



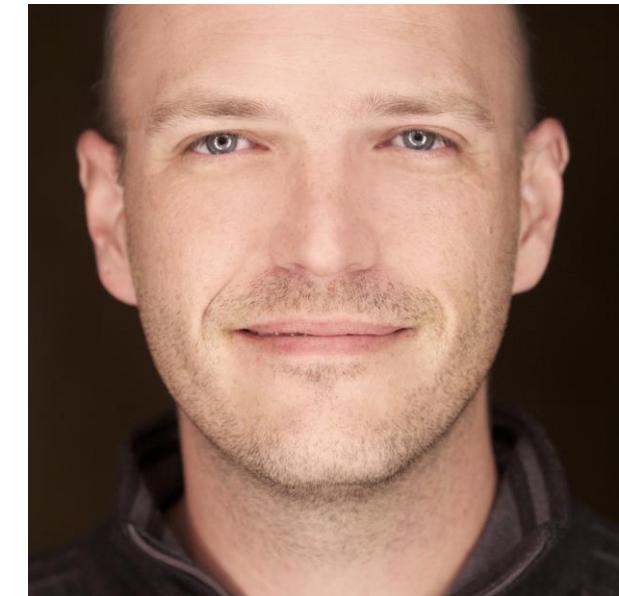
DESIGN PORTFOLIO

KEVIN CARPENTER

PRODUCTION DESIGN | MECHANICAL SYSTEMS ENGINEERING | CREATIVE CONSULTANT

CAREER PROFILE

- 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

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

CONTACT INFORMATION

11928 Meadowfire Dr.
Austin TX 78758
xs.kevin@gmail.com
214-601-3039

PROFESSIONAL EXPERIENCE

Paul Bernhard 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

PORTFOLIO CONTENTS

	01	PRODUCTION DESIGN ENGINEERING	5 - 34
	02	EXHIBIT DESIGN ENGINEERING	35 - 40
	03	ANIMATRONICS PROJECTS	41 - 54
	04	ROBOTICS CHARACTER ROBOTS	55 - 64
	05	BLUE SKY IDEATION CONCEPTUALIZATION	65 - 69
	06	SCALE PRODUCTION MODELS	70 - 75
	07	3D PRINTING FUNCTIONAL PROTOTYPES	76 - 78
	08	MOLDING CASTING PROJECTS	79 - 82
	09	CAD DESIGN ARCHITECTURAL CONCEPTS	83 - 87
	10	CREATIVE DESIGN CONSULTANT	88 - 90
	11	ARTWORK GÆDGE	91 - 95
	12	EDUCATIONAL OUTREACH LECTURES	96
	13	LEGACY ENGINEERING PROJECTS	97

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

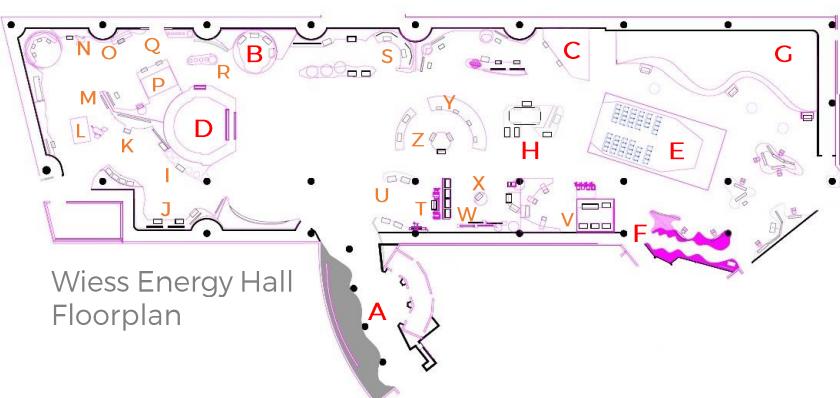


EXHIBIT DESIGN CONTRIBUTIONS

- 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

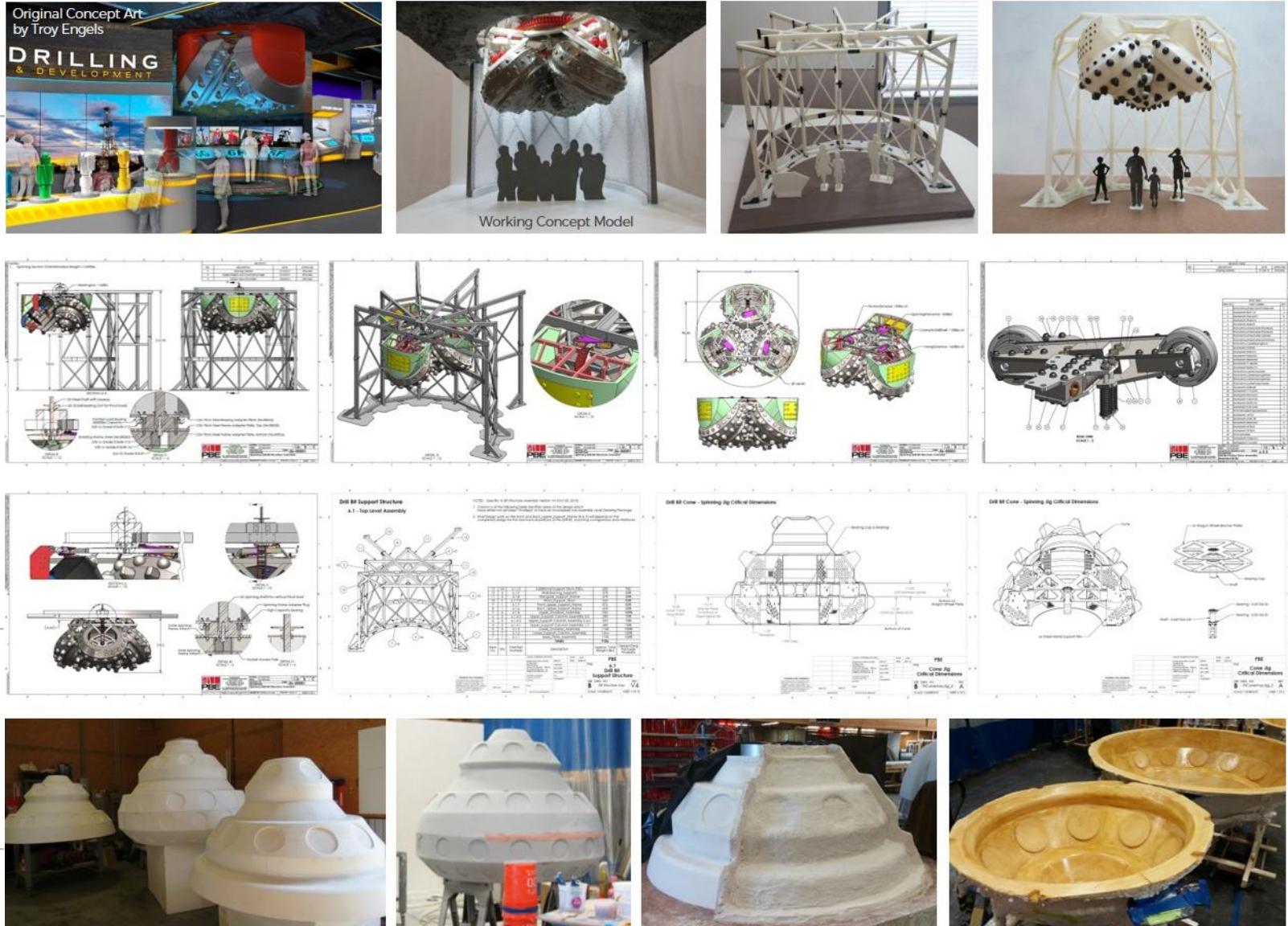
- Scale Models helped the Engineering Team identify problems and solidify the design and production strategy

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

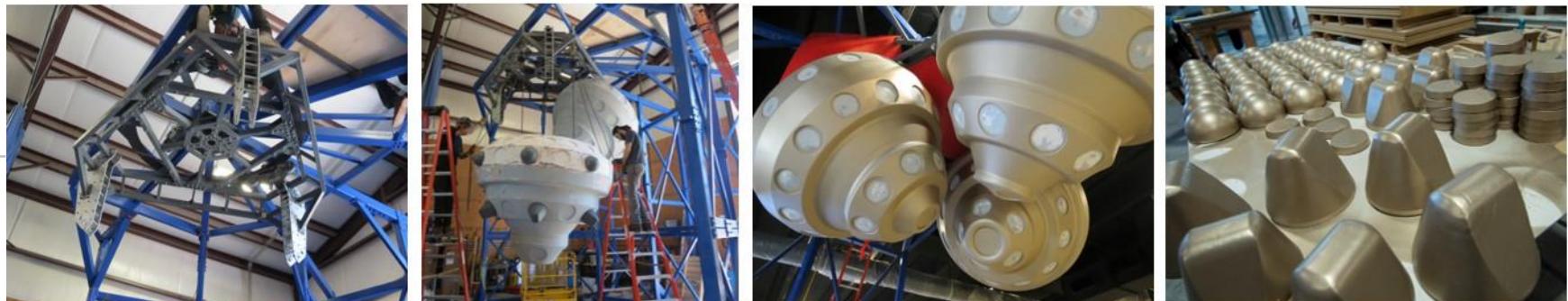
INTERNAL MECHANICS

- 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

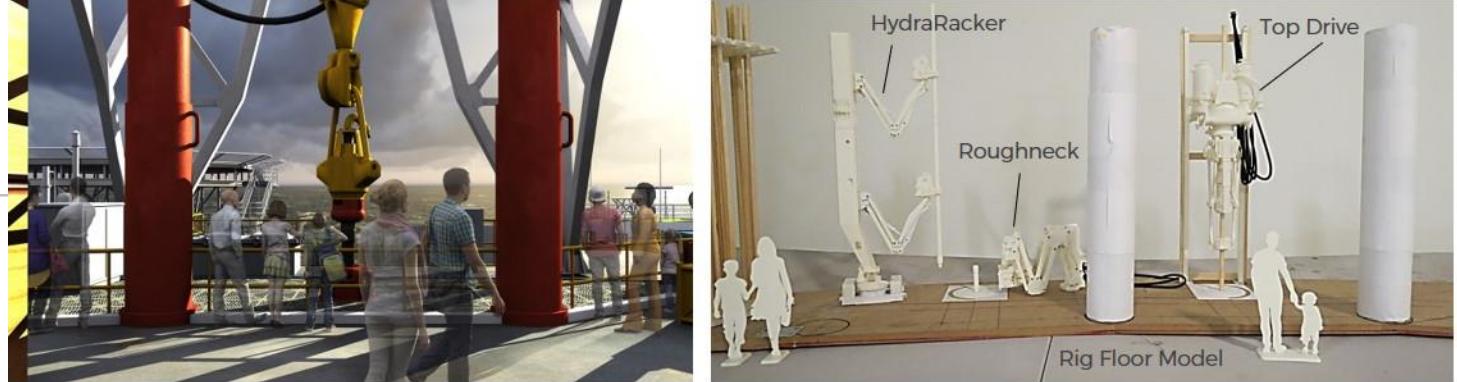


OIL DRILLING RIG FLOOR | 2017

PBE | WIESS ENERGY HALL 3.0
Houston Museum of Natural Science

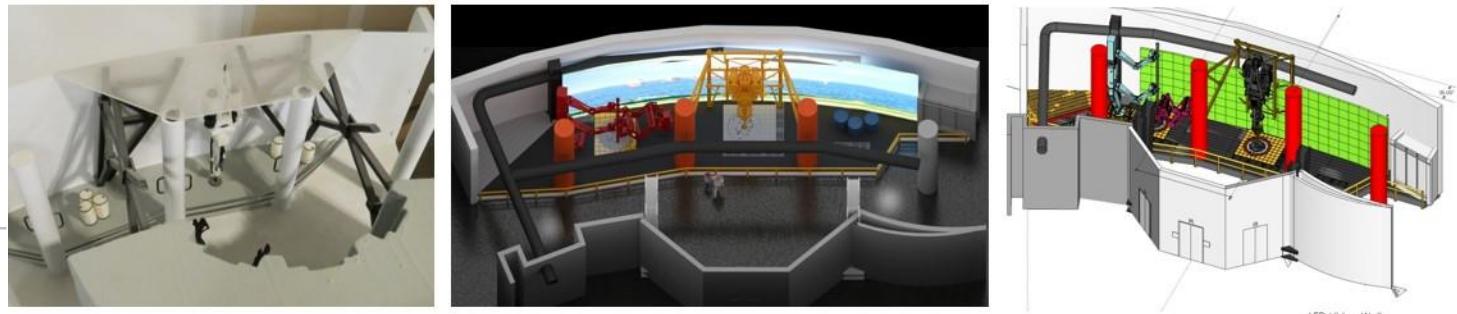
BLUE SKY IDEATION

- 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



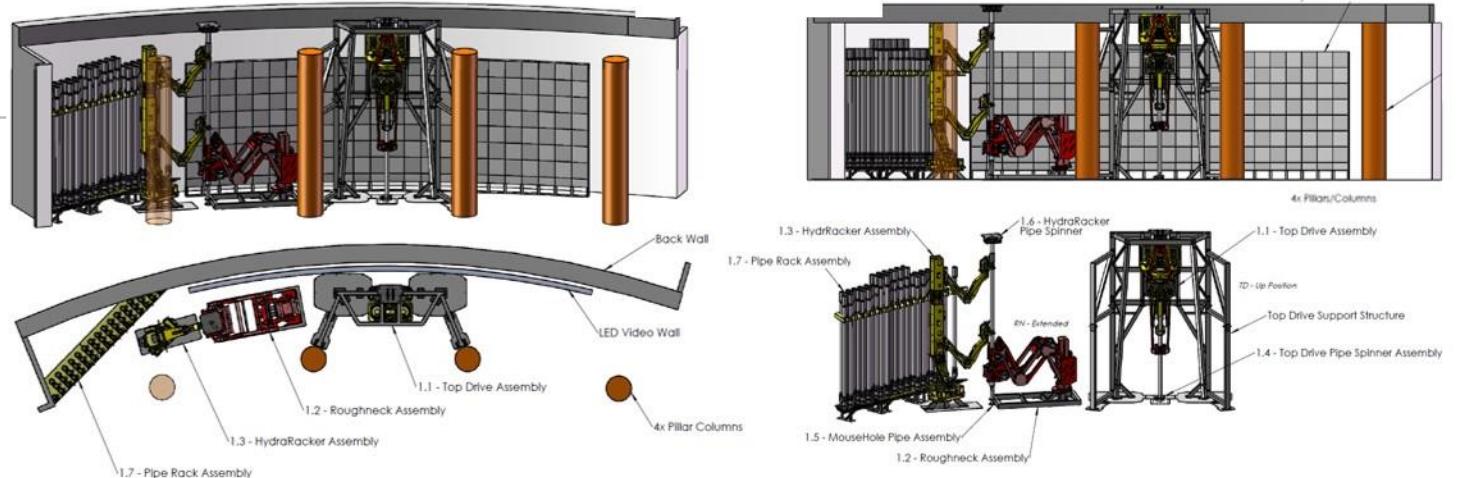
CONCEPT MODELS

- 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

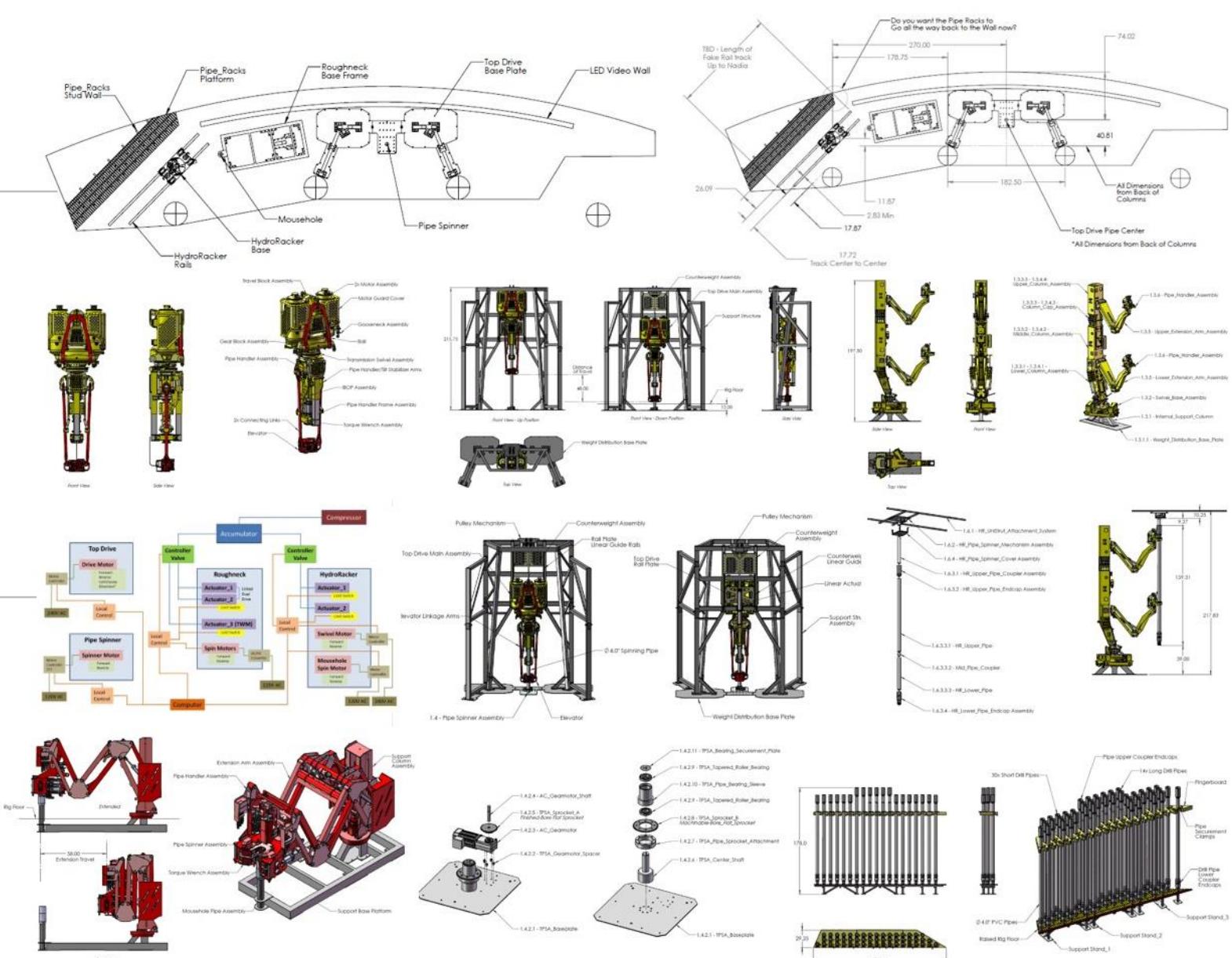
PBE | WIESS ENERGY HALL 3.0
Houston Museum of Natural Science

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

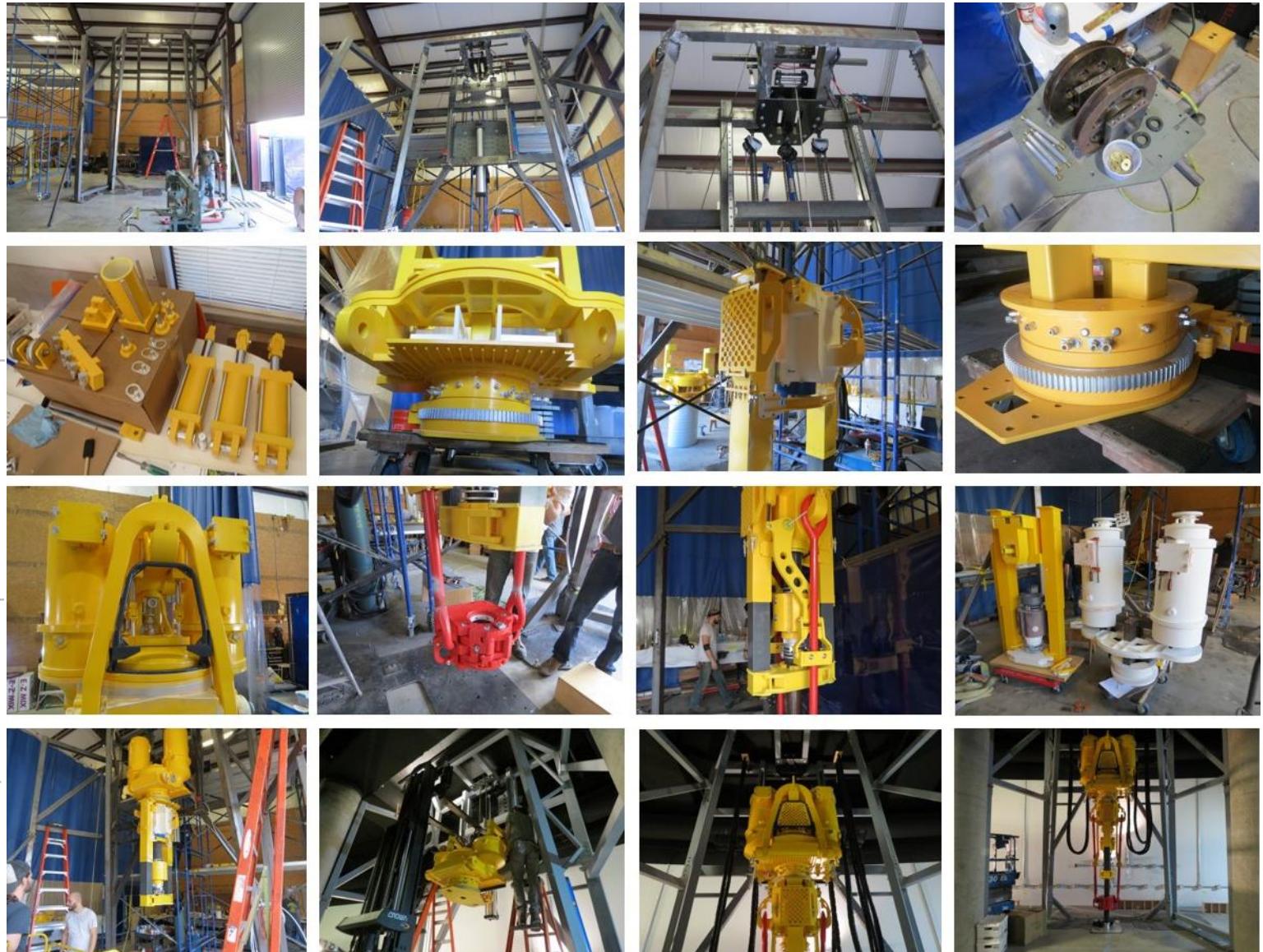
- Fabrication Team Lead and Coordination
- 3D Printings and assembly coordination of all component parts

