- Project Manager, Customer Coordination, Lead Mechanical/Systems Engineer, Lead CAD Designer, Lead Fabricator, Assistant Artistic Director, Lead Animator

### ACADEMIC RESEARCH

- A 'mind reading' robot that can mimic human emotions
- Researchers at Cambridge University have programmed Charles to mimic all human expressions to discover if the machines could respond to the same social cues as humans and encourage people to engage with the machines more
- Charles is made up of a system of computer programs linked up to a camera – which can read people's faces
- The computer reads the positions of the face, including the eyebrows, jaw and mouth, then sends the information over to Charles who mimics the expression in just two seconds



## MIA-PISA (The F.A.C.E. Robot) | 2009

HANSON ROBOTICS | UNIVERSITY OF PISA

### OVERVIEW

- Full body interactive female robotic android therapist for use in groundbreaking autism therapy research
- Collaboration with the University of Pisa, Centro Piaggio and Distanza da Istituto Stella Maris Hospital in Messina Italy

### DESIGN | ENGINEERING

- Project Manager, Customer Coordination, Lead Mechanical/Systems Engineer, Lead CAD Designer, Lead Fabricator, Assistant Artistic Director, Lead Animator
- On-Site integration and academic studies with test subjects

### ACADEMIC RESEARCH

- In neuro-typical individuals, fMRI experiments show that face perception opens paths of social engagement including in the cingulate and language systems
- In autistic individuals fMRI experiments show that face perception does not activate these social language processing centers
- Autistic individuals have altered patterns of activation during social tasks, the emotional processing and visual-spatial processing and often lack affect and social engagement when encountering people

### PROJECT HYPOTHESIS

- Interaction with realistic robots may be more predictable and appealing and engaging to the autistic individual
- The resulting engagement may kick start the social brain, training more neuro-typical activity



Studies conducted at the *Stella Maris Hospital* in Messina, Italy



### PRELIMINARY TEST RESULTS

- Tests performed at Stella Maris Hospital with a dozen autistic test subjects showed a striking increase in emotional affect with imitation, social-type engagement, and gaze-following when interacting with the robot

IBN- SINA | 2009

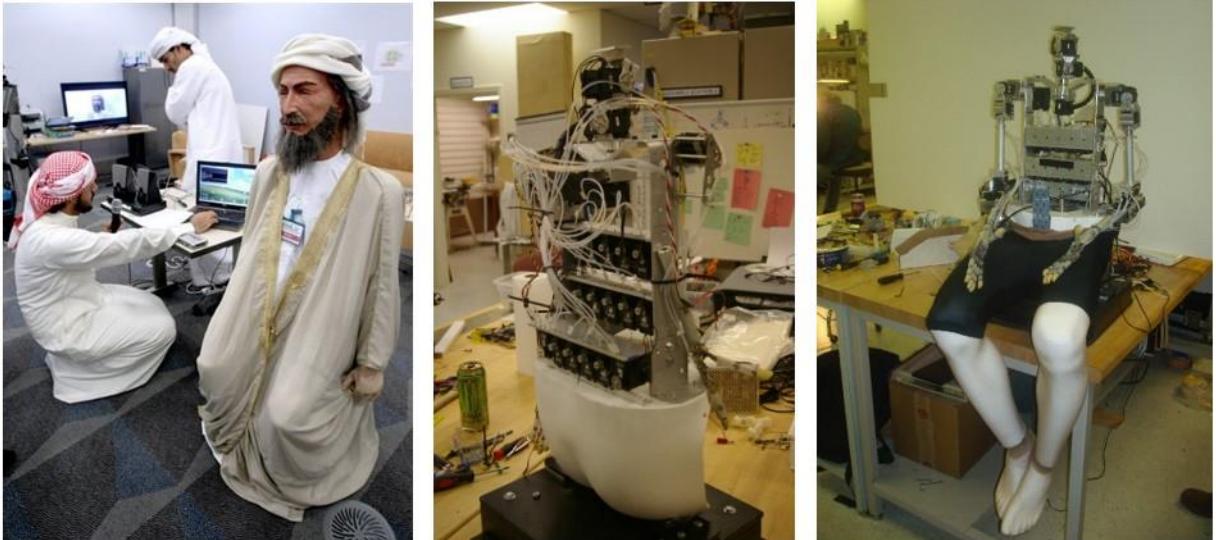
HANSON ROBOTICS | UNITED ARAB EMIRATES UNIVERSITY

## OVERVIEW

- Interactive robotic android portrait (with fully expressive arms and fingers) of the Arabic philosopher/mathematician Ibn-Sina (or Avicenna)
- Designed and fabricated for the Interactive Robots and Media Laboratory (IRML) at the United Arab Emirates University, Dubai
- Debuted at the GITEX 2009 exhibition in Dubai.

## DESIGN | ENGINEERING

- Project Manager, Customer Coordination, Lead Mechanical/Systems Engineer, Lead CAD Designer, Lead Fabricator, Assistant Artistic Director, Lead Animator



## YOUNG EINSTEIN | 2009

HANSON ROBOTICS | NATIONAL TAIWAN UNIVERSITY  
Taipei, China

### OVERVIEW

- Interactive robotic android portrait of Dr. Einstein as a young man. Designed and fabricated for Artificial Intelligence Lab at National Taiwan University, Taipei China

### DESIGN | ENGINEERING

- Project Manager, Customer Coordination, Lead Mechanical/Systems Engineer, Lead CAD Designer, Lead Fabricator, Assistant Artistic Director, Lead Animator



## EINSTEIN.V3 | 2009

HANSON ROBOTICS |  
UNIVERSITY OF CALIFORNIA, SAN DIEGO

### OVERVIEW

- Interactive robotic android portrait designed and fabricated for the Visual Computing & Machine Perception Labs, University of California, San Diego, and the California Institute for Telecommunications and Information Technology
- Debuted at the 2009 TED Conference.

### DESIGN | ENGINEERING

- Project Manager, Customer Coordination, Lead Mechanical/Systems Engineer, Lead CAD Designer, Lead Fabricator, Assistant Artistic Director, Lead Animator

### ACADEMIC RESEARCH

- Robot used as a test platform for social robotics research and the development of facial expression detection software called CERT (Computer Expression Recognition Toolbox)
- This software provides the data necessary for machine learning algorithms to learn a mapping between facial expressions and the movements of muscle motors.



MIRA-ALICE | 2008

HANSON ROBOTICS | UNIVERSITY OF GENEVA

## OVERVIEW

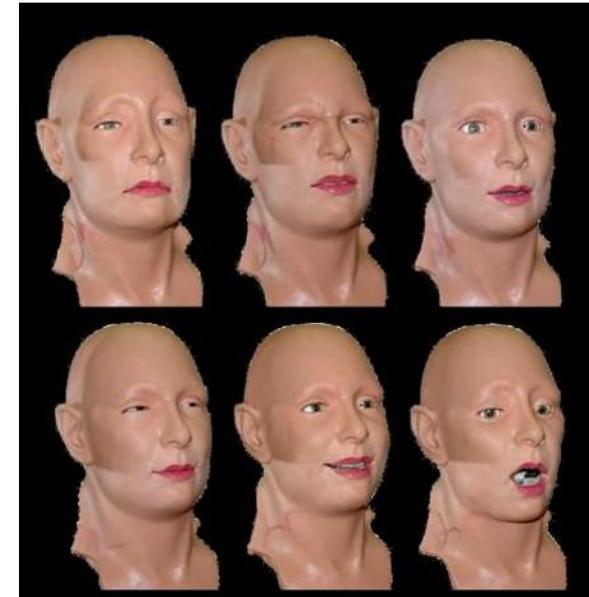
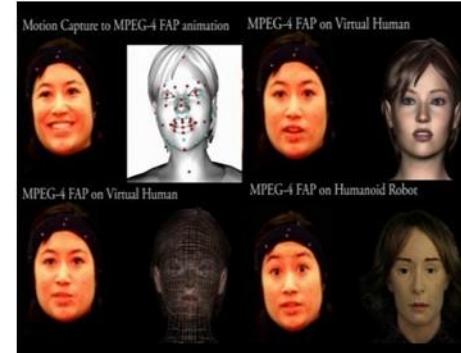
- Interactive female robotic android head. Designed and fabricated for the MIRA Labs at the University of Geneva, Switzerland under a grant from the EU Indigo Project

## DESIGN | ENGINEERING

- Project Manager, Customer Coordination, Lead Mechanical/Systems Engineer, Lead CAD Designer, Lead Fabricator, Assistant Artistic Director, Lead Animator

## ACADEMIC RESEARCH

- Robot used for social robotics research, motion capture/virtual interface control generation, interaction and communication with virtual and robotic characters SW architecture development, and personality /emotion simulation and modeling



## VOICE OF JULIO | 2008

HANSON ROBOTICS |  
MUSEO NACIONAL CENTRO DE ARTE REINA SOFÍA

### CONCEPT IDEATION

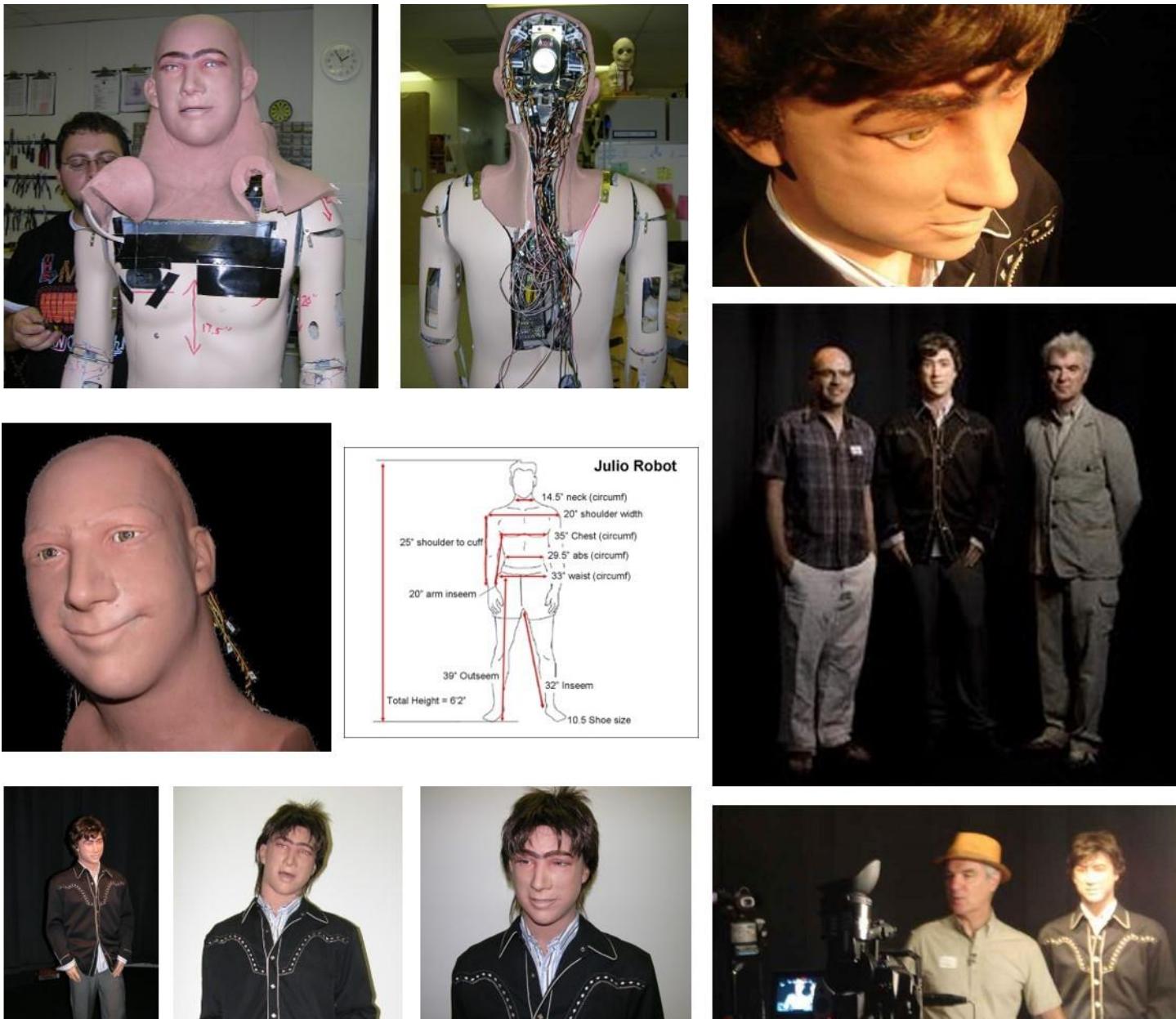
- An attraction conceived by Artist/Musician David Byrne to highlight the Uncanny Valley Principle of Robotics for the ArtFutura Exhibition: Maquinas & Almas (Machines and Souls) at the Museo Nacional Centro De Arte Reina Sofía, Madrid, Spain
- Julio sings a song written by Byrne specifically for the exhibition in both English and Spanish

### DESIGN | ENGINEERING

- Project Manager
- Robot design and engineering
- Brainstorming sessions with David Byrne
- Museum / vendor coordination
- Exhibit interaction design
- Sound design
- Robot head & body construction / fabrication
- Facial and gesture Animation and programming
- On-Site Installation
- On-site operations, testing and maintenance
- Travel logistics and planning

### EXHIBITION LENGTH

- 6 Months



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## PHILIP K. DICK | 2008

### HANSON ROBOTICS

#### OVERVIEW

- Interactive robotic android portrait designed and fabricated for the VPRO Dutch TV Documentary Film Company for the movie "Owls in Daylight"

#### DESIGN | ENGINEERING

- Lead Mechanical Engineer, Lead CAD Designer, Fabricator



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## ALPHA-M | 2007

### HANSON ROBOTICS | UNIVERSITY OF CRETE

#### OVERVIEW

- Interactive robotic android head designed and fabricated in collaboration with the EU Indigo Project for the Computational Vision and Robotics Laboratory and the Foundation for Research and Technology-Hellas at the University of Crete, Heraklion, Greece

#### DESIGN | ENGINEERING

- Project Manager, Customer Coordination, Lead Mechanical/Systems Engineer, CAD Designer, Lead Fabricator, Assistant Artistic Director, Lead Animator



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## JOEY CHAOS | 2007

#### OVERVIEW

- Interactive robotic android rock star
- Designed and fabricated for use as a test platform for Maya and Massive Animation Software Character Engine testing and interactive chat capabilities

#### DESIGN | ENGINEERING

- Project Manager, Lead Mechanical Engineer, Lead CAD Designer, Fabricator



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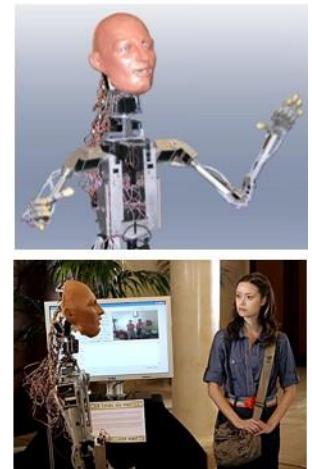
## ALEPH-NULL | 2007

#### OVERVIEW

- Full body interactive robotic android
- Exhibited at Wired Nextfest 2007 and featured on the *Sarah Connor Chronicles* television series

#### DESIGN | ENGINEERING

- Project Manager, Lead Mechanical Engineer, Lead CAD Designer, Fabricator



## JULES | 2007

HANSON ROBOTICS |  
UNIVERSITY OF THE WEST OF ENGLAND

### OVERVIEW

- Interactive robotic android head designed and fabricated for the University of the West of England, Bristol

### DESIGN | ENGINEERING

- Fabricator, Technical Support



## EINSTEIN.V2 | 2007

HANSON ROBOTICS |  
SMITHSONIAN COOPER-HEWITT

### OVERVIEW

- Interactive robotic android head refurbished for an exhibit at the Smithsonian Cooper-Hewitt National Design Museum, New York

### DESIGN | ENGINEERING

- Fabricator, Technical Support



## SWAMI | 2007

HANSON ROBOTICS | NEIMAN MARCUS

### OVERVIEW

- Interactive robotic android fortune teller
- Designed for the Neiman Marcus 100 Anniversary Edition Christmas Book
- Debuted on the *Today Show*

### DESIGN | ENGINEERING

- Project Manager, Lead Engineer, CAD Designer, Fabricator, Art Direction, Technical Support



## FRANKIE | 2007

HANSON ROBOTICS | EXPLORATORIUM

### OVERVIEW

- Interactive robotic android head designed and fabricated for the "MIND" exhibit at the Exploratorium Museum of Science, Art and Human Perception, San Francisco

### DESIGN | ENGINEERING

- Project Manager, Lead Mechanical Engineer, CAD Designer, Fabricator, Technical Support



