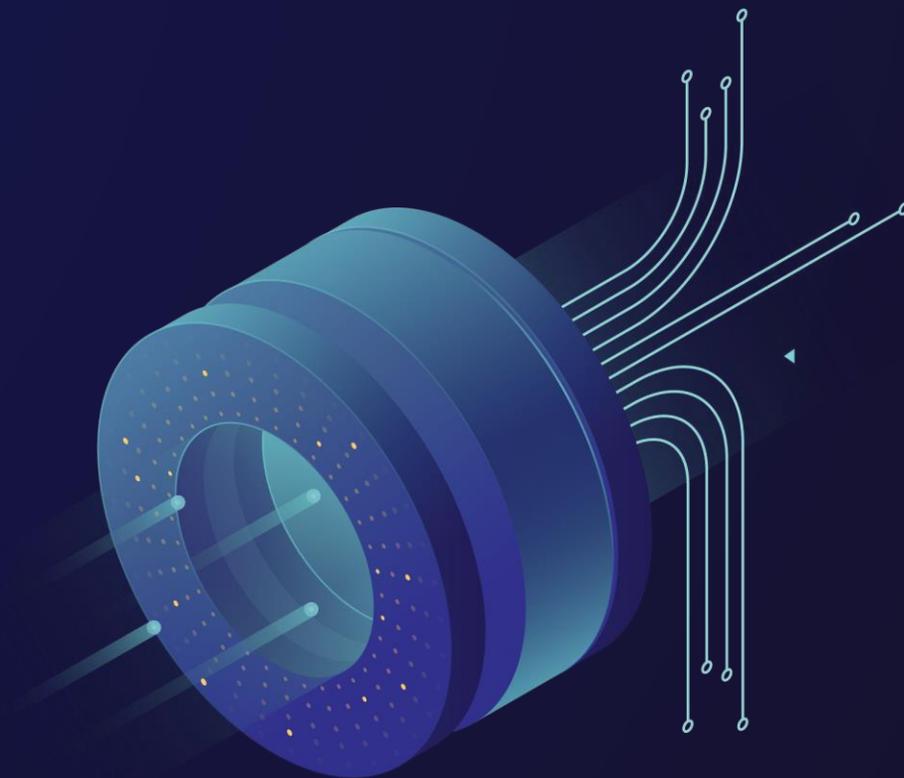




VALENCE

Digital Transformation Services



TODAY'S ENTERPRISE OPPORTUNITY

New technologies have emerged to revolutionize the way end-users interact with technology and to reshape businesses.

We are facing the most radical changes since the mobile transformation 10 years ago followed by the cloud transformation 5 years ago – and the rate of change of these “transformational” technologies is increasing.

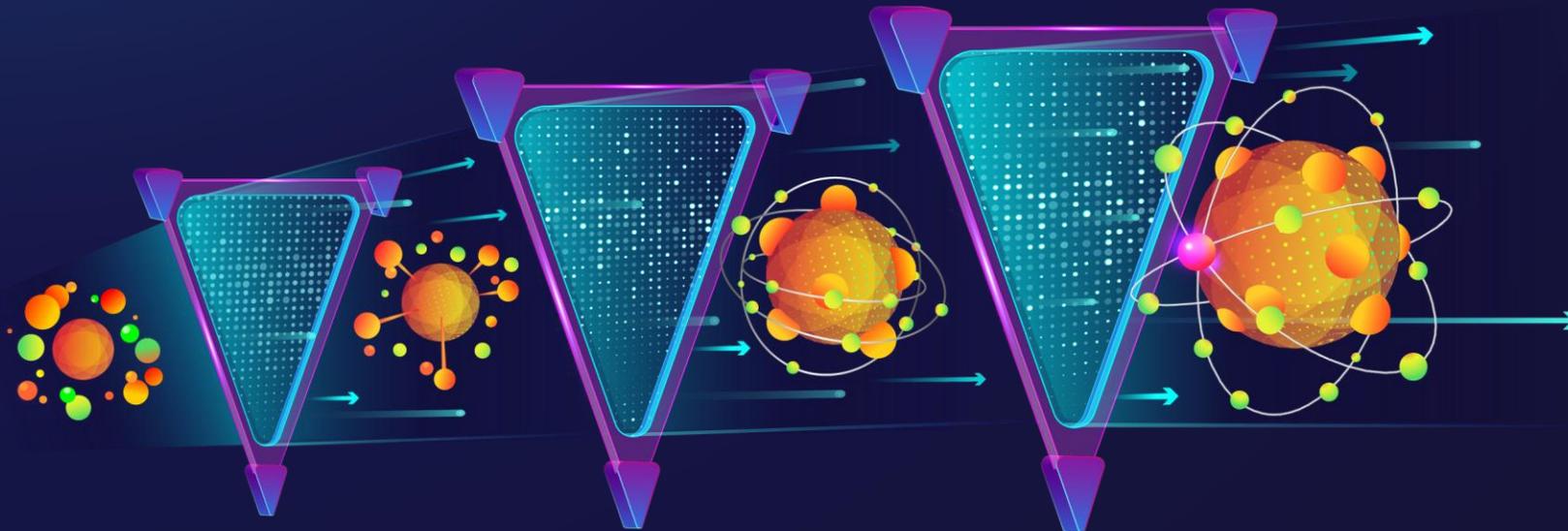
Enterprises are now forced to **adapt and accelerate innovation**, else run the risk of losing their competitive advantages and ultimately market-share.



