



chaostheory 

imagination is our landscape



Introduction



Product Engineering



UX/UI Design



Enterprise AI Solutions



XR Solutions



Transit Technology



About Chaos Theory





Introduction



Chaos Theory Studios is a creative technology agency providing strategic consulting, user experience design, hardware prototyping, and software development services.



Our team of designers, developers and strategists brings deep expertise in product development, including the design of interactive and immersive experiences, generative AI, XR, and other emerging technologies.

Experience

The Chaos Theory team has over two decades of experience working in product design, engineering, and emerging technologies - experience which provides the foundation for our expertise in creating innovative and engaging solutions.



Vision

We approach technology with a vision for how it will support business objectives, improve human performance, provide measurable data, and create engaging experiences. Our focus is on the ways in which technology makes us more informed, more efficient, and more effective.



Partnership

Our team of strategists, designers, and developers partners with clients to create product strategies and solutions tailored to meet key business needs. We approach design and technology from the standpoint of business strategy and customer experience, with the goal of reducing costs, improving performance, and delivering value.

Services

Executive Briefing on technology, strategy, and relevant use cases.

Consulting on business strategies, technology integration, and product roadmap development.

Experience Design for products and applications, including multi-modal UX for voice, computer vision, and physical interaction.

Product Engineering for technology solutions, platforms, and experiences.



Expertise



Product Strategy Consulting



Hardware Prototyping



UX Research & Design



Kiosk Control Systems



AR/VR/XR Experiences



Data Management Solutions



Computer Vision



AI/ML Solutions



Interactive Installations



IoT Solutions



Transit Information Systems



Enterprise Platforms



Learning Management



Product Engineering

Product Strategy And Engineering



We provide product strategy, design and development capabilities for:

- Product Strategy Consulting
- Product Roadmap Development
- Experience Design
- Solution Architecture
- Prototyping
- Development and Testing
- Deployment
- Maintenance and Feature Iteration





Microsoft Executive Briefing Center Lobby Video Wall

The Lobby at the Microsoft Executive Briefing Center presents visitors with a video wall that displays interactive content in response to user movement detected by an array of Kinect cameras.



Interactive
Installations



Hardware
Prototyping



Computer
Vision



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MoPOP

MoPOP Museum Sound Lab Interactive Installation

Sound Lab, a permanent exhibit at Seattle's MoPOP Museum, allows visitors to quickly learn to play a variety of instruments even with no musical experience. For this installation we created custom software and hardware integration for all aspects of the experience.



Interactive
Installations



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UNICEF Giga ETL Pipeline

Working with the UNICEF Giga team, we designed and delivered an ETL pipeline capable of onboarding location data for every school worldwide, and associate that information with coverage by Internet service providers.

unicef.org/innovation/giga



Data
Solutions



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Carnival Medallion

Real-time wayfinding and communications app created for Carnival Cruise Lines. Combines data integration across multiple contexts (phones, wall screens, doors) interactions, access control & payments. Wearable, IoT and on-prem integration. Built in Unity.



Interactive
Installations



Hardware
Prototyping



UX
Design





U.S. AIR FORCE

Pilot Training Learning Management System

We provided engineering services to develop a learning management system (LMS) deployed by the USAF. The LMS provides a platform that integrates adaptive learning with both standard learning modules and the latest immersive technologies (VR/AR/MR) into a single cohesive experience.



Data Solutions



Enterprise Platforms



UX Design



The appearance of U.S. Department of Defense (DoD) visual information does not imply or constitute DoD endorsement.

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Kinetic Retail Customer Traffic Tracking System

The Kinetic Retail traffic tracking system provides more accurate store traffic counting through the use of facial recognition to remove employees from the gate count data. Total traffic is tracked using an overhead camera at the door.



Computer
Vision



Enterprise
Platforms



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Kinetic Retail Customer Attention Tracking System

The Kinetic Retail Attention Tracking system uses the OpenCV computer vision library to track customer attention and dwell time for ad triggering and impression tracking. Developed using Python for Raspberry Pi implementation and C++ for Linux.



Computer
Vision



Enterprise
Platforms

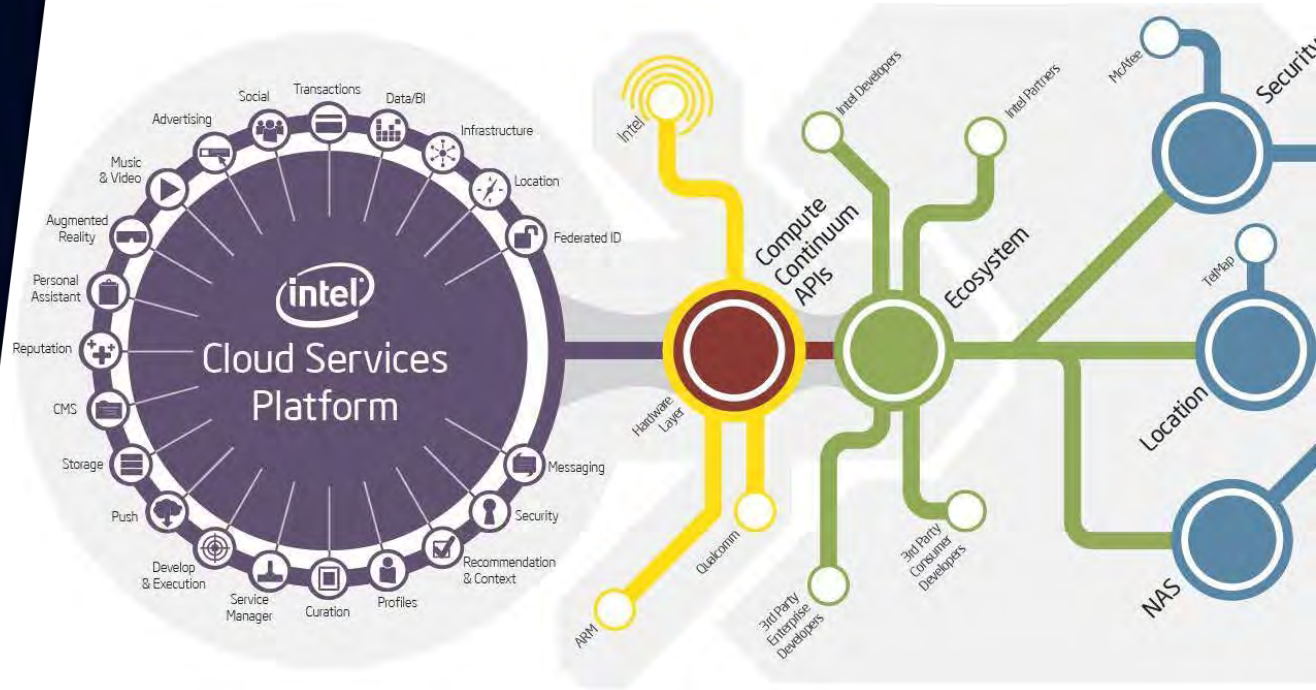


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Intel Compute Continuum Product Strategy Consulting

We led an effort to help Intel define their strategic vision, cloud services platform strategy and opportunities in the software space. The project led to multiple business initiatives within Intel, including the purchase of two companies, Aepona and Mashery.



Product
Strategy



UX/UI Design

UX/UI Design



Our design team provides a full range of UX and UI research, testing, and design services:

- Global Design System Definition
- UX Research & Design
- Prototyping and User Testing
- Multimodal UX Design
- XR Design
- Advanced UX for Generative AI





Universal Studios UX Research, Prototyping & User Testing

Chaos Theory provided Universal Studios with UX research, rapid prototyping, and user testing services for the theme park mobile app, wallet, ticket purchase experience, and global design system (GDS).



UX Research



UX Prototyping



User Testing

Wallet Testing -

Test Methods

We tested general usability in a task-based format but also asked questions to encourage open feedback to better understand user's perception of Wallet.

UOR - Unified QR	UOR - Unified QR: Empty State	UOR - Individual QR's	USH - Individual QR's
<ul style="list-style-type: none"> Water Inability Color availability of Water Text Inability Payment icon Inability Accessibility Inability Add a payment method Account Page Spending limit Payment setting Feedback on improvement 	<ul style="list-style-type: none"> Water Inability Water entitlement Payment icon Inability Payment icon Inability Payment icon Inability Payment icon Inability Payment icon Inability Payment icon Inability Payment icon Inability Payment icon Inability Payment icon Inability 	<ul style="list-style-type: none"> Water Inability Water entitlement of Water Water Inability Spending limit Inability Adding a payment method Understanding CTA placement Payment setting Feedback on improvement 	<ul style="list-style-type: none"> Water Inability Water entitlement of Water Text Inability Payment icon Inability Adding a payment method Understanding CTA placement Water entitlement Payment setting Feedback on improvement

High Priority for Design Lock

Scanning Tickets & Passes

The "Scan Tickets and Passes" accessibility issue is a CTA for the session would perform better if passed ticket for Wallet.

- Must provide a visual cue on the way to find from QR codes to give a clearer emphasis to look up the difference for fonts and substrates.
- This was an issue for UOR & UOR.

UX Recommendation

- A primary CTA button in either design pattern from GDS to better activate the scanning action.
- Consider changing the wording from "Scan tickets and passes" to something more indicative of a camera covering to scan a physical code.
- Relevant design files to ensure CTA pattern and consistency across experiences.

- ### Onboarding and Pass Naming

Most test participants did not understand Unified QR code.

They noticed the "Universal Pass" name but didn't understand what that meant.
- ### Opportunity

Test participants highlighted the value of Wallet to be organization and convenience.