## A.R.T.I. | 2007

HANSON ROBOTICS | INTEL MUSEUM  
San Jose, CA

### DESIGN | FABRICATION

- Static interactive robotic exhibit designed and fabricated in collaboration with Hanson Robotics and Kumotek Robotics
- On display at the Intel Museum, San Jose CA



## MINI-EINSTEIN PROTOTYPE | 2009

HANSON ROBOTICS

### DESIGN | ENGINEERING

- Project Manager for the development of a Static Toy looks-a-like electronics toy prototype
- Collaboration with Excalibur Electronics
- Debuted at 2009 CES, Las Vegas



## FARISH HALL OF TEXAS WILDLIFE | 2014

KUMOTEK ROBOTICS | STUDIO VANIMA  
HOUSTON MUSEUM OF NATURAL SCIENCE

### OVERVIEW

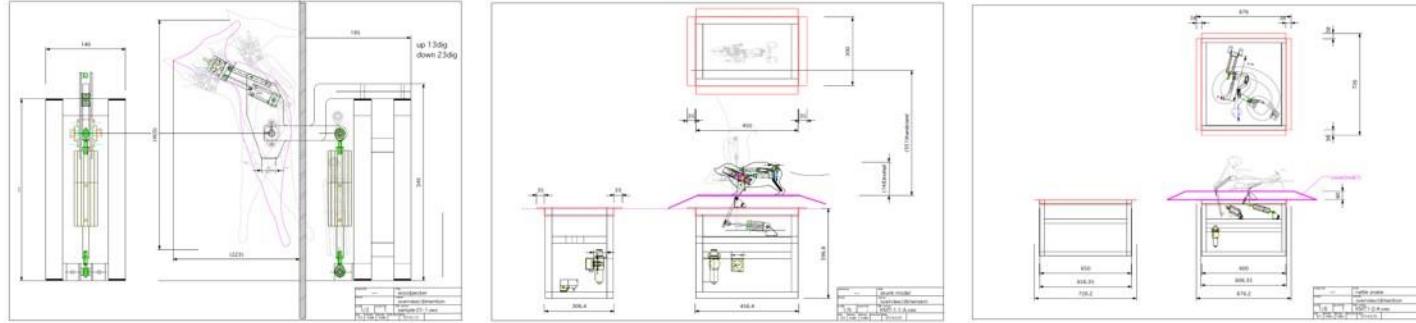
- Animatronic Rattle Snake, Woodpecker and Skunk for the "Farish Hall of Texas Wildlife" at the Houston Museum of Natural Science, Houston TX
- Collaboration with Animatronics Design Company VANIMA, Tokyo Japan

### DESIGN | ENGINEERING

- Project Manager, interaction design, animatronics R&D, procurement, exhibit logistics, customer coordination, installation

### FEATURES

- Skunk
  - Moving head and handstand tail flicking
- Woodpecker
  - Pecks at a tree, moving head
- Rattle Snake
  - Rattles tail, moves head, raises up/down



# 04

## ROBOTICS | CHARACTER ROBOTS

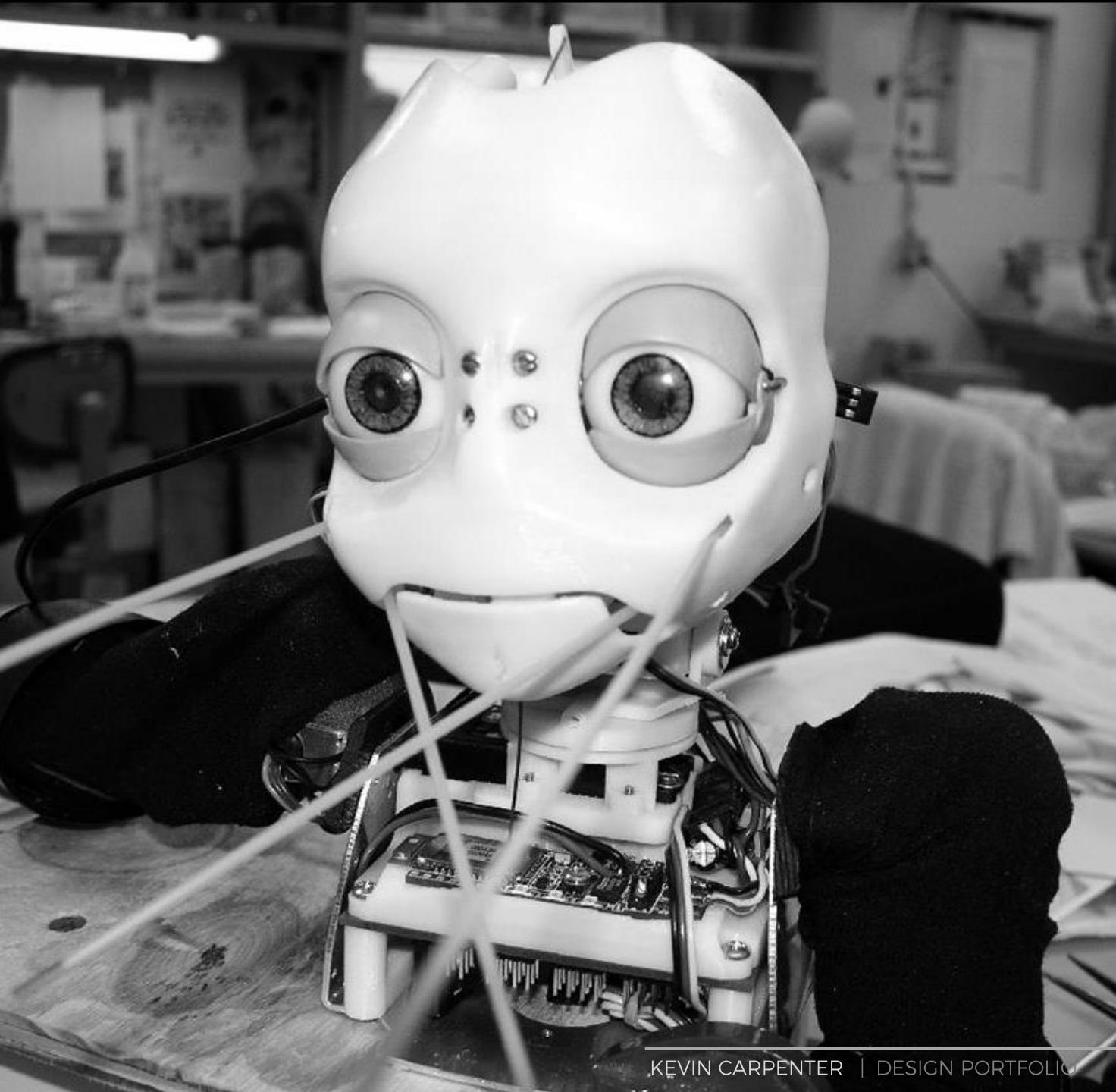
### HANSON ROBOTICS

#### Zeno RoboKind Character Robots

- Zeno.V5
- Zeno.V4
- Zeno.V3 - Museum of Science & Industry
- Zeno.V2
- Zeno.V1

### KUMOTEK ROBOTICS

- Spy in the Huddle - Penguin Robots
- Robo-Boom



## HANSON ROBOTICS | 2007 - 2010

### ZENO ROBOKIND ROBOTS | OVERVIEW

Robotic Design Collaborations with Dr. David Hanson

#### OVERVIEW

- Co-Design and development of the Zeno RoboKind robot platform
- The world's first artificially intelligent, wirelessly-controlled, interactive, conversational character robotic companion with human-like facial expressions

#### DESIGN | ENGINEERING

- Project Manager, Lead Mechanical and Systems Engineer, Lead CAD Designer and Lead Animator on the 3+ year development effort to design and fabricate the 5 Zeno RoboKind proof-of-concept prototypes to determine market and manufacturing feasibility

#### ART DIRECTION

- Assistant Creative Director involved in the artistic design and creative direction of the Zeno RoboKind design and cross-platform multimedia deployment and branding strategy
- Contributions included participation on the character design, aesthetics, movie script, web-isode story concepts, virtual world and comic book development, and marketing and media graphics

#### FEATURES

- Face tracking, facial recognition, voice recognition, speech synthesis, spatial navigation, and the HRI patented character engine software, which enables the robot to make eye contact, identify users, access the internet for information, carry on a conversation, chat and answer questions, tell stories, express emotion in response to users emotional state, and store information about conversations

### THE EVOLUTION OF ZENO ROBOKIND

- From humble beginnings in 2007, through the design and development of the first 5 proof-of-concept prototypes
- The evolution of Zeno and the Robokind platform continued for another 4 years after Kevin Carpenter's departure from Hanson Robotics
- In 2014, Zeno became Milo, the Teaching and Autism Therapy Robot
- Milo is currently in mass production and is part of the Robots4Autism Program



Zeno.V1  
2007

Zeno.V2  
2007

Zeno.V3  
2008

Zeno.V4  
2009

Zeno.V5  
2010

Milo  
2014

#### PRESS | ACCOLADES

- Robotic Design Collaborations exhibited at over 35 international symposiums and technology conferences, and have been featured in over 100 international publications, in major news and television broadcasts, and in documentary films
  - Zeno.V3 showcased in the Museum of Science and Industry's *Fast Forward* Exhibit
  - *Popular Mechanics*, *Discover Magazine*, *Robot*, *Forbes*, *Servo*, *National Geographic*, *The Smithsonian*, *Wired*, *IEEE*,
  - *Good Morning America*, *Discovery Channel*, *Today Show*, *NOVA*
  - 2010 TED Conference, Long Beach CA
  - Ray Kurzweil's Film *Transcendent Man*

ZENO.V5 | 2010

HANSON ROBOTICS | ROBOKIND

#### OVERVIEW

- A walking, fully interactive and conversational looks-a-like & works-a-like toy robot prototype

#### DESIGN | ENGINEERING

- Project Manager, Artistic Direction, Lead Mechanical/Systems Engineer, Lead CAD Designer, Lead Fabricator, Lead Animator

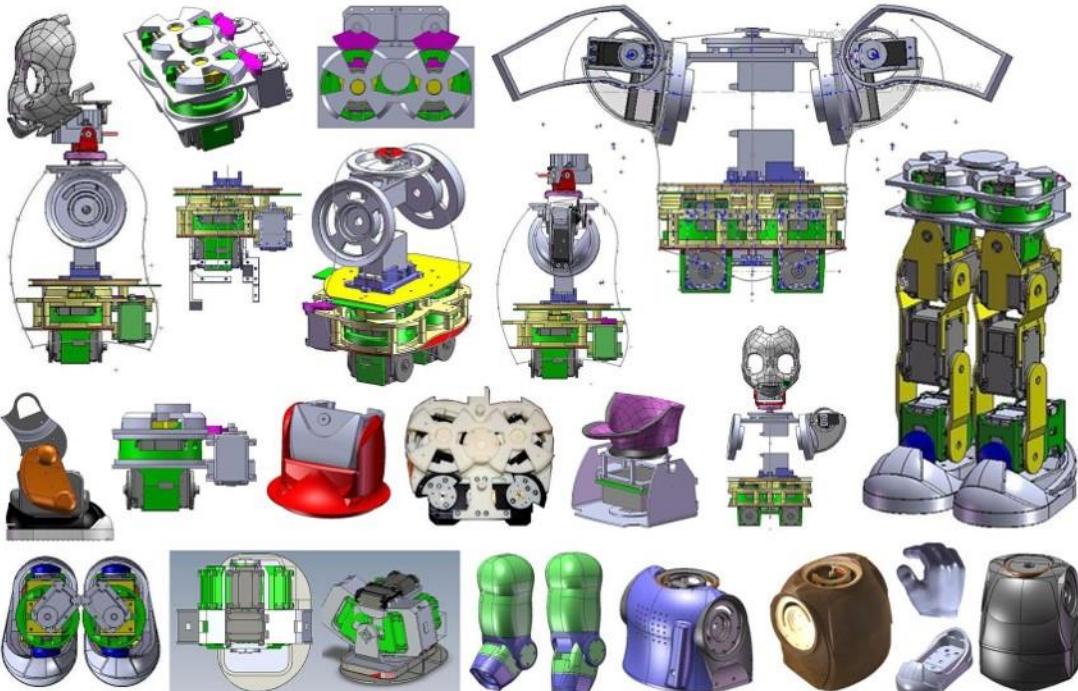
#### PRESS | AWARDS

- Zeno-5 debuted in Popular Mechanics and Discover Magazines

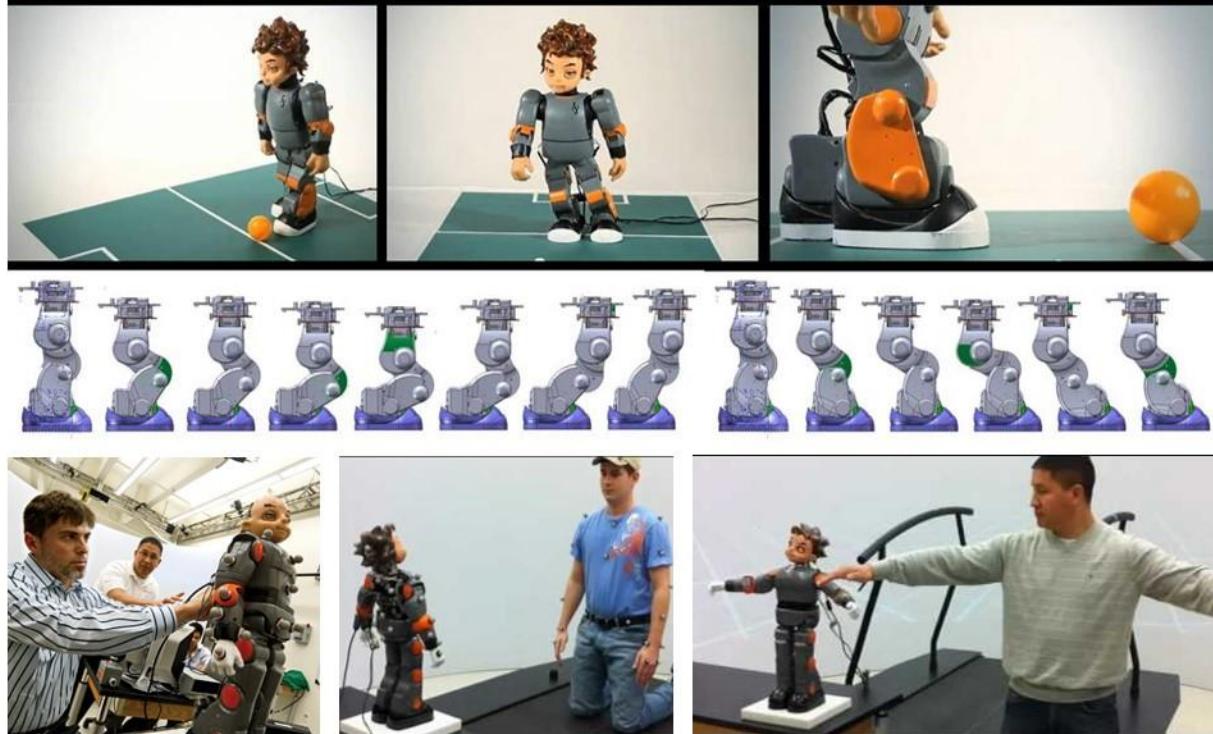
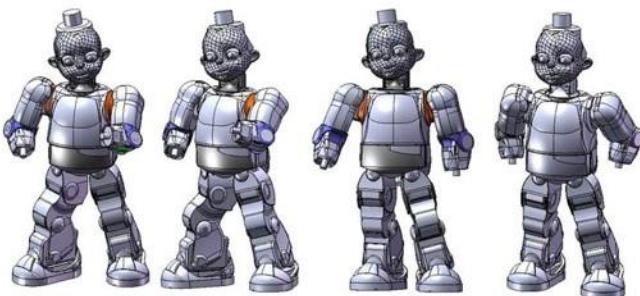


ZENO.V5 | 2010

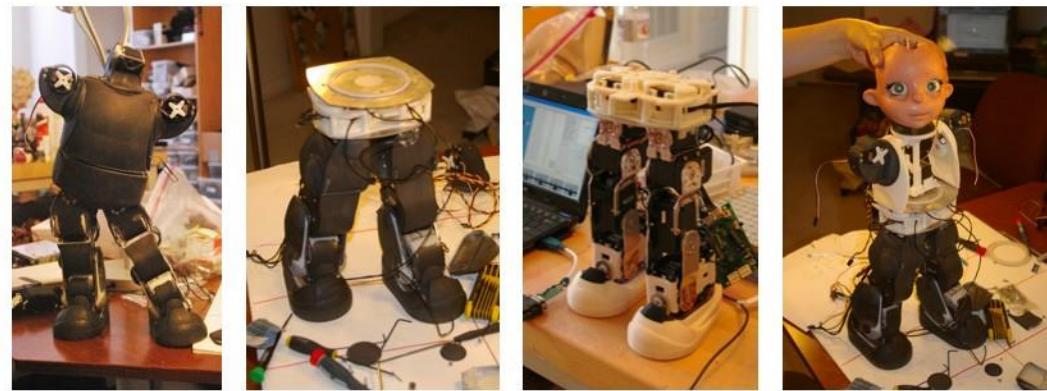
HANSON ROBOTICS | ROBOKIND



Design of Action Figures



Mechanical Design of Walking Mechanism



ZENO.V4 | 2009

HANSON ROBOTICS | ROBOKIND

### OVERVIEW

- A static looks-a-like toy robot prototype

### DESIGN | ENGINEERING

- Project Manager, Artistic Direction, Interfaces and integration with head



## ZENO.V3 | FAST FORWARD | 2008

HANSON ROBOTICS | MUSEUM OF SCIENCE AND INDUSTRY  
Chicago, IL

### OVERVIEW

- An interactive dancing robotic exhibit installed in the “Fast Forward” exhibit at the Museum of Science and Industry, Chicago
- Exhibit Duration: 1 Year