THE JOURNEY



From cloud enablement to cutting-edge, digital transformation strategies today are the building blocks for success in the future.



WHO WE ARE

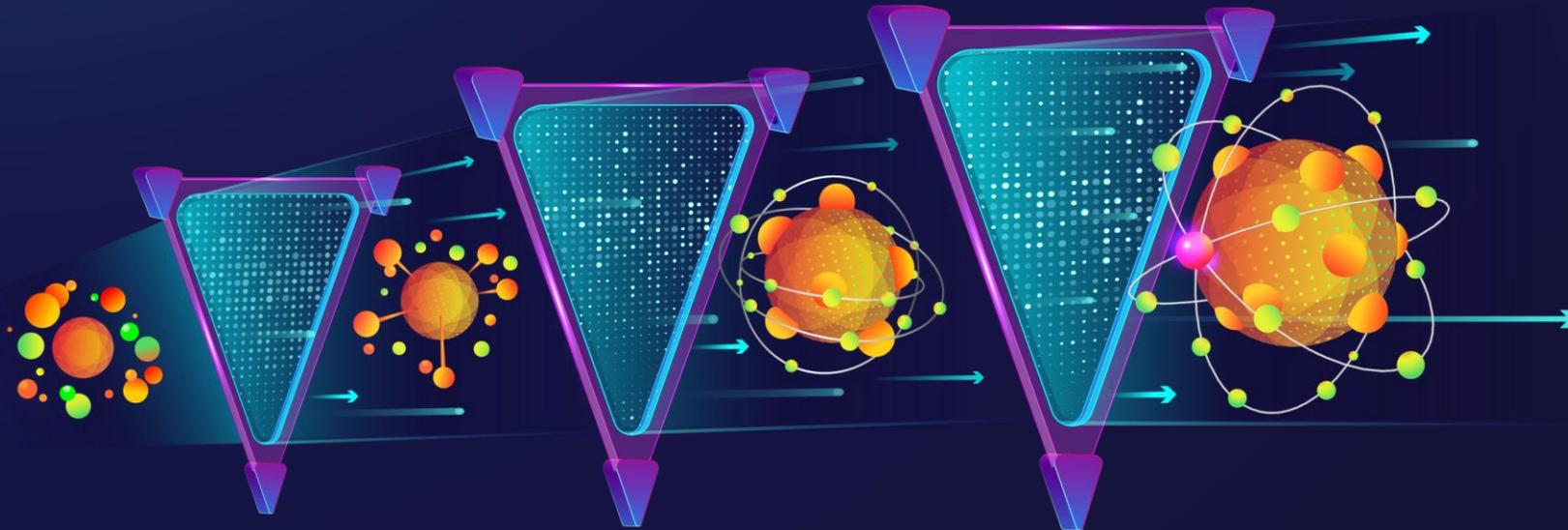


Valence provides services at every stage of the digital transformation journey, developing solutions that increase value, decrease costs, and improve user experiences.

Engineering

Consulting

Creative



We are a **Digital Transformation** services company.

We engage with our clients at every stage of their Digital Transformation journey, bringing expertise in today's new and emerging technologies that we believe will shape the future.

We move fast, grow fast, and love what we do.