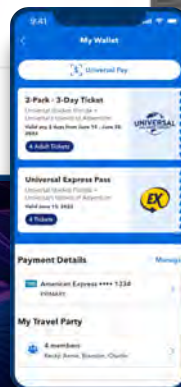
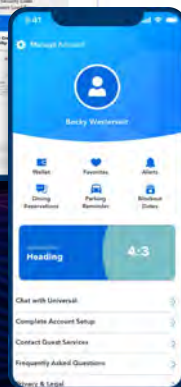
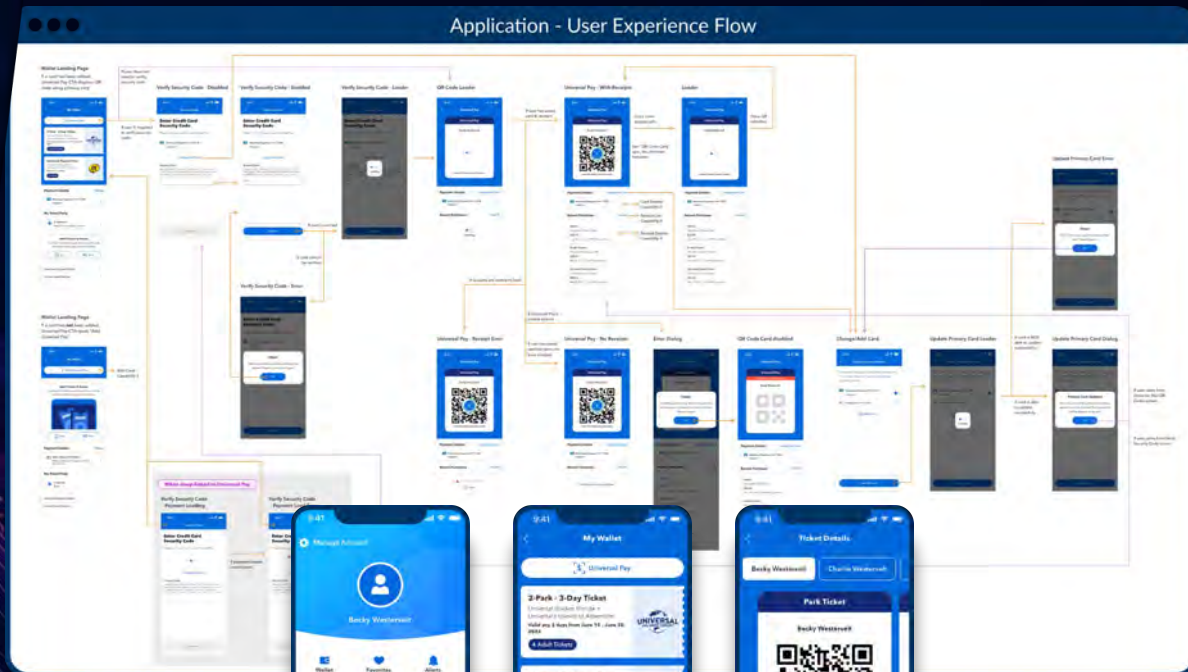
There is an opportunity to increase Wallet value with a Unified QR with onboarding and research-informed UX execution.
- ### Key Usability Findings

 - Differentiation between 'tickets' and 'passes'
 - "Scan Tickets and Passes section needs to be clearer"
 - Expectations for shareable Wallet entitlements
 - Spending limit expectations
 - Direct access to Wallet from the homepage



Universal Studios Mobile App UX and UI Design

Chaos Theory provided UX and UI design services to Universal Studios for the theme park mobile app, wallet, ticket purchase experience, and global design system (GDS).

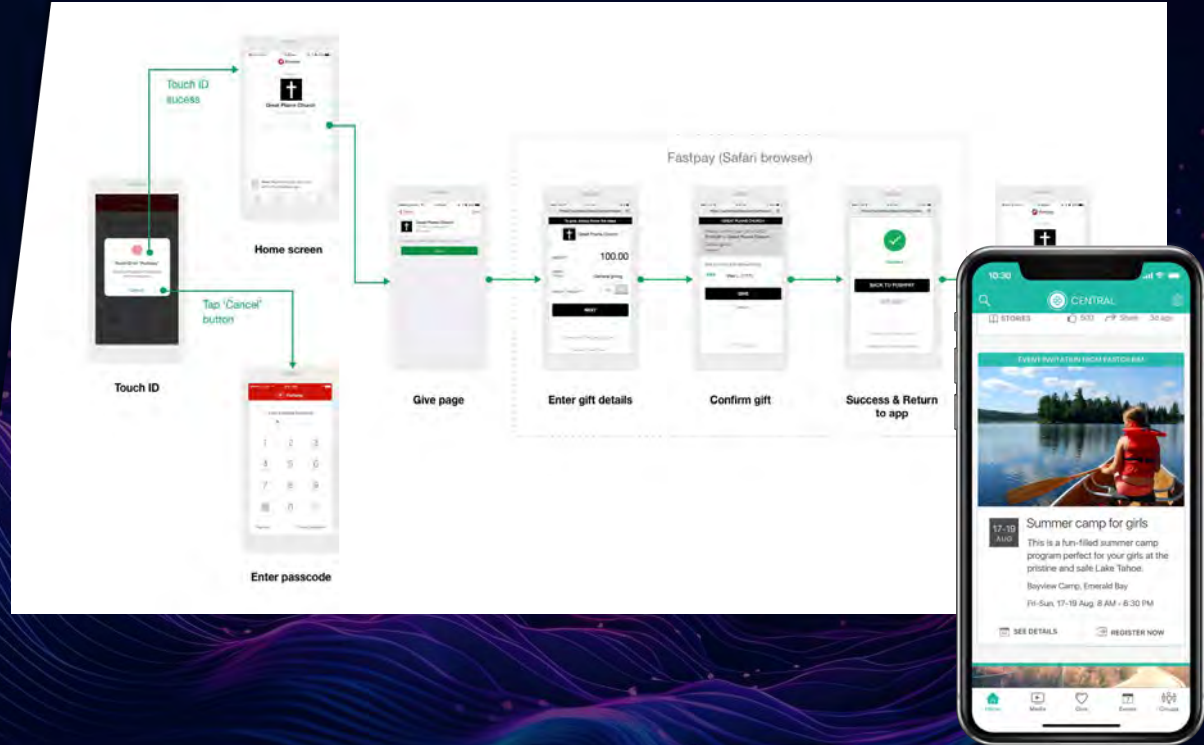


UX/UI
Design



PushPay UX and UI Design

Chaos Theory provided PushPay with UX and Visual Design services for their mobile payment system, including UX prototyping, user testing, and high-fidelity UI design renderings.



UX/UI
Design



UX
Prototyping

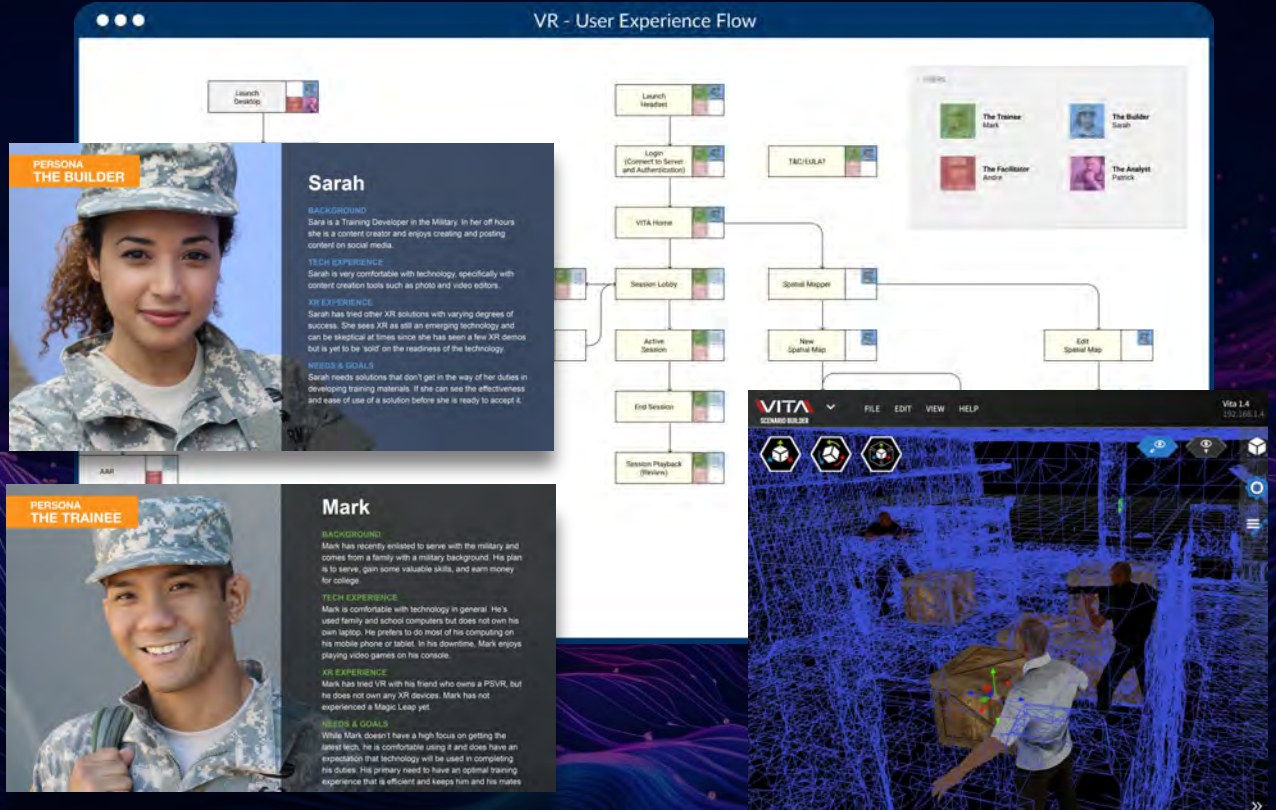


User
Testing



VITA AR Training Platform

The VITA augmented reality training platform was designed and engineered by Chaos Theory to provide content creators with the ability to quickly build and modify AR training simulations, and then run them for multiple users in a shared training experience.