### FEATURES

- Face tracking, facial recognition, voice recognition, speech synthesis, spatial navigation, and the HRI patented character engine software, which enables the robot to make eye contact, identify users, access the internet for information, carry on a conversation, chat and answer questions,

### DESIGN | ENGINEERING | ANIMATION

- Project Manager, design lead, engineering, fabrication, programming, full body and facial character animation, exhibit display, installation, testing and on-site maintenance



## ZENO.V2 | 2007

HANSON ROBOTICS | ROBO-GARAGE | MASSIVE

### OVERVIEW

- The World's 2nd Conversational Character Robot
- Collaboration with Tomotaka Takahashi of Robo-Garage (Japan) and Massive Software (New Zealand)

### CONCEPTUALIZATION | DESIGN | ENGINEERING

- Project Lead, CAD design lead, mechanical/systems engineering, skin development, hair sculpture, fabrication lead, assembly, testing, facial and gesture animation

### FEATURES

- Face tracking, facial recognition, voice recognition, speech synthesis, spatial navigation, and the HR/Massive character engine test software

### PRESS | ACCOLADES

- Debuted at Wired Nextfest 2007, Los Angeles
- Exhibited at Wired Nextfest 2008, Ingenuity Festival, Cleveland, ArtFutura Barcelona, United Arab Emirates University, GadgetOff 2008, FMX, Indian Institute of Technology, University of Tokyo, and the 2009 TED Conference
- Filmed for Ray Kurzweil's "The Transcendent Man" Documentary



## ZENO.V1 | 2007

HANSON ROBOTICS | ROBO-GARAGE | MASSIVE

### OVERVIEW

- The World's 1st Conversational Character Robot
- From Blue-Sky Concept to Reality
- Collaboration with Tomataka Takahashi of Robo-Garage (Japan) and Massive Software (New Zealand)

### CONCEPTUALIZATION | DESIGN | ENGINEERING

- Project Lead, CAD design lead, mechanical/systems engineering, skin development, hair sculpture, fabrication lead, assembly, testing, facial and gesture animation

### FEATURES

- Face tracking, facial recognition, voice recognition, speech synthesis, spatial navigation, and the HR/Massive character engine test software

### PRESS | ACCOLADES

- Debuted at Wired Nextfest 2007, Los Angeles
- World Debut on Good Morning America
- Exhibited at over 25 international conferences , reported on in over 80 publications worldwide



## ROBO-PENGUINS | 2012

KUMOTEK ROBOTICS | JOHN DOWNER PRODUCTIONS  
Bristol, England

### OVERVIEW

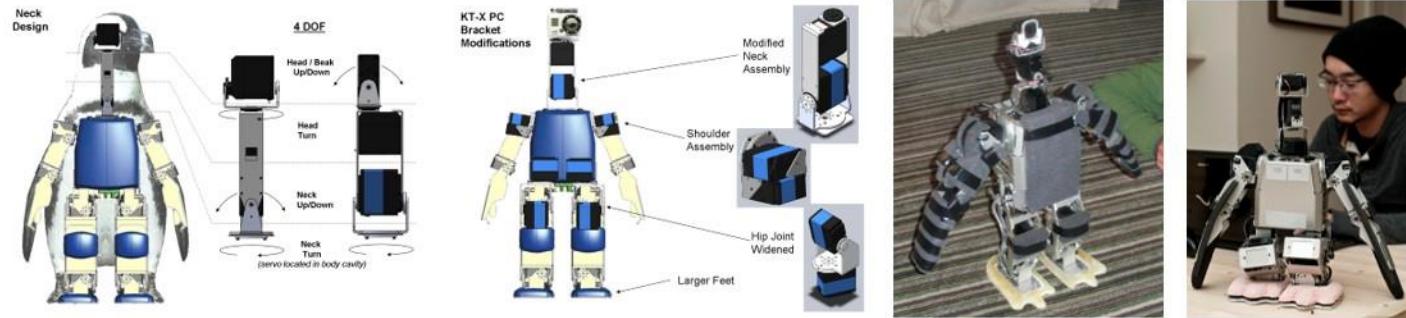
- Collaboration with award winning documentary film company John Downer Productions for the BBC Production, *Penguins: Spy in the Huddle*.
- The state-of-the-art robots were designed to resemble and mimic Rockhopper and Humboldt and Baby Emperor Penguins
- Advanced capabilities to autonomously walk on rough surfaces into the midst of penguin colonies, interact with and film the penguins remotely in their natural habitat in Peru, the Falkland Islands and in Antarctica.

### DESIGN | ENGINEERING

- Mechanical design, substructure, exterior skin development, fabrication and testing

### PRESS | AWARDS

- Nominated for 7 awards, including an Emmy for Best Documentary and Nature Program
- Winner of The Guild of Television Cameramen Awards for Excellence in Technology
- Demonstration for Prince William at the Great British Festival in Shanghai, 2015



## ROBO-BOOM | 2012

### KUMOTEK ROBOTICS

#### OVERVIEW

- The world's first Interactive Robotic Sound Studio Microphone
- Concept originated in coordination from audio engineers for Radio Disney and Ryan Seacrest



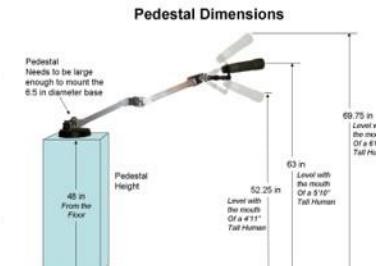
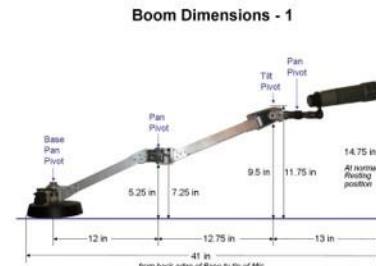
#### DESIGN | ENGINEERING

- Mechanical design, prototype development, fabrication, and testing, customer coordination



#### FEATURES

- This patented system employs super quiet robotic motors and special facial recognition technology to determine the distance between the user's face and the tip of the microphone.
- Once RoboBoom is engaged, it automatically positions the microphone at an optimal distance from the talent for best audio quality pickup



#### AWARDS

- The design concept was awarded Radio Magazine's 2012 Pick Hit Radio Award at the 2012 National Association of Broadcasters Conference.

# 05

## BLUE SKY IDEATION | CONCEPTUALIZATION

### INTERACTIVE DANCING "HAPPY FEET" PENGUIN Kumotek | Simex iWerks

- 4D Interactive Theatre Concept

### INTERACTIVE DINOSAURS 4D THEATRE Kumotek | Simex iWerks

- 4D Interactive Theatre Concept

### WIESS ENERGY HALL 3.0 PBE | Houston Museum of Natural Science

- Coal Mine

### RAPTOR TENT Kumotek | Six Flags Great Escape

- Suspense-filled walk-through Attraction

### DINOSAUR WALK Kumotek | Six Flags Great Escape

- Child-friendly walk-through Attraction



# INTERACTIVE DANCING "HAPPY FEET" PENGUIN | 2014

KUMOTEK | SIMEX iWERKS

## BLUE SKY CONCEPT IDEATION

- Conceptual Design for Interactive dancing robotic "Mumble" Happy Feet Penguin in collaboration with Simex iWerks
- To be located in the lobby of all Simex iWerks 4D Theatres playing "Happy Feet"
- A high energy Dance Competition

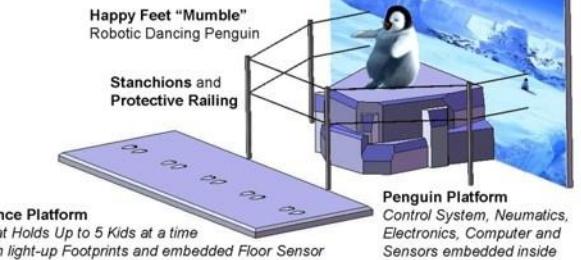
## FEATURES

- Interacts with guests using face tracking, voice recognition and Kinect motion sensors.
- Penguin dances and performs for kids and teaches Kids dance moves
- Mumble lets kids teach him dance moves by using Kinect and floor sensors to analyze and record kids footsteps and movements. Then plays back and performs child's dance moves

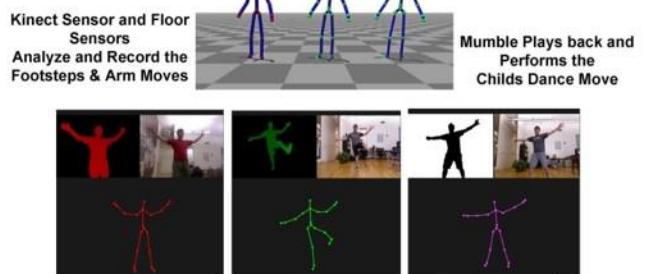
## DESIGN | ENGINEERING

- Preliminary design sketches
- Technology & Animatronic R&D
- Customer coordination
- Proposal development

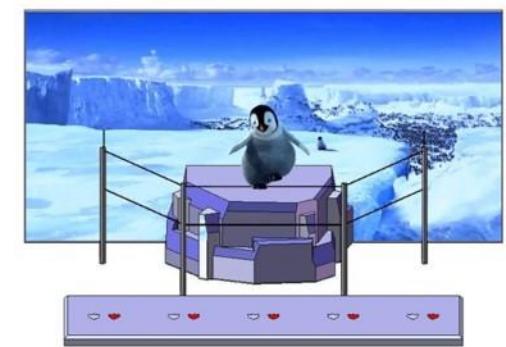
## Components of the System



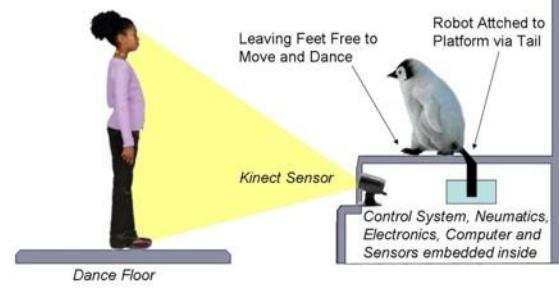
## Kinect Sensor



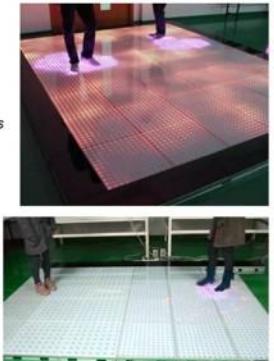
## The Dance Floor



## Penguin Robot Platform



## The Dance Floor



## INTERACTIVE DINOSAURS 4D THEATRE | 2014

KUMOTEK | SIMEX iWERKS

### BLUE SKY CONCEPT IDEATION

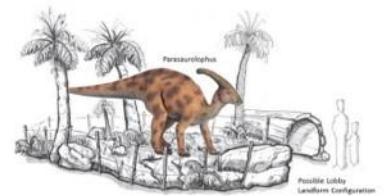
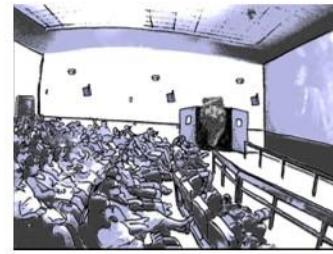
- Conceptual Design for the integration of physical effects, animatronics and SFX into a new 4D Simex-iwerks dinosaur theatre show in development
- Show theme: Aircraft (the theatre) carrying guest passengers crash lands on Dinosaur Island, dinosaurs circle and attack the Aircraft

### FEATURES

- Interactive dinosaur in the Lobby
- Brachiosaurus head that stretches out over the audience from above the screen
- A T-Rex head that crashes through a door in the side of the theatre
- Raptors that run past portholes

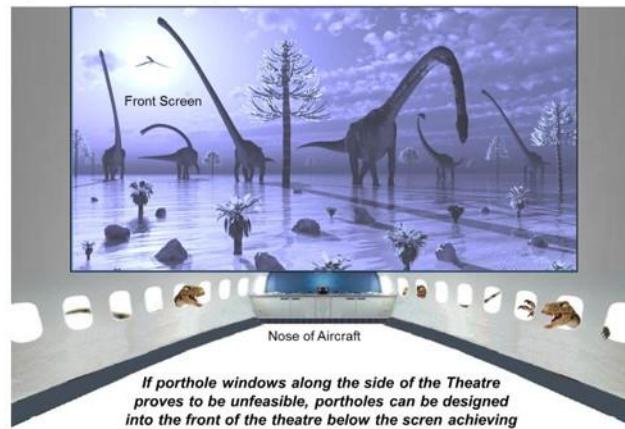
### DESIGN | ENGINEERING

- Preliminary design sketches
- Model and video animatic
- Technology/Animatronic R&D
- Strategic planning
- Customer coordination
- Proposal development

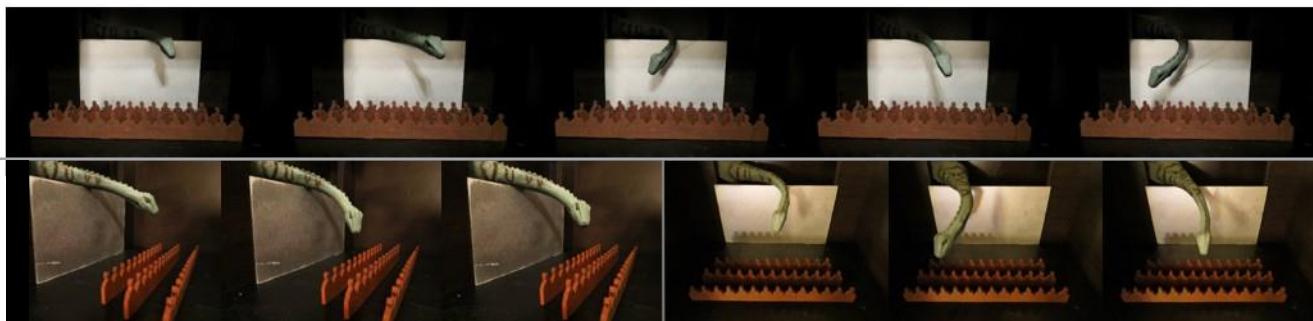
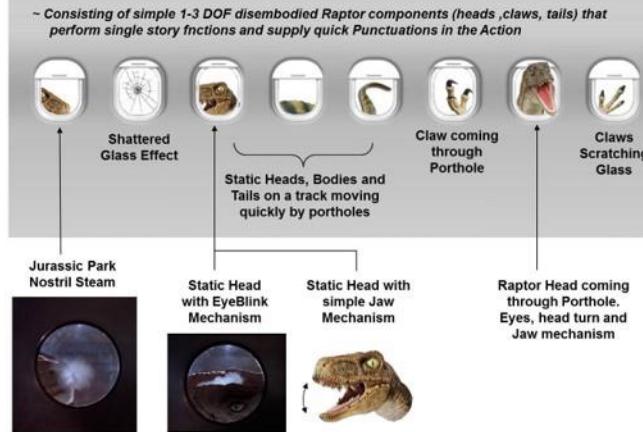


Animatic demonstrating how the Brachiosaurus Head could emerge from behind the screen and stretch out over the audience

### Raptor Porthole Concepts

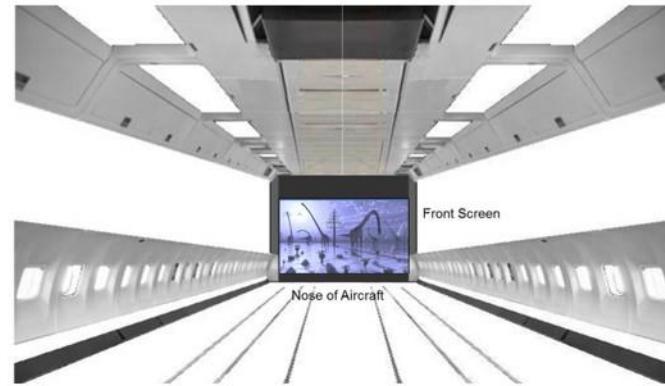


### Raptor Porthole Concepts



### Raptor Porthole Concepts

Example of aircraft style porthole windows along the side of the Theatre, mocked up to look like the interior of an Aircraft



### T-Rex Features

- During the storyline of the movie, guests hear a T-Rex in the distance.
- The floor shakes as we hear the T-Rex get closer.
- The side theatre door rattles, and scratching and beating noises are heard outside.
- We see the T-Rex eyes peering through the portholes in the door.
- The door suddenly bursts open and the T-Rex sticks his head into the theatre and lets out a tremendous roar.