**IoT and
Connected Everything**



**Artificial Intelligence and
Machine Learning**



**Robotics and
Automation**



**Augmented and
Virtual Reality**



**Voice and
Chat Experiences**



**Blockchain and
Distributed Ledgers**

OUR SERVICES



We bring digital transformation to market through three service offerings.

Engineering

Our engineering team combines cloud and data with a deep passion for emergent technology. We engage in all phases of software development – from prototyping to deployment – offering strategy, design, build and innovation.



Consulting

Our consulting practice is focused on helping enterprises define and advance their goals while gaining operational efficiency. We deploy smart, scalable teams with an emphasis on strategy, project leadership, analysis and process improvement.

Creative

Our creative process discovers, defines, and delivers opportunities in your business with a focus on intuitive user experience and inclusive design. From seamless dashboards to multi-sensory immersive environments we strive to perfect experiences at every step of the journey.



VALENCE STORIES

Industry Case Studies and Digital Transformation Experience

AI & PRECISION AGRICULTURE

Problem

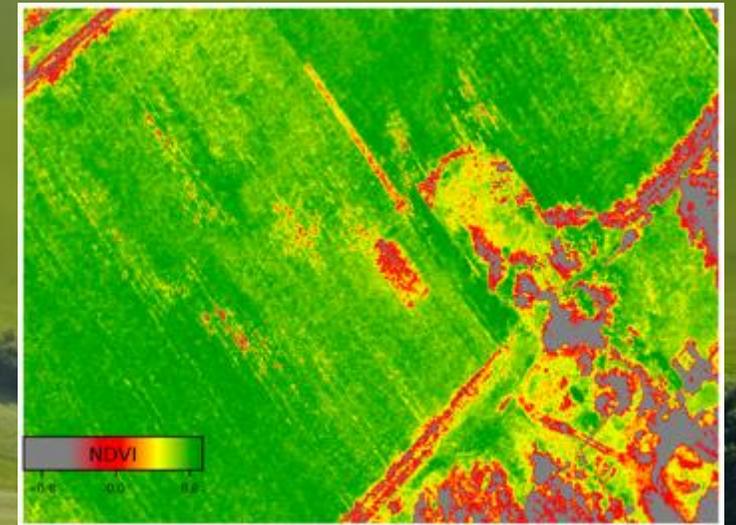
At an industrial scale, agriculture operations are generating massive amounts of data, and this is only increased with the addition of drone-based photography. The result is a wealth of data from which it can take hours and days to gain any meaningful insights.

Solution

Today's farming operations succeed by harnessing the vast amounts of data available in the field, and running sophisticated analytics against that data. To address this, Valence worked with **PrecisionHawk**, a major precision agriculture drone intelligence company, to [design and build intelligent data and numerical analysis workflows, allowing for the processing of thousands of discrete aerial images of a field](#). By utilizing AWS to build a modern, elastic, scalable system, Valence was able to help PrecisionHawk optimize their algorithms for speed and accuracy.

Results

By relying on a cloud-first methodology Valence designed and built a field analytics engine that [reduced processing time from 72 hours to 30 minutes](#). Additionally, a [40x performance improvement was gained on specific computer vision algorithms](#).



PERSONALIZED CONTEXTUAL RETAIL EXPERIENCE

The world's largest coffee company challenged us to deliver a more personalized shopping experience to drive increased sales at more than 100 premium grocery store locations across the U.S.

- ✓ Created custom in-store displays to surface personalized offers to consumers in aisle based on purchase patterns and preferences.
- ✓ Improved customer connection to the brand through “meet the producer” videos and other info. per blend.
- ✓ Contextual content triggered by beacon integration with native mobile app