AR/VR/XR
UX



UX/UI
Design



UX
Prototyping



Enterprise AI Solutions

AI Capabilities



Full design and development capabilities for AI experiences, including:

- Cloud platform and on-premises LLM integration
- Text-to-speech and interactive avatars
- RAG implementation for domain-specific context
- Computer vision integration
- Attention tracking
- Machine learning and data analytics
- Other use cases as needed



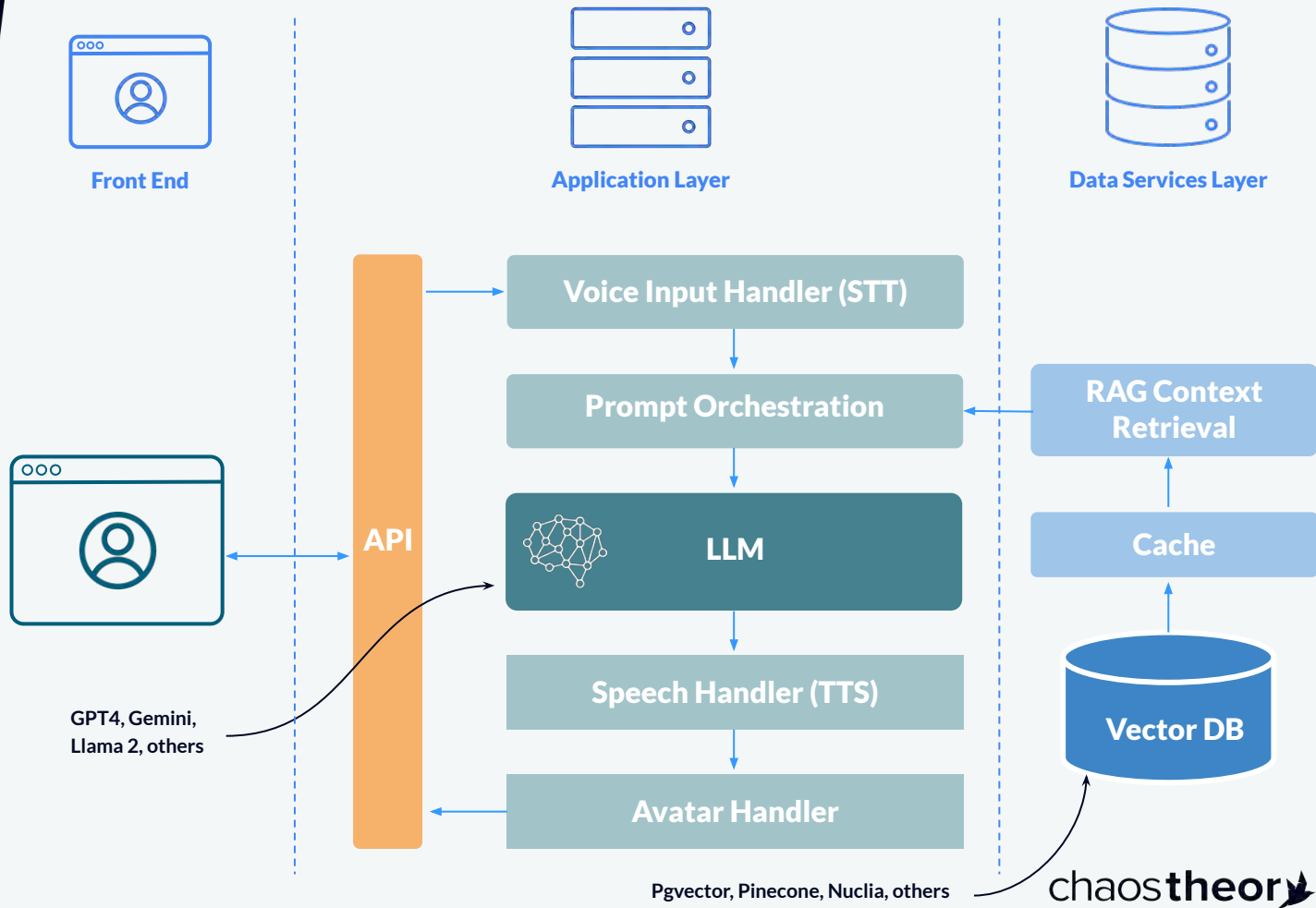
We explore the possibilities of AI

The Emerging Technology of Interactive AI

- **Context-aware AI agents** use Retrieval-Augmented Generation (RAG) and other techniques to improve the accuracy of general-purpose LLMs.
- **Domain-specific use cases** extend the existing power of LLMs and Generative AI.
- **Voice input and response** supports natural, multilingual interaction between the user and the AI.
- **Integration with external platforms** and APIs enable AI-facilitated operations.
- **Analytics and BI** data capture from AI interactions provide insights into customer experience, team performance and other metrics.



Interactive AI Architecture



2

We create AI experiences



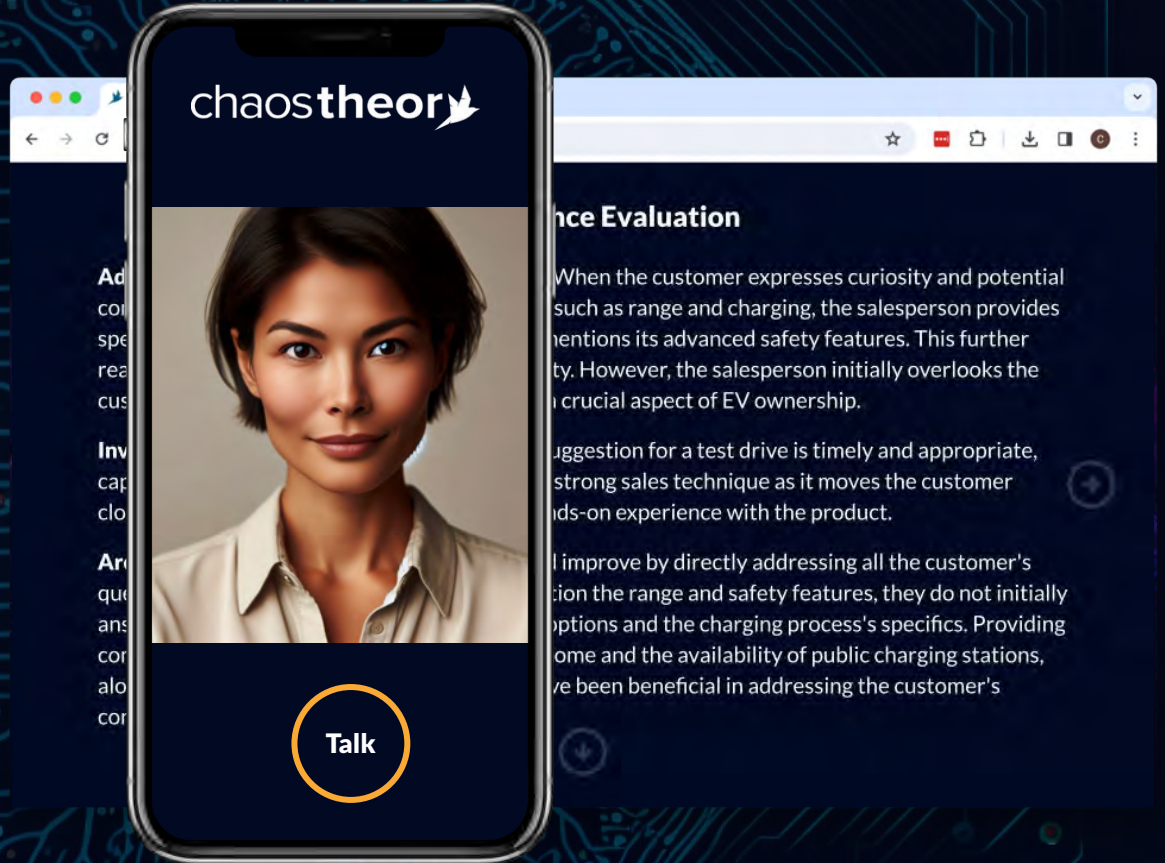
Customer Interaction Simulator

Our AI-based customer interaction simulator can be used to train personnel on retail sales and other interactions. The trainee can engage in a conversation with a specific goal, and receive an AI-generated performance evaluation after the session.

Demo available on request



AI/ML
Solutions





Auto Dealership Training AI

Our AI-based customer interaction simulator is being deployed by Lexus to train dealership sales teams on how to sell new models. The sales trainee can engage in a conversation with a specific goal, and receive an AI-generated performance evaluation after the session.