## RAPTOR TENT ATTRACTION | 2014

KUMOTEK | SIX FLAGS GREAT ESCAPE  
Lake George, NY

### BLUE SKY CONCEPT IDEATION

- Production Model of an Immersive suspense-filled walk-through interactive Themed Animatronic Dinosaur Attraction for Six Flags Great Escape

### THEME

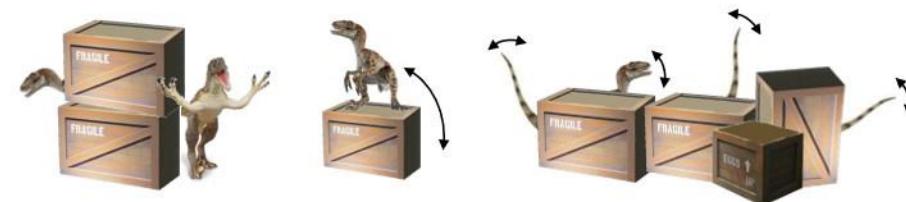
- An archeological dig site-style Tent filled with Crates, fossils, molds and work tables
- Raptors are loose hiding inside the Tent behind crates
- Raptors detect motion of guests and react

### DESIGN | ENGINEERING

- Models were used for Creative Team brainstorming and strategy sessions, story/content development & animatronics R&D
- Pre-production planning (logistics, manpower schedule and budget)

### FEATURES

- Claws Scratch Crates
- Tails Wave and Flick
- Shadows of Raptors on Walls
- Raptors Jump out and up onto Crates
- Raptors Peek Out from above and around Crates
- Crates Rattle and Shake



## INTERACTIVE DINOSAUR ATTRACTION | 2014

KUMOTEK | SIX FLAGS GREAT ESCAPE  
Lake George, NY

### BLUE SKY CONCEPT IDEATION

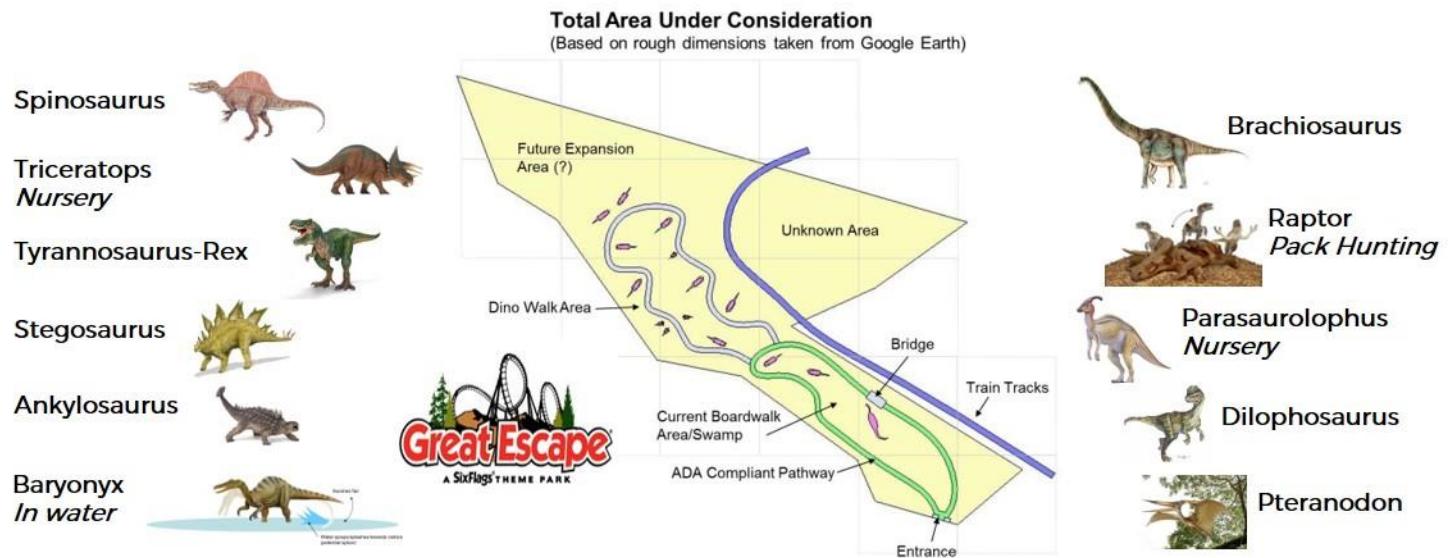
- Conceptualization of an immersive walk-through interactive Themed Animatronic Dinosaur Attraction for Six Flags Great Escape
- Parasaurolophus Nest Concept

### THEME

- 11 Types of Animatronic Dinosaurs occupying an existing wooded walking trail on the edge of the Park
- Child-Friendly Theme with Baby Dinosaurs
  - Brachiosaurus Nest
  - Parasaurolophus Nest

### DESIGN | ENGINEERING

- Walking trail layout
- Created models for use in the proposal
- Creative Team brainstorming and strategy sessions, story/content development & animatronics R&D
- Pre-production planning (logistics, manpower schedule and budget)



Brachiosaurus Nest Concept



Parasaurolophus Nest Concept



# 06

## SCALE PRODUCTION MODELS

### WIESS ENERGY HALL 3.0

Houston Museum of Natural Science

- Master Exhibit Production & Layout Model
- Rotating Tricone Drill Bit
- Subsea Wellhead Site
- Oil Drilling Rig Floor
- Coal Mine

### RAPTOR TENT

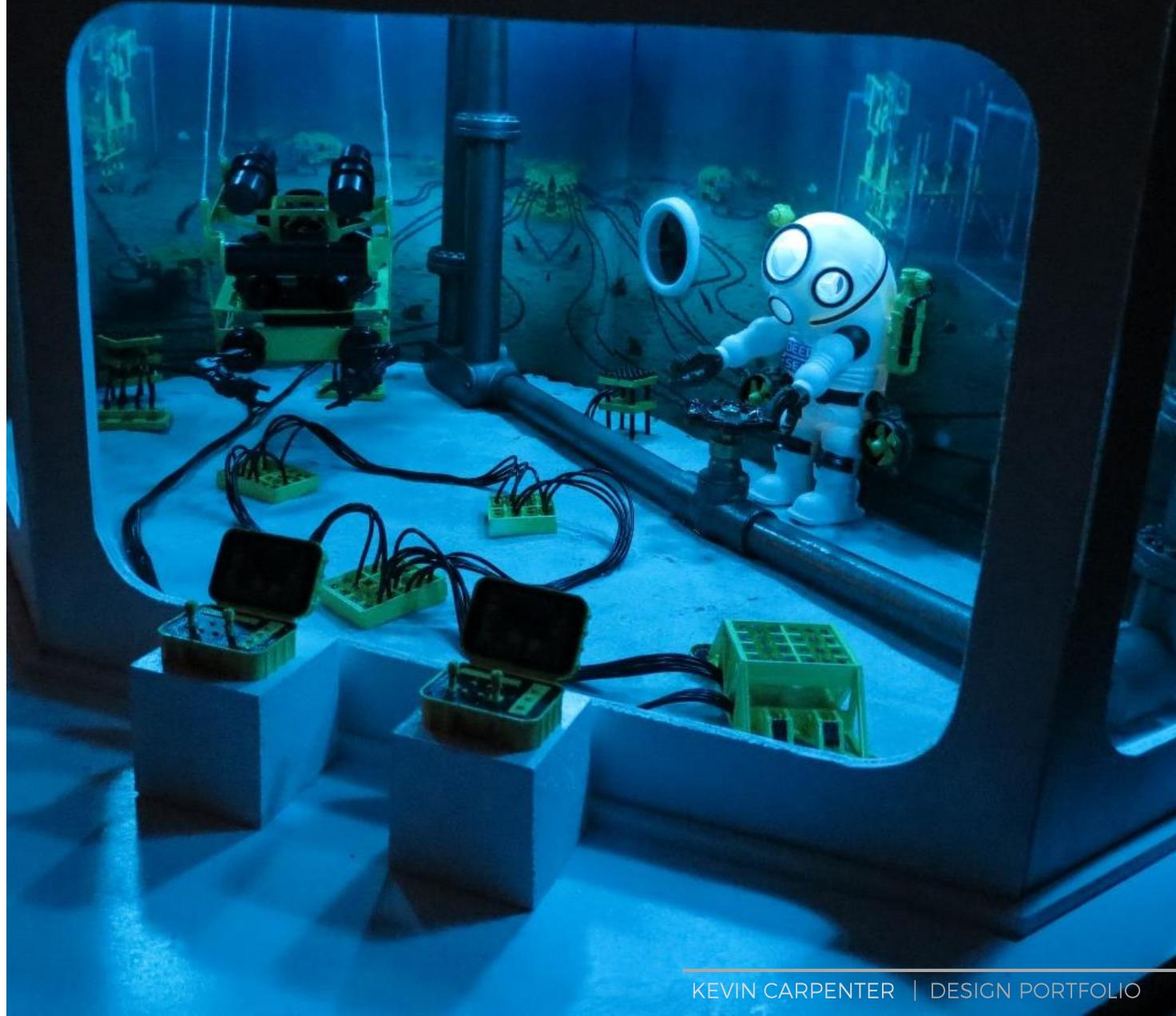
Six Flags Great Escape

- Suspense-filled walk-through Attraction

### DINOSAUR WALK

Six Flags Great Escape

- Child-friendly walk-through Attraction

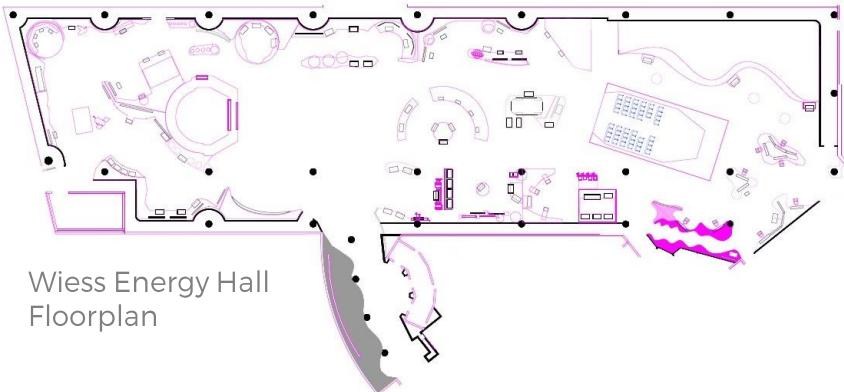


## MASTER EXHIBIT LAYOUT MODEL | 2015

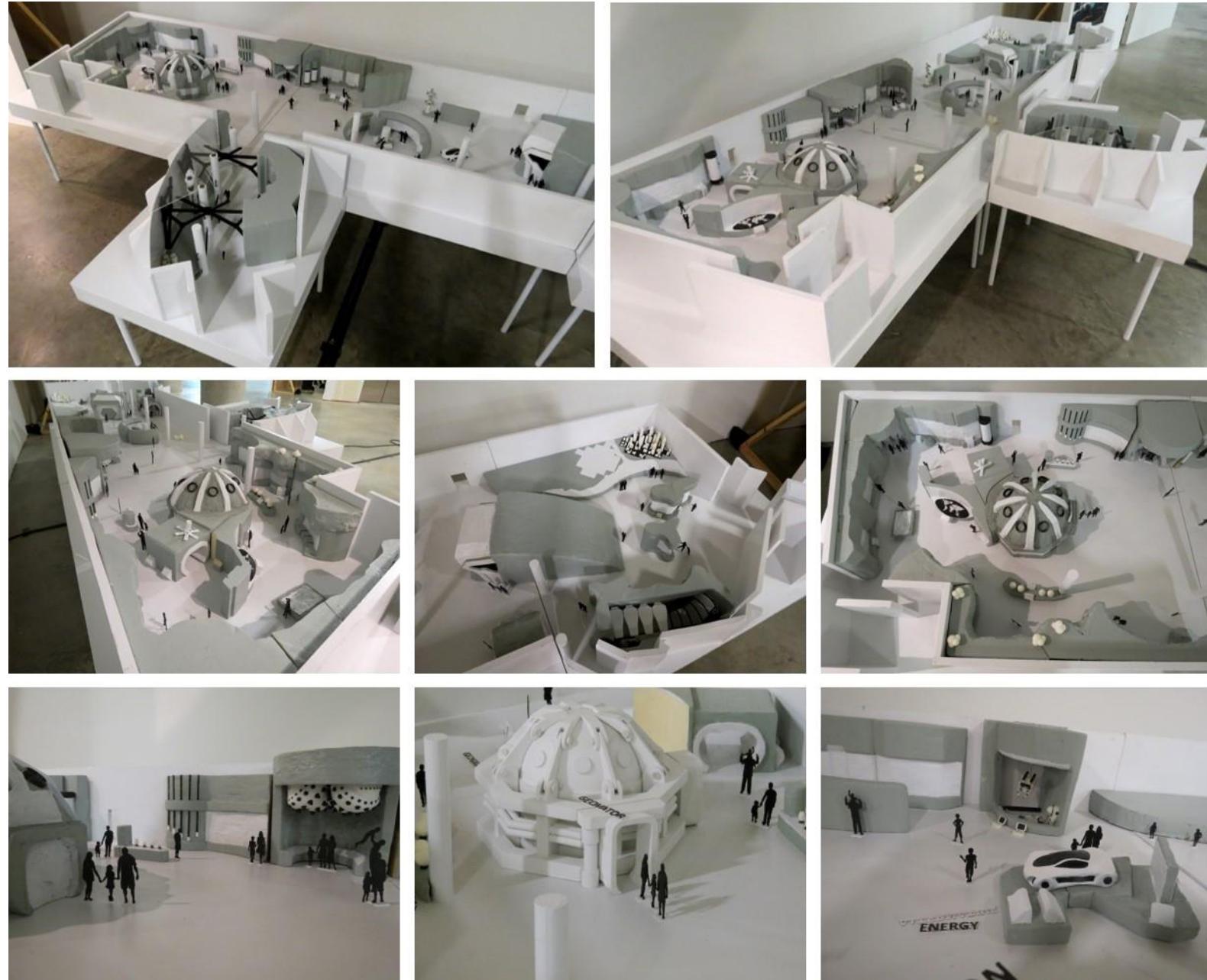
PBE | WEISS ENERGY HALL 3.0  
Houston Museum of Natural Science

### DESIGN

- Large table-top Layout Model fabricated based on the first iteration of the Weiss Energy Hall Floorplan
- Model used to help convey Design Intent to Investors, Board of Directors Members, Shareholders, and VIP's touring the Exhibit Space
- Model used for Production and Creative Team brainstorming sessions and helped solidify the design and production strategy
- Model helped determine Placement, Scale & Layout of individual Exhibits in the Hall
- Model helped with Blocking Studies and Guest Flow pattern analysis



Wiess Energy Hall  
Floorplan



## ROTATING TRICONE DRILL BIT | 2015

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### IDEATION

- Rotating Model successfully helped sell the Concept to Investors and secure funding for the exhibit



Functional Rotating Mechanical Model

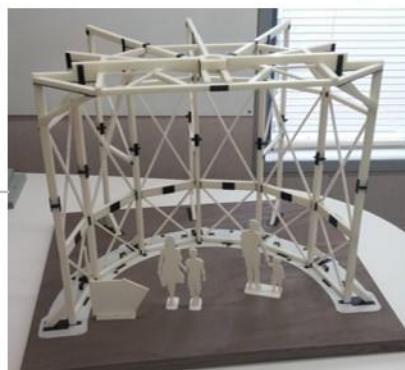
### DESIGN | ENGINEERING

- Models were used for Production Team brainstorming sessions
- Helped determine Scale & Layout for equipment
- Helped the Engineering Team identify problems and solidify the design and production strategy



### FABRICATION | ASSEMBLY

- Models directly helped the Fabrication Team with the construction and assembly of the Drill Bit Structure