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

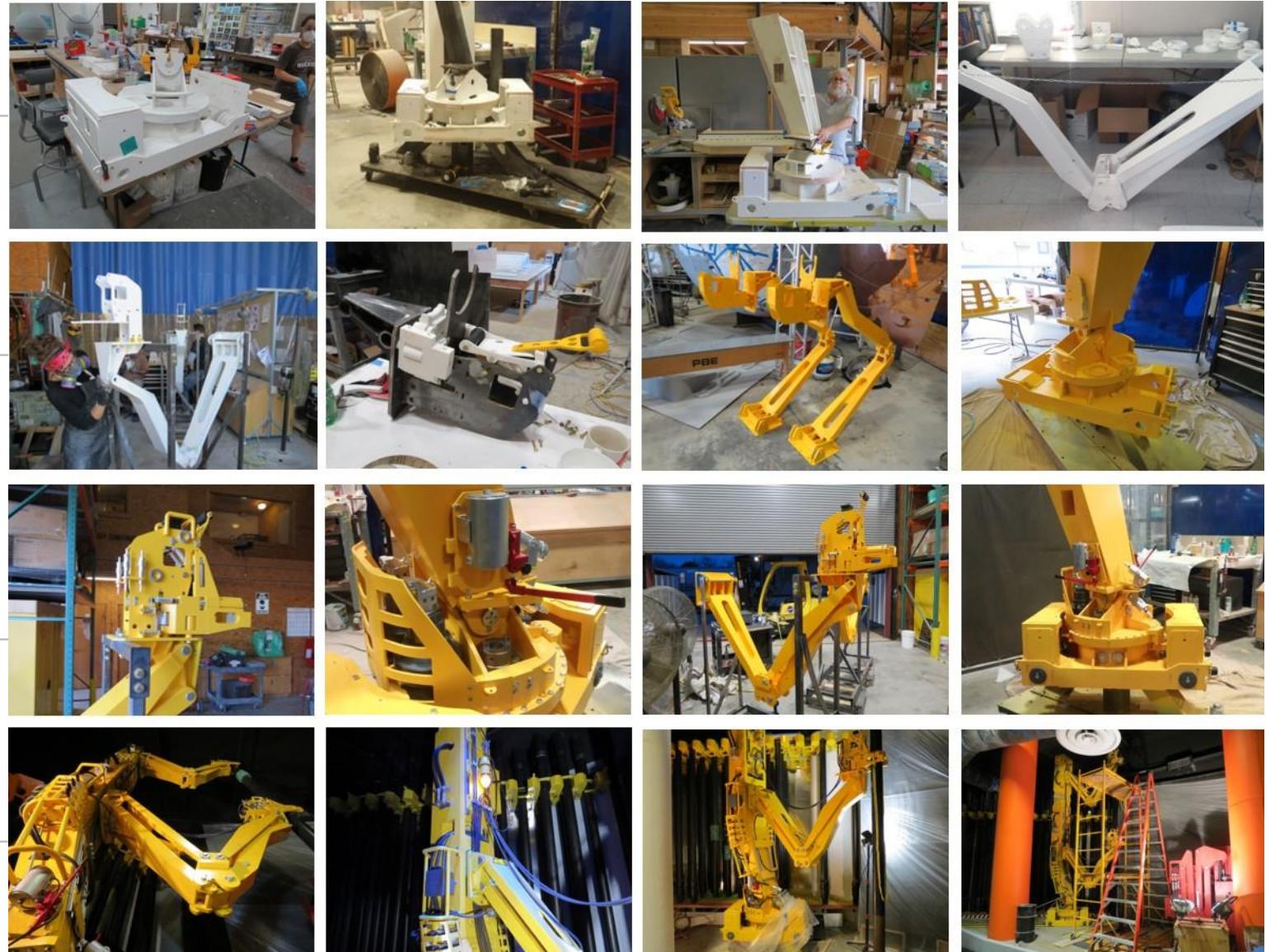
- Fabrication Team Lead and Coordination
- 3D Printings and assembly coordination of all component parts

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

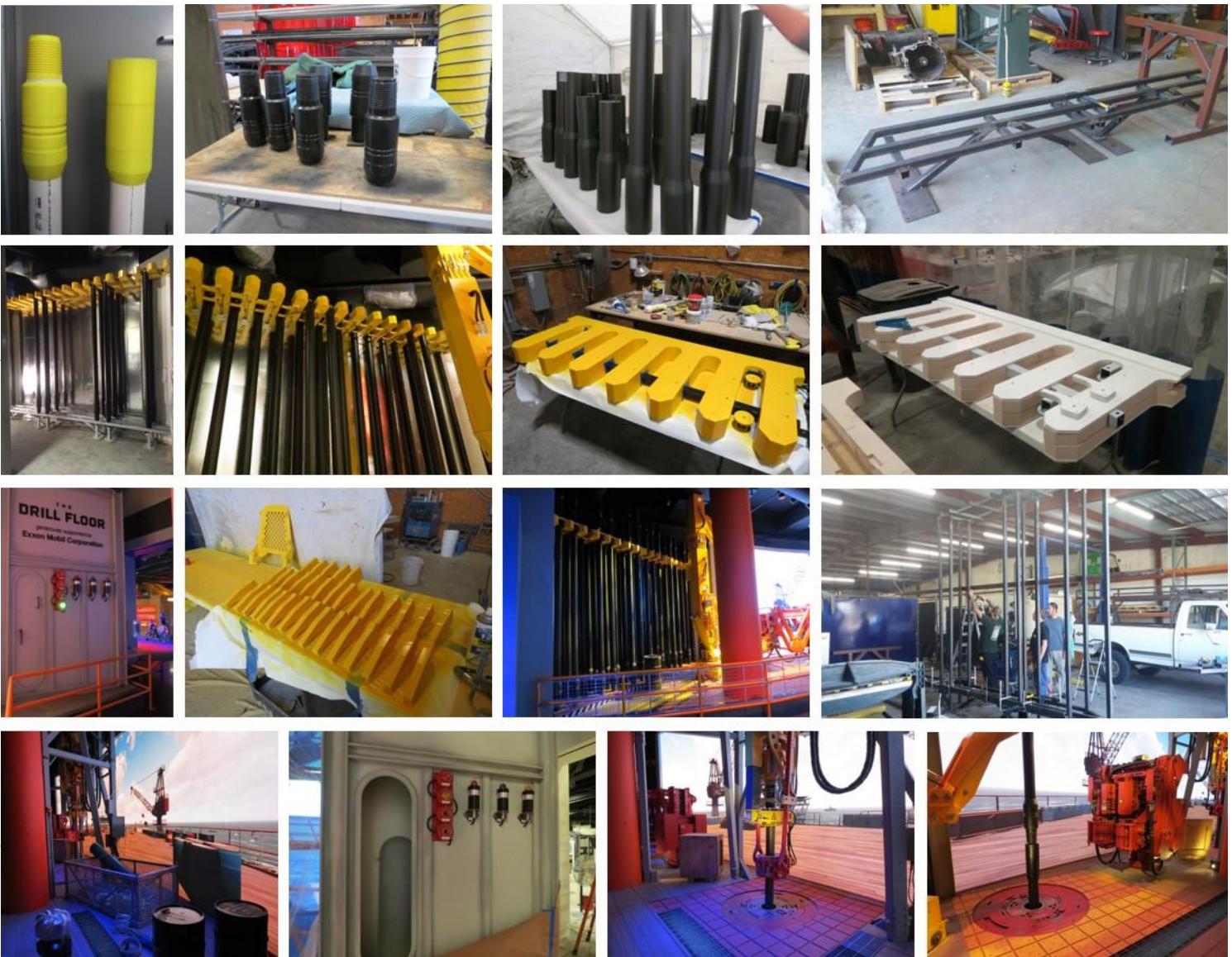
- Fabrication Team Lead and Coordination
- 3D Printings and assembly coordination of all component parts

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

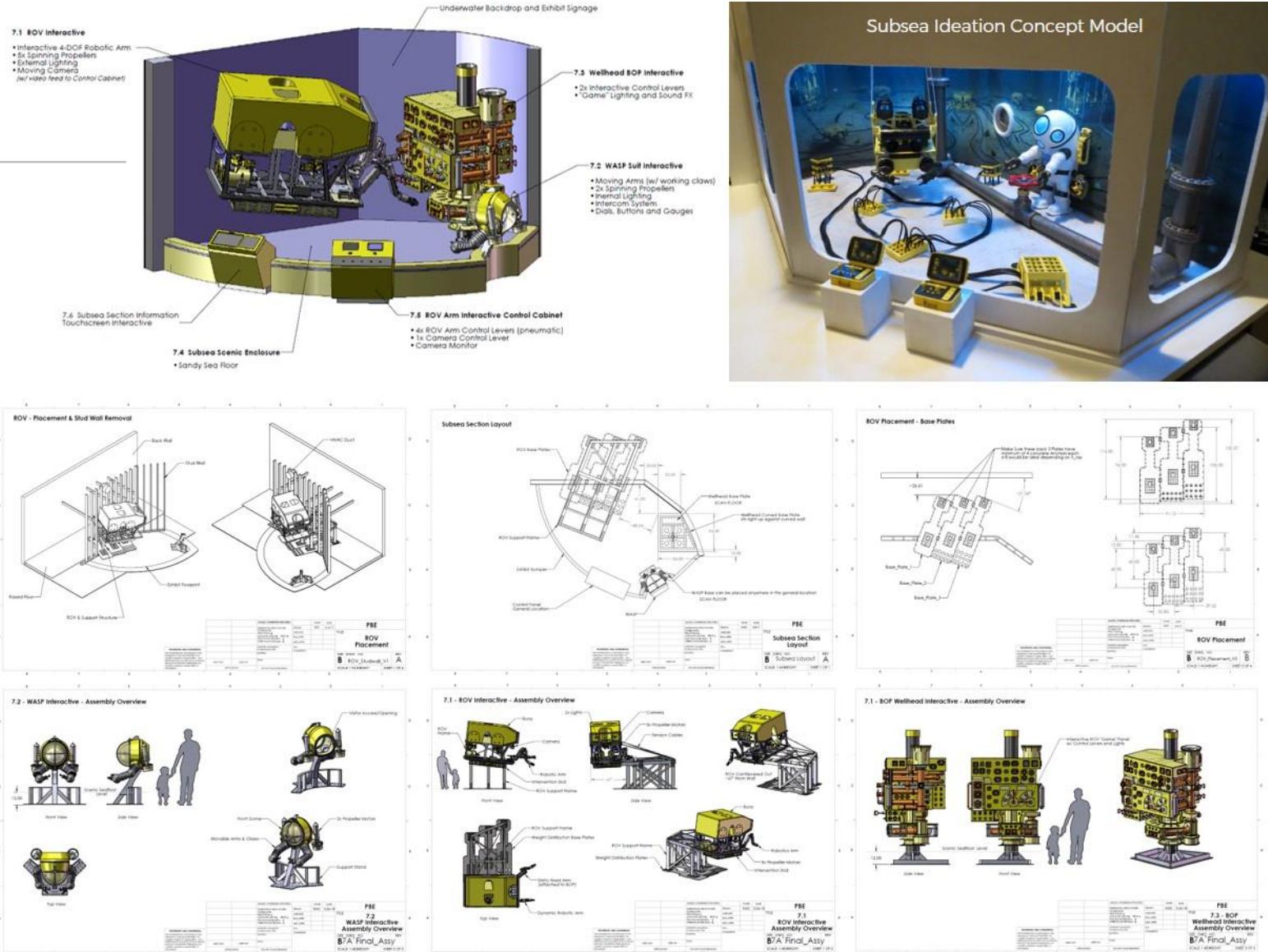
PBE | WIESS ENERGY HALL 3.0
Houston Museum of Natural Science

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

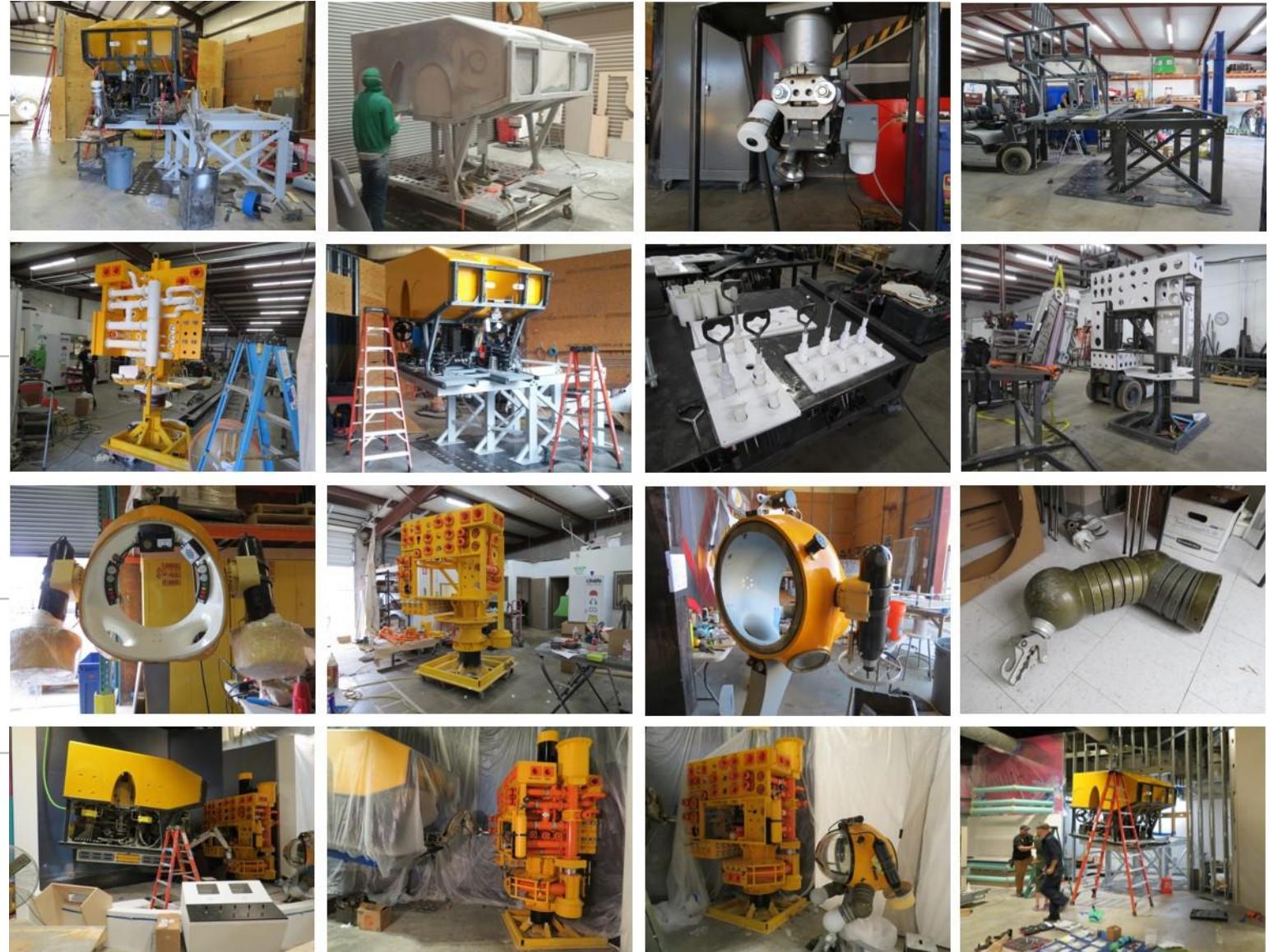
- Fabrication Team Lead and Coordination
- 3D Printings and assembly coordination of all component parts

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

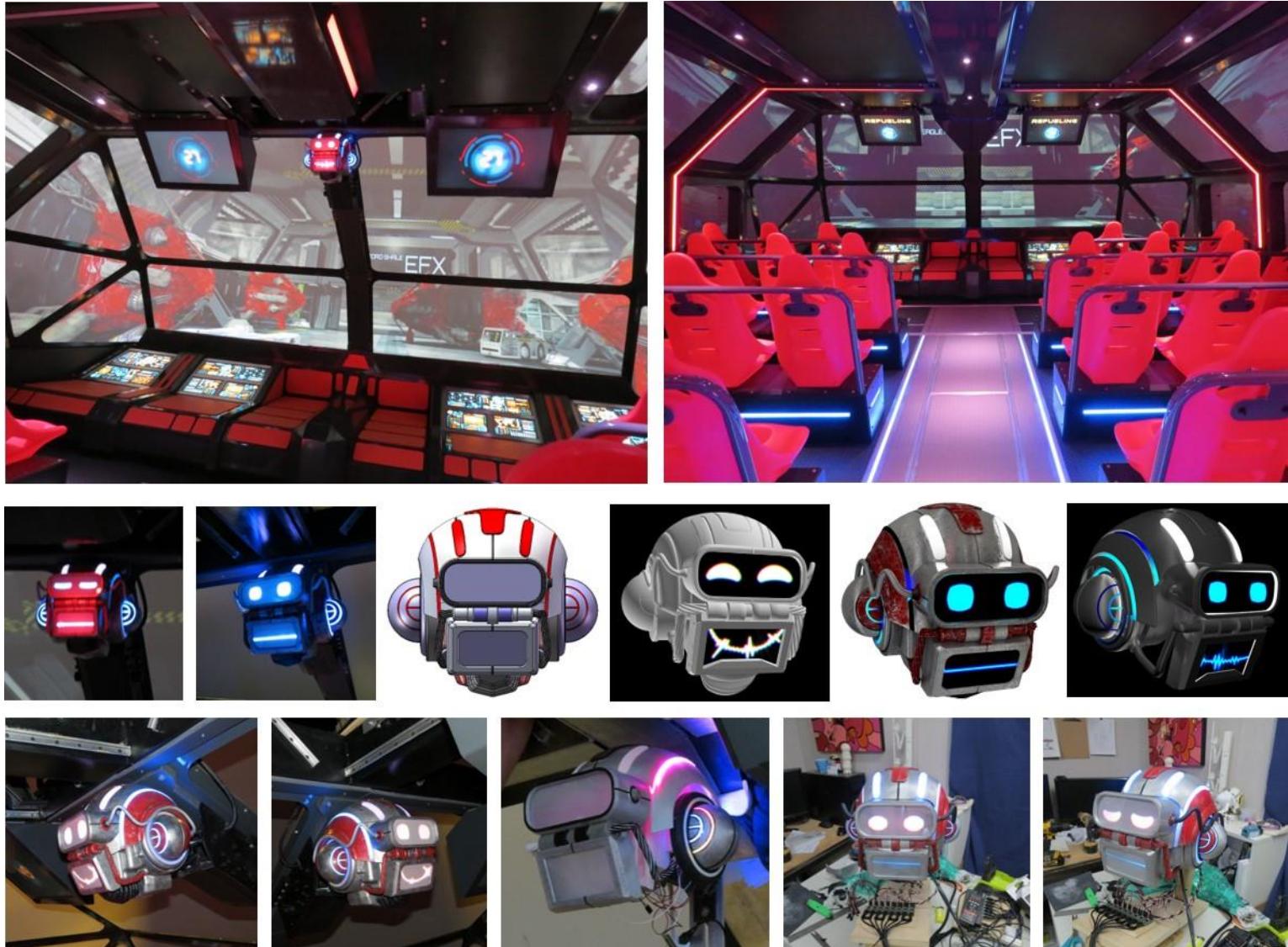
- DAR-C, the Robotic Host and Co-Pilot of the EFX-3000 Motion Platform Theatre Ride Experience, narrating the story of Fracking in the Eagle Ford Shale

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

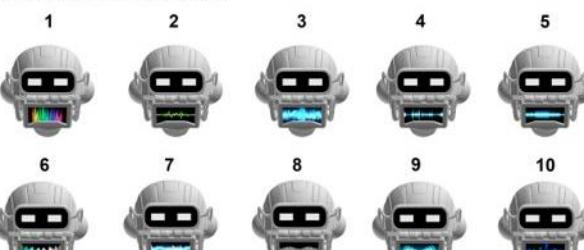
- Responsible for all tasks required to take DAR-C from Blue Sky Concept to physical reality
- DAR-C mouth and eye animations are projected from a set of micro-projectors through a series of mirrors and onto a semi-translucent film allowing the robot to be fully expressive
- Motor-driven Shell Door design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

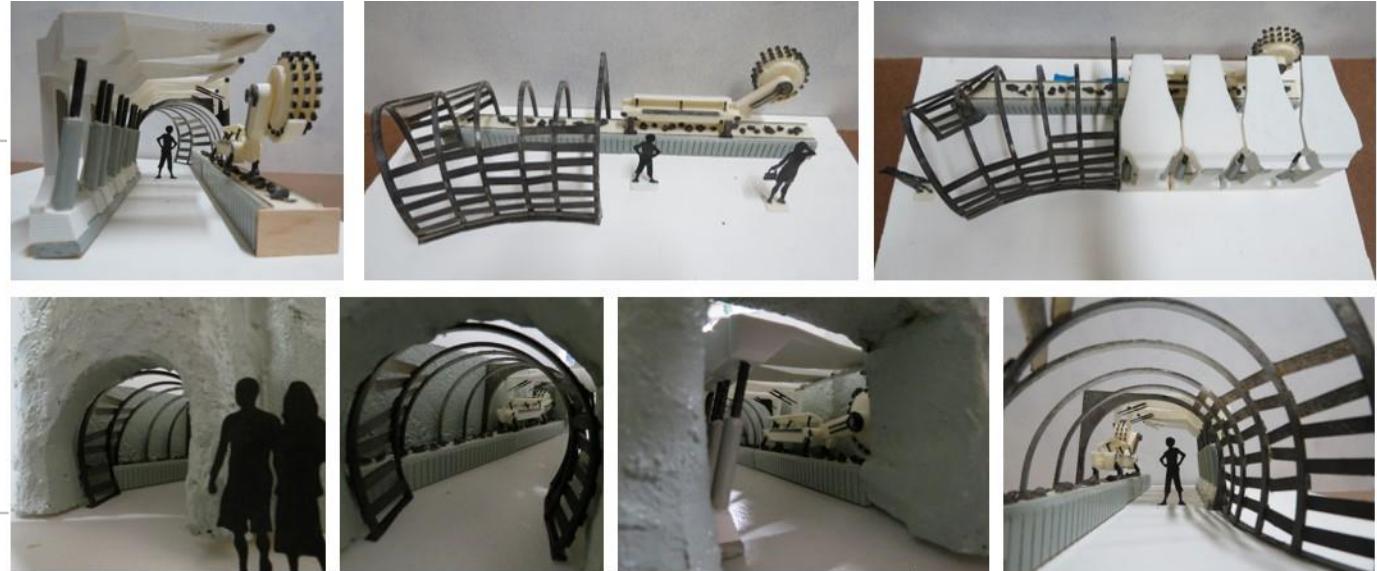


COAL MINE ATTRACTION | 2015

PBE | WIESS ENERGY HALL 3.0
Houston Museum of Natural Science

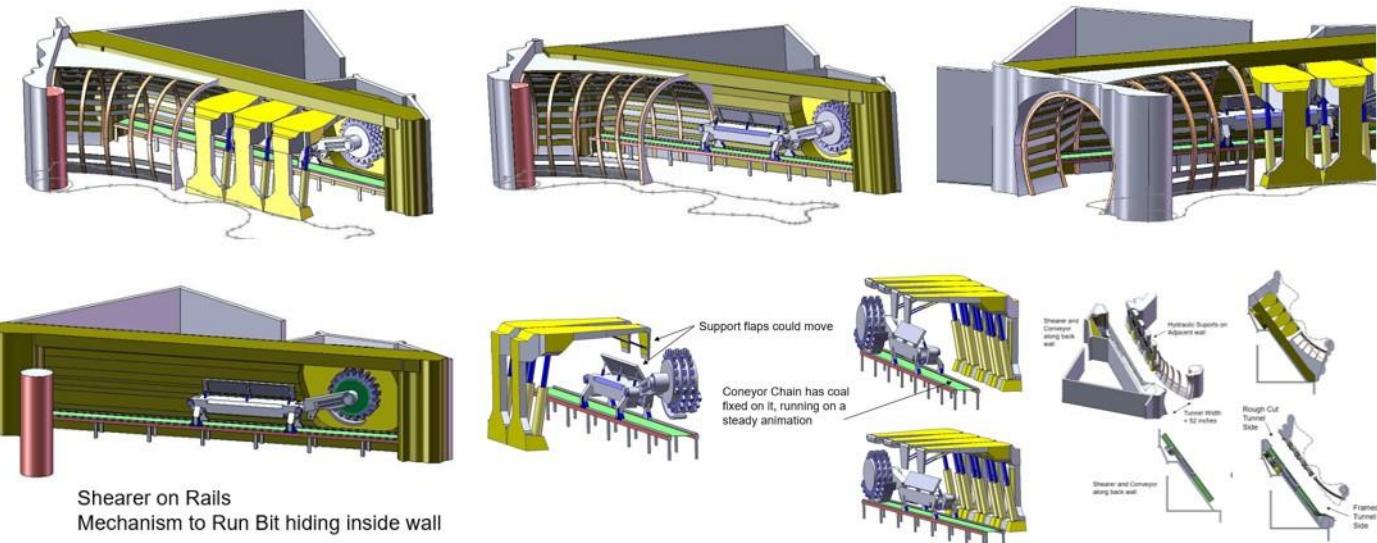
DESIGN CHALLENGE

- 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

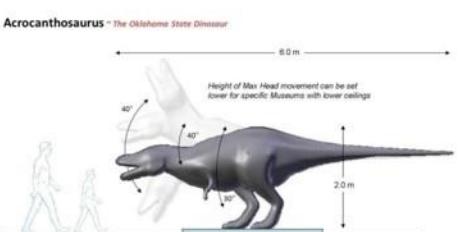
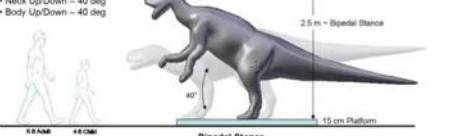
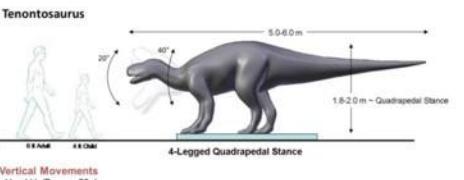
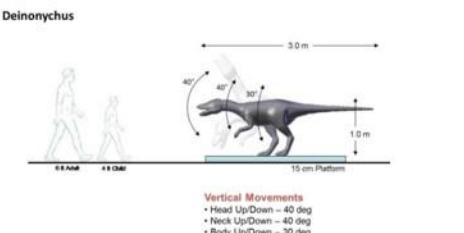
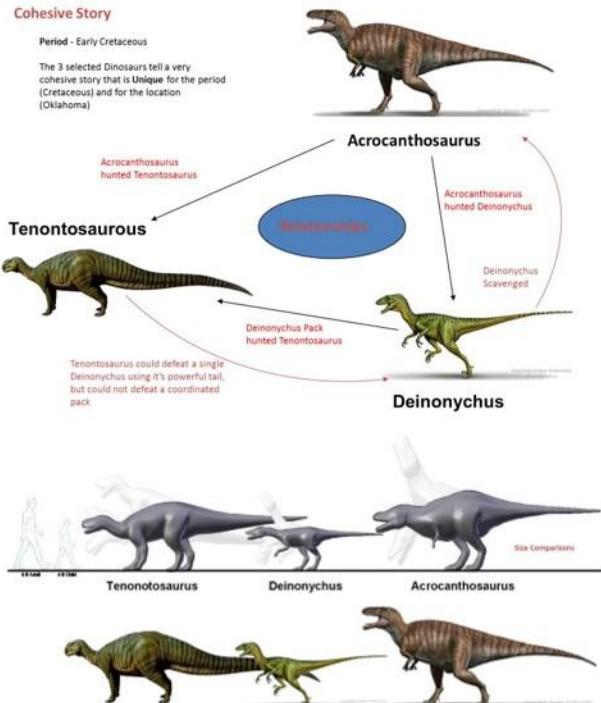
KUMOTEK ROBOTICS | GUJO