Demo available on request



AI/ML
Solutions





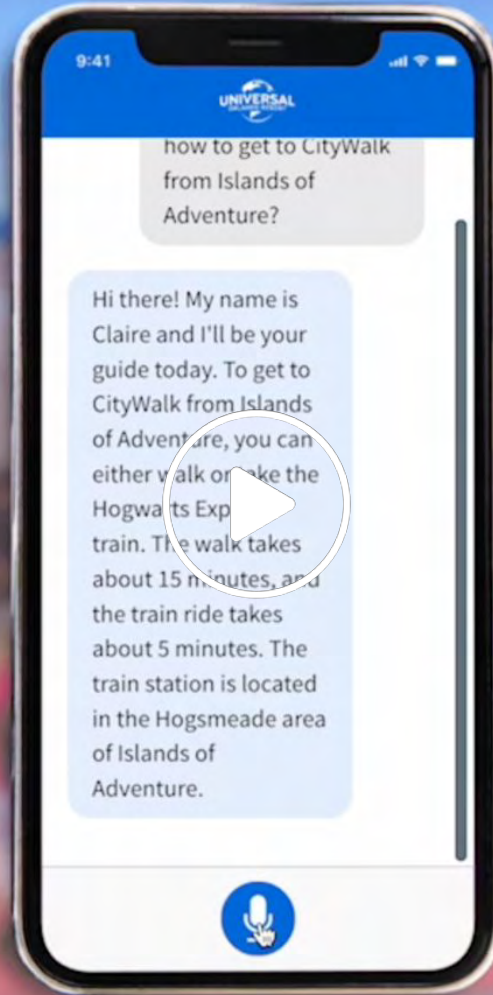
Theme Park Guide

This prototype AI park guide was developed for Universal Studios as an exploration of future guest-facing AI experiences. Park guests can query the guide for information and directions on park attractions and resources.

Demo available on request



AI/ML
Solutions



chaostheory



Transit Trip Planning Guide

Our AI-based trip planning assistant allows a user to request trip information via natural voice interaction, and receive a trip plan verbally, or through a visual UI.

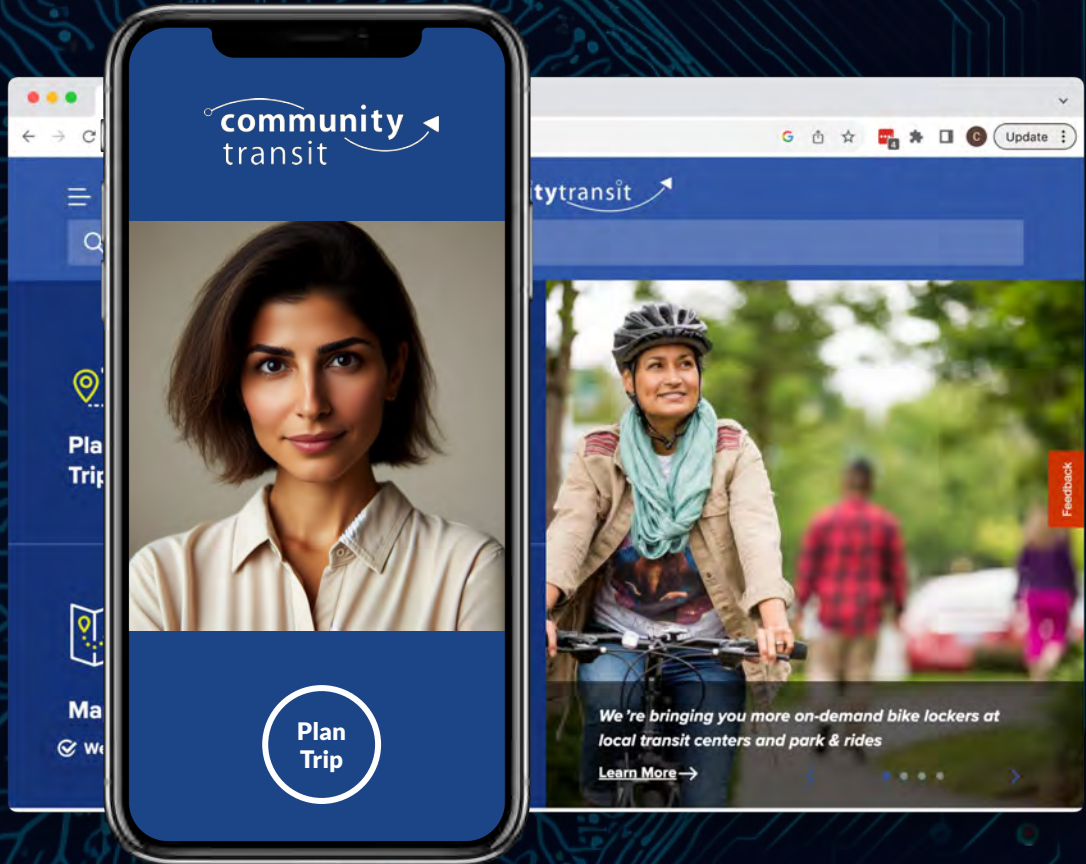
Demo available on request



AI/ML
Solutions



Transit
Technology

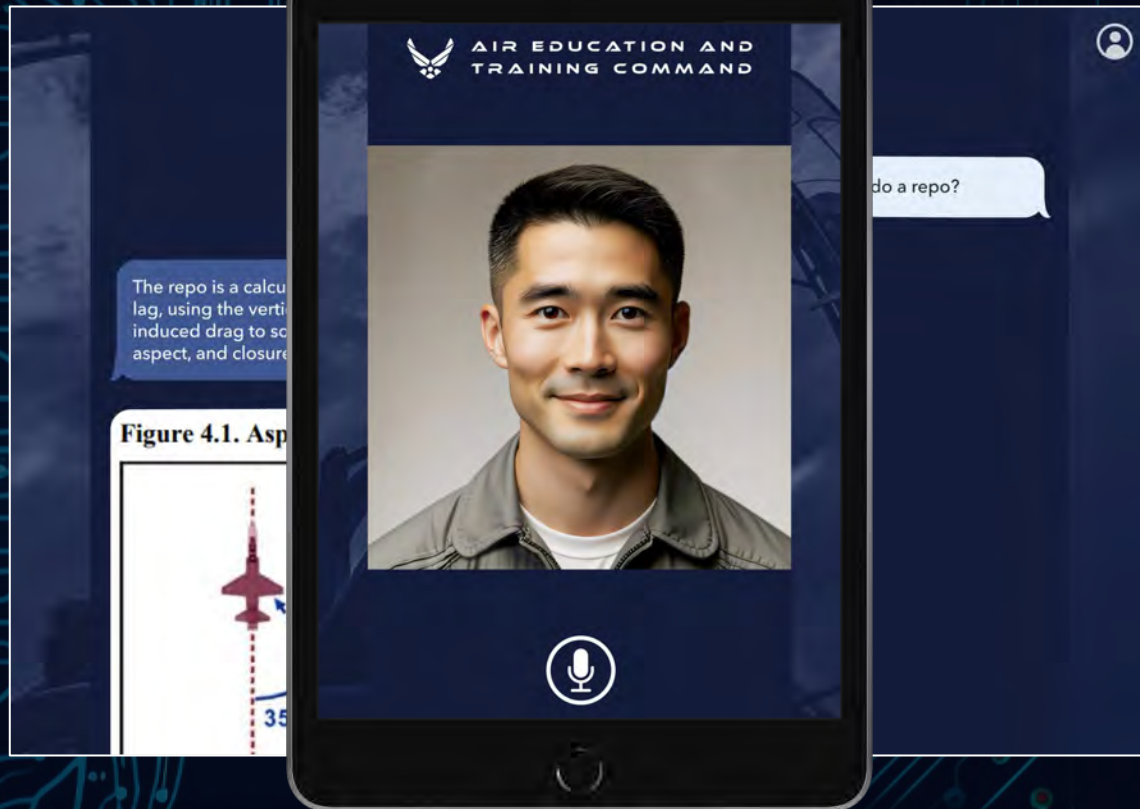




U.S. AIR FORCE

AETC Pilot Instruction AI

Developed as a prototype for the USAF Air Education and Training Command, this AI-based pilot instruction application provides training materials and related narratives in an interactive, natural language experience.



AI/ML
Solutions

chaostheory

AI Transit Signage

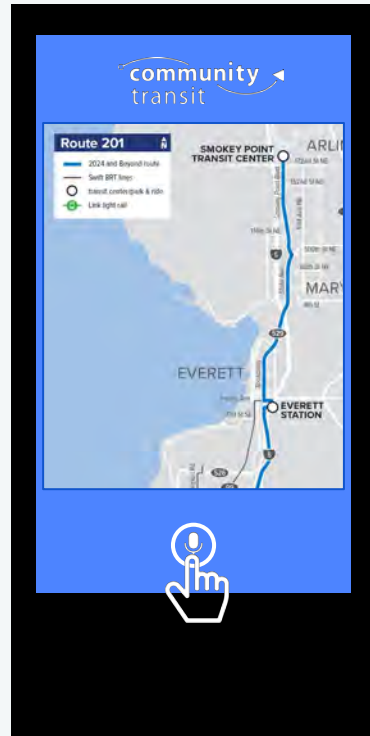
Our AI assistant for transit provides users with bus, route, and trip information in response to natural language requests.

The assistant can be deployed for web, mobile or digital signage applications.

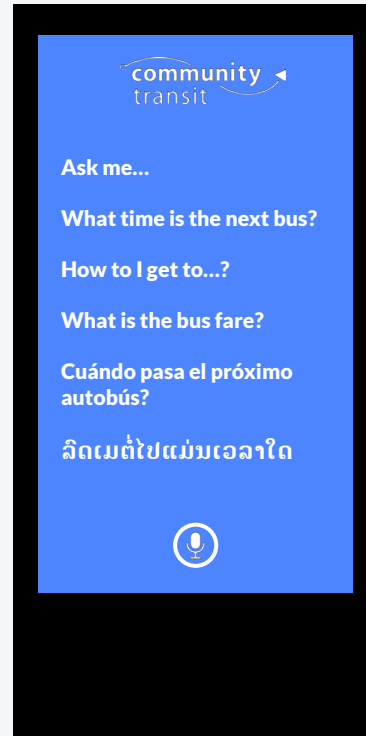
Interaction is fully-multilingual in 57 different languages, and the assistant will respond in the user's preferred language.