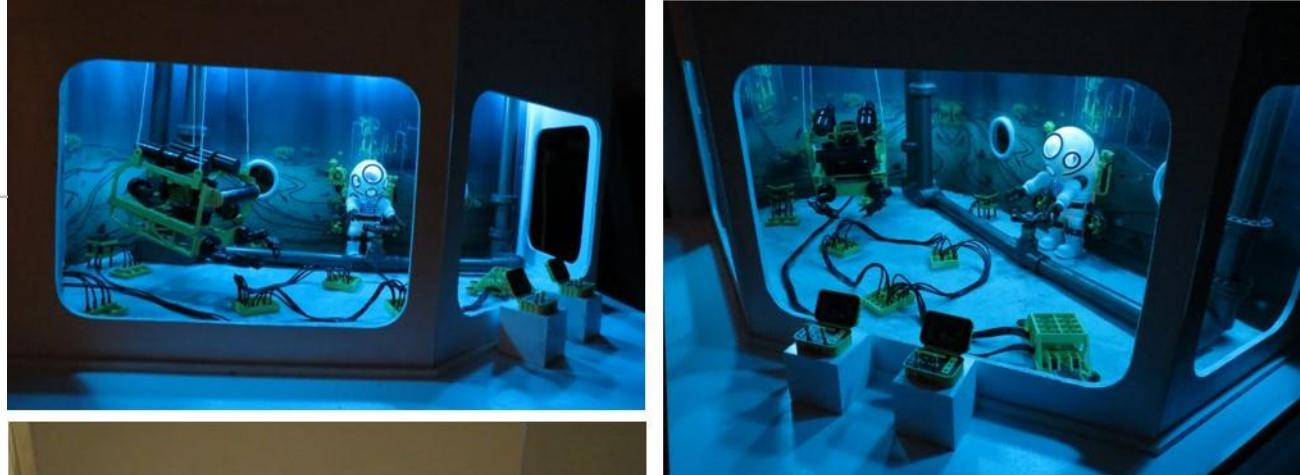


## SUBSEA WELLHEAD SITE | 2015

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### DESIGN CHALLENGE

- To design an immersive and interactive Attraction for the Subsea Production Section utilizing an ROV



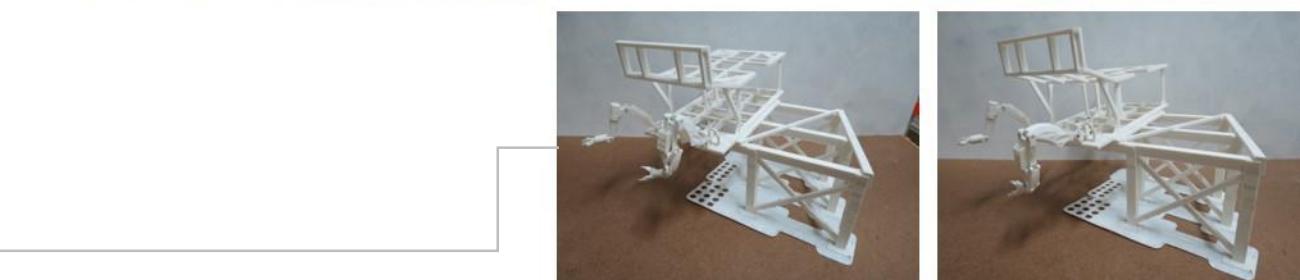
### IDEATION

- The Subsea Model successfully helped sell the Blue Sky Concept to Investors and secure funding for the exhibit and an In-Kind Donation of both an real ROV and WASP Suit by Oceaneering International, Inc



### DESIGN | ENGINEERING

- Models were used for Production and Creative Team brainstorming sessions
- Helped determine Scale & Layout for placement in the Hall
- Helped the Engineering Team solidify the design and production strategy



### FABRICATION | ASSEMBLY

- Models directly helped the Fabrication Team with the construction and assembly of the ROV Support Structure

## AUTOMATED DRILLING RIG FLOOR | 2015

PBE | WIESS ENERGY HALL 3.0  
Houston Museum of Natural Science

### DESIGN CHALLENGE

- To design a visually stunning immersive Attraction for the Entrance to the "Wiess Energy Hall" that would capture the essence of being on the Drilling Rig Floor of a Drilling Ship in the Gulf of Mexico, complete with automated robotic drilling equipment

### BLUE SKY IDEATION

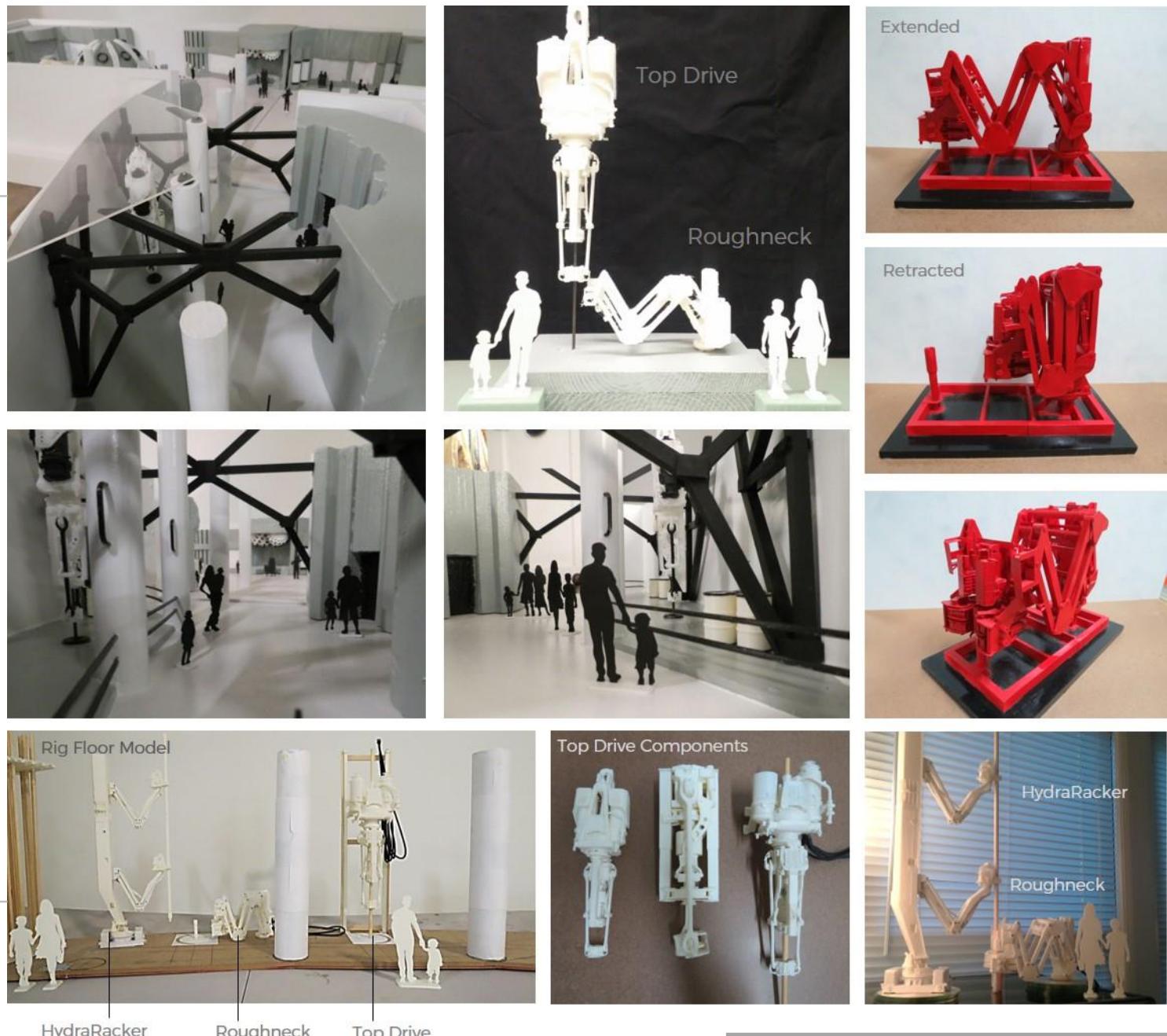
- Scale Models helped sell the Blue Sky Concept to Management and the Creative Director

### DESIGN | ENGINEERING

- Models used for Production Team brainstorming sessions
- Helped determine Scale & Layout for equipment
- Helped the Engineering Team identify problems and solidify the design and production strategy

### FABRICATION | ASSEMBLY

- Component & Functional Models directly helped the Fabrication Team with the construction and assembly of the Automated Drilling Rig Floor Equipment



## RAPTOR TENT ATTRACTION | 2014

### KUMOTEK | SIX FLAGS GREAT ESCAPE

#### OVERVIEW

- Production Model of an Immersive suspense-filled walk-through interactive Themed Animatronic Dinosaur Attraction for Six Flags Great Escape

#### IDEATION | DESIGN | ENGINEERING

- Models were used for Creative Team brainstorming and strategy sessions, story/content development, animatronics R&D and pre-production planning

## INTERACTIVE DINOSAUR ATTRACTION | 2014

### KUMOTEK | SIX FLAGS GREAT ESCAPE

#### OVERVIEW

- Production Model of an Immersive walk-through interactive Themed Animatronic Dinosaur Attraction for Six Flags Great Escape

#### IDEATION | DESIGN | ENGINEERING

- Models were used for Creative Team brainstorming and strategy sessions, story/content development, animatronics R&D and pre-production planning



# 07

## 3D PRINTING | FUNCTIONAL PROTOTYPES

### PBE | WIESS ENERGY HALL 3.0

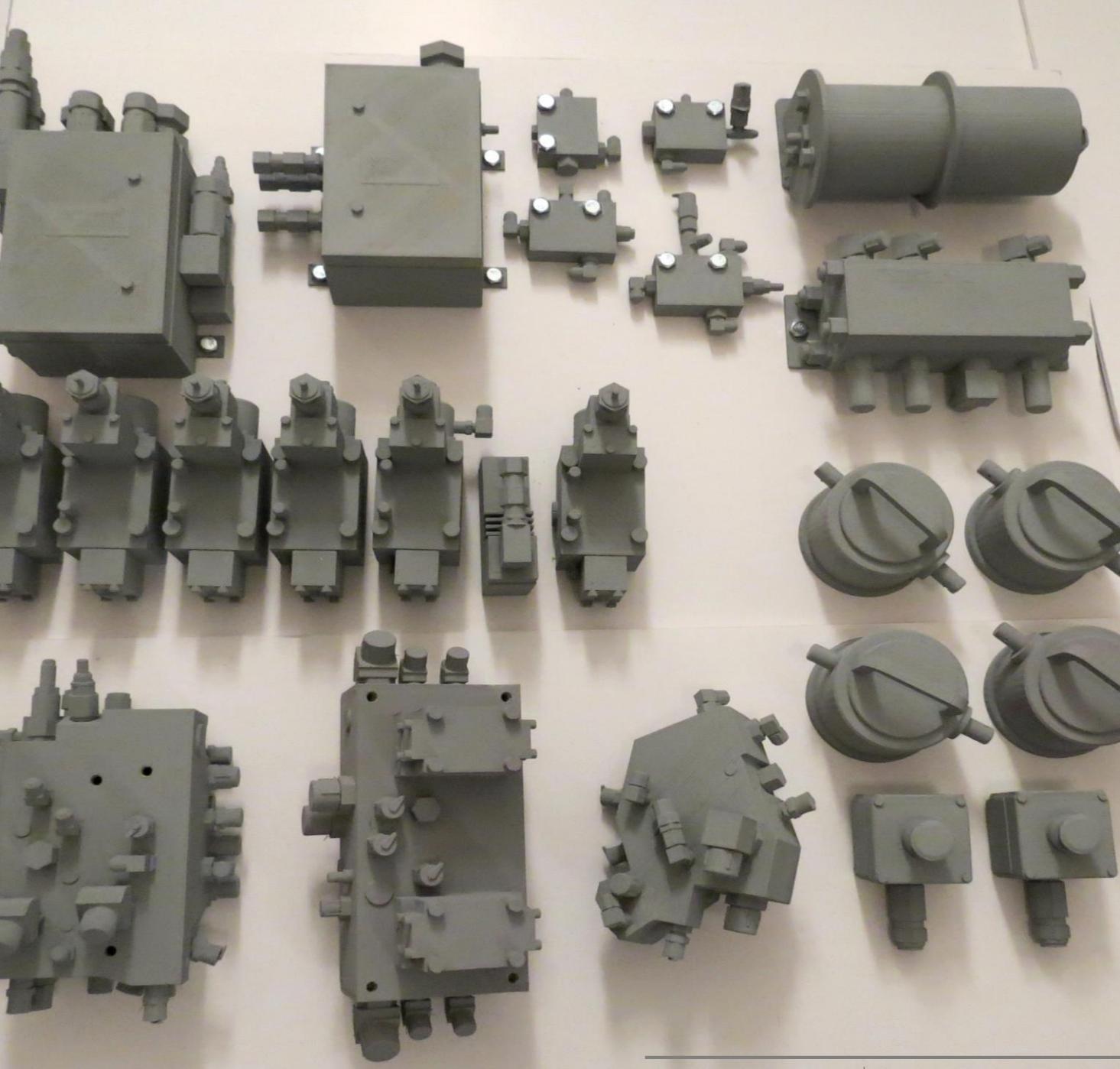
- Energy City
- Oil Drilling Rig Floor
- Subsea Wellhead Site
- Dar-C - Robotic Host of the EFX-3000

### HANSON ROBOTICS

- HumanKind Animatronics
- Zeno RoboKind

### HERRINGTON-ERIKSEN PRODUCTIONS

- Conceptual Architectural Sculptures



## ENERGY CITY | 2016

PBE | WIESS ENERGY HALL  
Houston Museum of Natural Science

### OVERVIEW

- Energy City is an animated 2,500-square-foot model of a city for the "Wiess Energy Hall"
- The model consists of over 750 3D printed model buildings, houses, stores, skyscrapers, monuments and electrical generation facilities, and wind turbines

### ROLES | RESPONSIBILITIES

- 3D Print technology research consultant and Printer Operator
- Responsible for 3D printing over 450 individual model assets
- Most assets printed and assembled off-site at Kevin Carpenter's home studio



## DRILLING RIG FLOOR | 2016

PBE | WIESS ENERGY HALL  
Houston Museum of Natural Science

### ROLES | RESPONSIBILITIES

- 3D Print technology research consultant and Printer Operator
- Design and printing of all Rig Floor equipment scenic set dressing and thematic elements
- Several printed components were integral parts of functional moving mechanical assemblies

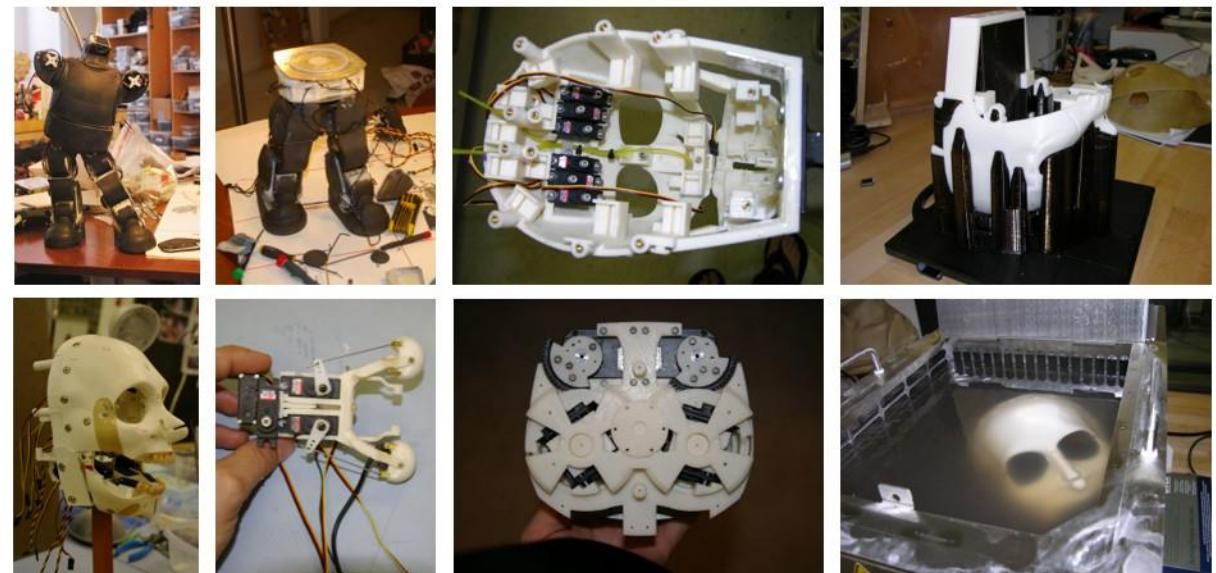


## HANSON ROBOTICS | 2007 - 2010

HUMANKIND ANIMATRONICS  
ROBOTKIND CHARACTER ROBOTS

### ROLES | RESPONSIBILITIES

- 3D Print technology research consultant and Printer Operator
- Responsible for the 3D Printing of the skulls and functional internal components on 21 animatronic/robotic design projects
- Familiar with all aspects of the Rapid Prototyping Process