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



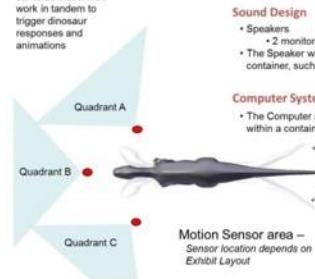
Measurements

- Measurements of Base Platform will be determined by February 2013
- All control systems and valves will be contained within the base of the dinosaurs

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



Measurements

- Measurements of Base Platform will be determined by February 2013
- All control systems and valves will be contained within the base of the dinosaurs

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

Motion Sensor area –
Sensor location depends on
Exhibit Layout

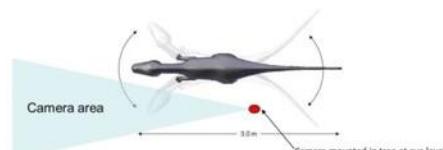
Deinonychus

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



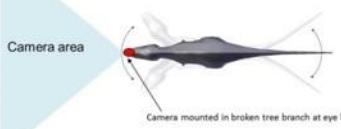
Acrocanthosaurus

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
- The camera combined with other sensors 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



Tenontosaurus

Interaction System

- 1 Visitor ~ 1 Quadrant
 - 1-5 Visitors ~ 2 Quadrants
 - Crowds ~ 3 Quadrants
- Dinosaur reacts based on number of visitors

- Interaction SW
 - Programmed Response Animation 1
 - Programmed Response Animation 2
 - Programmed Response Animation 3
- Dinosaur sensors load and responds

Deinonychus

Interaction System

- 1 Visitor
 - 1-5 Visitors
 - Children
 - Crowds
- Dinosaur reacts based on number of visitors & unregistered children

- Computer
 - Facial Tracking
 - Interaction SW
 - Programmed Response Animation 1-3
 - Programmed Response Animation 4
 - Programmed Response Animation 5
 - Programmed Response Animation 6
- Dinosaur sensors load and responds

- Interactive Game (TBD)
 - Sound Sensor (TBD)
 - Exhibit Entrance Sensor
- Dinosaur started by new visitors entering space and looks of entrance

Acrocanthosaurus

Interaction System

- 1 Visitor
 - 1-5 Visitors
 - Children
 - Crowds
- Dinosaur reacts based on number of visitors & registered children

- Computer
 - Facial Tracking
 - Interaction SW
 - Programmed Response Animation 1
 - Programmed Response Animation 2
 - Programmed Response Animation 3
- Dinosaur sensors load and responds

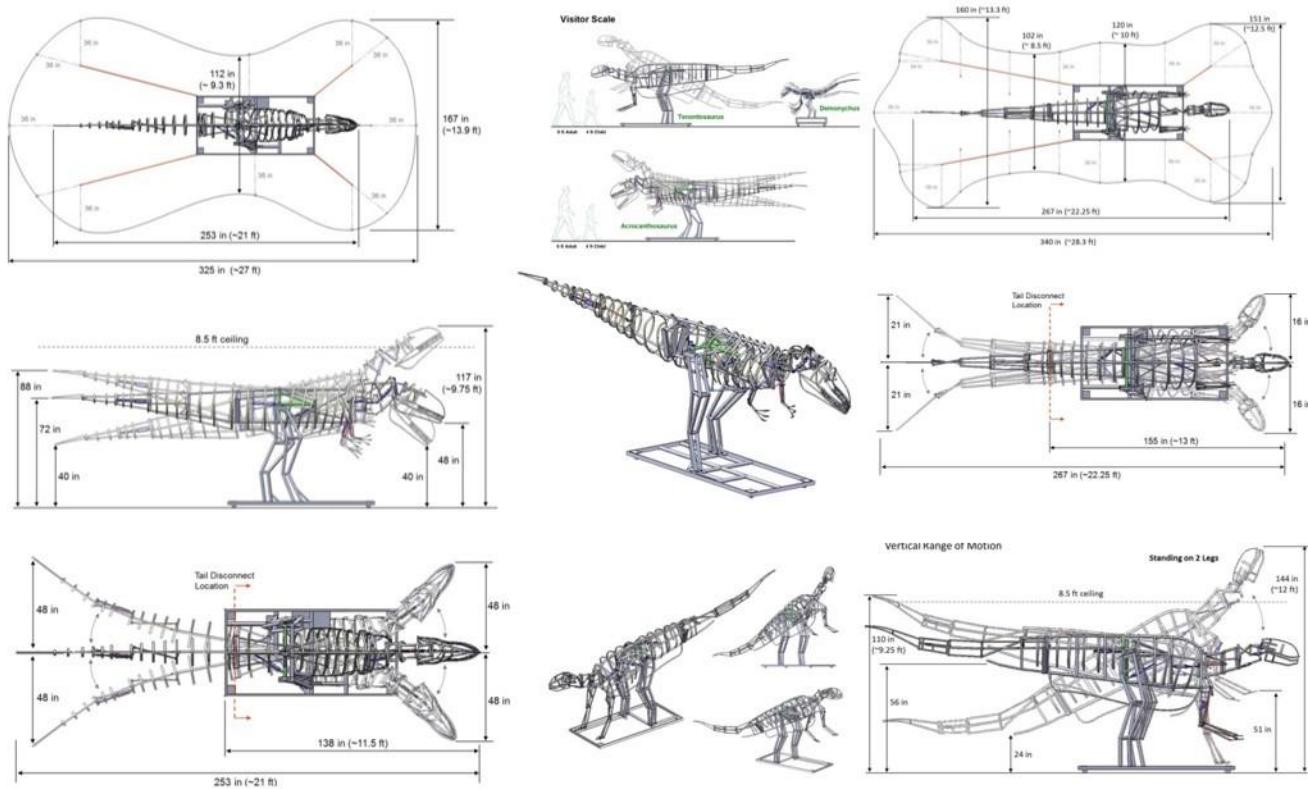
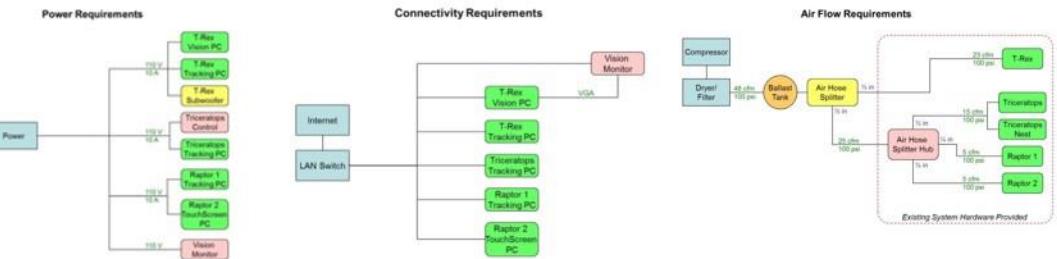
- Exhibit Entrance Sensor
 - Deinonychus Behavior Trigger
 - Tenontosaurus Behavior Trigger
- Dinosaur started by new visitors entering space and looks of entrance

RED DIRT DINOS | 2013 - 2016

KUMOTEK ROBOTICS | GUJO

PRODUCTION DESIGN | ENGINEERING

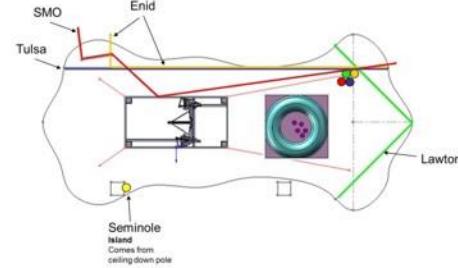
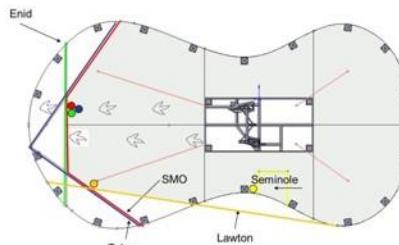
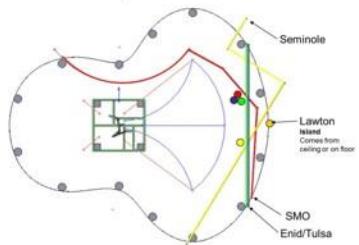
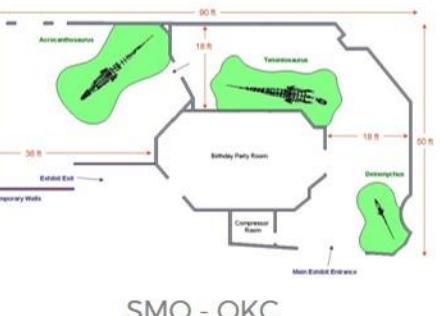
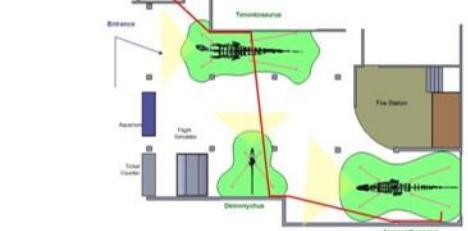
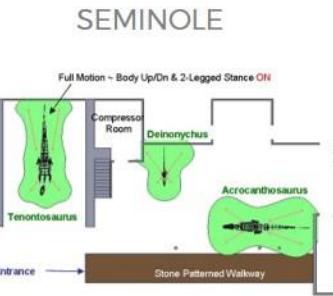
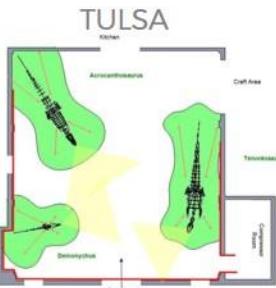
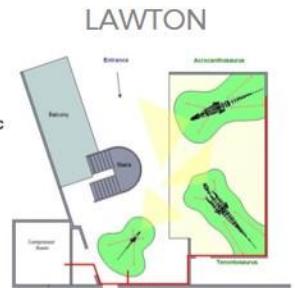
- Animatronics, Mechanical/Systems Engineering, Dinosaur Design
- Dinosaurs fabricated by Gujo in Japan based on the completed technical CAD data package, interfaces, requirements and specifications



KUMOTEK ROBOTICS

MODULAR LANDFORM DESIGN

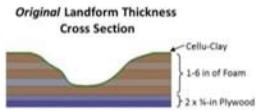
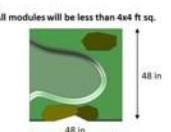
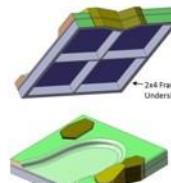
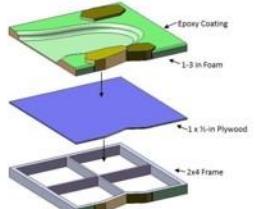
- Modular Exhibit Layout and Landform Design for 5 Museums
- Designed to be easily assembled and disassembled for travel
- Modular sections allow for multiple configurations for each Museum
- Lead Fabricator of 3 complete modular Landforms



Modular Travelling Landform Design

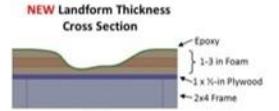
Landform Modules

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

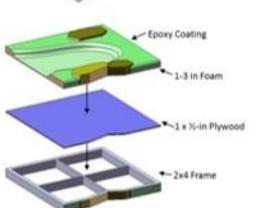


Original had 2x 3/4-in plywood overlaid with 1-6 inches of foam

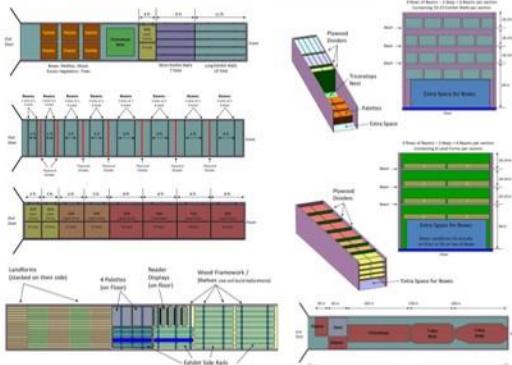
This thickness contributed greatly to the overall weight of each section



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



Travelling Exhibit Logistics and Loading Layout for Semi-Trucks



All modules connect together

The configuration is exactly the same for every museum

All modules will be less than 4x4 ft sq.

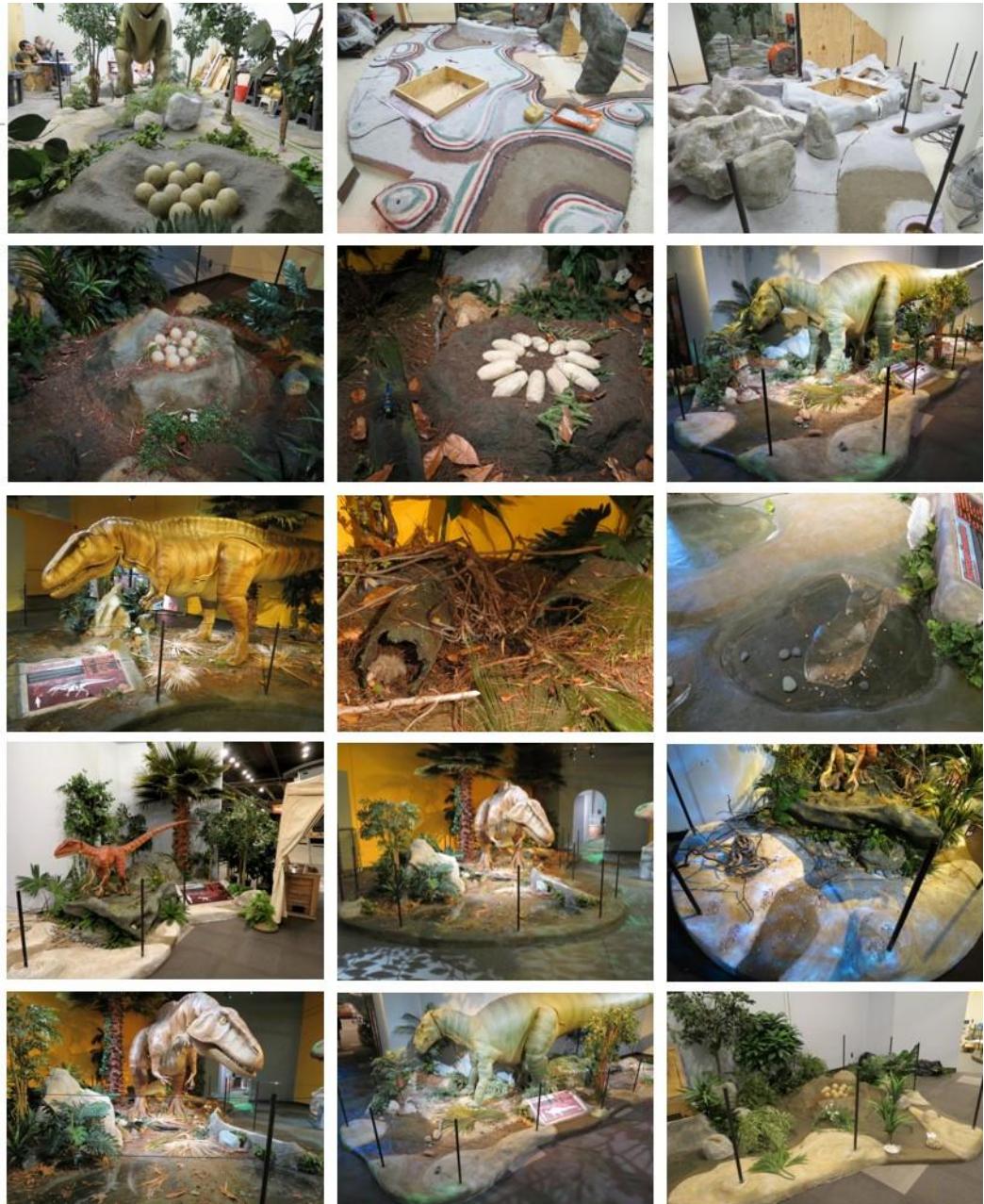


RED DIRT DINOS | 2013 - 2016

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



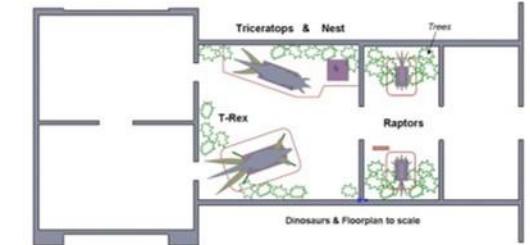
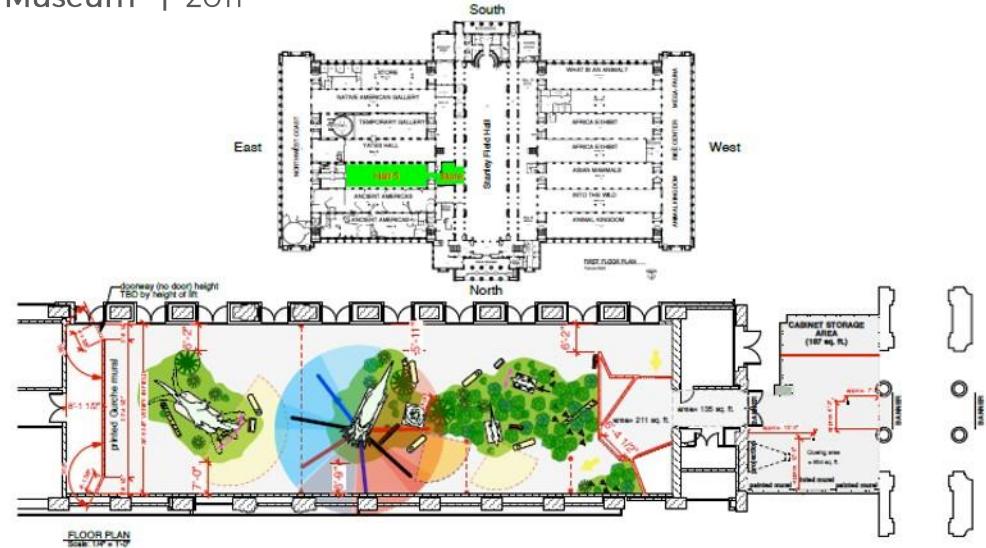
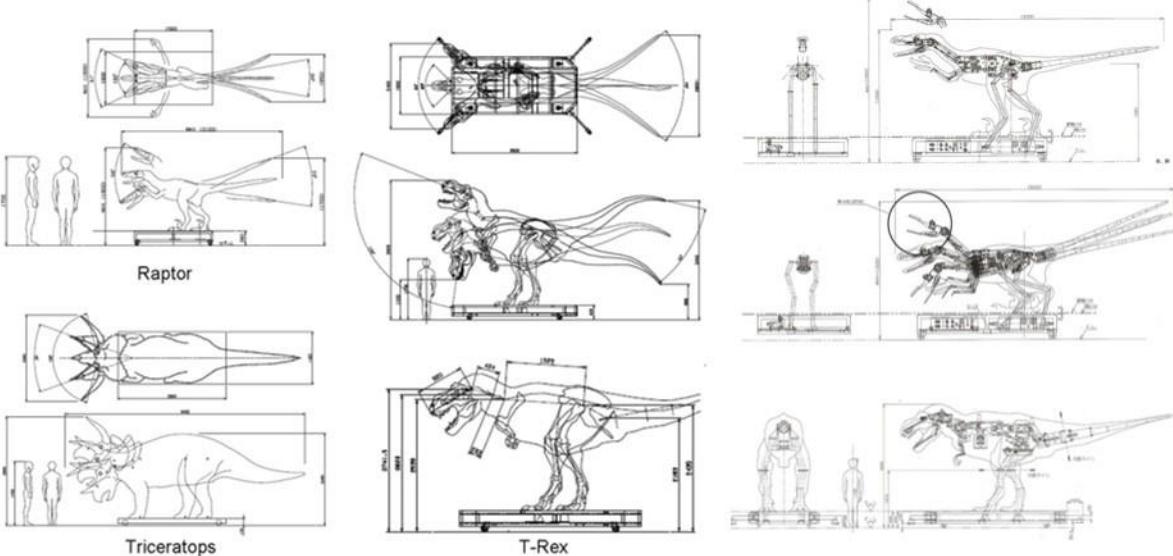
KUMOTEK ROBOTICS | KOKORO-DREAMS