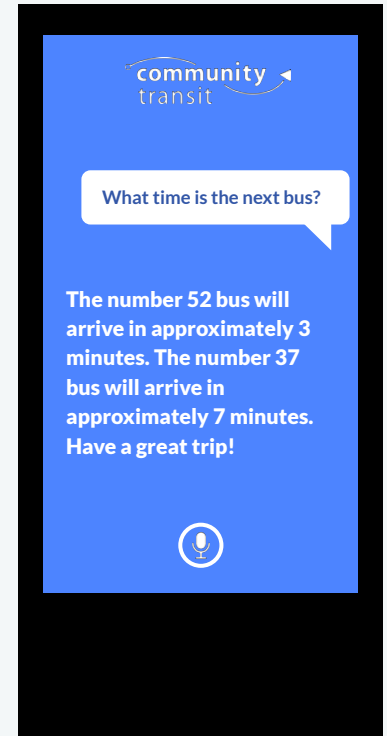
Interaction Design




Button press or proximity detection triggers interaction mode



Multilingual, audio, natural language information request support



 play audio
Audio response in preferred language

Interaction Examples

community transit

How do I get to the nearest Chick-Fil-A restaurant?

Take the number 196 bus to 96th St SW & 30th PI W. The next 196 bus will arrive in approximately 4 minutes.

community transit

¿Cómo llego al restaurante Chick-Fil-A más cercano?

Tome el autobús número 196 hasta 96th St SW y 30th PI W. El próximo autobús 196 llegará en aproximadamente 4 minutos.

community transit

Comment puis-je me rendre au restaurant Chick-Fil-A le plus proche ?

Prenez le bus numéro 196 jusqu'à 96th St SW & 30th PI W. Le prochain bus 196 arrivera dans environ 4 minutes.

AR Vision Assistant

We have developed an AI-based vision assistant for Augmented Reality (AR) use cases. Using computer vision and AI, a user is able to get information about objects that they focus on within the viewport via natural speech audio. The assistant can incorporate a RAG for specific domain knowledge.

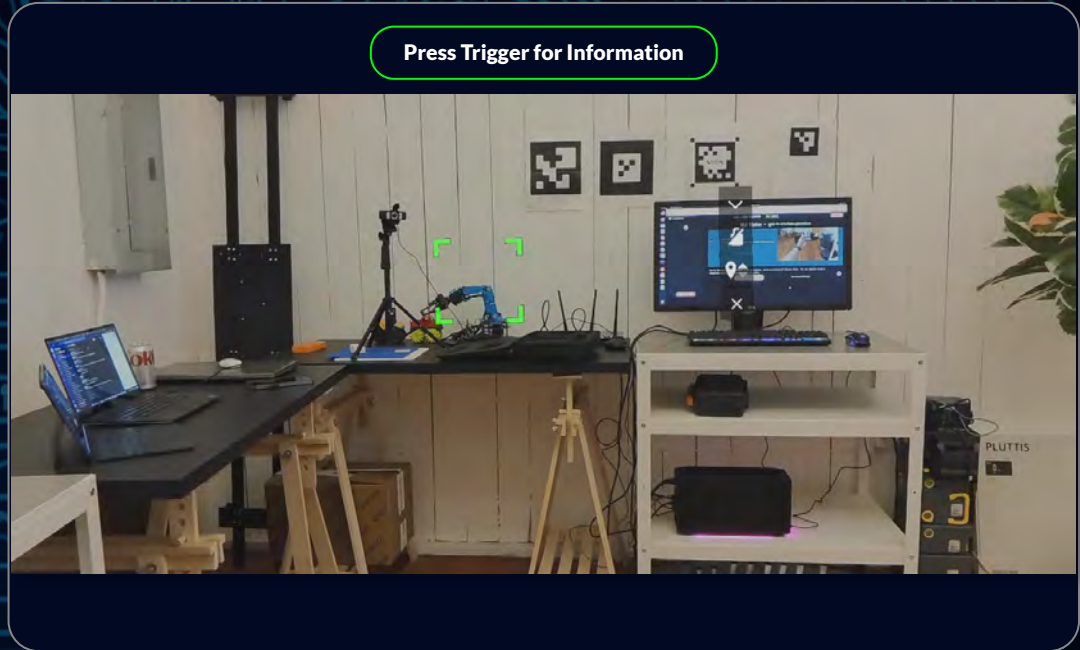
Demo available on request



AI/ML
Solutions



AR/VR/XR
Experiences



play
audio

"You're looking at a robotic arm set up on a workbench which seems to be part of a laboratory or workshop space. The robotic arm has a blue and silver color scheme and is surrounded by various electronic components and wires."



ETHoS Patient Insight Machine Learning Platform

We architected and developed the ETHoS Precision Care product for Standpoint Software. This platform applies machine learning and graph analytics to model patient care data. Relevant results are delivered to the care provider team through a social feed to help physicians optimize care decisions in real-time.



AI/ML
Solutions



Data
Solutions



Enterprise
Platforms





XR Solutions

XR Solutions

We provide experience design and development capabilities for:



XR Experiences



XR Content



XR Platforms

Across all devices and environments, including the Magic Leap ML2, Microsoft HoloLens, Snapdragon Spaces and others.



VITA AR Training Platform

The VITA augmented reality training platform was designed and engineered by Chaos Theory to provide content creators with the ability to quickly build and modify AR training simulations, and then run them for multiple users in a shared training experience.