1
Customer proceeds to in-aisle product display

1



2
Retail beacon detects customer's phone

2



3
Interaction is captured, sent to cloud

3

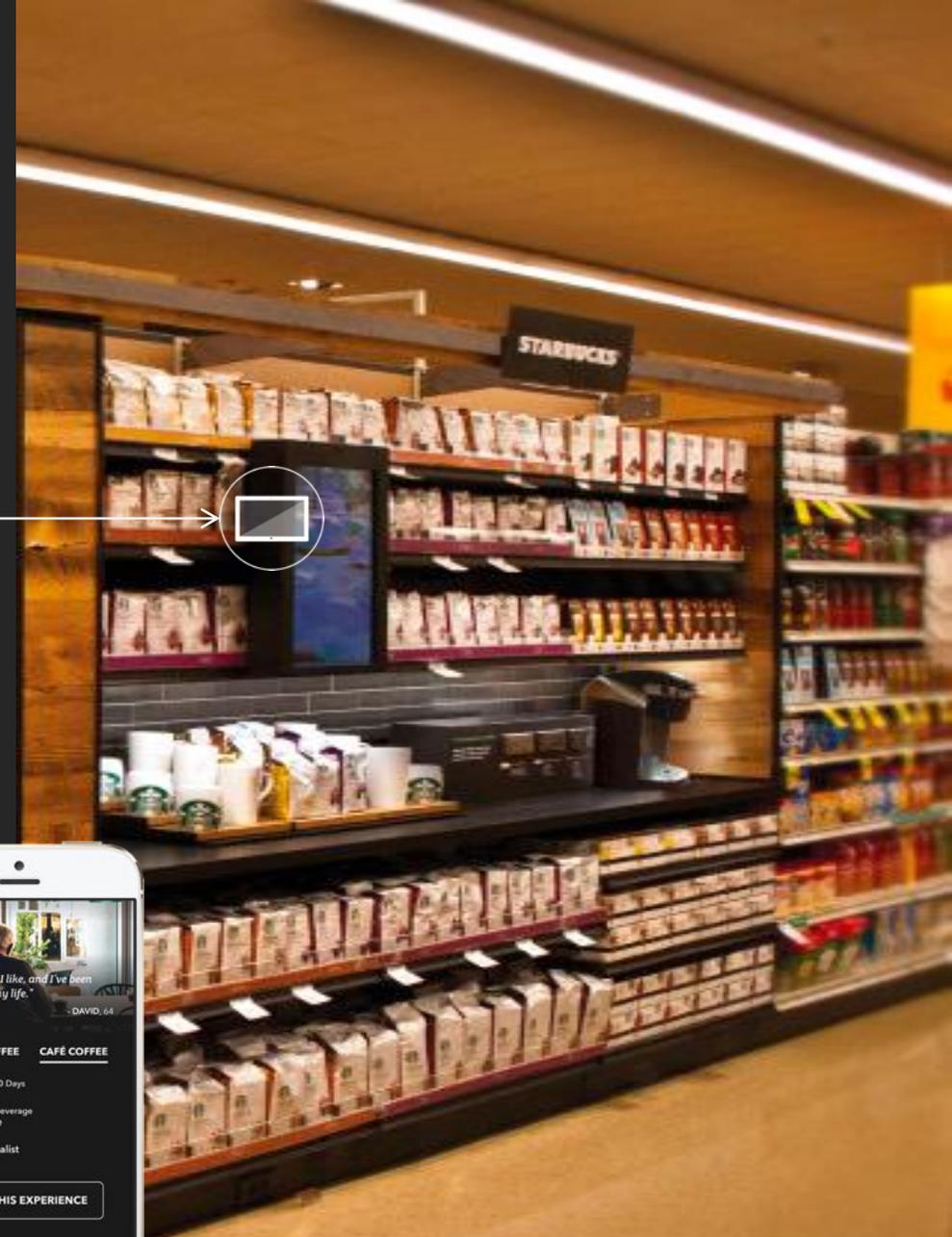


4
Personalized offer appears on nearby retail display

4

5
Notification sent to mobile app with personalized offer

5



Spatial Computing & Augmented Reality

Problem

With a new rocket in development, United Launch Alliance (ULA) was looking for a fun and immersive way to engage its target audience at the largest “must attend” space industry event and beyond.

Solution

The physical size of a rocket prevents it from being transported and shared for marketing and sales opportunities, but much like a car there’s a certain impressiveness to a rocket’s physicality. Valence worked with ULA, the industry leader in satellite deployment, to **design and build a mobile augmented reality application that created life-size rockets in virtual showrooms, viral social media photo sharing, and a mission-based game employing light simulation-based physics to demonstrate the complexity of rocket trajectories and satellite orbits.** By utilizing augmented reality on mobile devices, Valence was able to help ULA engage a diverse target audience for both sales opportunities and brand recognition.

Results

By deploying ULA Anywhere AR to the [iOS](#) and [Android](#) app stores, Valence enabled ULA to engage with industry professionals and space enthusiasts to build brand and technology awareness with fun photo sharing across all social media channels. [#ULAAnywhere.](#)



RETAIL EXPERIENCE & ANALYTICS

A high-tech software provider asked us to design and deliver an engaging, interactive and consistent experience enabling the remote management of over 5,000 devices and software in more than 105 retail stores worldwide.