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



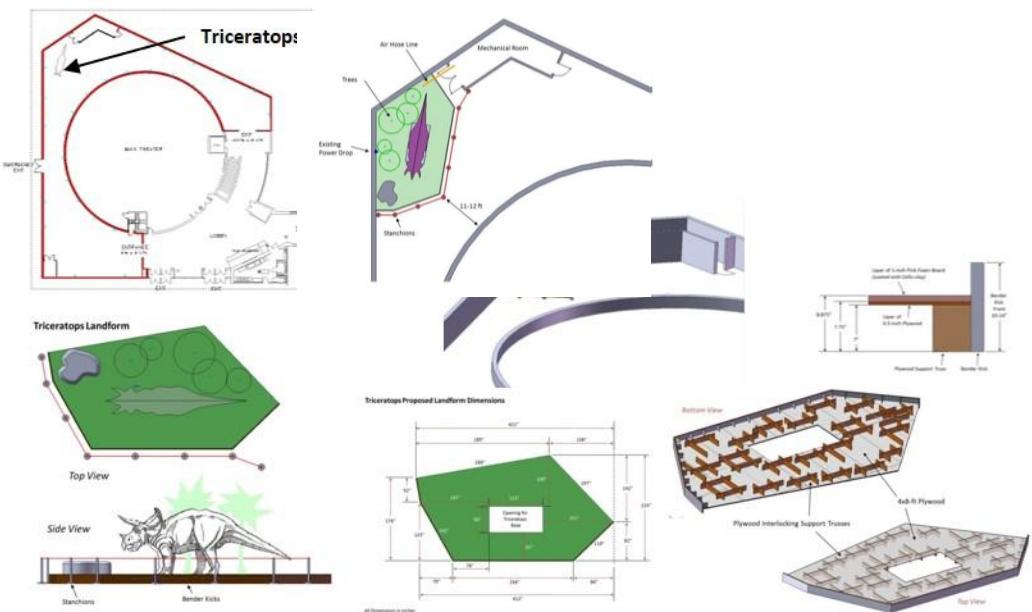
GUARDIANS OF TIME | 2011 - 2014

KUMOTEK ROBOTICS

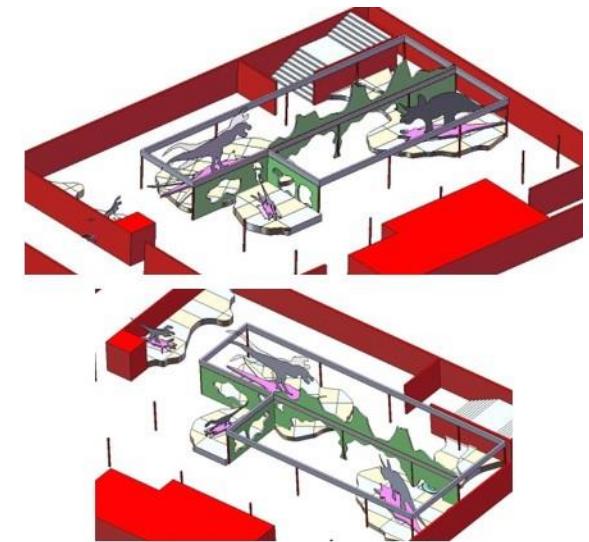
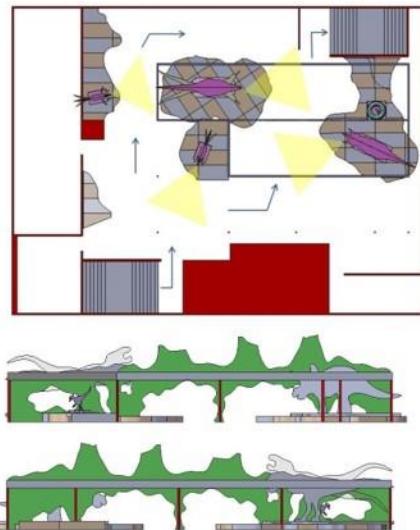
PRODUCTION DESIGN | EXHIBIT LAYOUT

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

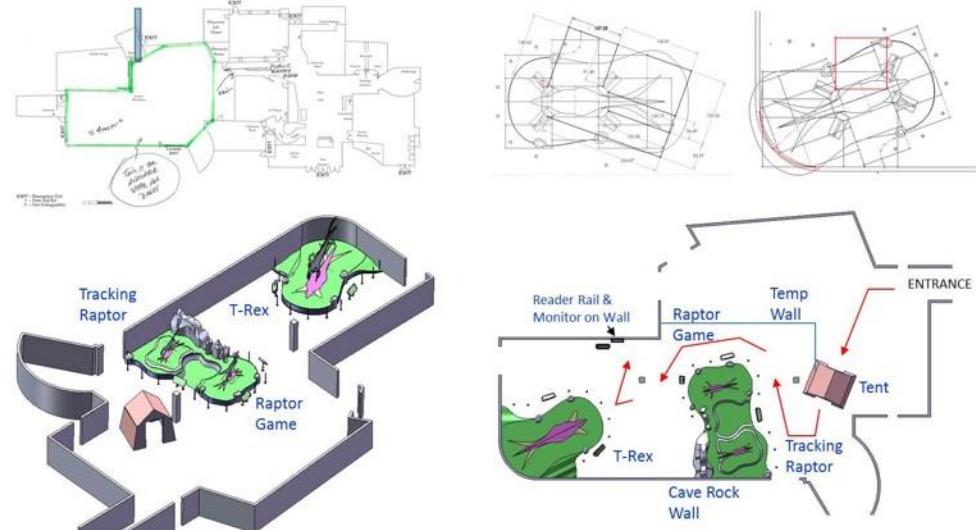
Science Museum of Virginia | 2014



Dino Solarium | Robotics New York | 2012



ScienceWorks Hands-On Museum | 2014



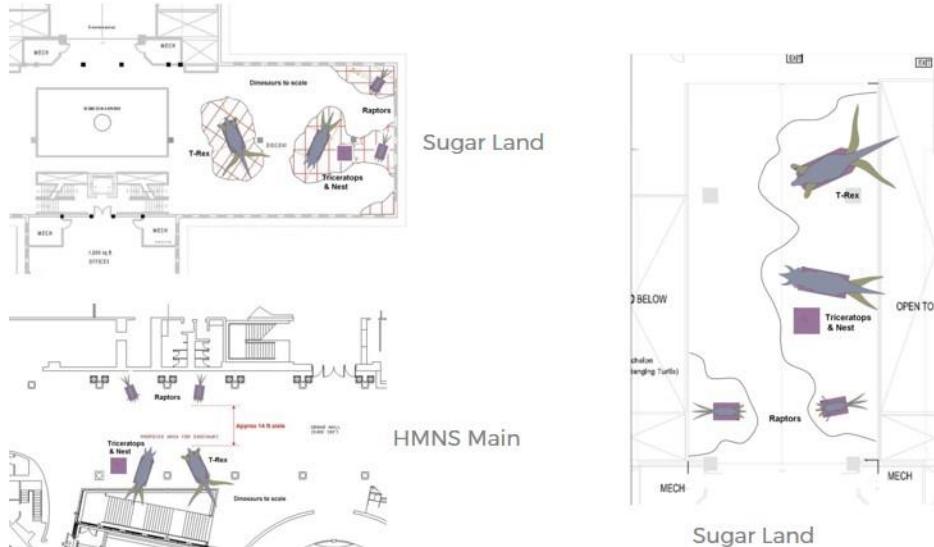
GUARDIANS OF TIME | 2011 - 2014

KUMOTEK ROBOTICS

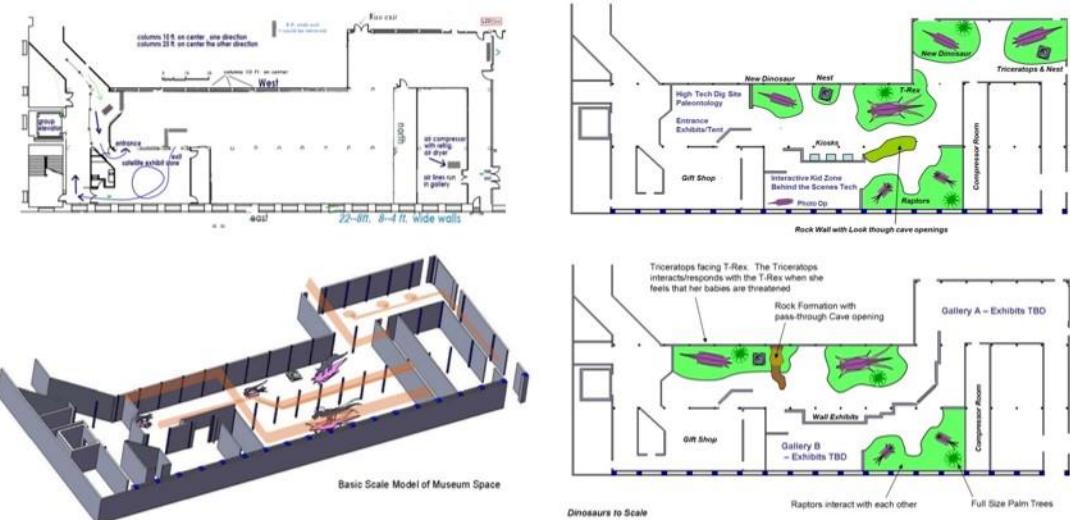
PRODUCTION DESIGN | EXHIBIT LAYOUT

- 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 |
|--|------|------|------|------|------|
| | | | | | |

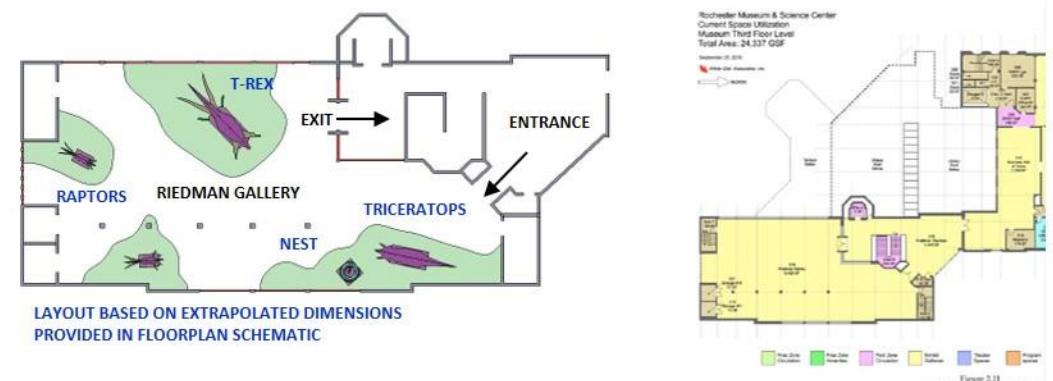
Houston Museum of Natural Science | 2012 Proposed Attraction Layout



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

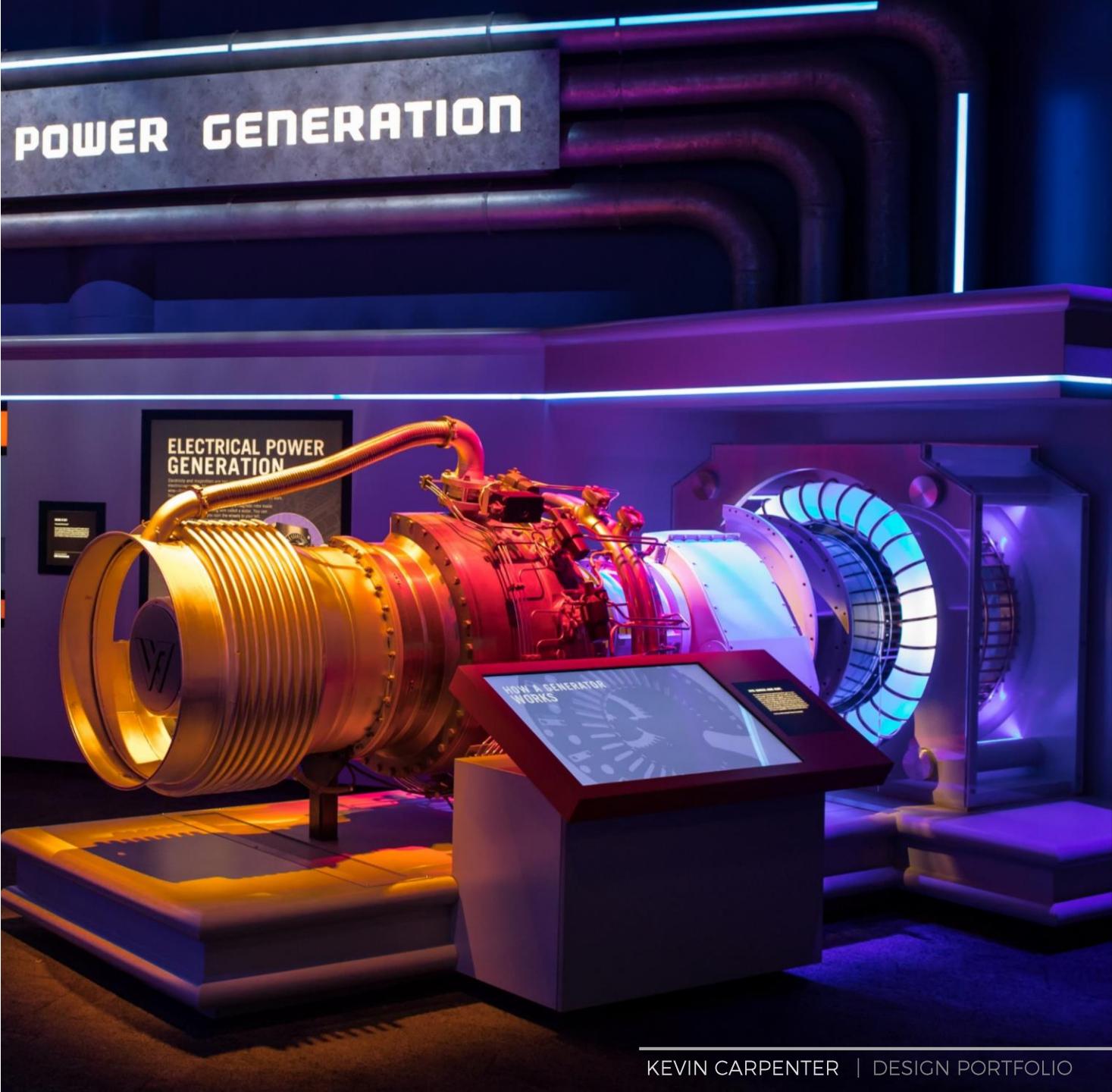
- Satellite
- Electrical Turbine Generator
- Sleeve Gun
- Geophone Demonstration
- Pig Race
- Pachinko Pinball Refinery
- Overhead Kinetic Sculpture
- MicroOrganism Overhead Sculptures
- Plate Techtonics Globes
- Global Energy Information Center
- HydroTurbine

ATTURAIF LIVING MUSEUM

Old Diriyah, Saudi Arabia

LAQ EXHIBIT BOOTH

Toy Fair 2013, New York NY



ELECTRICAL TURBINE GENERATOR | 2017

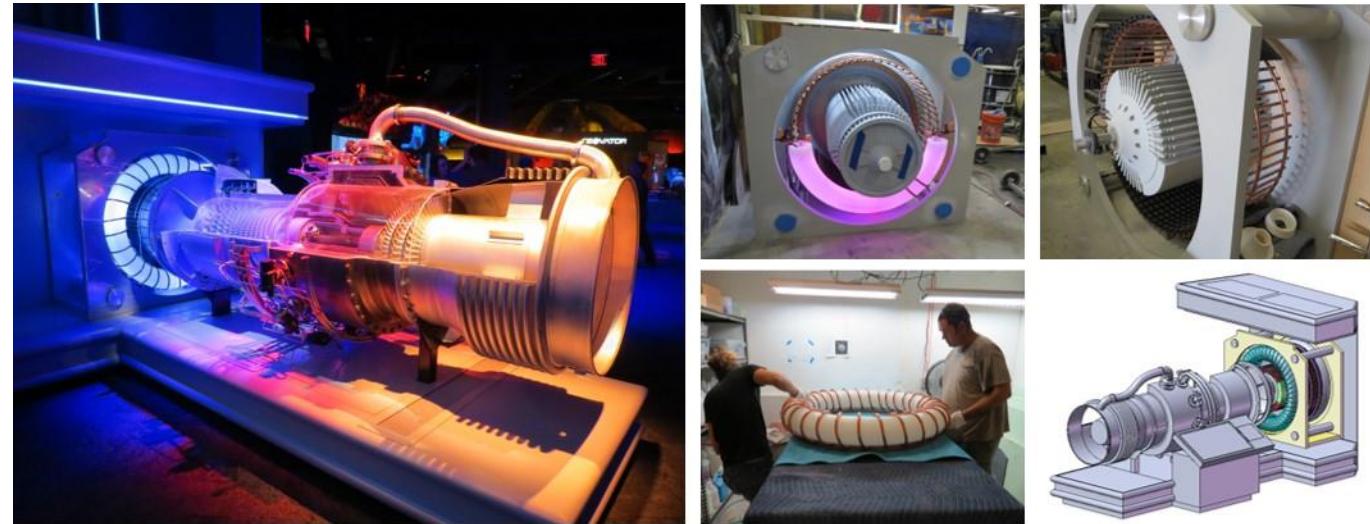
PBE | WIESS ENERGY HALL 3.0
Houston Museum of Natural Science

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

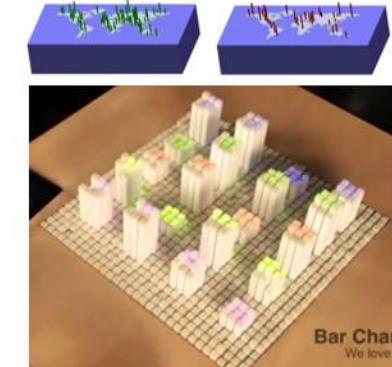
- Early exhibit conceptualization, design and development, functional analysis, and technical support



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

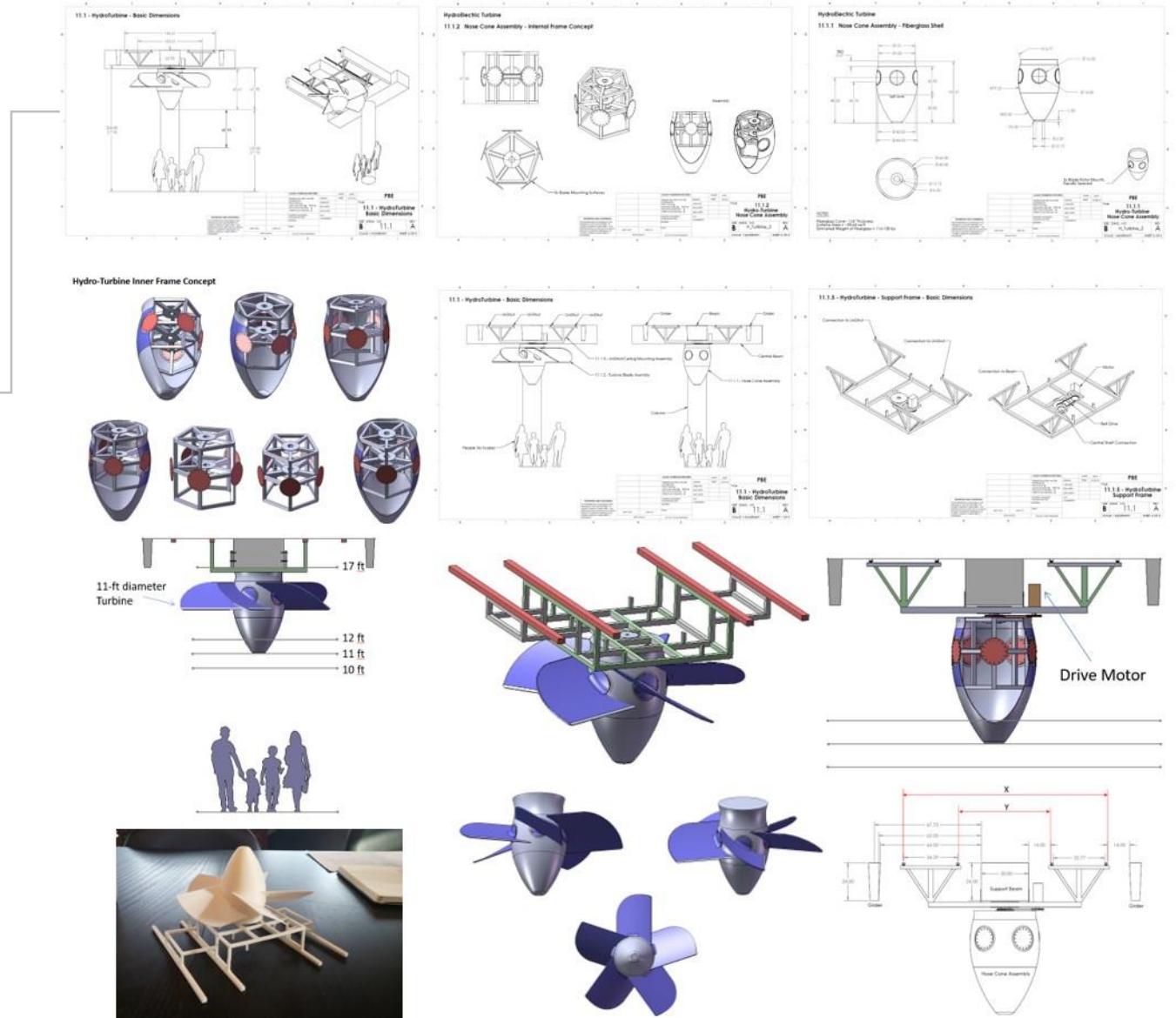
PBE | WIESS ENERGY HALL 3.0
Houston Museum of Natural Science

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

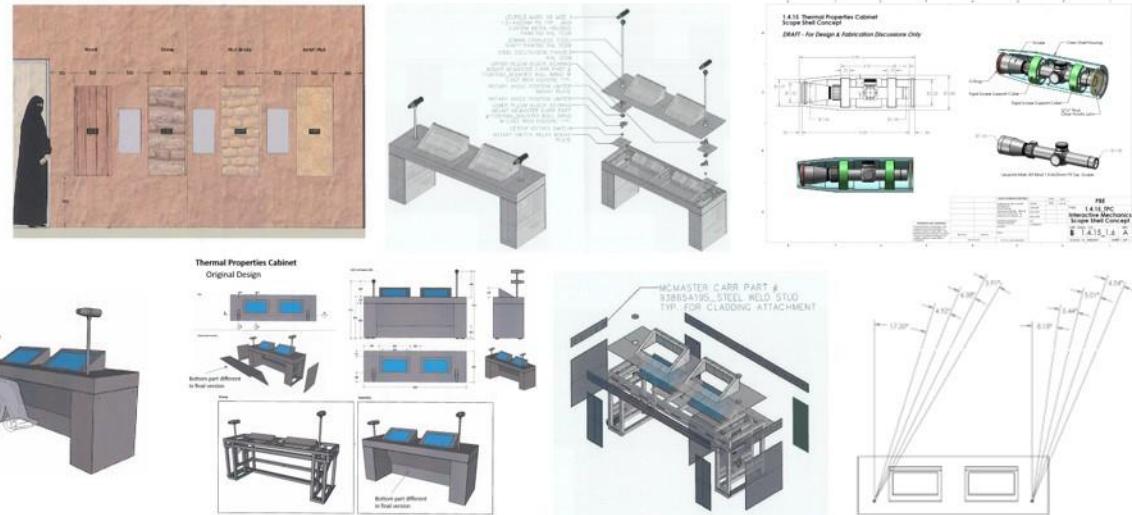
Old Diriyah, Saudi Arabia

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

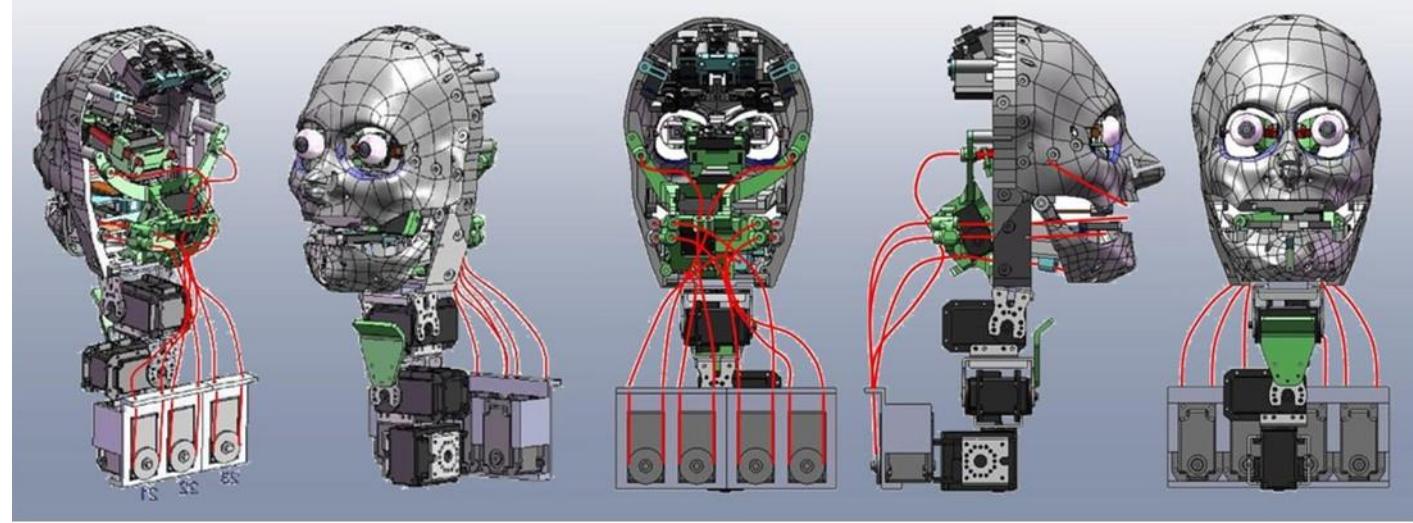
Interactive robotic android designed and fabricated for the Machine Intelligence Laboratory at University of Cambridge, England