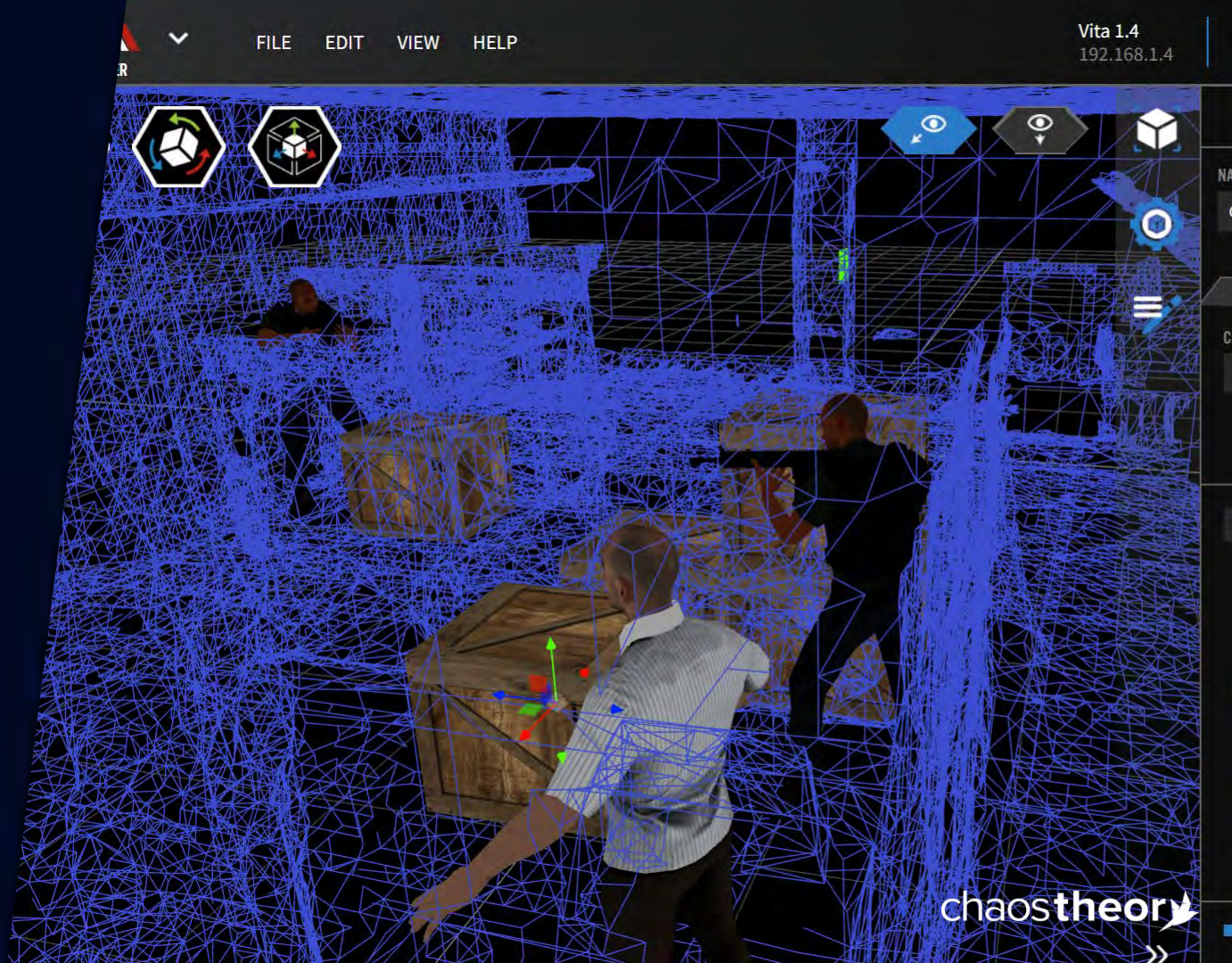
AR/VR/XR
Experiences



UX
Design



Enterprise
Platforms





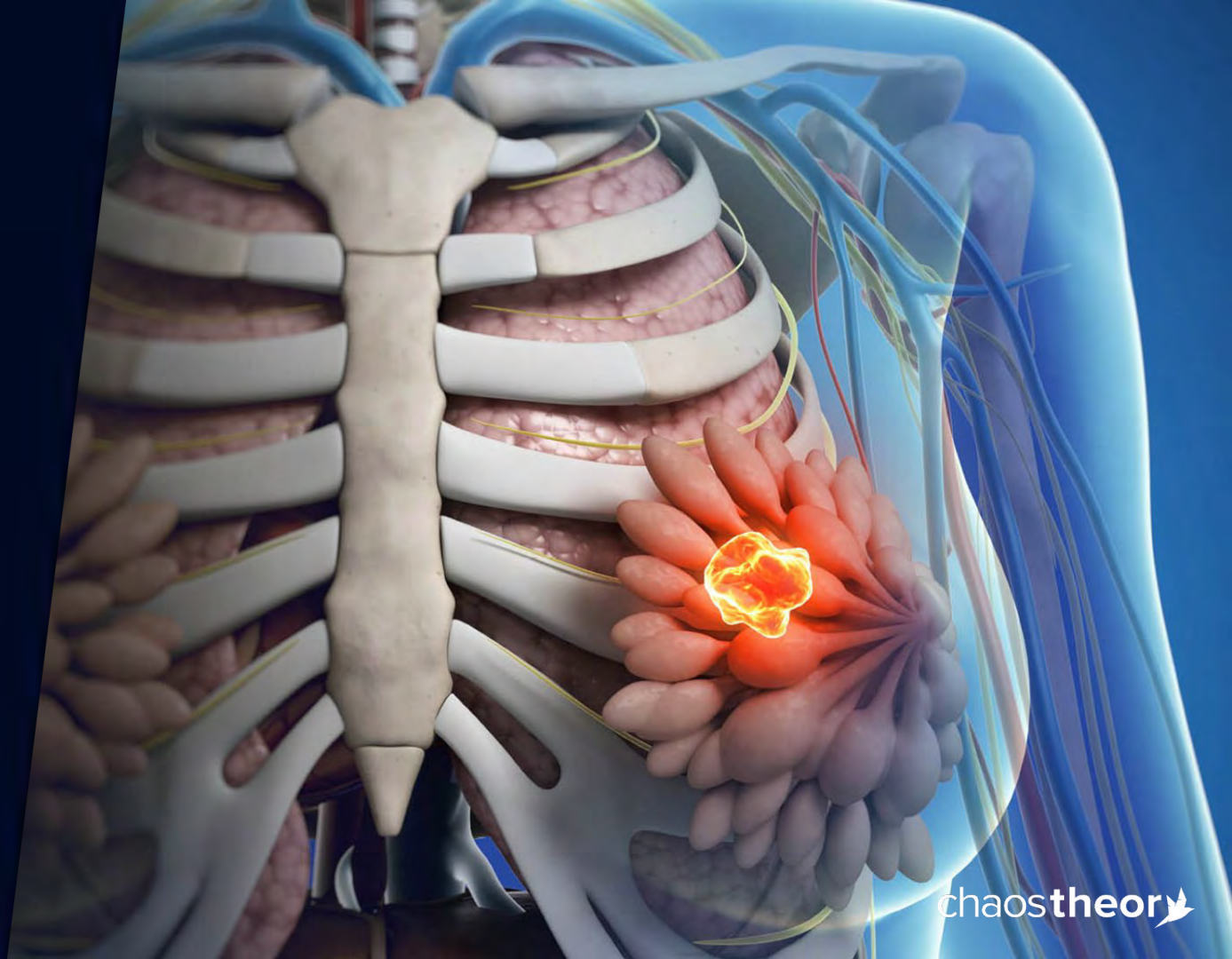
Stanford
MEDICINE

Stanford Serra AR Breast Cancer Imaging System

We partnered with Stanford and Microsoft to create the first visualization of MRI data within the Microsoft HoloLens AR system. By giving surgeons the power to visualize the size and location of the tumor directly on the patient, the Serra system shows the way toward increased accuracy and improved patient outcomes.



AR/VR/XR
Experiences



chaostheory



Starbucks Holodome Workspace Envisioning

Working in conjunction with Vulcan and Starbucks, we developed a prototype application using the Vulcan Holodome VR system for workspace design and envisioning. The prototype demonstrated the ability for group presentation during the design phase of office and retail spaces.



AR/VR/XR
Experiences



chaostheory

VR Piper Cockpit Simulator

The FlightSafety VR aircraft simulators were developed to improve pilot training programs by enhancing the learning experience through immersive technology. Pilots in training are able to view and interact with life-sized aircraft earlier in the training process.



AR/VR/XR
Experiences

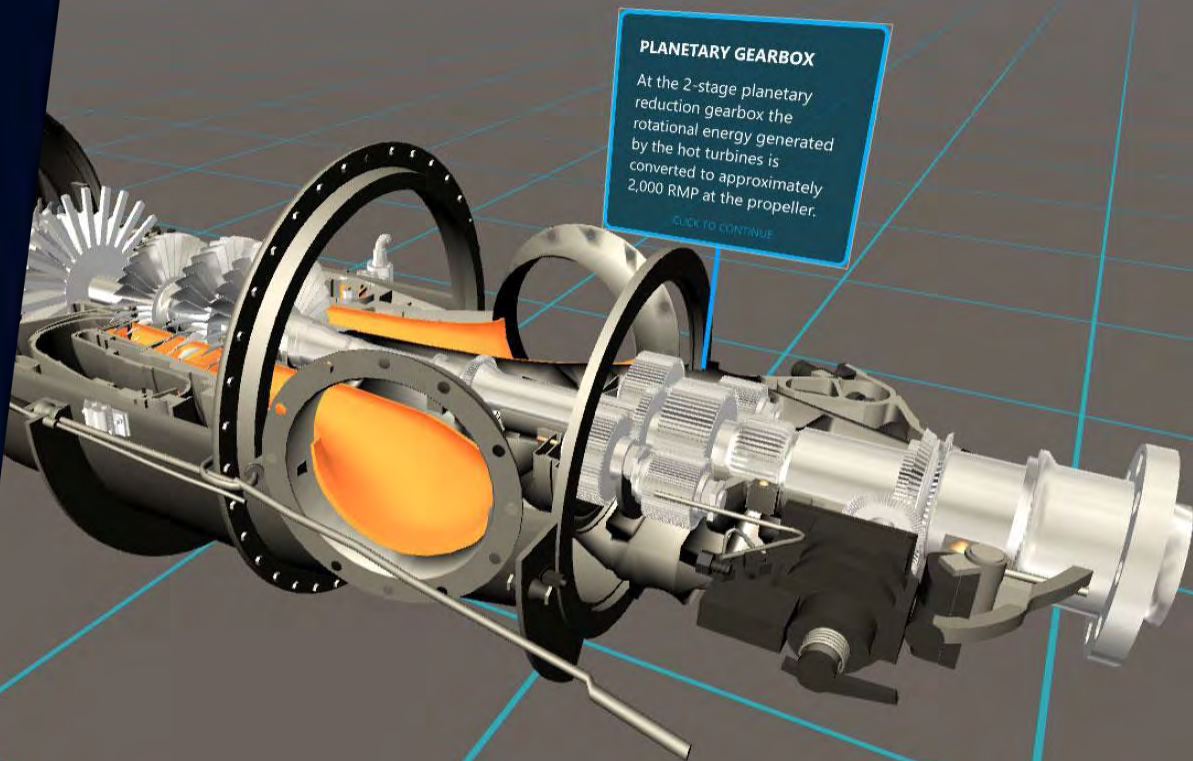


UX
Design



PT6A Turbine Simulator

The FlightSafety VR aircraft simulators were developed to improve pilot training programs by enhancing the learning experience through immersive technology. Pilots in training are able to view and interact with life-sized aircraft earlier in the training process.



AR/VR/XR
Experiences



UX
Design

FlightSafety International Augmented Reality Prototype

The FlightSafety AR experience prototype was developed to improve pilot training programs by enhancing the learning experience through immersive technology. Pilots in training are able to view and interact with life-sized aircraft earlier in the training process.



AR/VR/XR
Experiences



UX
Design



MRFlight Flight Training System

Created to supplement expensive simulator training with an AR/VR option, the MR Flight Flight Training system features fully-detailed virtual aircraft and guided training exercises. Developed using Unity for Microsoft Hololens.