SOLUTION

The team designed a real-time visual dashboard measuring point of presence “health” to continuously monitor key device analytic metrics. Additionally, the solution was built on a cloud-based platform which enabled the remote configuration of devices from one centralized location to any point of presence in the system.

RESULTS

The software provider was able to remotely manage their retail store devices in a more efficient, consistent and responsive management tool for a fraction of the cost of on-site services teams at each store. This also enabled the software provider to re-structure their services team to focus on higher-value activities for the company.



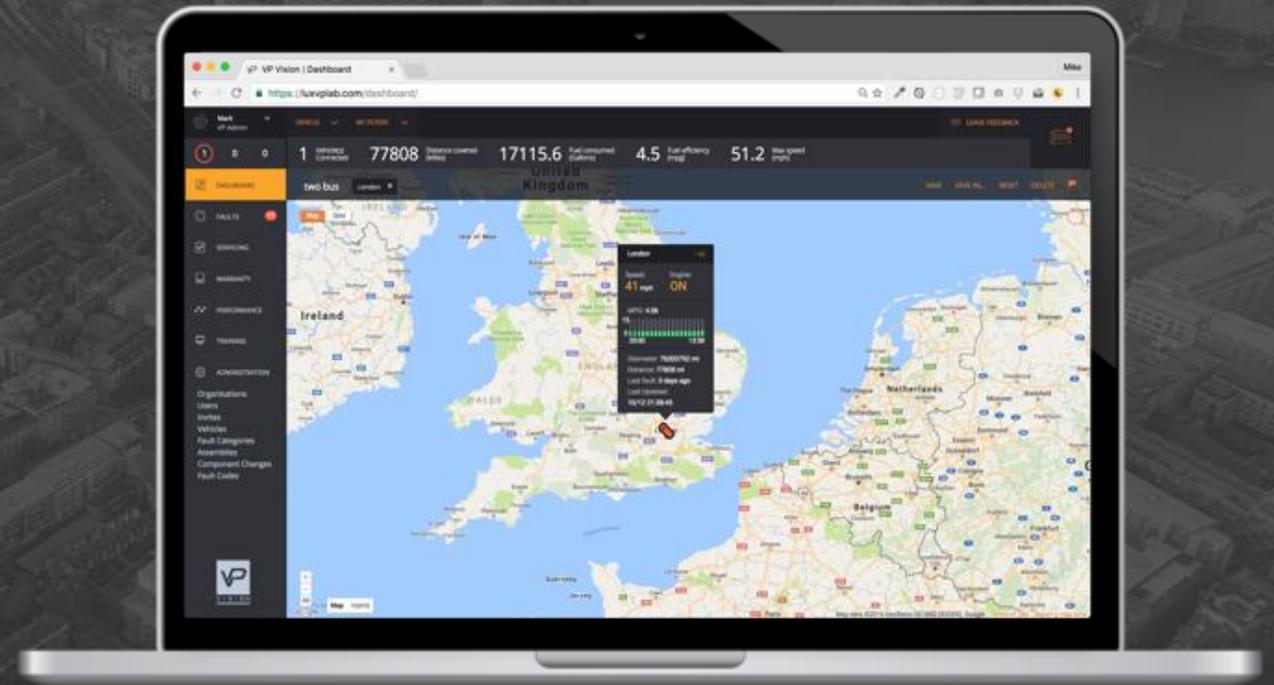
VEHICLE TELEMATICS & FLEET MANAGEMENT



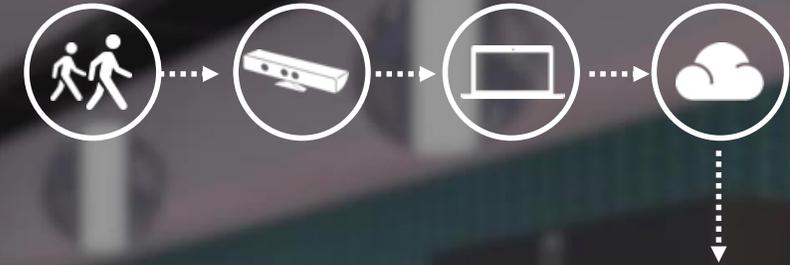
Valence works with Vantage Power (VP), a UK startup building [diesel-to-electric hybrid buses](#) for the London transportation industry. The company manufactures fuel cells, powertrain components, and telematics equipment, relying on Valence to handle downstream data management and application development. Currently in production deployment, the company plans to expand to [fleet coverage of 3000+ buses in London](#) alone in coming years.