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

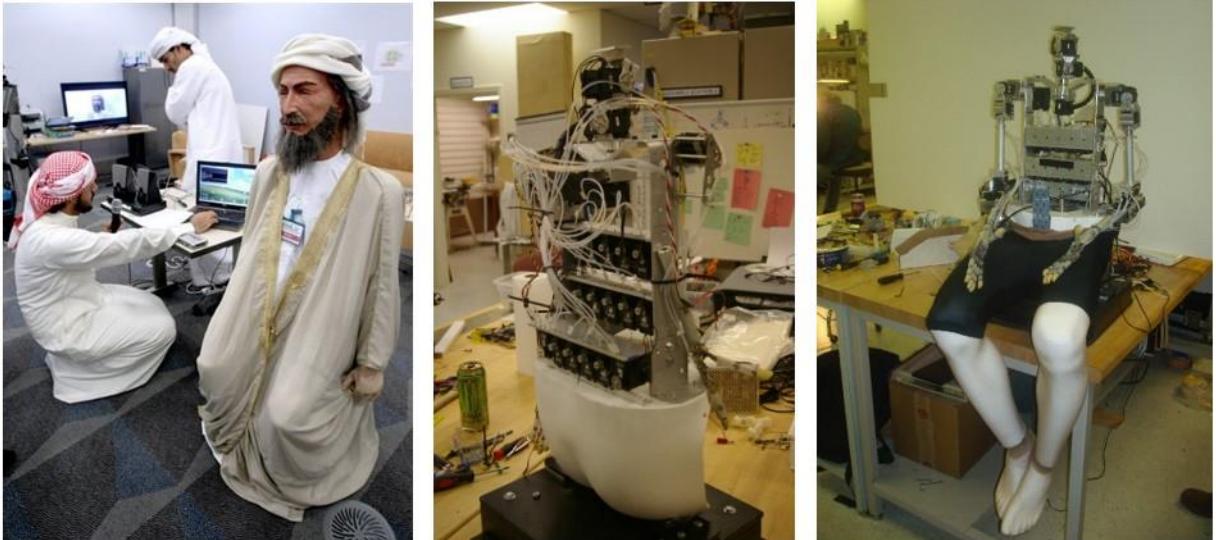
HANSON ROBOTICS | UNITED ARAB EMIRATES UNIVERSITY

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

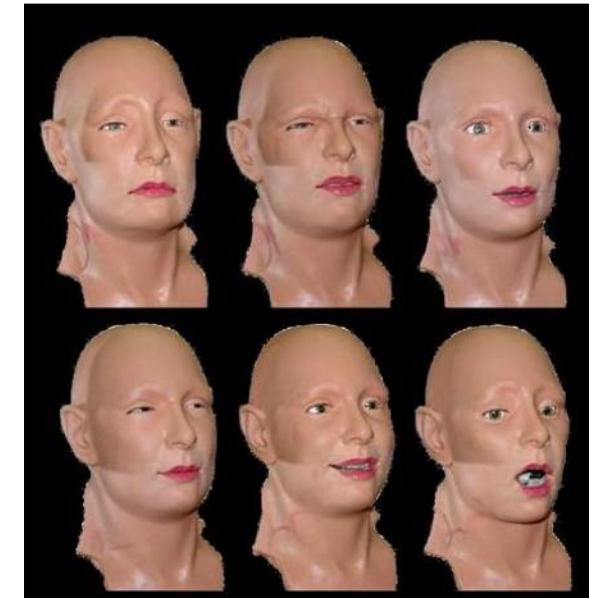
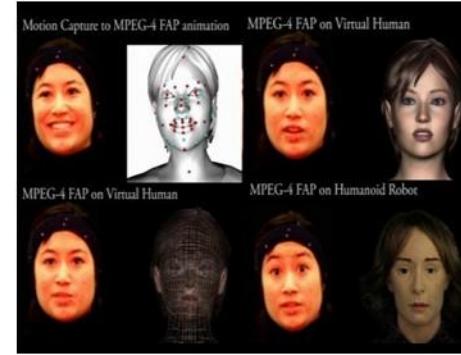
- Interactive female robotic android head. Designed and fabricated for the MIRA Labs at the University of Geneva, Switzerland under a grant from the EU Indigo Project

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

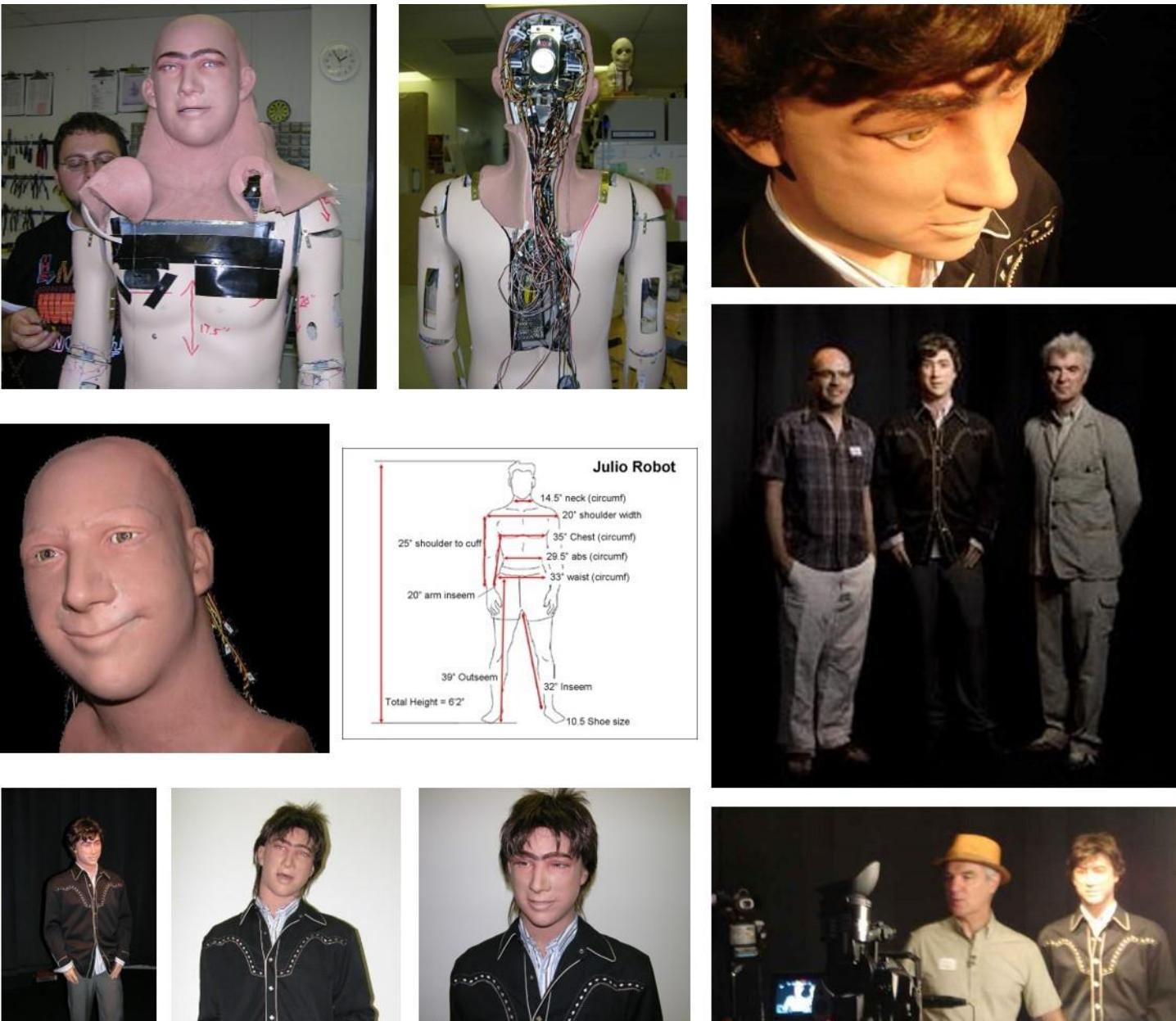
- An attraction conceived by Artist/Musician David Byrne to highlight the Uncanny Valley Principle of Robotics for the ArtFutura Exhibition: Maquinas & Almas (Machines and Souls) at the Museo Nacional Centro De Arte Reina Sofía, Madrid, Spain
- Julio sings a song written by Byrne specifically for the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



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



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



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



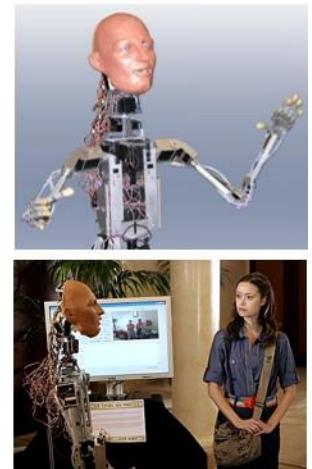
ALEPH-NULL | 2007

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

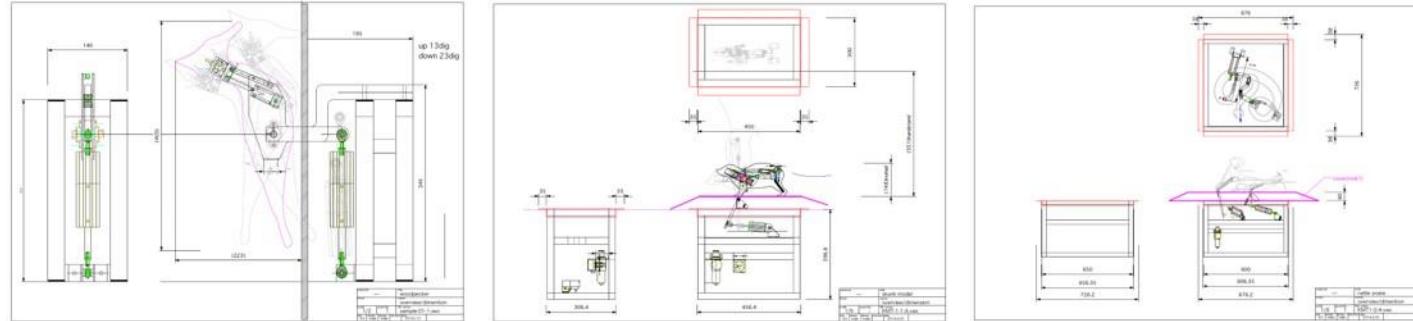
- Animatronic Rattle Snake, Woodpecker and Skunk for the "Farish Hall of Texas Wildlife" at the Houston Museum of Natural Science, Houston TX
- Collaboration with Animatronics Design Company VANIMA, Tokyo Japan

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

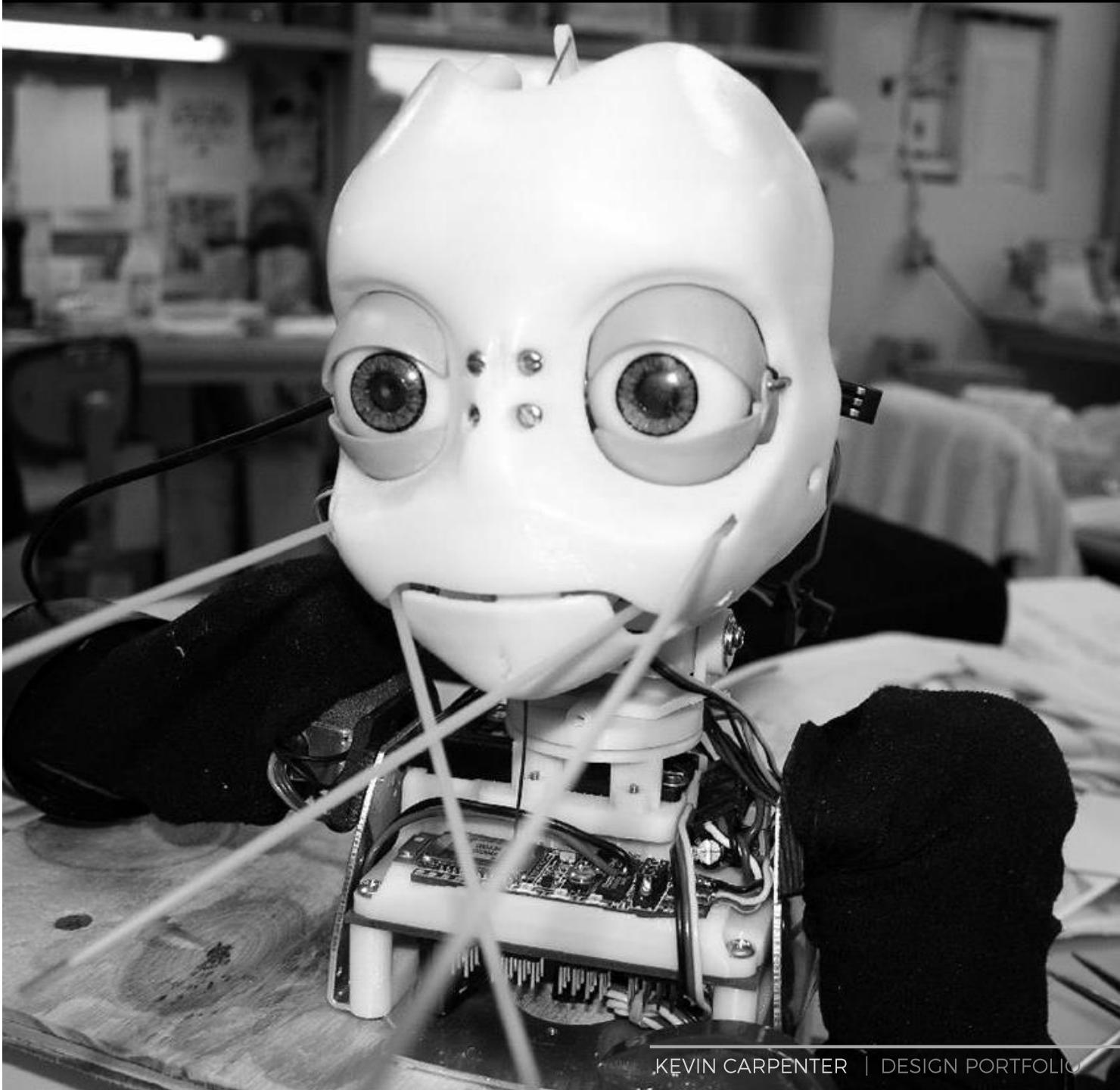
HANSON ROBOTICS

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



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

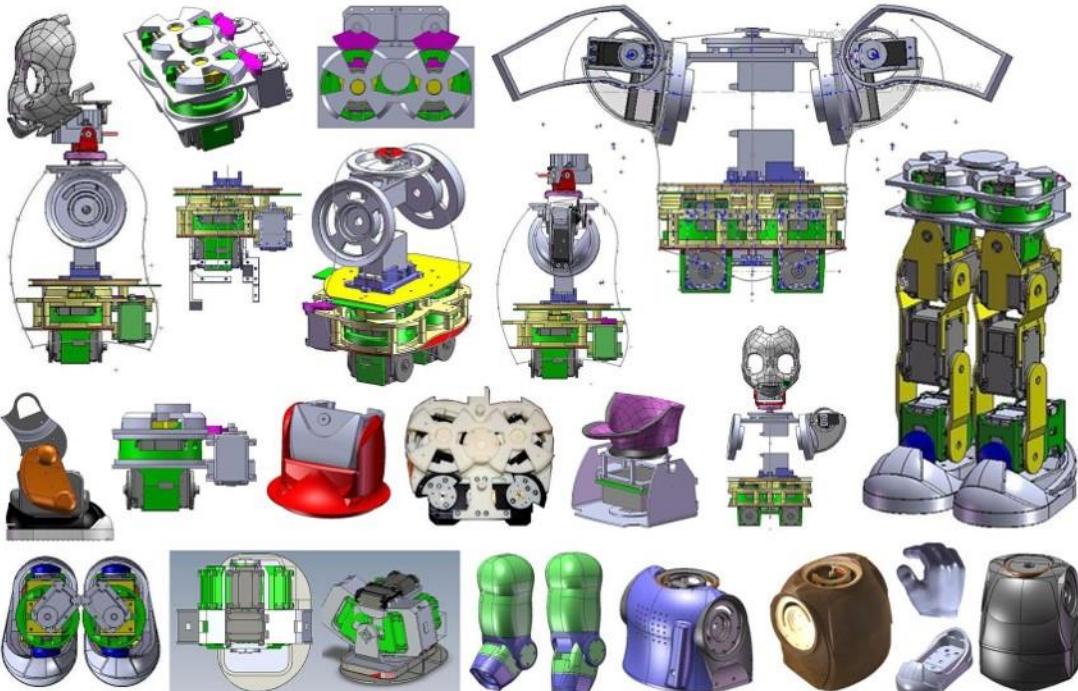
PRESS | AWARDS

- Zeno-5 debuted in Popular Mechanics and Discover Magazines

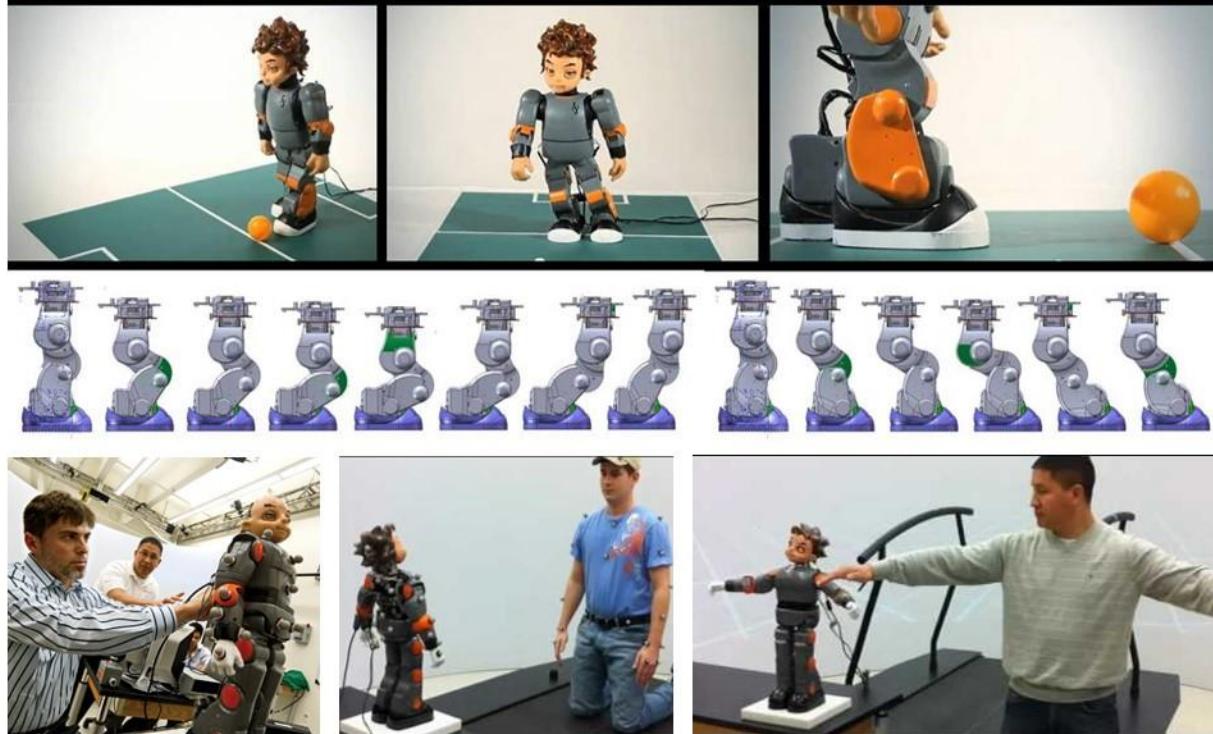
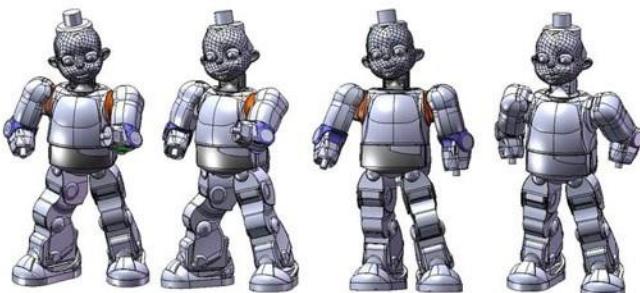


ZENO.V5 | 2010

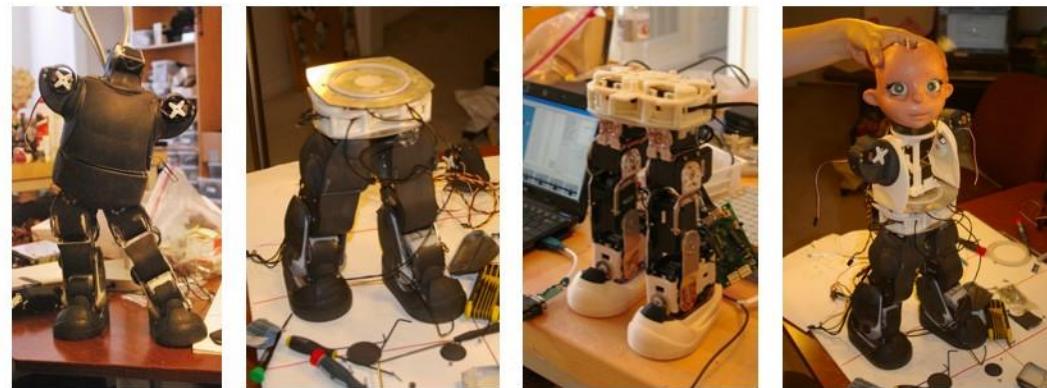
HANSON ROBOTICS | ROBOKIND



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

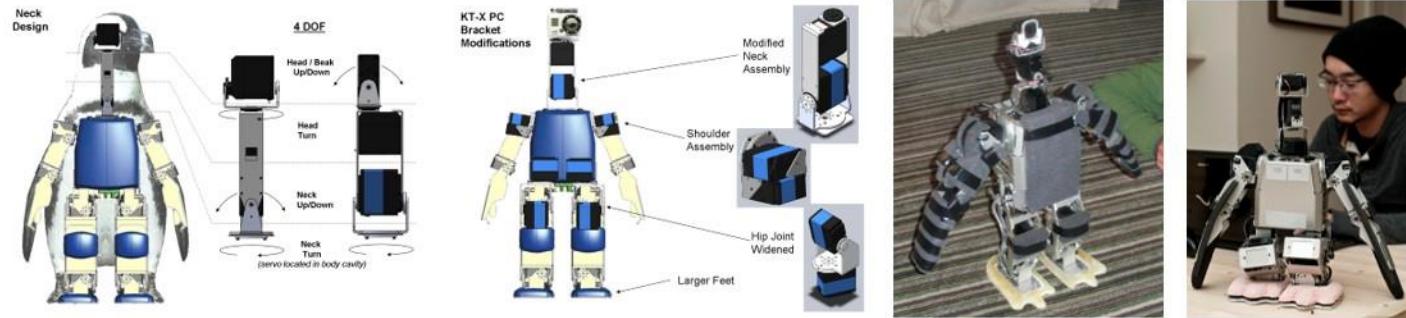
- Collaboration with award winning documentary film company John Downer Productions for the BBC Production, *Penguins: Spy in the Huddle*.
- The state-of-the-art robots were designed to resemble and mimic Rockhopper and Humboldt and Baby Emperor Penguins
- Advanced capabilities to autonomously walk on 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