# 08

## MOLDING | CASTING PROJECTS

### HANSON ROBOTICS

- HumanKind Animatronics
- Zeno RoboKind

### KUMOTEK ROBOTICS

- Dinosaur Egg Nests
- Robo-Penguins
- Concept Production Models

### HERRINGTON-ERIKSEN PRODUCTIONS

- Bubbie Award
- Hospital Critterz



## HANSON ROBOTICS | 2007 - 2010

### HUMANKIND ANIMATRONICS ROBOKIND CHARACTER ROBOTS

#### OVERVIEW

- Molding and Casting Team Member
- Participated in the molding, casting, life casting, mold construction, teeth molds, and skin development tests on 16 HumanKind animatronic design and fabrication projects
- Participated in the molding, casting, mold construction and skin development tests on 5 RoboKind character robotic design and fabrication projects
- Familiar with all aspects of the Molding and Casting Process



## RED-DIRT DINOS | 2015

### KUMOTEK ROBOTICS | OKLAHOMA MUSEUM NETWORK

#### OVERVIEW

- A Tenontosaurus and Acrocanthosaurus Dinosaur Egg Nest for the "Red Dirt Dinos" Attraction

#### ROLES | RESPONSIBILITIES

- Sculpting, Molding and Casting of the Dinosaur Eggs



## ROBO-PENGUINS | 2012

### KUMOTEK ROBOTICS | JOHN DOWNER PRODUCTIONS

#### OVERVIEW

- Three Penguin Robots for John Downer Productions

#### ROLES | RESPONSIBILITIES

- External skin development, head, beak, feet and prototype body sculptures, molding and casting of 3 types of Penguins



## THE BUBBIE AWARDS | 2015

HERRINGTON-ERIKSEN PRODUCTIONS  
The Jewish Experience, Denver CO

### OVERVIEW

- The Bubbie Award for The Jewish Experience Center 2015 Award Ceremony
- Award sculpted by artist Carter Herrington

### ROLES | RESPONSIBILITIES

- Molding and Casting of the Bubbie Award Sculpture



## HOSPITAL CRITTERZ | 2009

HERRINGTON-ERIKSEN PRODUCTIONS  
Strategic Partners, Chatsworth CA

### OVERVIEW

- A series of character sculptures to go accompany the Hospital Critterz Children's Book Launch

### ROLES | RESPONSIBILITIES

- Creative Consultant on "Hospital Critterz" Character Design project
- Molding and casting of the Hospital Critterz character sculptures



# 09

## CAD DESIGN | ARCHITECTURE CONCEPTS

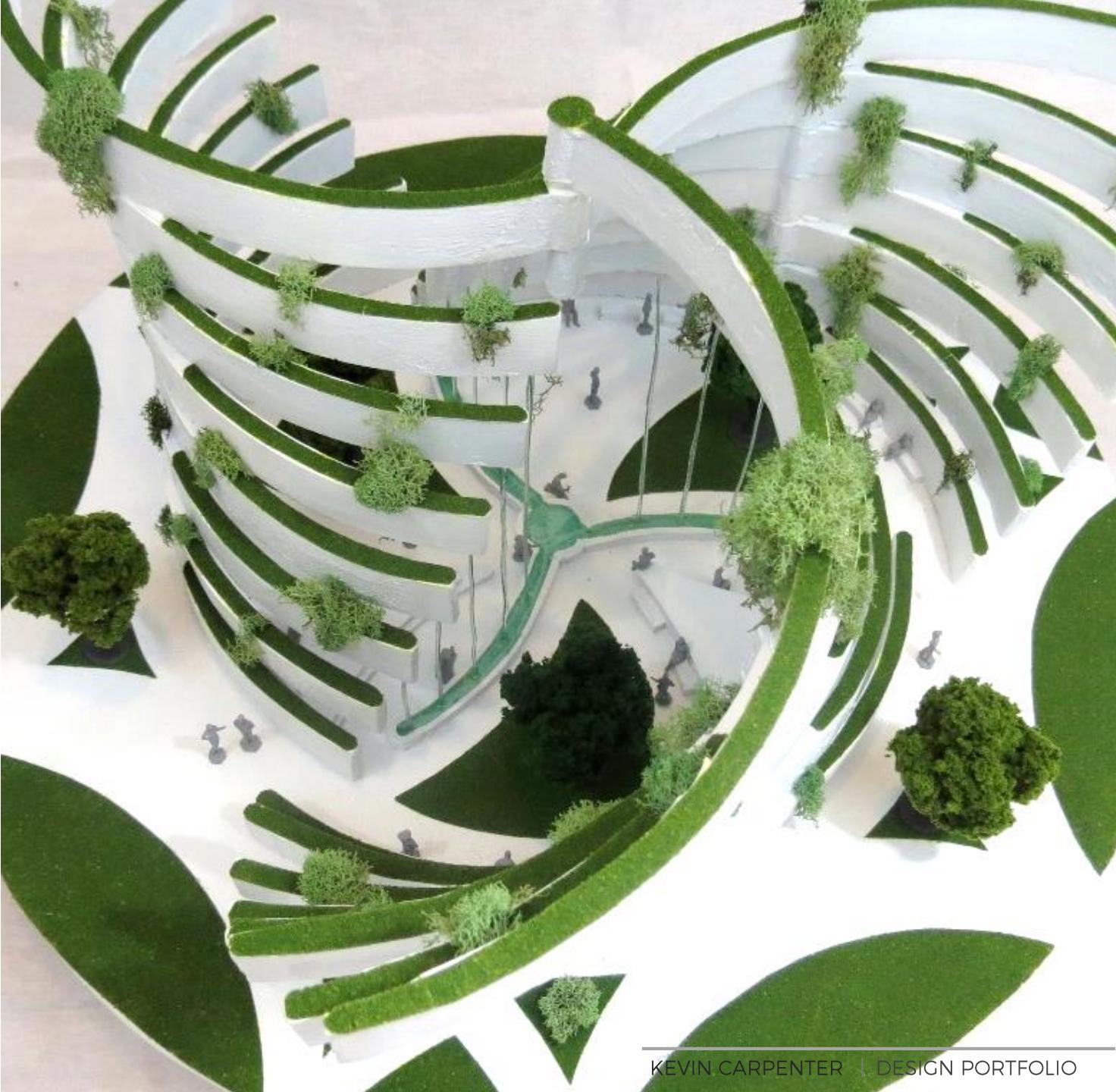
HERRINGTON-ERIKSEN PRODUCTIONS  
RENAISSANCE DESIGN WORKS

### TRINITY PAVILION

- Outdoor Pavilion Concept for Trinity River Redevelopment Area

## CAD DESIGN | ARCHITECTURE CONCEPTS

- Architectural Concepts, Furniture Designs, Renaissance Temples based on Sacred Geometry, Biomimicry and Harmonics, Public Art Installation Concepts and Sculptures



## TRINITY PAVILLION | 2014

### BLUE SKY CONCEPT IDEATION

- Architectural Model for a Conceptual outdoor public structure / pavilion for the Trinity River Park Redevelopment Area, Dallas TX

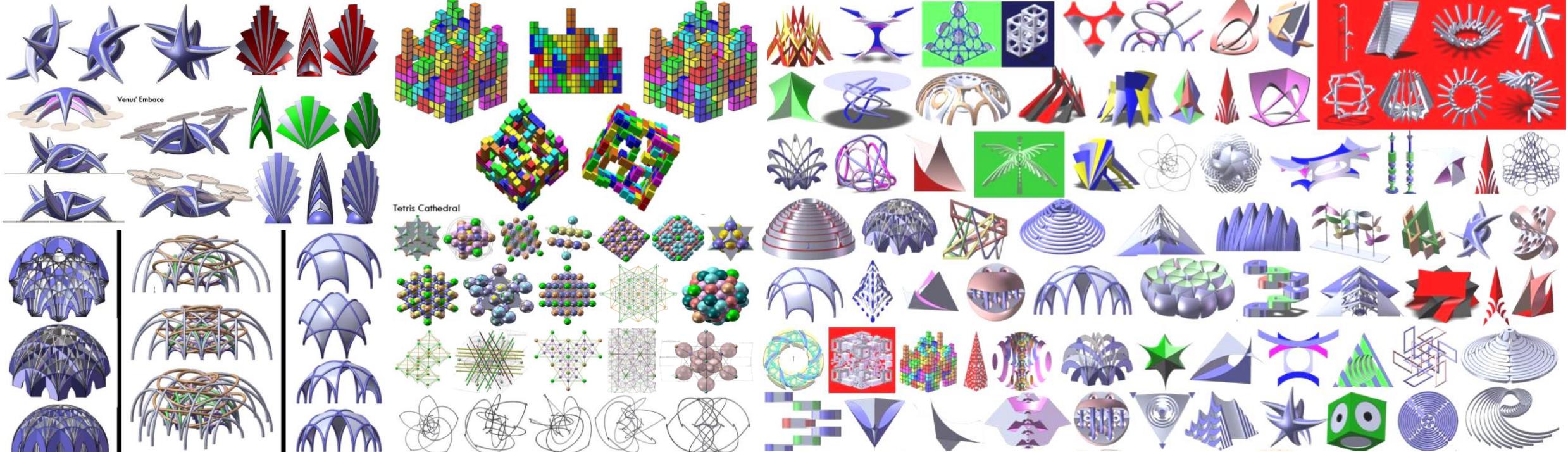


## RENAISSANCE DESIGN WORKS | 2007 - 2015

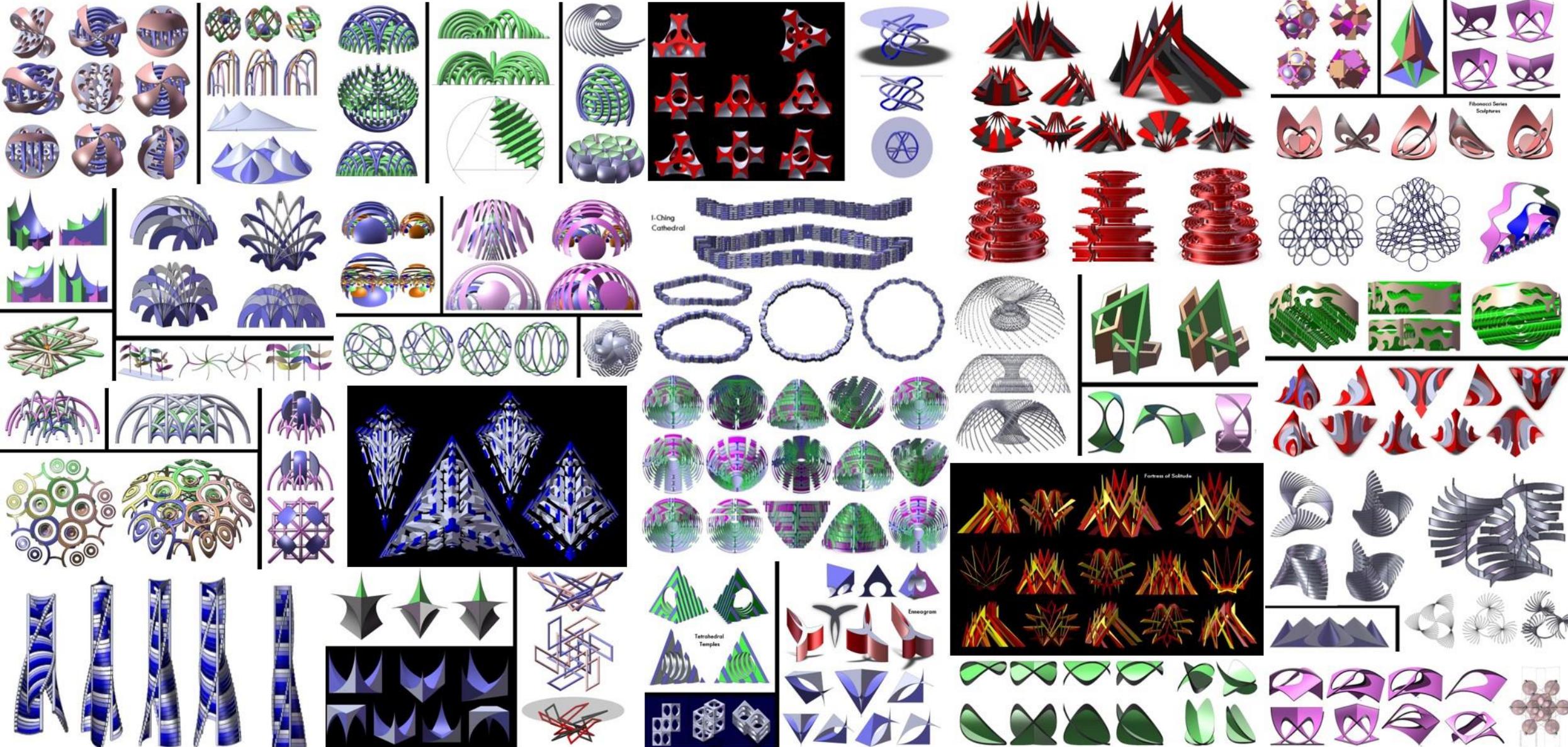
### HERRINGTON-ERIKSEN PRODUCTIONS

#### CAD DESIGN

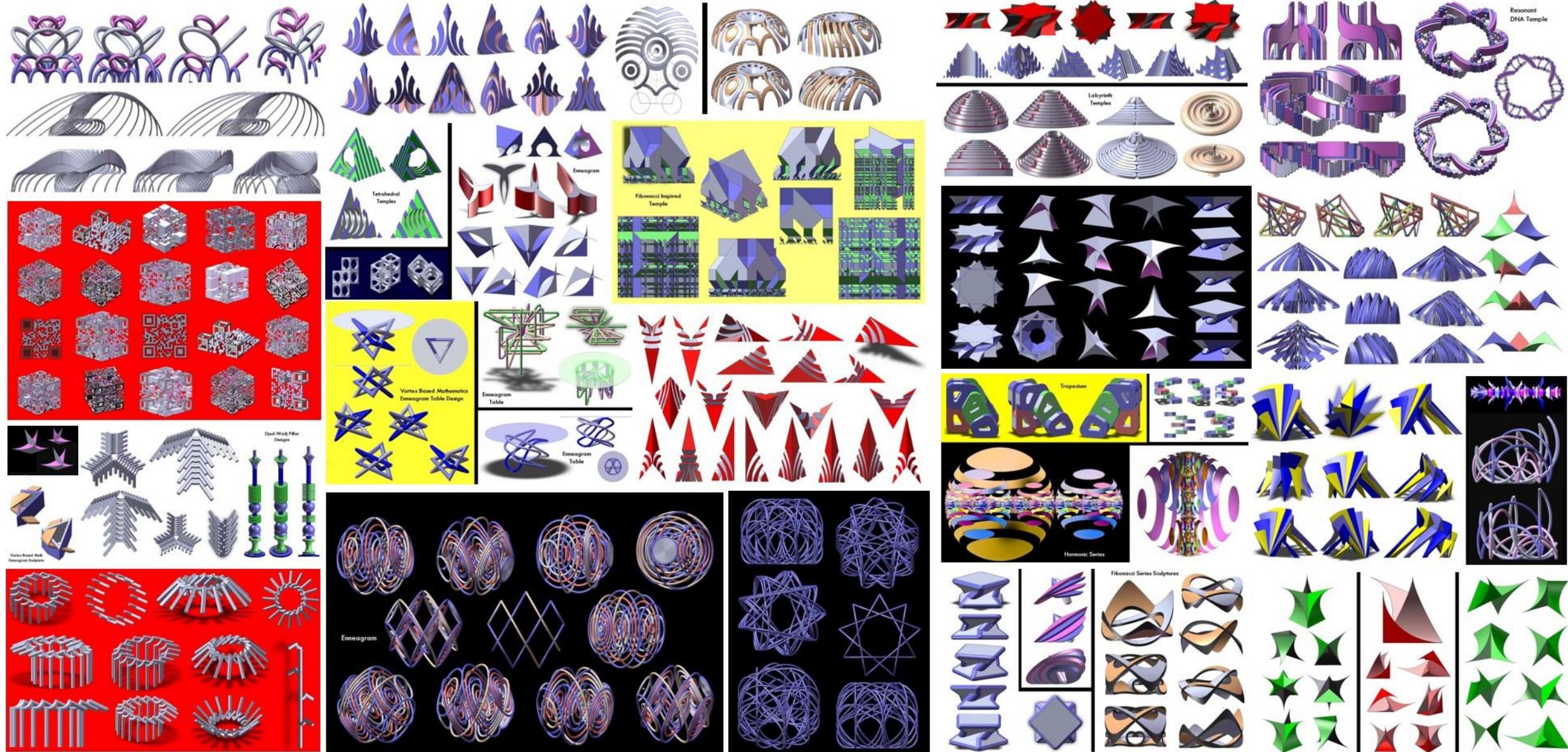
- Examples of Architectural Concepts, Furniture and Toy Designs, Renaissance Temples based on Sacred Geometry, Biomimicry and Harmonics, Public Art Installation Concepts and Sculptures
- Designs Completed in Solidworks