AR/VR/XR
Experiences



Enterprise
Platforms

MRFLIGHT



stevesmith



••••••••

LOGIN WITH PIN

LOGIN

FORGOT PASSWORD



Transit Technology

Transit Technology

Through our Transit Technology Practice we support transit agencies with:



Trip Planning Tools



Bus Finding



Technology Solutions

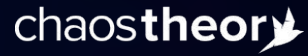
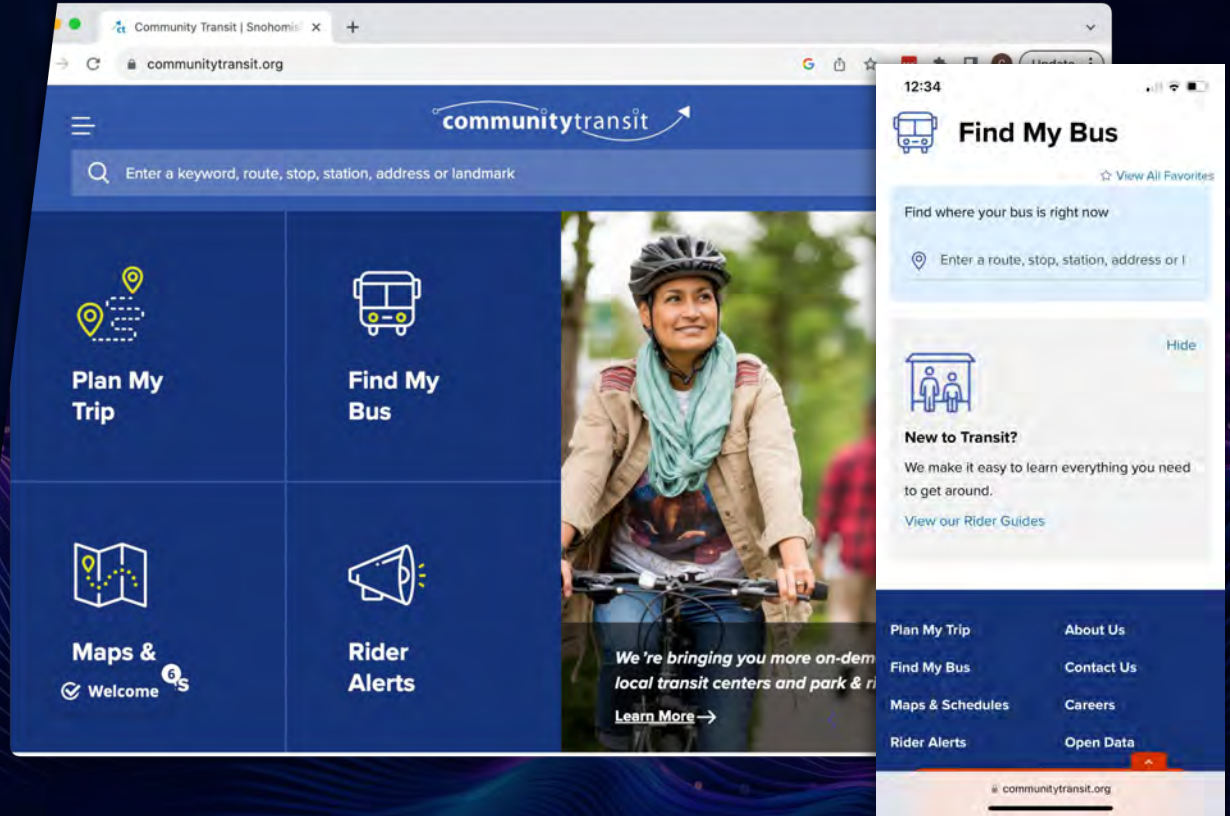
Our experience spans the range of transit and travel data systems, including ATIS, GIS, GTFS, OTP, Sabre and others.





Community Transit Website and Trip Planning Tools

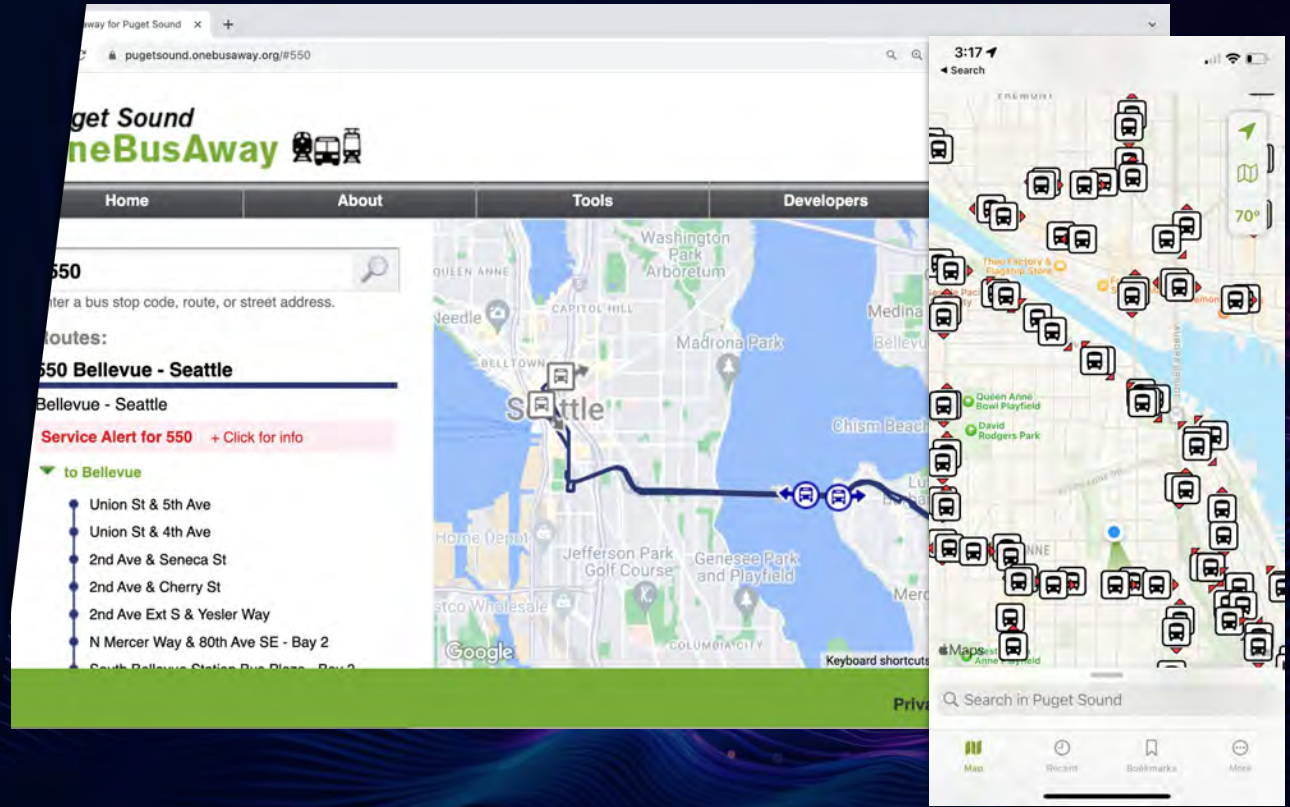
Community Transit, in Snohomish County, Washington, engaged Chaos Theory to revamp their user experience and provide their community with real-time trip planning tools across desktop and mobile that would make commuting a seamless and hassle-free experience.





One Bus Away Platform Migration and Update

Sound Transit engaged the Chaos Theory team to update the One Bus Away trip planning platform to support revised GTFS data feeds, and to replace an outdated mapping integration with a new Google Maps implementation.

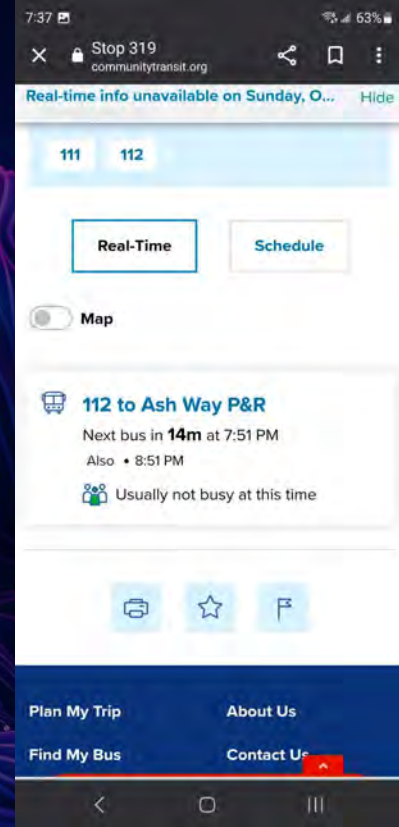
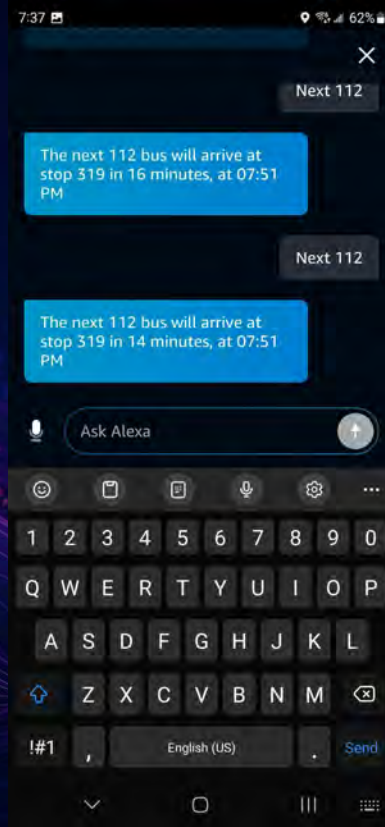




Alexa Bus Finder

We have developed a voice integration for Alexa which allows users to query for stop, bus, and route information using voice commands. This app is designed to improve accessibility and usability of existing tools.

Demo available on request





Kayak Price Comparison Tool

Chaos Theory developed a Kayak price comparison integration for the Sabre travel management platform, allowing travel agents to run price comparisons with Kayak directly from the Sabre booking interface and providing direct comparisons for a booking against a lowest price option.