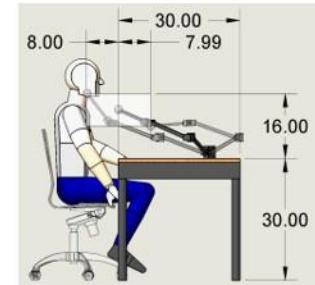
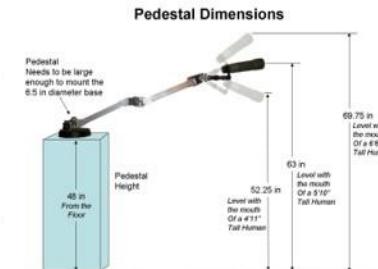
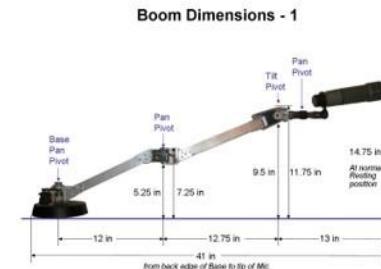
- Mechanical design, prototype development, fabrication, and testing, customer coordination

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

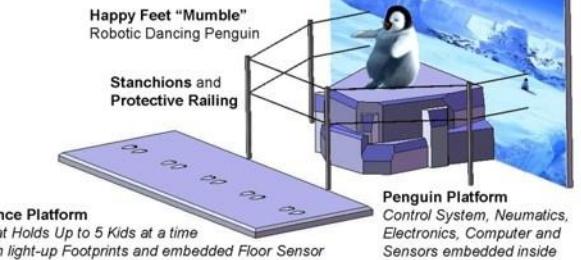
FEATURES

- 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

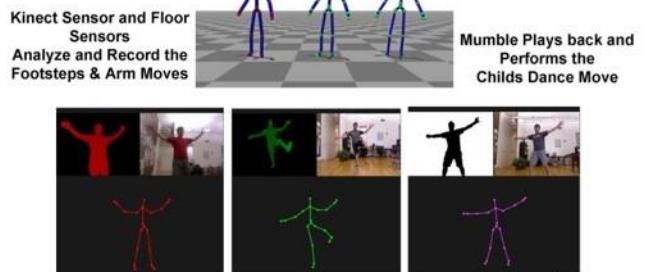
DESIGN | ENGINEERING

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

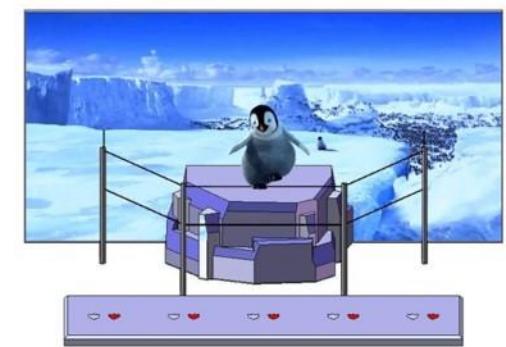
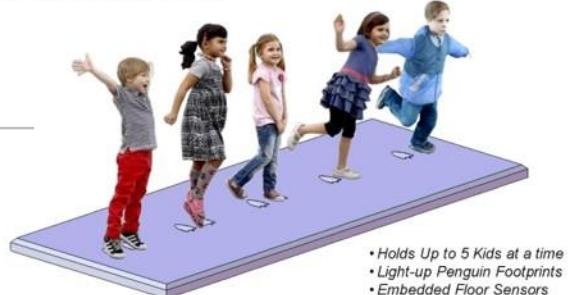
Components of the System



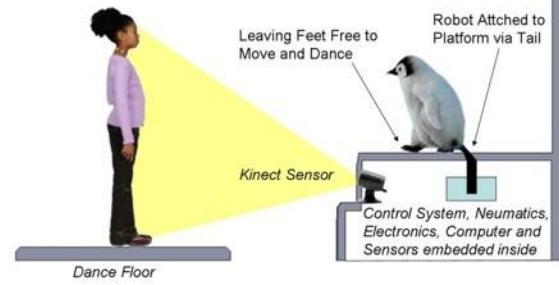
Kinect Sensor



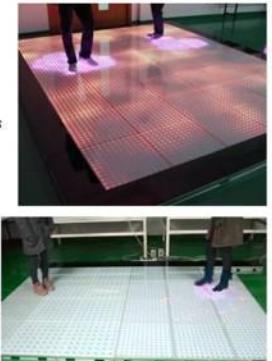
The Dance Floor



Penguin Robot Platform



The Dance Floor



INTERACTIVE DINOSAURS 4D THEATRE | 2014

KUMOTEK | SIMEX iWERKS

BLUE SKY CONCEPT IDEATION

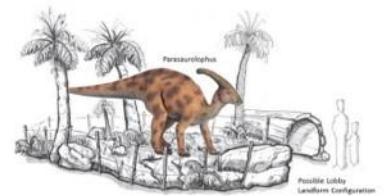
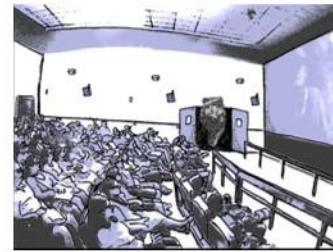
- Conceptual Design for the integration of physical effects, animatronics and SFX into a new 4D Simex-iwerks dinosaur theatre show in development
- Show theme: Aircraft (the theatre) carrying guest passengers crash lands on Dinosaur Island, dinosaurs circle and attack the Aircraft

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

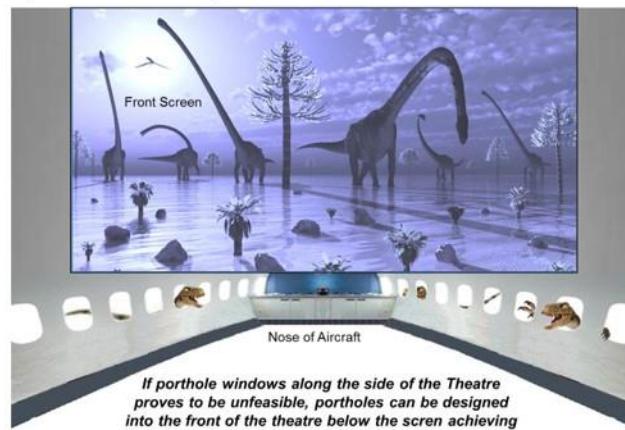
DESIGN | ENGINEERING

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



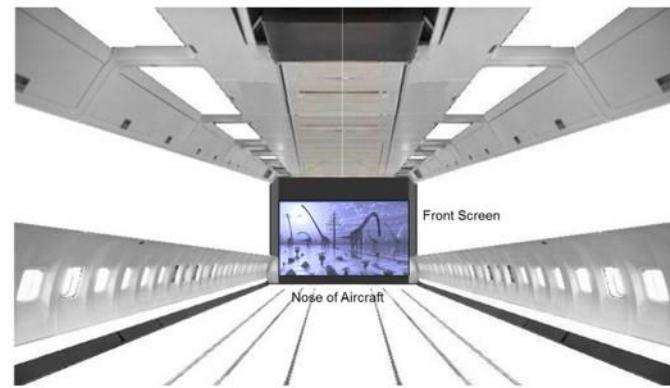
Animatic demonstrating how the Brachiosaurus Head could emerge from behind the screen and stretch out over the audience

Raptor Porthole Concepts



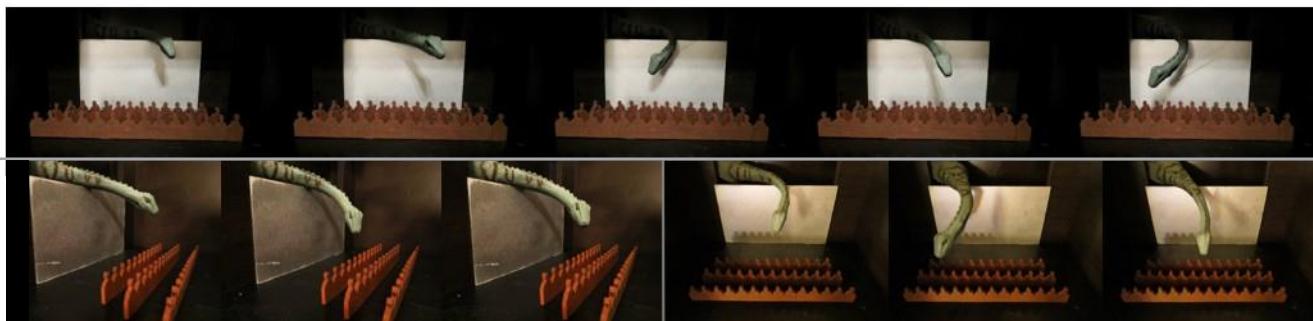
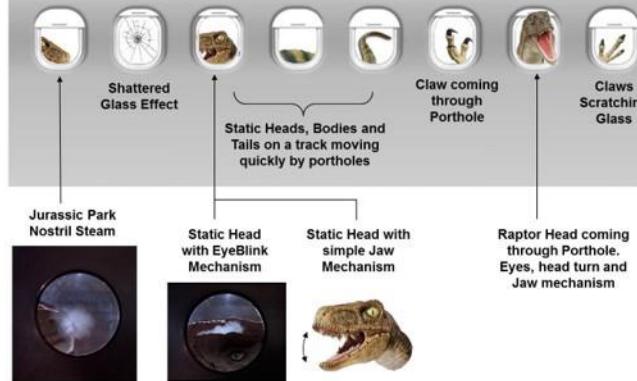
Raptor Porthole Concepts

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



Raptor Porthole Concepts

- Consisting of simple 1-3 DOF disembodied Raptor components (heads ,claws ,tails) that perform single story frictions and supply quick Punctuations in the Action



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

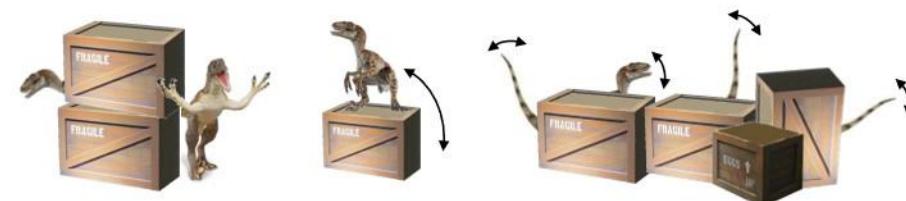
- An archeological dig site-style Tent filled with Crates, fossils, molds and work tables
- Raptors are loose hiding inside the Tent behind crates
- Raptors detect motion of guests and react

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

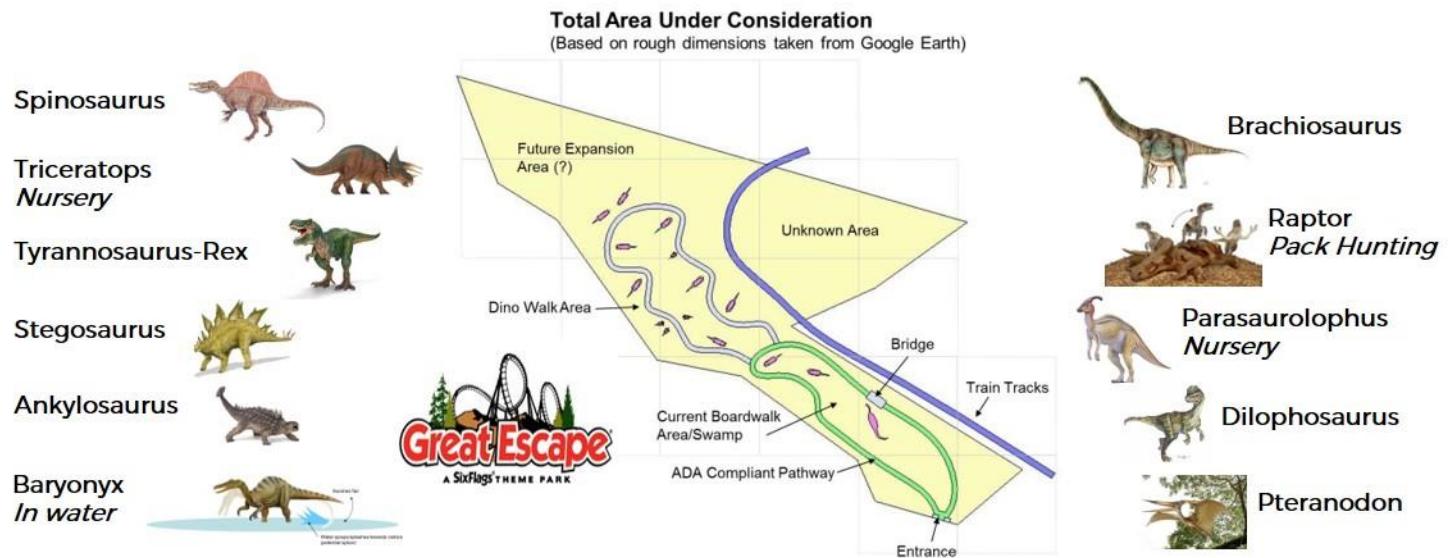
- Conceptualization of an immersive walk-through interactive Themed Animatronic Dinosaur Attraction for Six Flags Great Escape
- Parasaurolophus Nest Concept

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

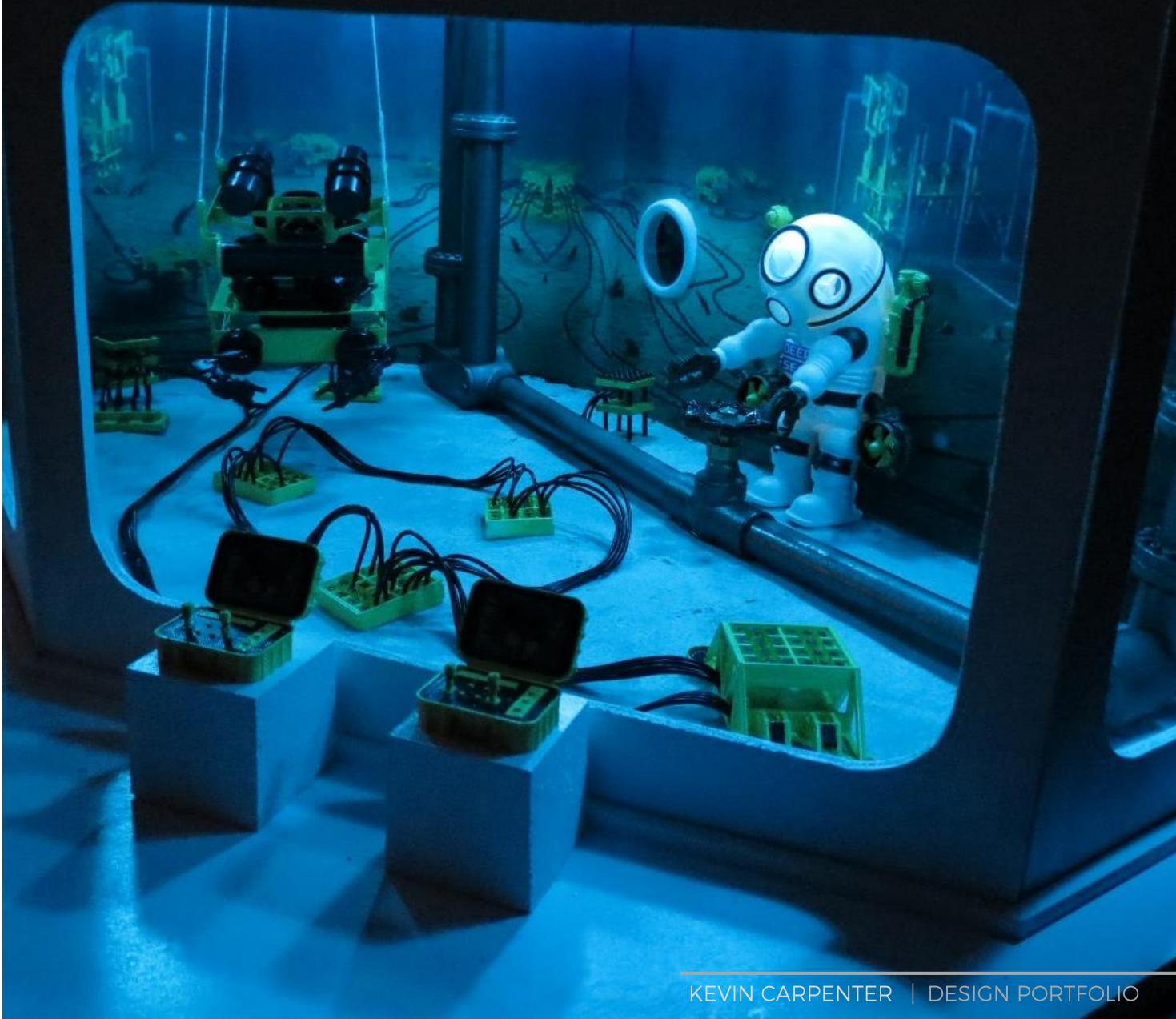
Six Flags Great Escape

- Suspense-filled walk-through Attraction

DINOSAUR WALK

Six Flags Great Escape

- Child-friendly walk-through Attraction

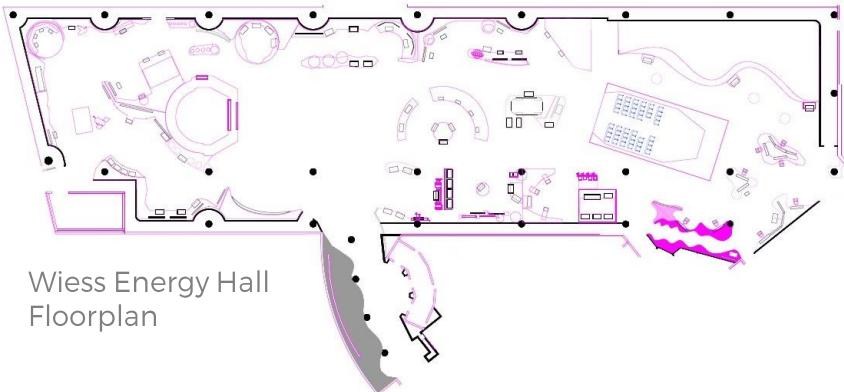


MASTER EXHIBIT LAYOUT MODEL | 2015

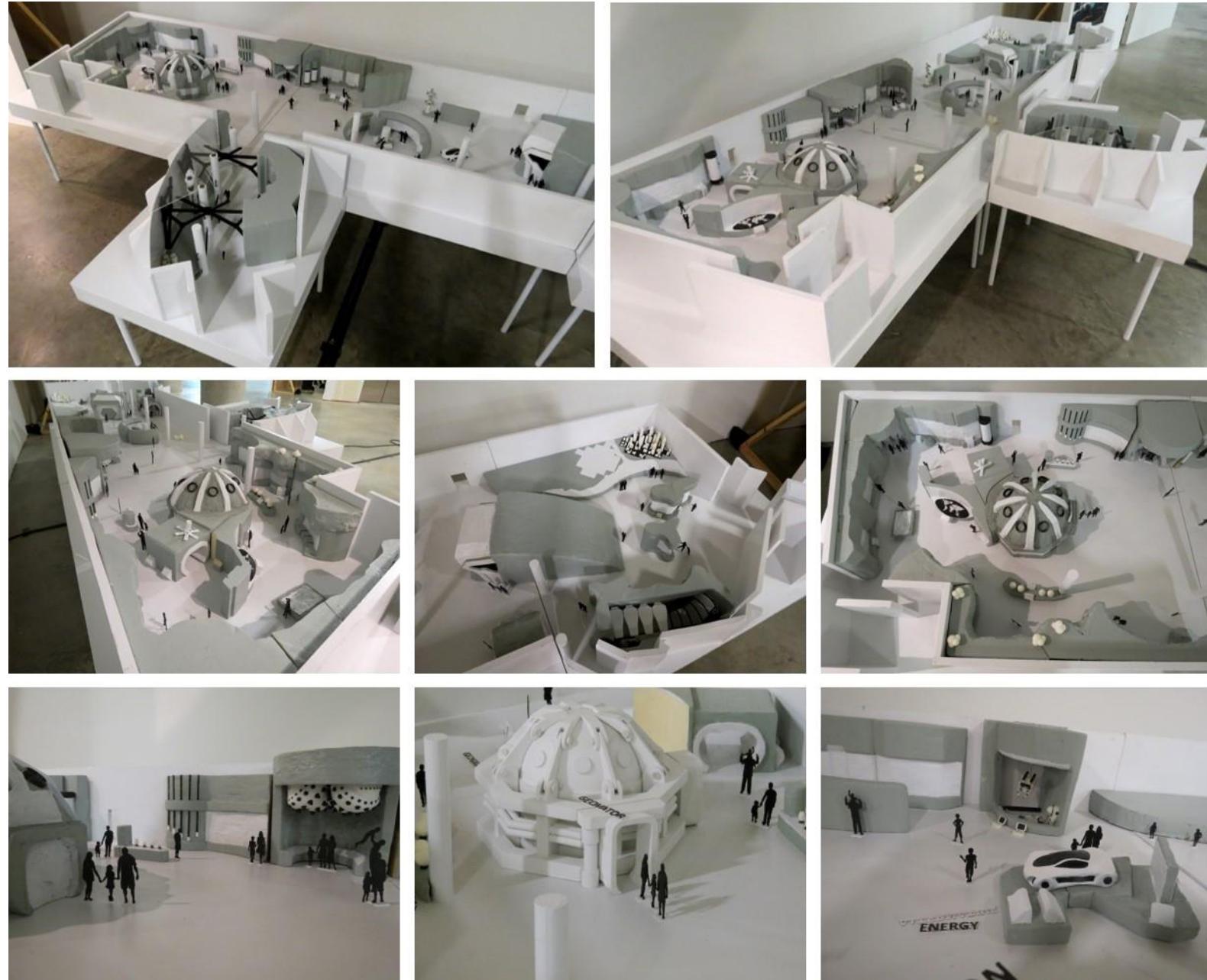
PBE | WEISS ENERGY HALL 3.0
Houston Museum of Natural Science