## RENAISSANCE DESIGN WORKS | 2007 - 2015



## RENAISSANCE DESIGN WORKS | 2007 - 2015



# 10

## CREATIVE | DESIGN CONSULTANT HERRINGTON-ERIKSEN PRODUCTIONS

### OVERVIEW

- Co-Founder
- Herrington-Eriksson Productions is an innovative creative design consultancy specializing in product visualization, ideation, rapid prototyping, 3D CAD design, toy design conceptual art, furniture and architecture, product development, R&D, and multi-media production

### CONSULTING PROJECTS

- Quantum Shop. Austin, TX. 2017. Design Consultant
- Renaissance Design Works. Dallas, TX. 2015. Inventor, Lead Designer and Engineer
- LaQ USA. Richardson, TX. 2013. Creative Consultant
- Elevate Studios and Creative Labs. Ojai, CA. 2011. Technical Consultant on development of "theXperience."
- Elevate Films. Ojai, CA. 2011. Co-Producer, Writer and Creative Director of "Free Energy" Music Video
- Resonance Project Foundation. Kilauea, HI. 2011. Technology Design Consultant and Development Engineer
- Louis A. Rivera Design Investments. Newbury Park, CA. 2011. Design Consultant and Development Engineer
- Unified Field Corporation (Marketing and Media Team), Santa Monica, CA. 2011. Creative and Technical Consultant
- Strategic Partners, Inc. Chatsworth, CA. 2009. Creative Consultant on "Hospital Critterz" Character Design project



## ELEVATE STUDIOS AND CREATIVE LABS | 2011

### HERRINGTON-ERIKSEN PRODUCTIONS

#### TECHNICAL | DESIGN CONSULTANT

- Technical Consultant, project management, research and development, conceptual design, and engineering support for the design and production of theXperience

#### BLUEPRINTS, LAYOUTS AND DIAGRAMS

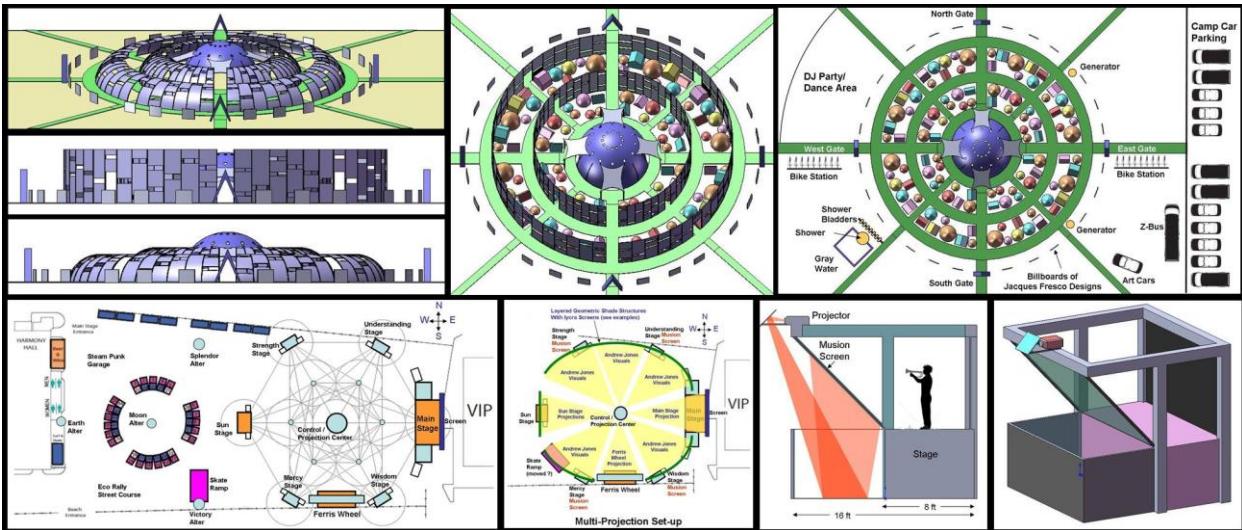
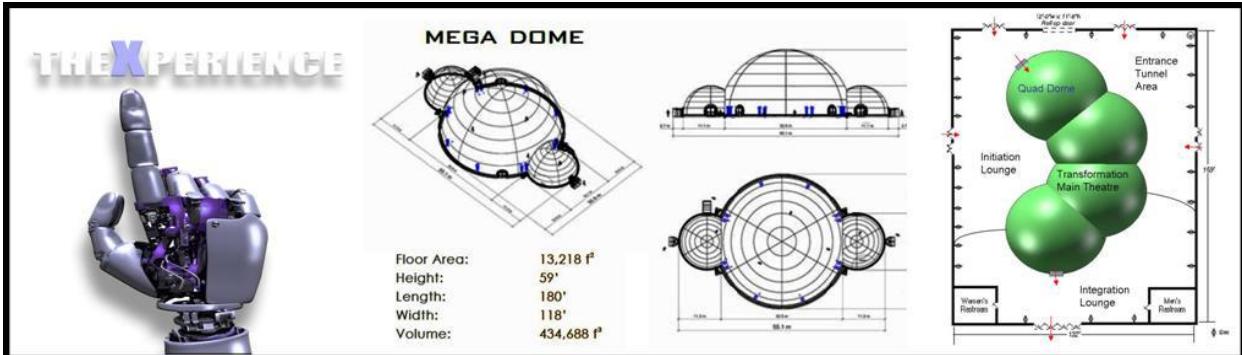
- Design of the conceptual layout of Harmony Music Festival and the design of staging structures and artistic elements
- Design of the Zeitgeist Movement's 2011 Exhibition Camp based on the futuristic designs of Jacques Fresco

## ELEVATE FILMS | 2011

### HERRINGTON-ERIKSEN PRODUCTIONS

#### CO-PRODUCER | IDEATION

- Co-Producer, Conceptual Artist, Writer and Green Screen Studio technician of the "Free Energy" music video
- A collaboration with the Pachamama Alliance for the launch of the online social networking platform MyStandGo
- Free Energy song Composed by The Luminaires featuring Aishah

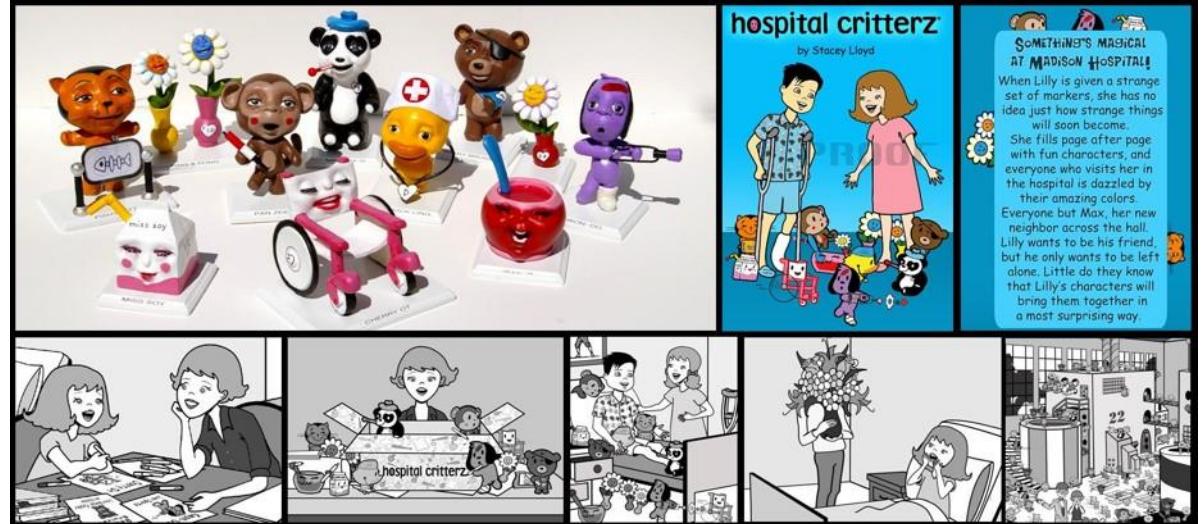


## HOSPITAL CRITTERZ | 2009

### HERRINGTON-ERIKSEN PRODUCTIONS

#### DESIGN CONSULTANT | CREATIVE DIRECTOR

- Project Manager and Creative Director of the "Hospital Critterz" publishing and design Project, a creative design collaboration with Strategic Partners, Inc., Chatsworth, CA
- This project included the illustration of the first Hospital Critterz Children's Book and the design and development of 12 prototype 3D characters based on the conceptual Hospital Critterz characters
- Illustrations by HEP Team Member: Carter Herrington
- Sculptures by HEP Team Member: Katherine Batiste

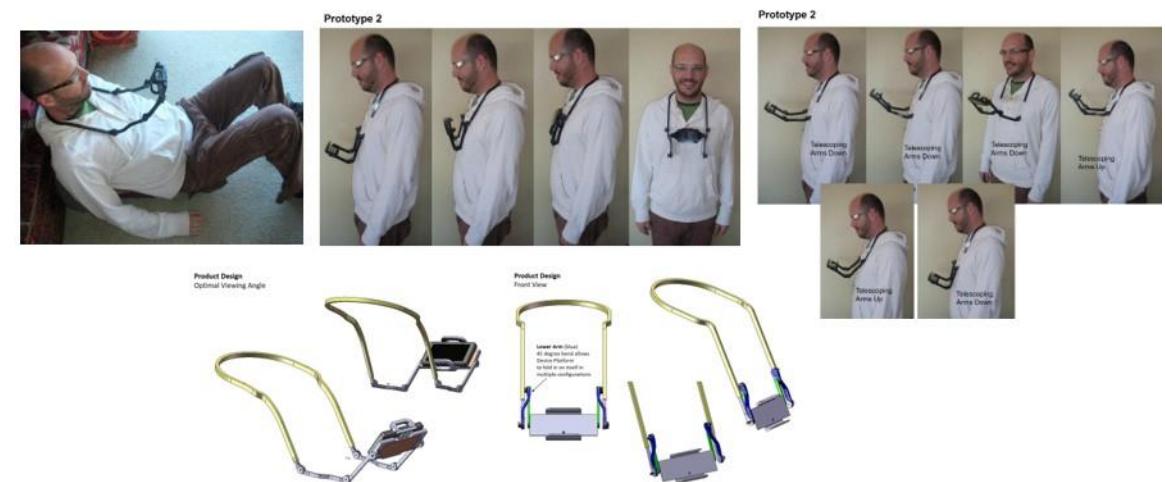


## "WATCHEN MA THINGY | 2011

### HERRINGTON-ERIKSEN PRODUCTIONS

#### PRODUCT DESIGN CONSULTANT

- Design Consultant and Development Engineer on a Product Design Project for Louis A. Rivera Design Investments, Newbury Park, CA called "Watchen Ma Thingy"
- Design, prototype development and patent drawings of a hands-free device to hold an iPhone for the purpose of watching movies without the need to hold the phone
- Product Patent Pending



# 11

## ARTWORK | PAINTINGS

### KEVIN CARPENTER

- Hive Mind - SculptCAD 3D Rapid Artist
- Lambdoma 15! Matrix - MADI Museum Biennial
- The Quadrivium – University of West Florida
- The Template Construction Block
- 3D CAD Conceptual Designs

### GAEDGE

#### Modern Art | Pop Art

- Accomplished Modern and Pop Artist painting under the pseudonym Gædge
- Artwork has been shown in 36 venues and galleries across the US, including 19 Joint Shows with his Partner Carter Herrington
- To date he has sold over 240 paintings



## PAST & CURRENT ART EXHIBITIONS | 2008-2018

### KEVIN CARPENTER

- May 2015
- Jul - Oct 2015
- May 2014

SME Rapid Expo - 3D Art Gallery, Long Beach CA  
MADI Museum - Biennial: Origins in Geometry, Dallas TX  
SME Rapid Expo - 3D Art Gallery, Detroit MI

### GAEDGE

- June 2018 - Current
  - Apr 2016
  - April 2015
  - Mar 2015
  - Mar 2015
  - Sep - Dec 2014
  - Jul 2014
  - Jul - Oct 2013
  - Jan 2013
  - Nov 2012
  - Nov 2011
  - Oct 2011
  - Sep 2011
  - Aug 2011
  - Jul - Sep 2011
  - Feb - Jul 2011
  - Feb 2011
  - Mar 2011
  - Feb - Mar 2011
  - Feb - Mar 2011
  - Oct - Nov 2010
  - Oct 2010
  - Jul 2010 - Jan 2011
  - Jun 2010
  - Mar - May 2010
  - Jan - Nov 2010
  - Jan - Jun 2010
  - Apr - Dec 2009
  - Jun 2008 - Mar 2010
  - Oct 2008 - Mar 2009
  - July - Aug 2008
  - July - Aug 2008
  - Mar - Apr 2008
- The Design Gallery Dallas TX  
Arts in Bloom McKinney TX  
Wine Therapist Dallas TX  
Komali Dallas TX  
Small Gallery Dallas TX  
JR's Dallas TX  
Access Media Dallas TX  
Titche-Goettinger Gallery Dallas TX  
Blow Up Gallery Dallas TX  
Grassroots Studio Dallas TX  
Kettle Art Dallas TX  
WildCat Lounge Santa Barbara CA  
Jimmy's Ventura CA  
Arts On Main Gallery Ventura CA  
Activate Imagination Station Ventura CA  
The Village Jester Ojai CA  
Ojai Playhouse Ojai CA  
Pancakes and Booze Show Los Angeles CA  
Canal Club Venice CA  
TownHouse Pop-Up Gallery, Sunset Tavern Venice CA  
Snooze Junction Seattle WA  
Greenwood-Phinney Ridge Seattle WA  
Ostridge G8 Studio Seattle WA  
Buli Dallas TX  
Betty's Best Around Dallas TX  
Fete-ish Dallas TX  
Pearl Cup Dallas TX  
The Amsterdam Dallas TX  
Gallery 163 (ArtAbility) Dallas TX  
TractorBeam Dallas TX  
Allure Gallery Galveston TX  
Jacket Gallery Dallas TX



## GAEDGE ARTWORKS | 2007 - 2018



Includes Several Joint Artistic collaborations with  
Artist CARTER HERRINGTON

## LAMBDOMA 15! MATRIX | 2015

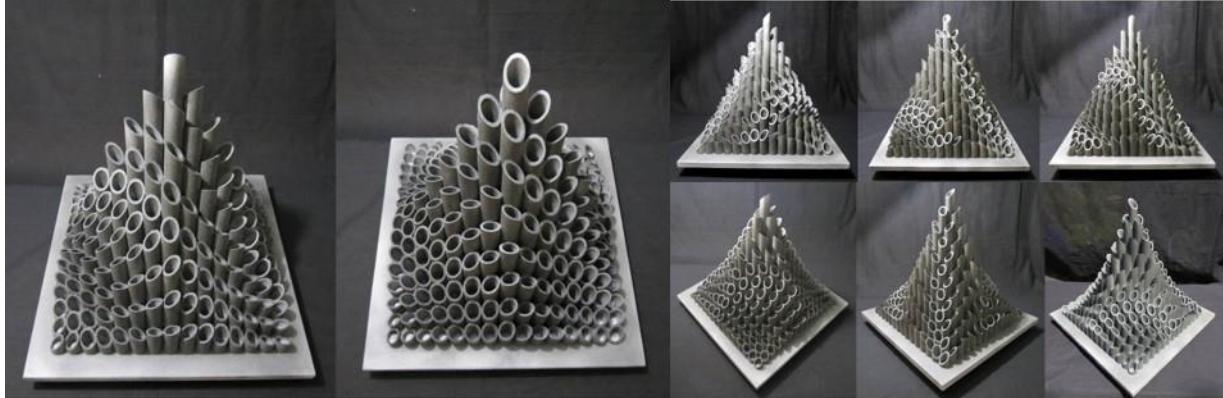
### KEVIN CARPENTER | MADI MUSEUM

#### OVERVIEW

The "Lamdoma 15! Matrix" is a construction sculpture by Kevin Carpenter that was created for the MADI Museum (Dallas, TX) Biennial: Origins in Geometry Exhibit in 2015

#### EXHIBITIONS

- Sculpture debuted at the MADI Museum – Biennial: Origins in Geometry, Dallas TX, 2015
- Currently Showcased at the The Designe Gallerie, Dallas TX