DD

AS6916V 240CT T ICTDFW HK1 1016A 1139A HRS /DCAS*CFRXVD /E
RATED BY /ENVOY AIR AS AMERICAN EAGLE
CHECK-IN WITH AMERICAN AIRLINES
AS 566V 240CT T DFWSEA HK1 100P 325P HRS /DCAS*CFRXVD /E
UA1646L 270CT F SEADEN*HK1 311P 655P SPM HRS /DCUA*OR3SKF /E
UA6235L 270CT F DENICT*HK1 832P 1100P SPM HRS /DCUA*OR3SKF /E

PERATED BY /MESA AIRLINES DBA UNITED EXPRESS
KT/TIME LIMIT
1. T-110CT-V9QI*AWY
PHONES
1. SEA425-822-2333-A
2. SEA866-659-8439-B
3. SEA425-951-8565-B MARIE DIR
4. SEA3169904246-B
5. SEAS*1*3169904246-MX

TR Tangerine Rec
vPay H vPay Hotel
vPay Air
vPay Car
vPay G vPay Group
K Kayak
Clipboard

KAYAK Multi-city ICT-DFW, DFW-SEA, SEA-DEN, +1 Oct 24, Oct 24, Oct 27, +1 1 adult, Economy

301 of 458 flights

Cheapest \$342 · 2h 28m Best \$342 · 2h 30m Quickest \$987 · 2h 27m Other sort

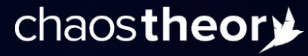
Stops
 Nonstop \$342
 1 stop \$831
 2+ stops

Times
Take-off Landing
Take-off from ICT
Tue 5:00 AM - Tue 7:00 PM
Take-off from DFW
Tue 8:00 AM - 11:00 PM
Take-off from SEA

Best
 9:00 am - 10:23 am nonstop 1h 23m
American Airlines ICT-DFW
 12:21 pm - 2:47 pm nonstop 4h 26m
American Airlines DFW-SEA
 10:46 am - 2:33 pm nonstop 2h 47m
United Airlines SEA-DEN
 5:28 pm - 7:52 pm nonstop 1h 24m
United Airlines DEN-ICT
Operated by Envoy Air AS American Eagle

Cheapest
 6:37 pm - 8:00 pm nonstop 1h 23m
American Airlines ICT-DFW

\$342
Multiple fares
Hacker Fare
View Deal





Uber Ride Scheduling Tool

Chaos Theory developed an Uber integration for the Sabre travel management platform, allowing travel agents to book Uber rides from within the Sabre user interface. The ride is scheduled with the Uber for Business platform, and a text and call is dispatched to the traveler with the ride details.

Uber Reservation

Traveler: Phil Tapia, +14252206887 phil.tapia@gmail.com

From: 2320 Rucker Avenue, Everett, WA, USA => To: Angel of the Winds Arena, Hewitt Avenue, Everett, WA, USA @ 2023-10-24 22:00 (UTC)

Select Rate:

Name	Desc	Estimate/Fare	Trip
<input checked="" type="radio"/> UberX	Affordable, everyday rides	\$8.99	0.67 mile
<input type="radio"/> Uber Pet	Affordable rides for you and your pet	\$12.99	0.67 mile
<input type="radio"/> Comfort Electric	Premium zero-emission cars	\$13.46	0.67 mile
<input type="radio"/> Comfort	Newer cars with extra legroom	\$13.00	
<input type="radio"/> UberXL	Affordable rides for groups up to 6	\$13.99	
<input type="radio"/> Black	Luxury rides with professional drivers	\$54.00	
<input type="radio"/> Black SUV	Luxury rides for 6 with professional drivers	\$64.00	

Change Request | **Create Ride Request**

Voicemail

Unknown
October 23, 2023 at 12:30 PM
0:05 -0:41

InfuBorg Sandbox scheduled a ride with Uber for you for Tue, Oct 24 at 9:00 PM.
You'll receive a text when your driver is on the way.
Your pickup address is: 2320 Rucker Ave, Everett, WA 98201-2723, US.
Reply 9 to cancel this ride.
By taking this ride, you agree to Uber's Terms and acknowledge the Privacy Notice here [Link](#) Includes safety tips.
Reply STOP 1 to stop Transactional SMS, or STOP ALL to stop all SMS. If you opt-out of SMSs, Uber's Terms still apply.



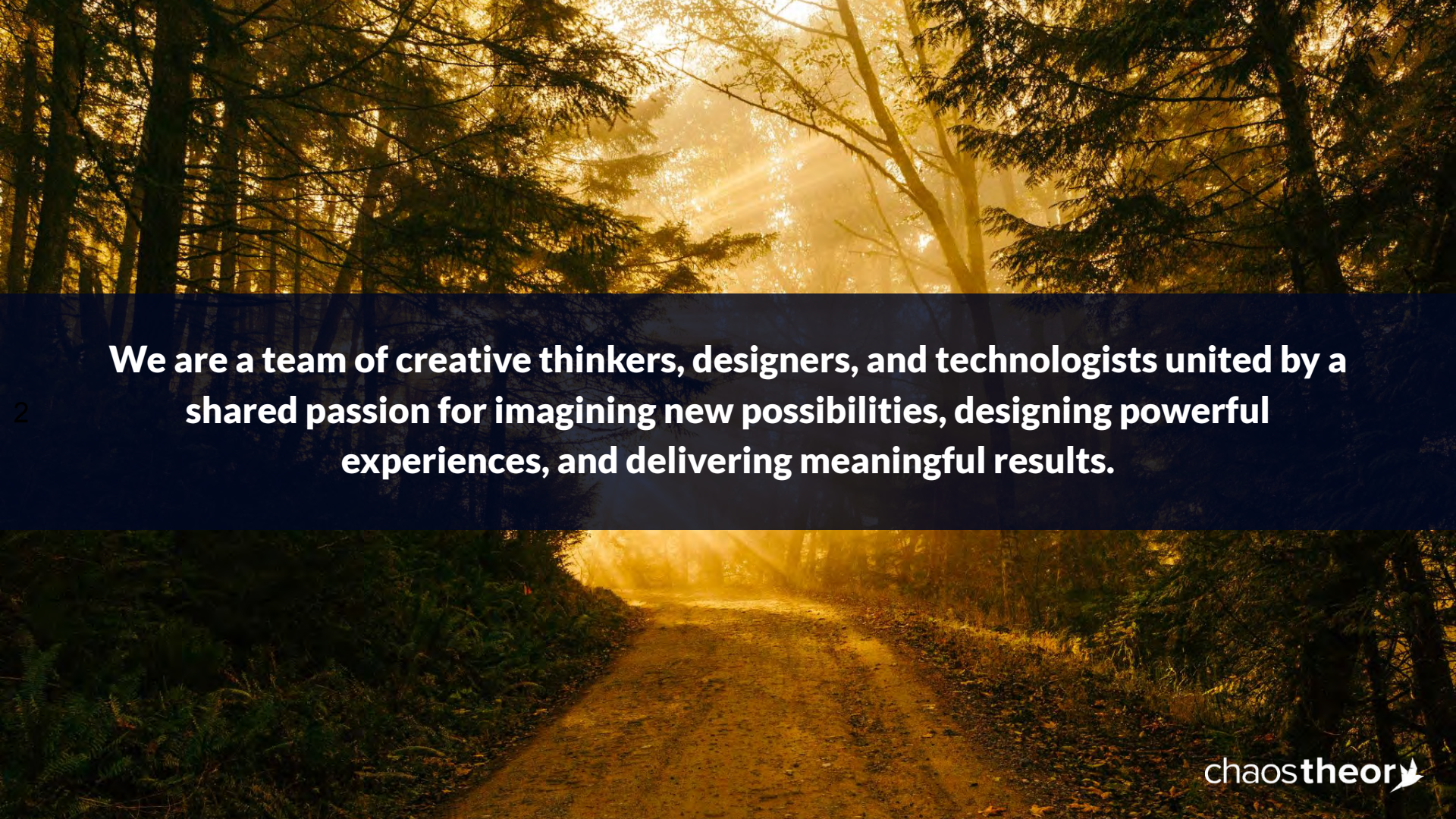
Transit
Technology



Enterprise
Platforms



About Chaos Theory



We are a team of creative thinkers, designers, and technologists united by a shared passion for imagining new possibilities, designing powerful experiences, and delivering meaningful results.



Imagination, wonder, and little bit of magic

We have taken surgeons inside their patients via real-time augmented reality visualization, given thousands of people a new ability to create music, transported users into new worlds through immersive, interactive role-play experiences, and provided countless moments of exploration and wonder.

Values

1 Curiosity

We are **always exploring**. We approach each challenge with curiosity for the unknown, pursuing possibilities across the landscape of our imagination.

2 Collaboration

We are **better together**. We believe that authentic collaboration with our clients sparks creativity, stimulates ingenuity and inspires joy.

3 Creativity

We are **architects of imagination**. Guided by our ideas, and motivated by our creativity, we envision the possible and deliver the unexpected.

4 Expertise

We are **technical trailblazers**. We are masters of our craft and inventors of what does not exist. We create what we imagine by expanding the limits of technology.

Leadership



Phil Tapia
Co-Founder and
COO/CTO



Chris Stevens
Co-Founder and
CEO



Jayme Hewitt
Director of Production



Paola Reyes
Director of Design



Belinda Buscher
Director of Operations

Locations



Process



Clients

Magic Leap 

intel 

amazon 

MoPOP
MUSEUM OF
POP CULTURE

T-Mobile 

TARGET 

Microsoft 

at&t 

unicef 

ORACLE 

Disney 

Google 

Stanford
MEDICINE 

communitytransit 

SENNHEISER 

Skybrary 


probably
MONSTERS


SOUNDTRANSIT

UNIVERSAL 

And many
more...

chaostheory 

Contact

Every connection is a new opportunity.
To start a new conversation, email us at

hello@chaostheory.com

Thank You

chaostheory.com