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

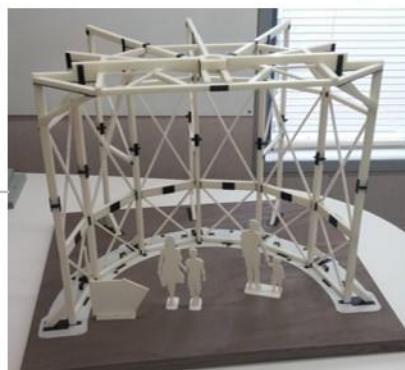
DESIGN | ENGINEERING

- 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

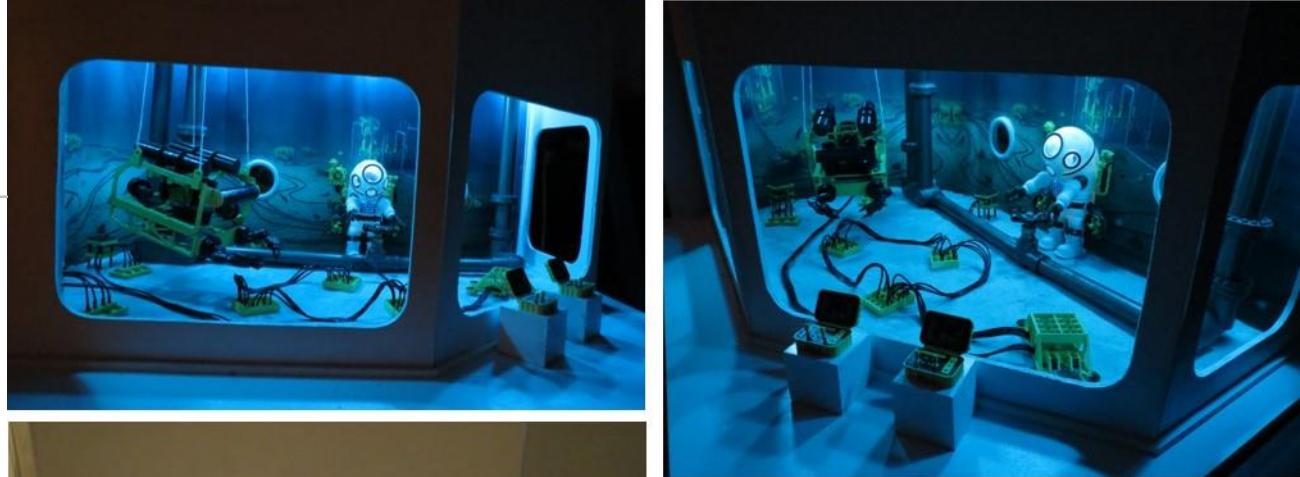


SUBSEA WELLHEAD SITE | 2015

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



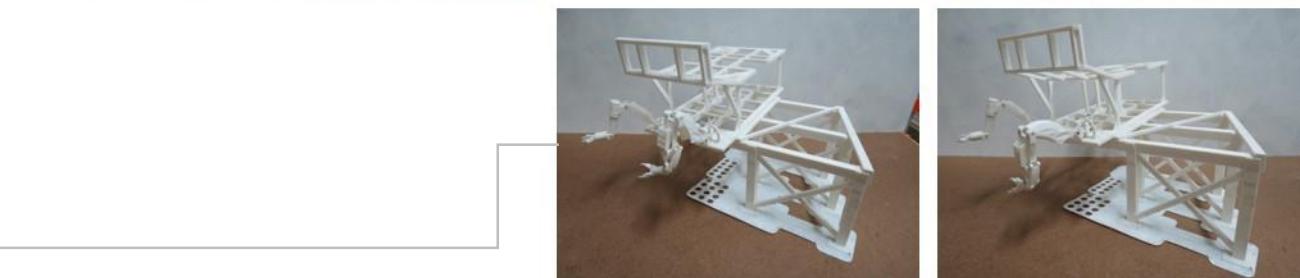
IDEATION

- 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

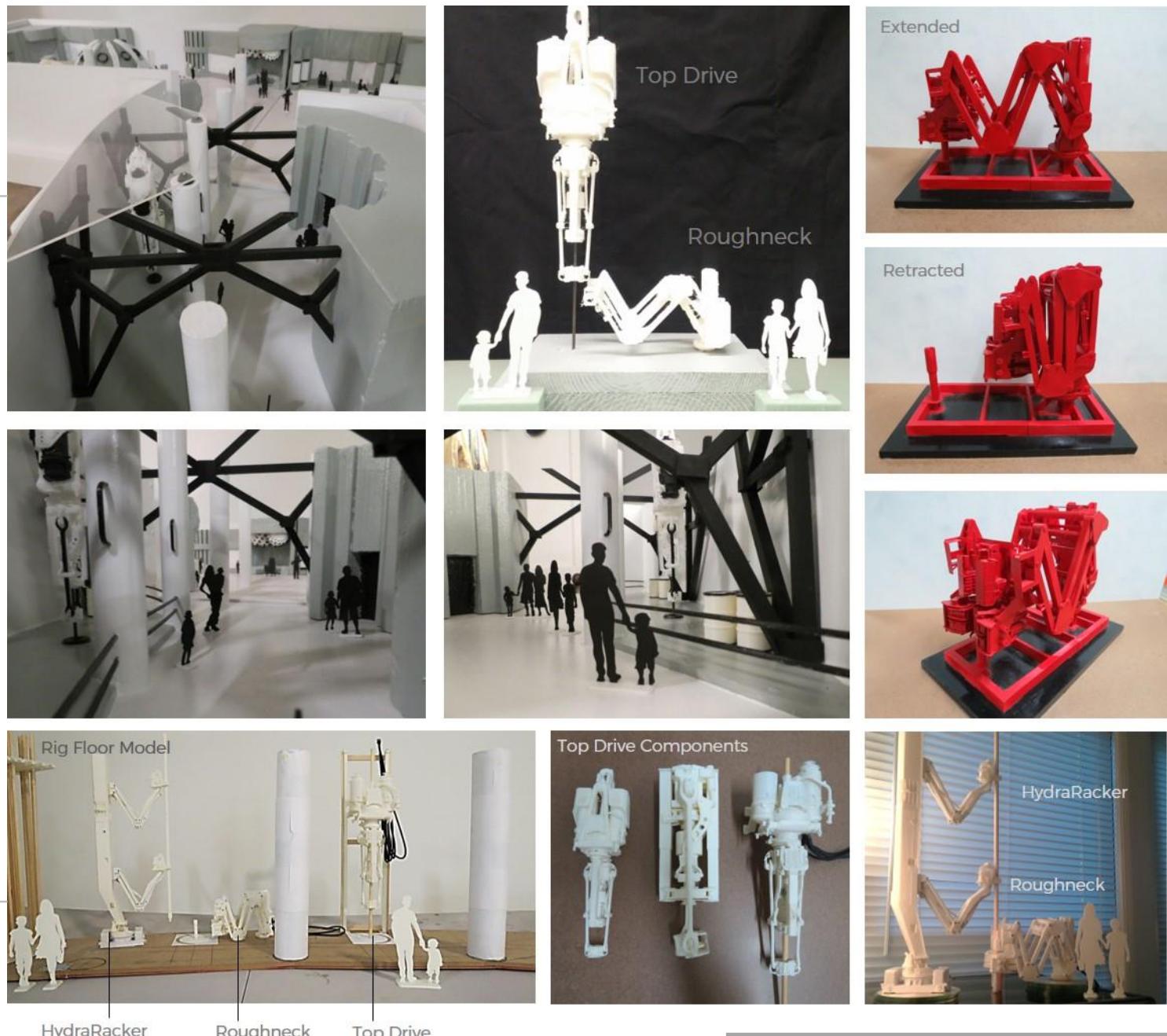
- Scale Models helped sell the Blue Sky Concept to Management and the Creative Director

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

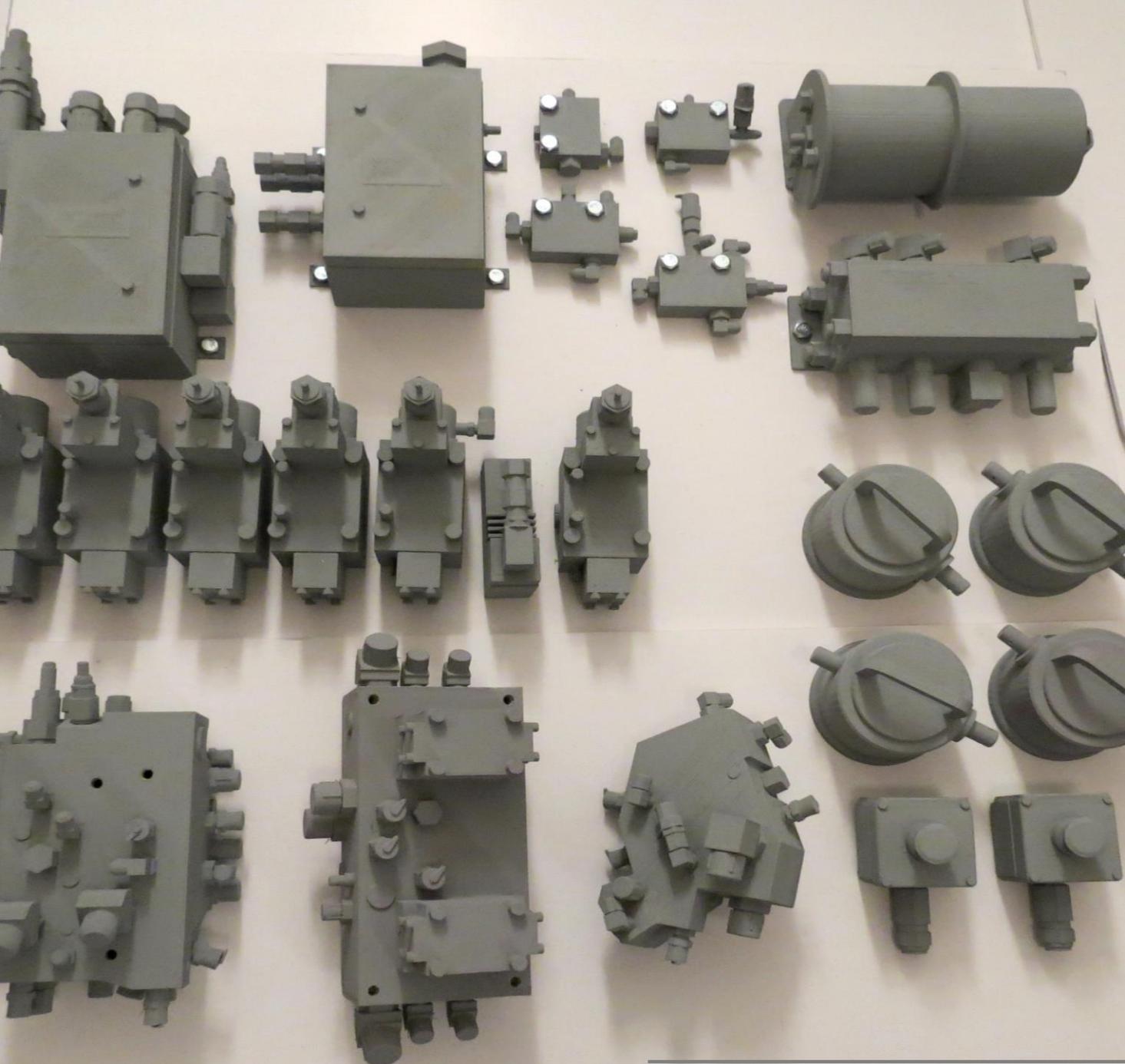
- Energy City
- Oil Drilling Rig Floor
- Subsea Wellhead Site
- Dar-C - Robotic Host of the EFX-3000

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

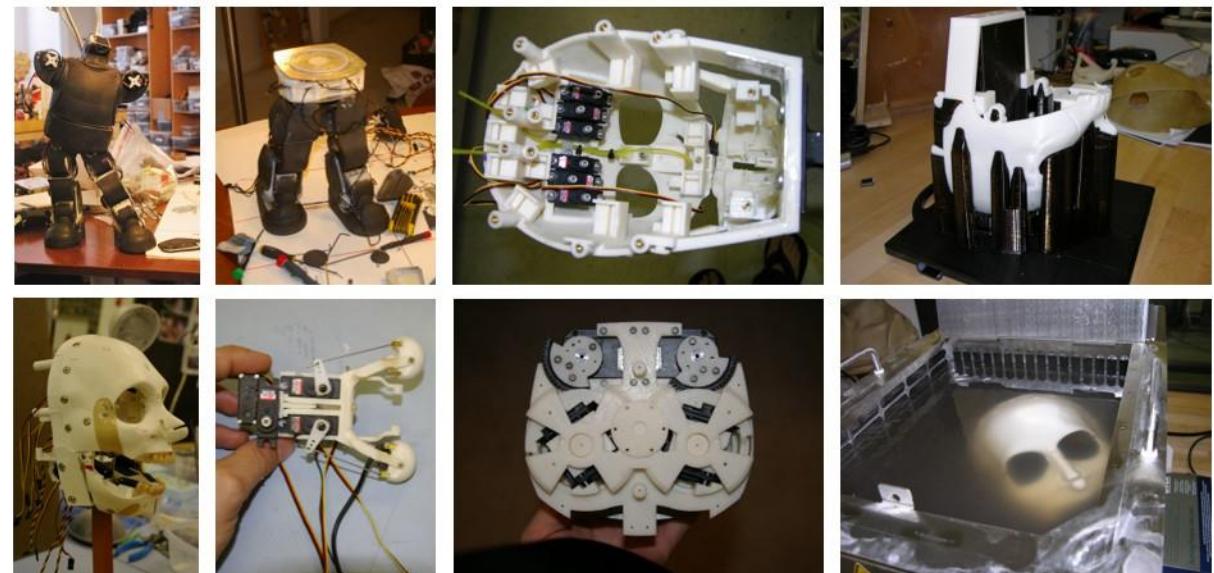


HANSON ROBOTICS | 2007 - 2010

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

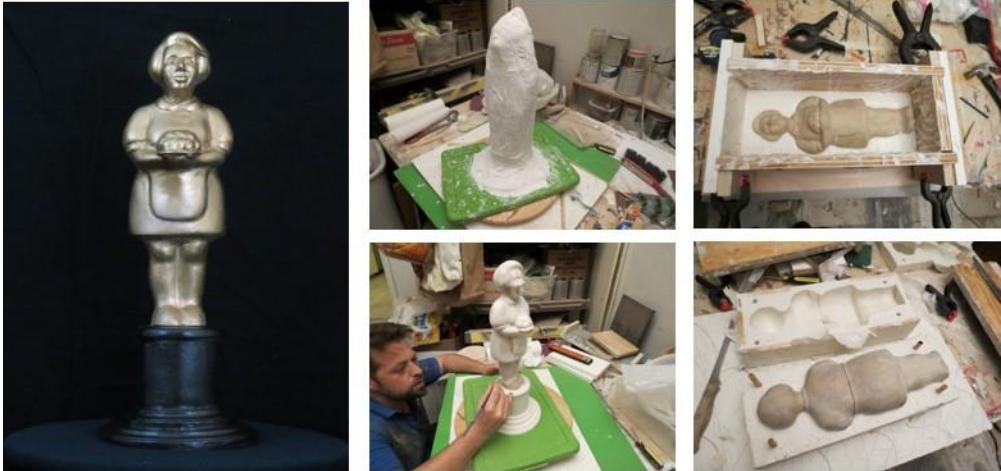
HERRINGTON-ERIKSEN PRODUCTIONS
The Jewish Experience, Denver CO

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

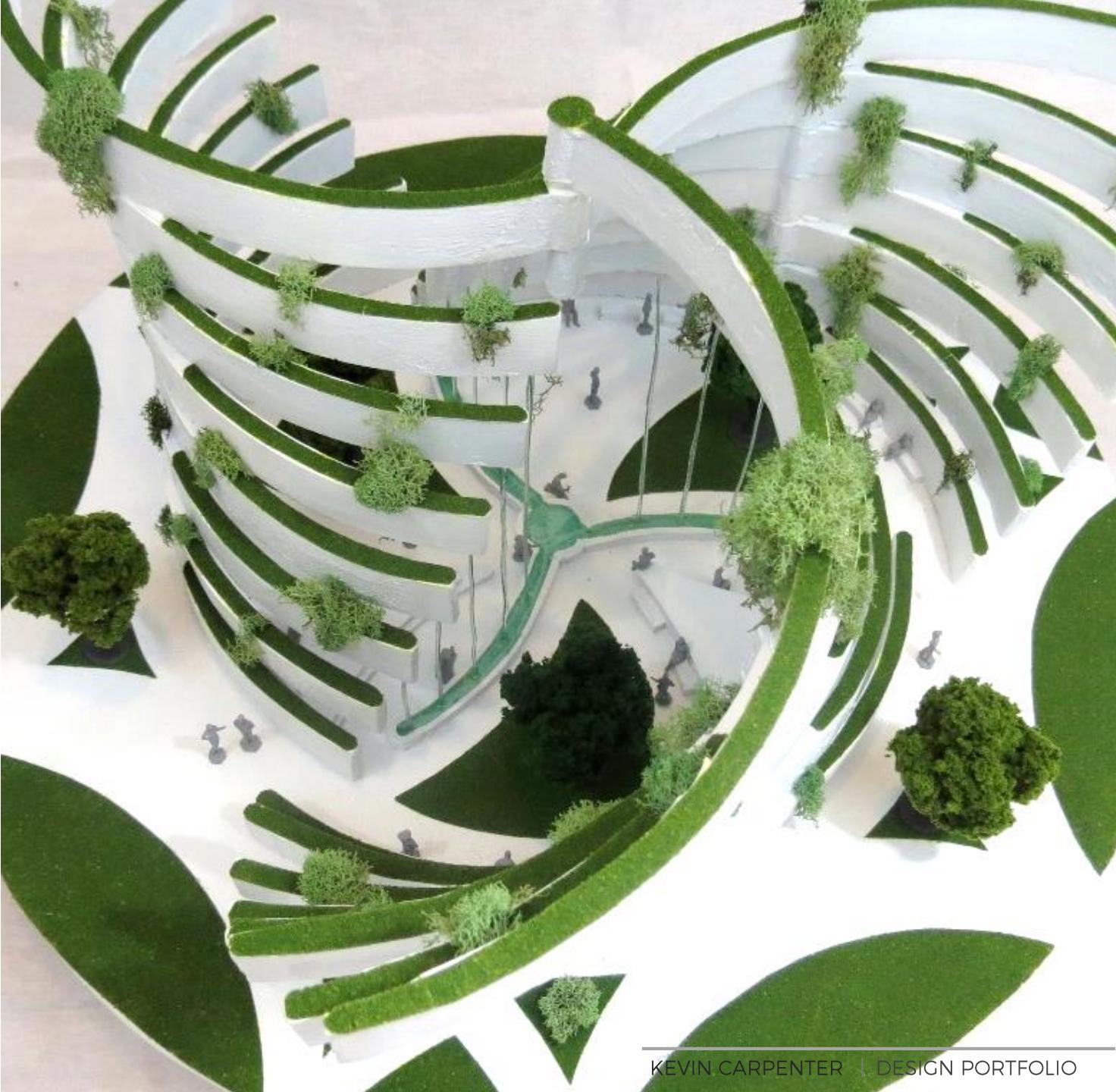
HERRINGTON-ERIKSEN PRODUCTIONS
RENAISSANCE DESIGN WORKS

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

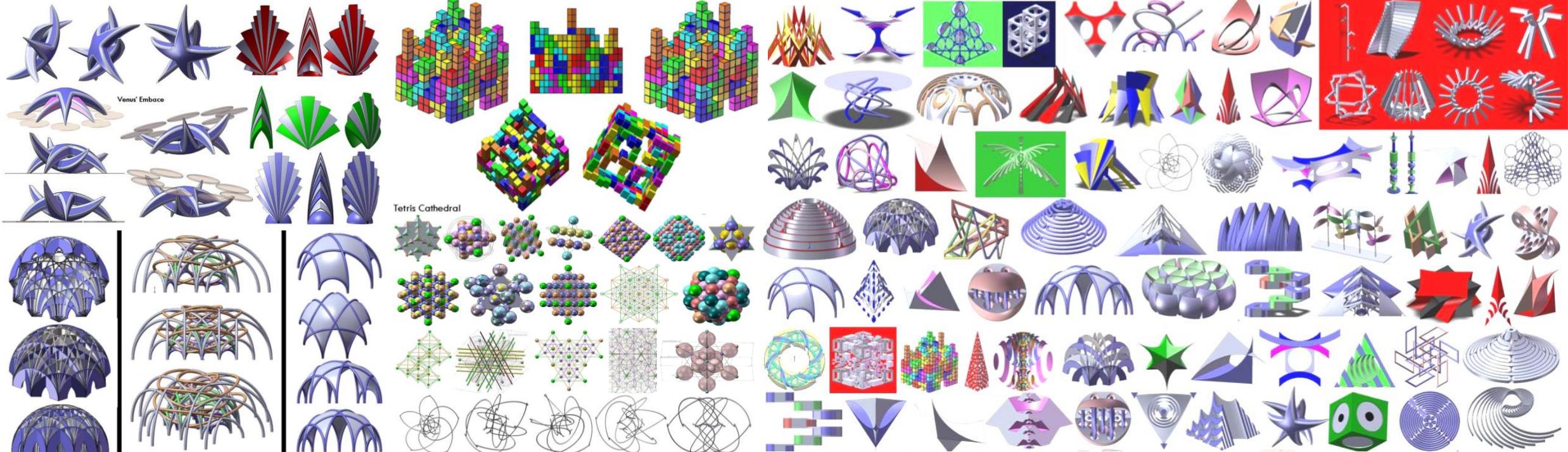


RENAISSANCE DESIGN WORKS | 2007 - 2015

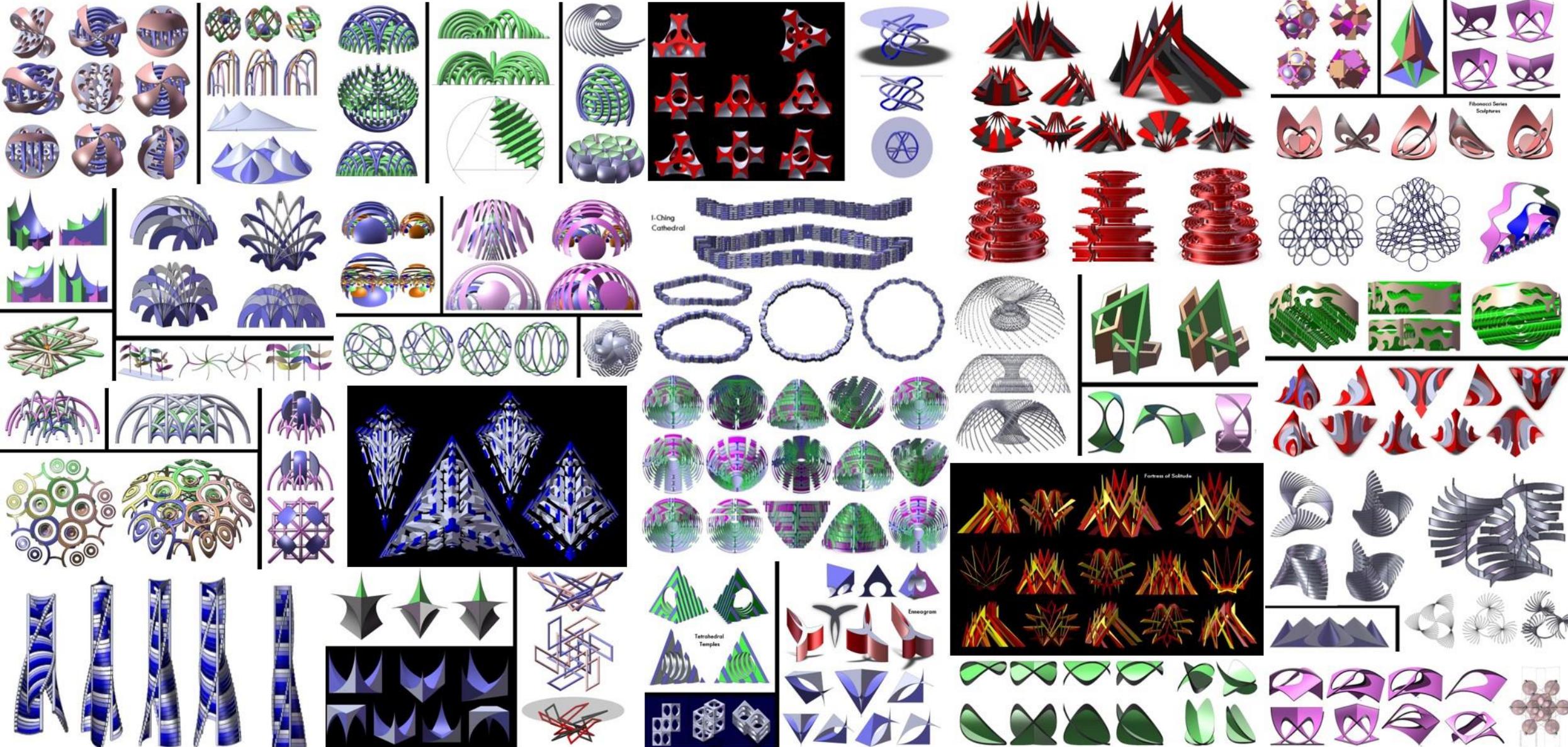
HERRINGTON-ERIKSEN PRODUCTIONS

CAD DESIGN

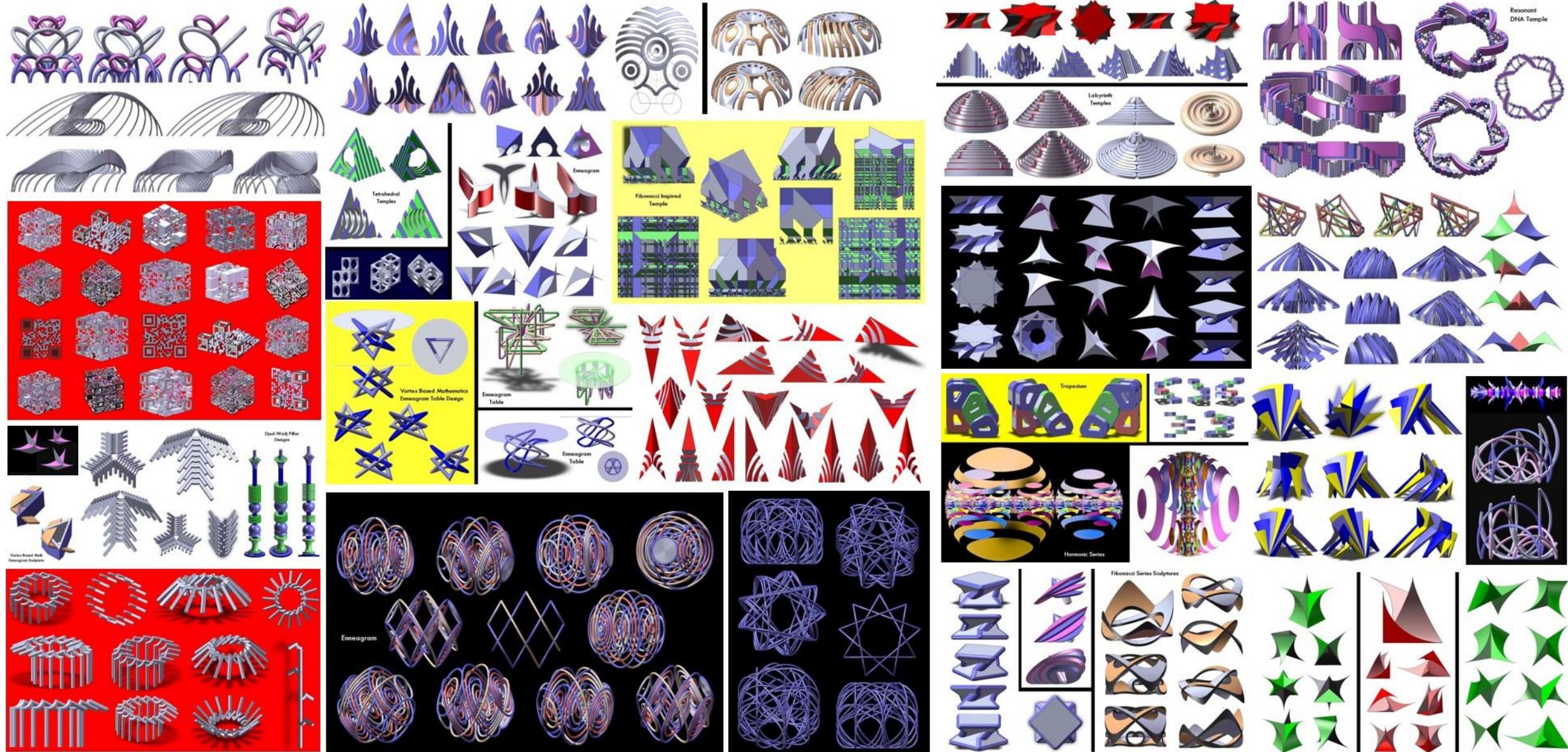
- Examples of Architectural Concepts, Furniture and Toy Designs, Renaissance Temples based on Sacred Geometry, Biomimicry and Harmonics, Public Art Installation Concepts and Sculptures
- Designs Completed in Solidworks