## THE HIVE MIND | 2014

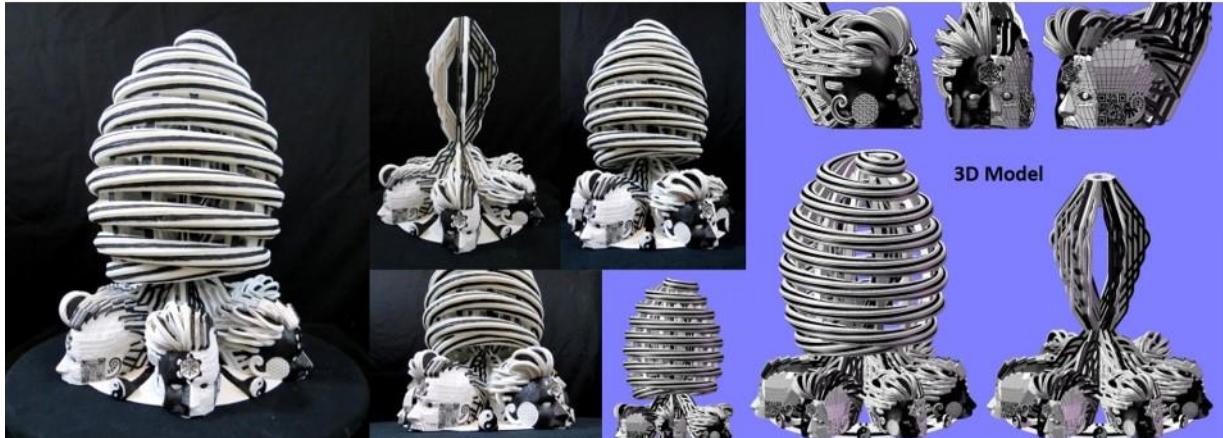
### KEVIN CARPENTER | MILWAUKEE SCHOOL OF ENGINEERING

#### OVERVIEW

- The Hive Mind is a digitally sculpted and rapid-prototyped 3D sculpture designed by Kevin Carpenter with sponsorship from the SculptCad Rapid Artist Program and the Society of Manufacturing Engineers (SME)
- Sculpture printed at the Milwaukee School of Engineering Rapid Prototyping Lab using the Selective Laser Sintering (SLS) process

#### EXHIBITIONS

- Sculpture debuted at the SME Rapid Expo in Detroit, MI in 2014
- Showcased at the SME Rapid Expo in Long Beach, CA in 2015
- Considered as one of 20 rapid prototype art finalists to appear in the Gallery at "Euromold" in Dusseldorf Germany in 2015



## THE QUADRIVIUM | PUBLIC SCULPTURE | 2018

KEVIN CARPENTER | STEAM: UNIVERSITY OF WEST FLORIDA

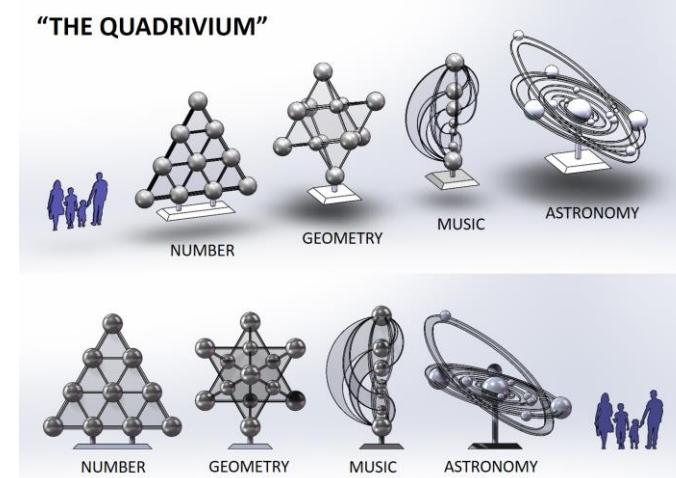
### OVERVIEW

- Conceptual design of a 4-part sculpture series for the University of West Florida's STEAM Project (Science, Technology, Engineering, Art, Math)

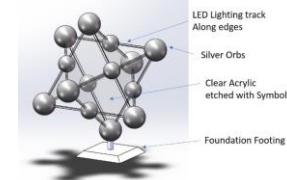
### DESIGN CONCEPT

- A proposed artwork called "The Quadrivium," consisting of four large independent free standing (yet interconnected) sculptures arrayed in a line. (1) Number (2) Geometry (3) Music (4) Cosmology. This artwork would be the FIRST sculpture entirely devoted to the subject of The Quadrivium in the world

"THE QUADRIVIUM"



- Sculpture 1: NUMBER  
A representation of the Mystical Tetractys
- Sculpture 2: GEOMETRY  
A representation of the Star Tetrahedron
- Sculpture 3: MUSIC  
A Representation of the Harmonic Series
- Sculpture 4: ASTRONOMY/COSMOLOGY  
A Representation of the Solar system and the "Music of the Spheres"



## THE TEMPLATE CONSTRUCTION BLOCK | 2013 - 2015

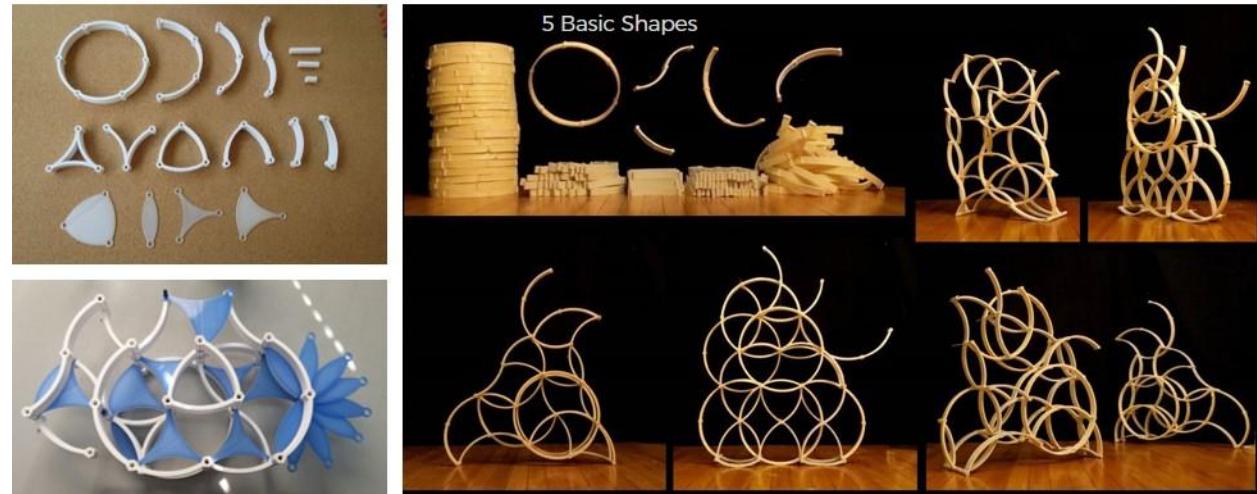
KEVIN CARPENTER | RENAISSANCE DESIGN WORKS

### OVERVIEW

- Inventor, Lead Designer and Engineer on the the design of a scientific and educational building block/construction system (i.e.. museum toy)

### DESIGN OBJECTIVE

- The Toy will help educate users on the core principles of designing fluid architectural structures based upon the principles of quadrivium, sacred geometry, harmonics, biomimickery, BioGeometry and the examination of nature-based forms and processes

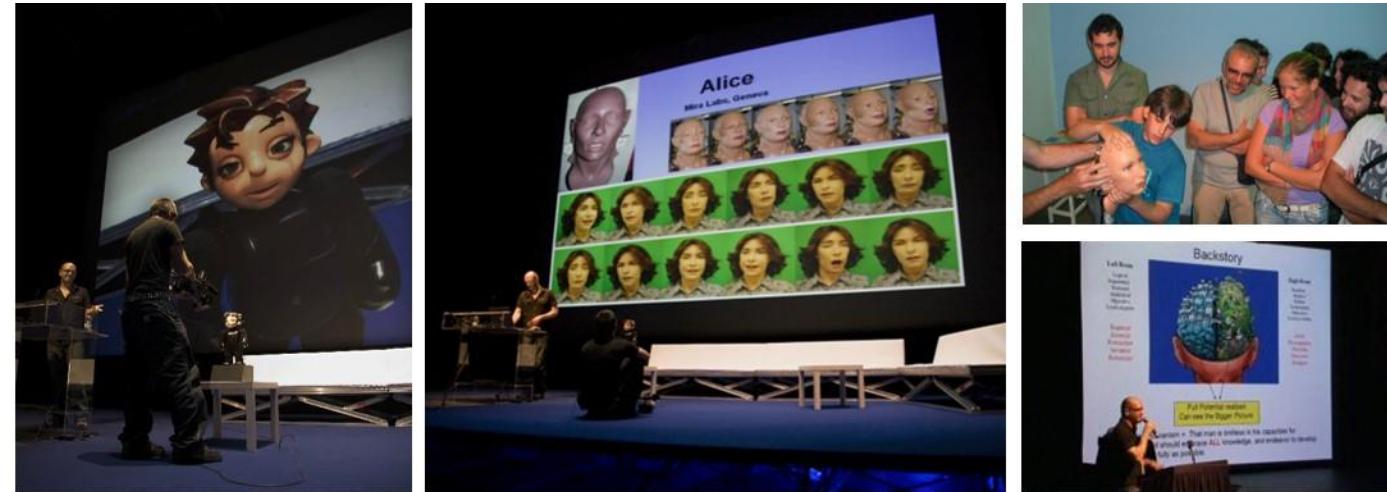


# 12

## EDUCATIONAL OUTREACH | LECTURES SPEAKING ENGAGEMENTS

### OVERVIEW

- Kevin Carpenter has had the privilege of speaking, lecturing and delivering presentations world-wide at universities, museums, technical symposiums, festivals and leadership conferences
- Topics range from the creative design process, the future of immersive design, autism therapy, interactive and social robotics, the fusion of art with technology/robotics as an emerging artform, new media and storytelling mediums, artificial intelligence vs. human intelligence, sacred geometry and Nikola Tesla



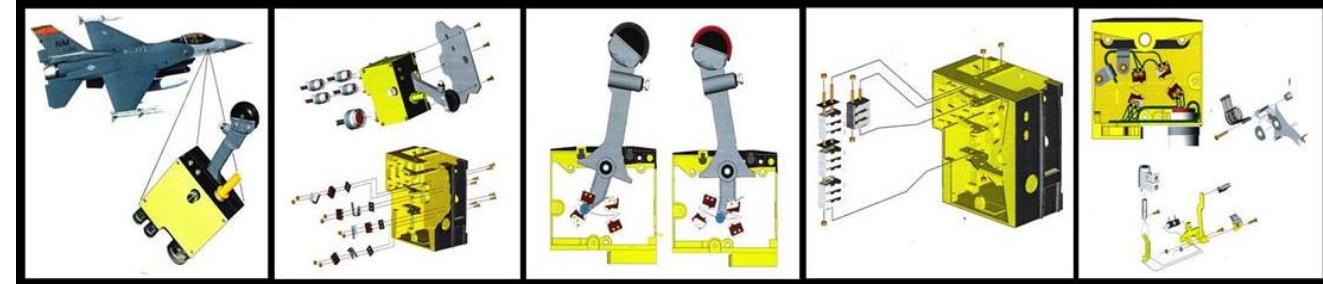
- 2017 Co-Delivered lecture on the Exhibit Design Process at the Houston Museum of Natural Science, Houston TX
- 2015 Academic Round Table Discussions at the University of Texas at Dallas (UTD), Dallas TX
- 2014 Co-Delivered presentations about the Nikola Tesla Robotics and Intelligent Systems Initiative, joint economic development and cultural exchange program to 6 international Technical and Engineering Universities and at the US Embassies in Belgrade, Serbia & Zagreb, Croatia
- 2011 Go Green Expo Conference Panel Speaker. Los Angeles CA
- 2010 Leaders Causing Leaders Conference Speaker. Long Beach CA
- 2009 5D Design is Change Conference Key-Note Speaker. The Hammer Museum. Los Angeles CA
- 2009 TED Conference Lobby Co-Presenter. Long Beach Performing Arts Center. Long Beach CA
- 2009 IDEA Project Key-Note Speaker. Barnsdall Art Park. Los Angeles CA
- 2009 Co-Delivered lecture on the design process at Accademia di Belle Arti di Palermo, Italy
- 2009 Co-Delivered lecture on robotics and artificial intelligence at University of Pisa, Italy
- 2009 Co-Delivered lecture on robotics design at Accademia di Belle Arti di Carrara, Italy
- 2008 ArtFutura Barcelona Key-Note Speaker. Mercat de les Flors. Barcelona Spain
- 2008 Maquinas & Almas Presentation Co-Speaker w/ David Byrne. Museo Reina Sofia, Madrid
- 2008 Ingenuity Fest Speaker/Presenter. Playhouse Square. Cleveland, OH
- 2007 Delivered lecture on robotics and artificial intelligence at Eastfield College, Dallas TX

# 13

## LEGACY ENGINEERING PROJECTS SOUTHWEST RESEARCH INSTITUTE | 1997 - 2000

### F-16 LANDING GEAR CONTROL ASSEMBLY

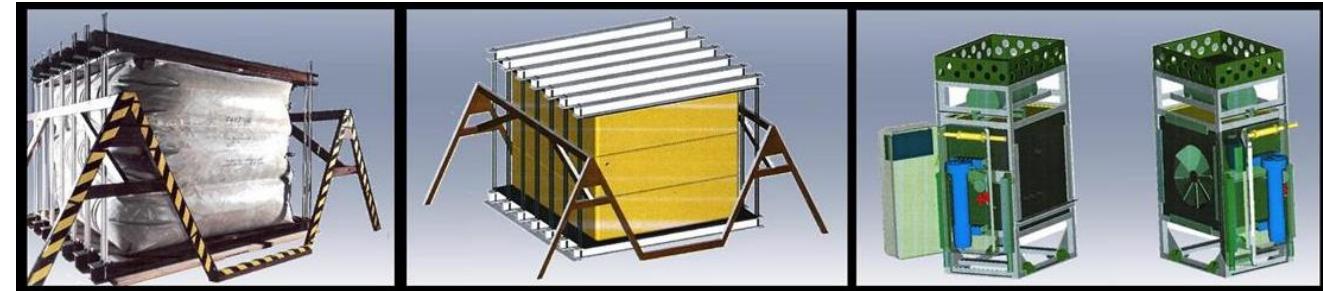
- Project Manager and Lead Engineer on 3-year Air Force redesign program to improve the reliability of the F-16 Aircraft Landing Gear Control Assembly (LGCA)
- Completed failure analysis, electromechanical component redesign, prototype development, environmental, endurance, and flight testing, FMECA evaluation, and extensive technical data package



F-16 LANDING GEAR CONTROL ASSEMBLY

### PNEUMATIC AIRCRAFT LIFTING BAG

- Project Manager and Lead Mechanical Engineer on a joint Air Force/Office of Special Investigations (OSI) project to evaluate and test failed Pneumatic Aircraft Lifting Bags

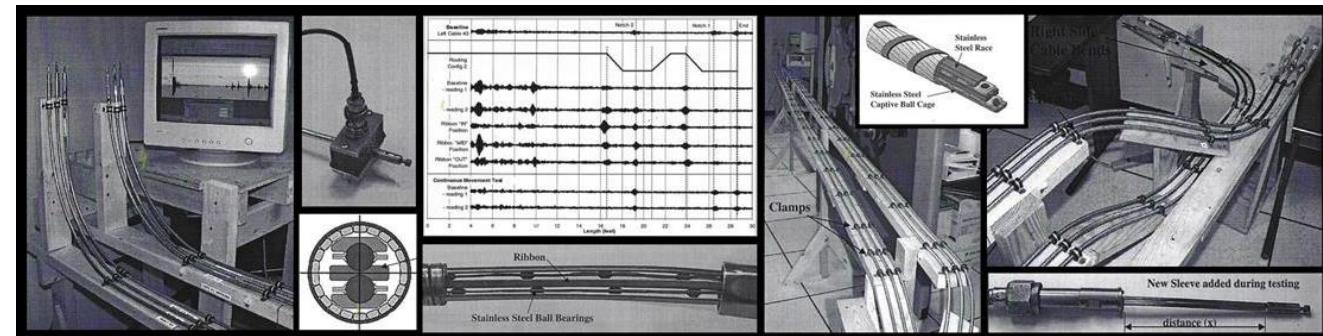


PNEUMATIC AIRCRAFT LIFTING BAG

TPS-75 HEAT EXCHANGE SYSTEM

### TPS-75 RADAR HEAT EXCHANGE SYSTEM

- Reliability Improvement Study on the TPS-75 Radar Heat Exchange System, and developed a Cooling Purification Monitoring Module to control and monitor the system



A-10 THROTTLE CABLE NDE INSPECTION SYSTEM

### A-10 THROTTLE CABLE NDE INSPECTION SYSTEM

- Project Manager and Lead Design Engineer on Air Force project to evaluate potential NDE Inspection Techniques for A-10 Throttle Cables Developed a new inspection procedure using ultrasonic guided wave technology to detect fatigue cracks
- Awarded a patent in 2004. "Average Guided Wave Inspection Technology for Ribbon Cable"