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

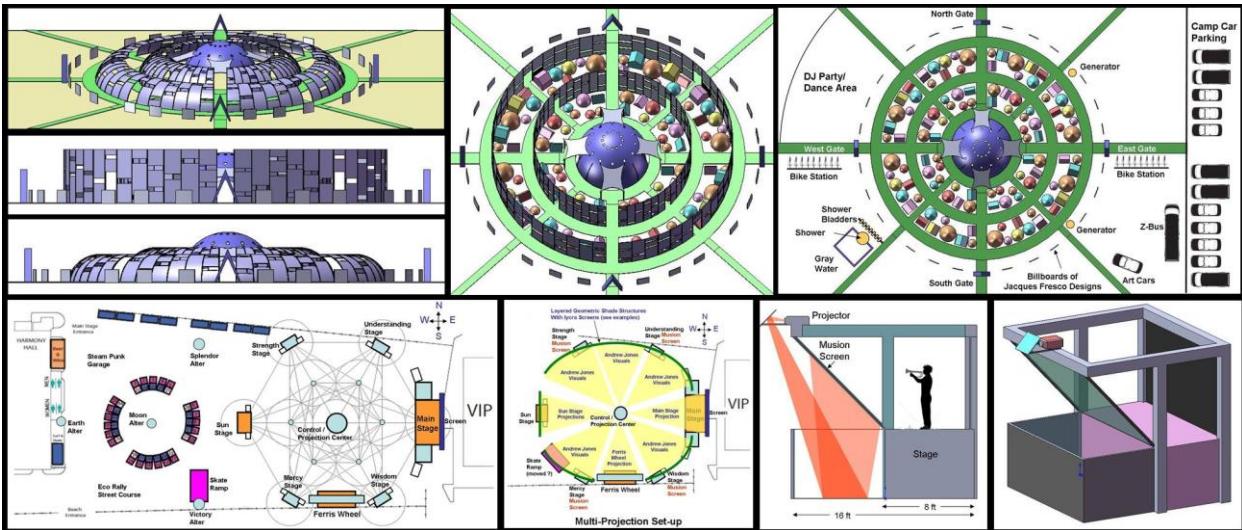
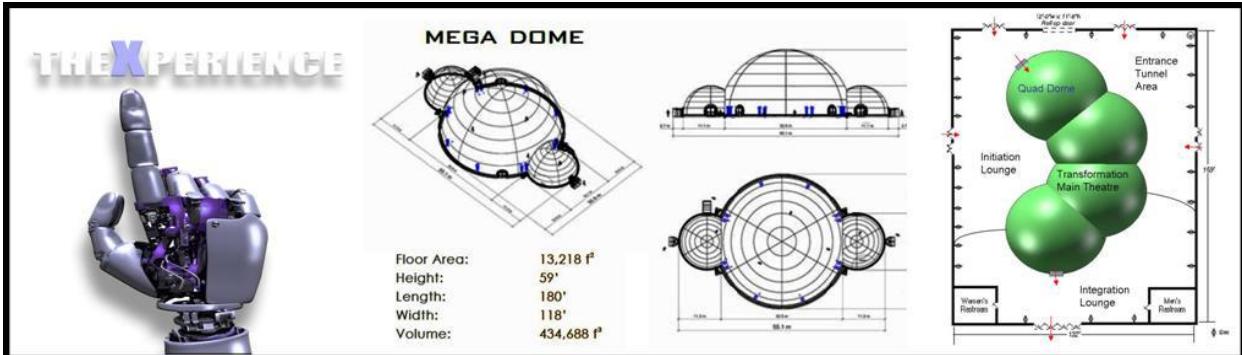
- Design of the conceptual layout of Harmony Music Festival and the design of staging structures and artistic elements
- Design of the Zeitgeist Movement's 2011 Exhibition Camp based on the futuristic designs of Jacques Fresco

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

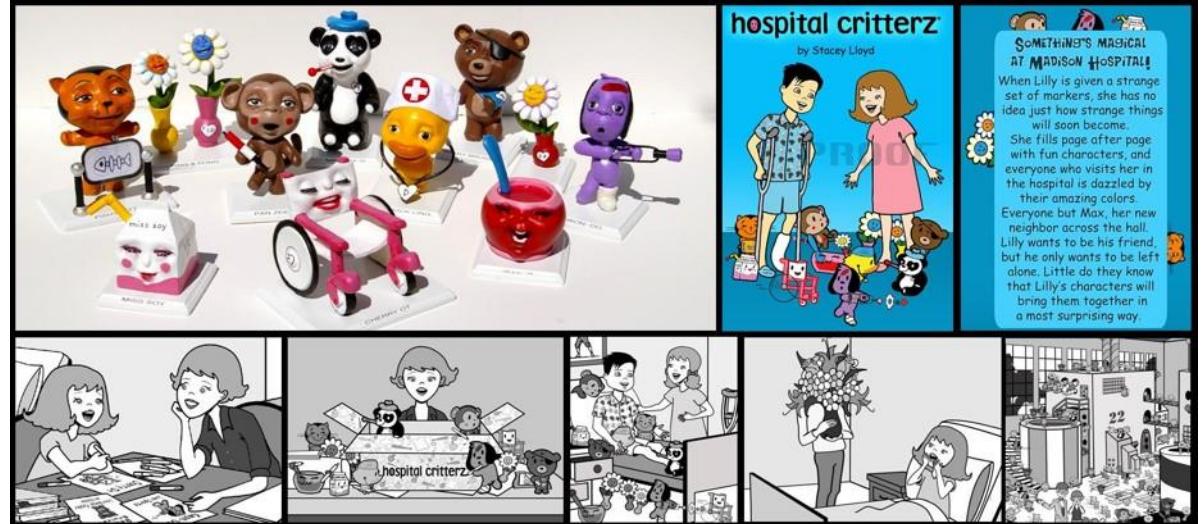


HOSPITAL CRITTERZ | 2009

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

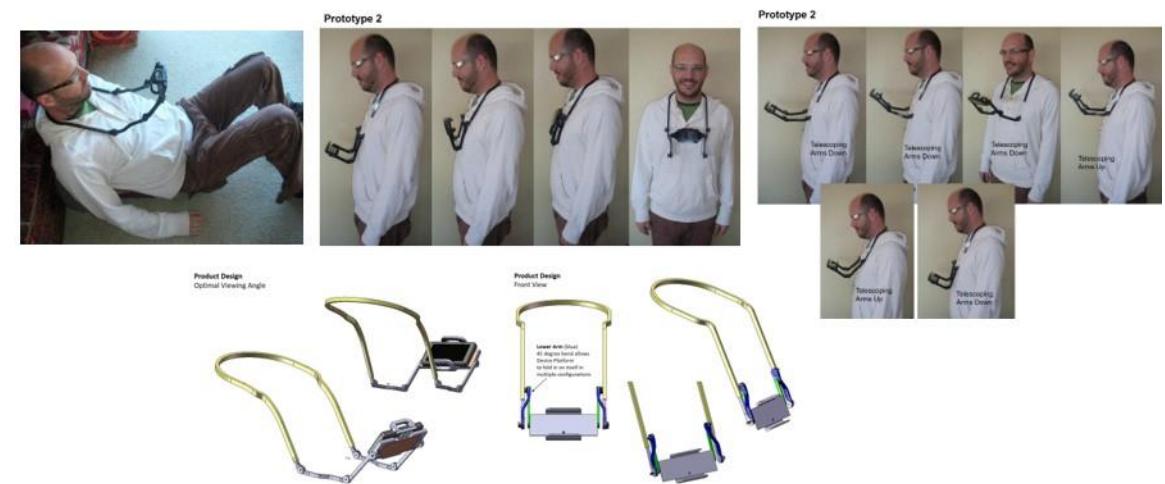


"WATCHEN MA THINGY | 2011

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

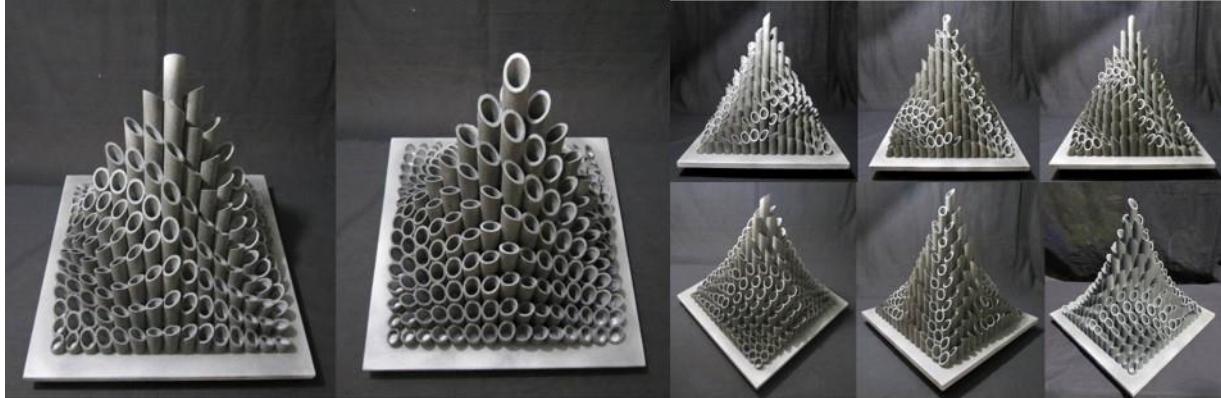
KEVIN CARPENTER | MADI MUSEUM

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

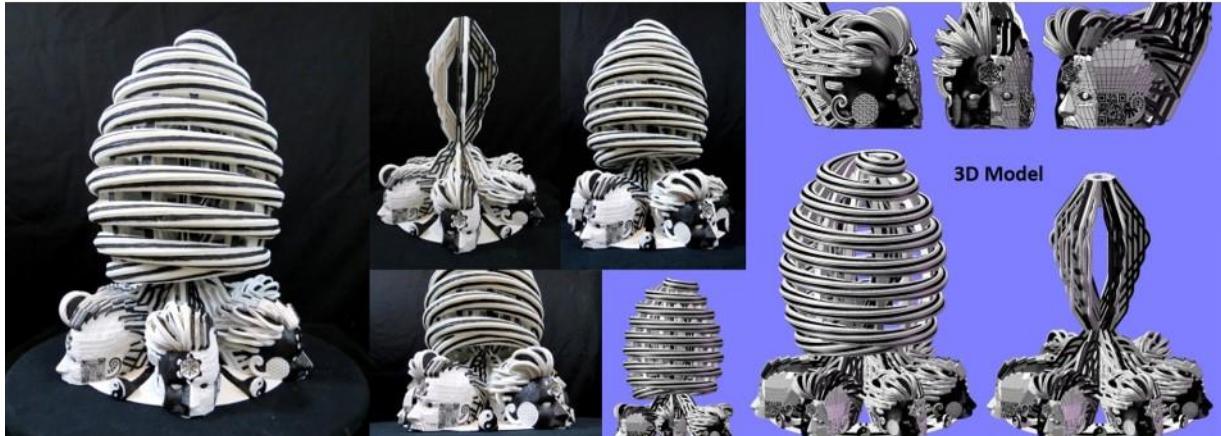
KEVIN CARPENTER | MILWAUKEE SCHOOL OF ENGINEERING

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

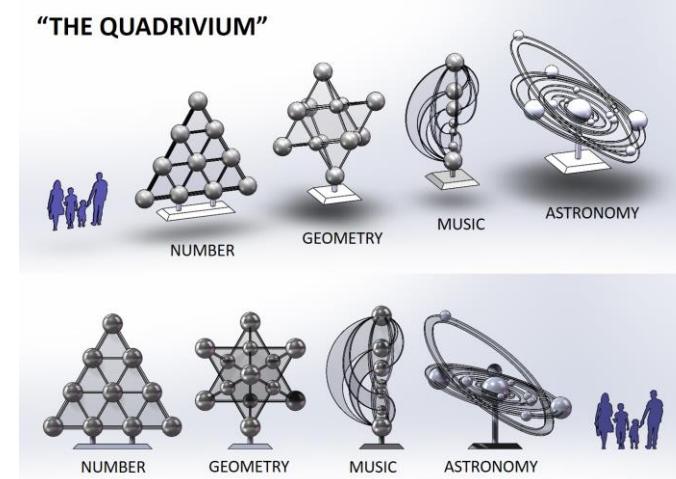
OVERVIEW

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

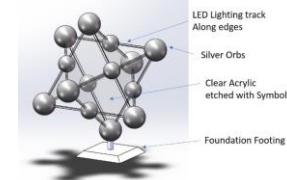
DESIGN CONCEPT

- 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

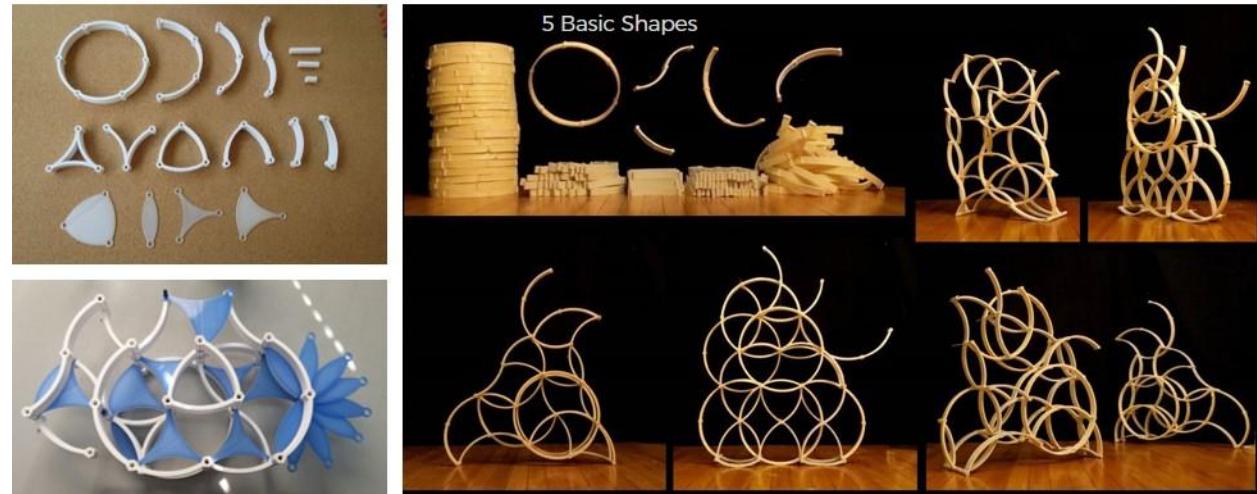
KEVIN CARPENTER | RENAISSANCE DESIGN WORKS

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

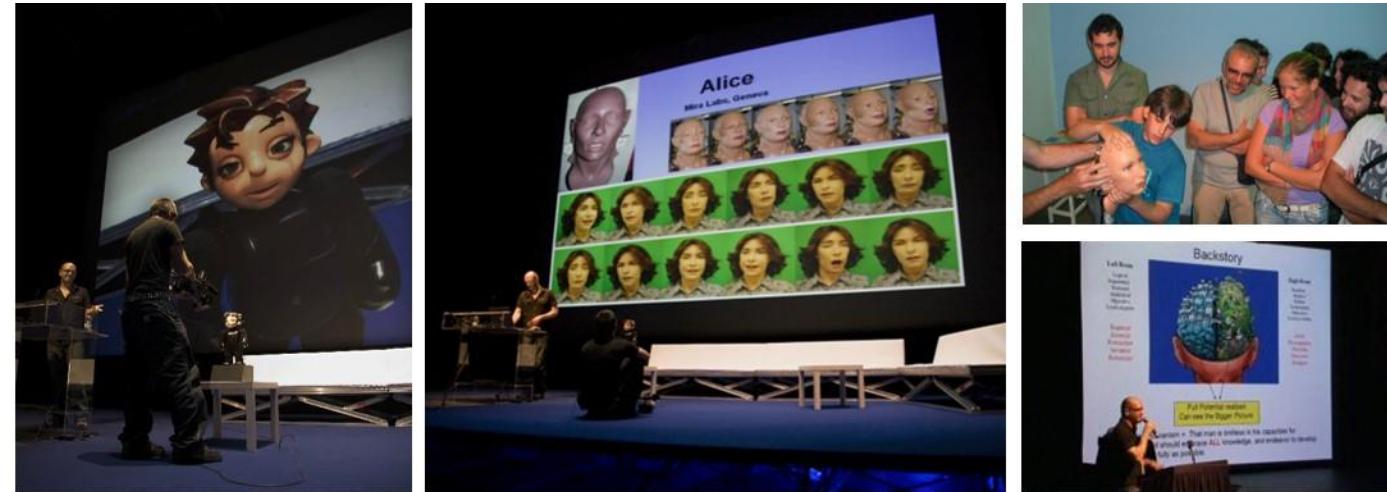


12

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



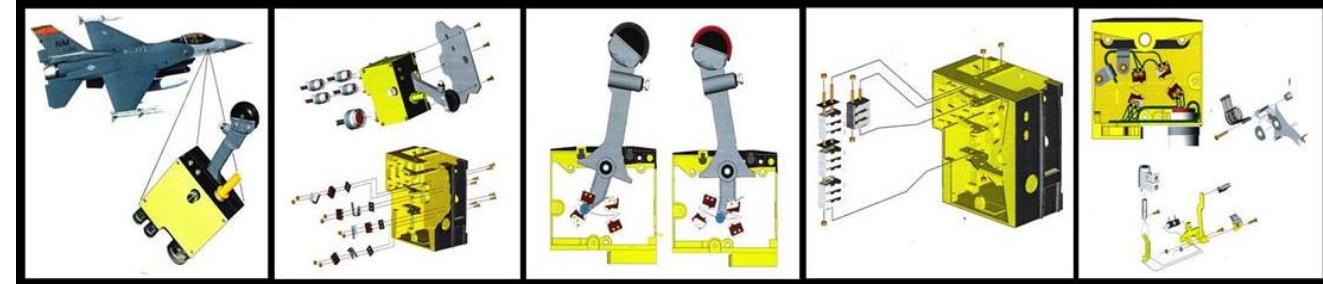
- 2017 Co-Delivered lecture on the Exhibit Design Process at the Houston Museum of Natural Science, Houston TX
- 2015 Academic Round Table Discussions at the University of Texas at Dallas (UTD), Dallas TX
- 2014 Co-Delivered presentations about the Nikola Tesla Robotics and Intelligent Systems Initiative, 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

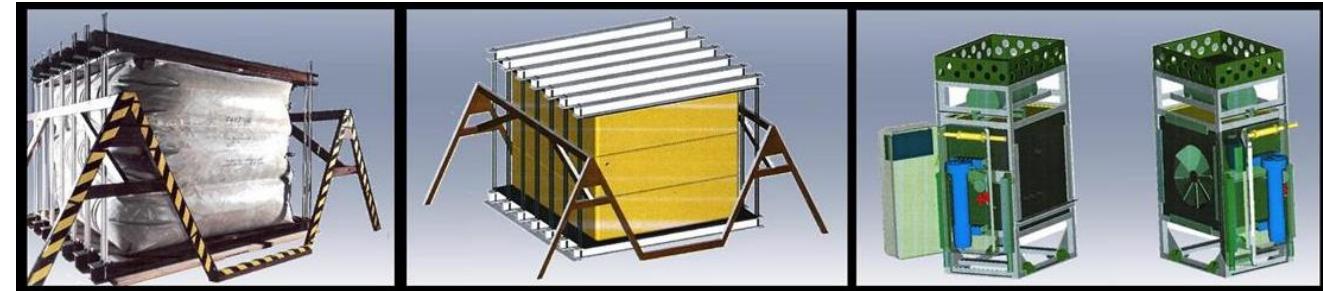
- Project Manager and Lead Engineer on 3-year Air Force redesign program to improve the reliability of the F-16 Aircraft Landing Gear Control Assembly (LGCA)
- Completed failure analysis, electromechanical component redesign, prototype development, environmental, endurance, and flight testing, FMECA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

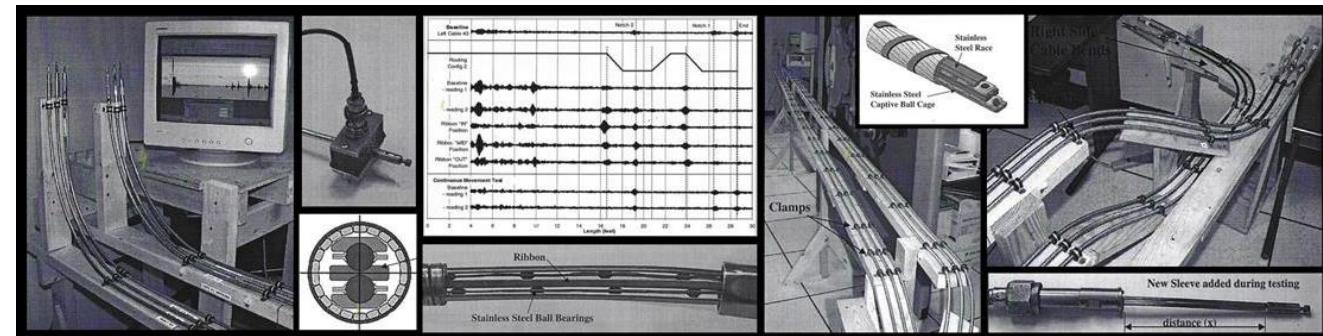


PNEUMATIC AIRCRAFT LIFTING BAG

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"