VP presents a [large-scale IoT scenario](#), one in which real-time telemetry data is used to [monitor fleet efficiency](#), maintenance requests, and provide [location services for discrete geo-fencing rules enforcement](#). For example, VP is on track to programmatically switch individual buses from diesel to electric operations based on proximity to dynamic, high pollution regions, or in quiet zones near schools for noise suppression.

Valence has built the backend data collection, management, and processing on AWS, leveraging [the AWS IoT suite](#). For fleet operators, Valence has designed and built the [VP-Vision web portal for remote monitoring and fleet management](#).



AIRLINE LOUNGE OCCUPANCY MONITORING



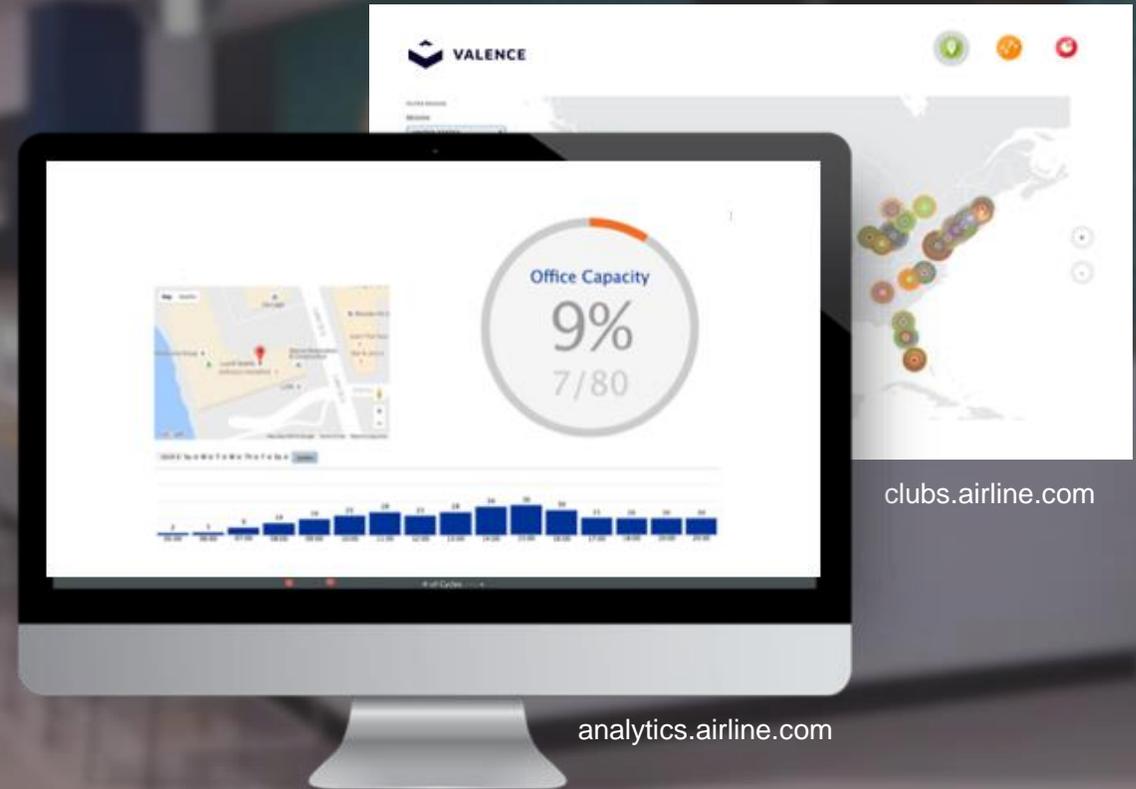
A global airline challenged us to deliver a real-time system for monitoring capacity in its club lounges at airports nationwide. Through the system, the airline wanted to optimize customer experience in the lounges, reduce overcrowding and offer amenities to non-member customers when capacity allows.

SOLUTION

The team prototyped a Microsoft Kinect sensor mounted to the ceiling at the entry to the B6 lounge at Chicago O'Hare airport deployed with custom computer vision algorithms to detect motion of people moving in and out of the lounge.

RESULTS

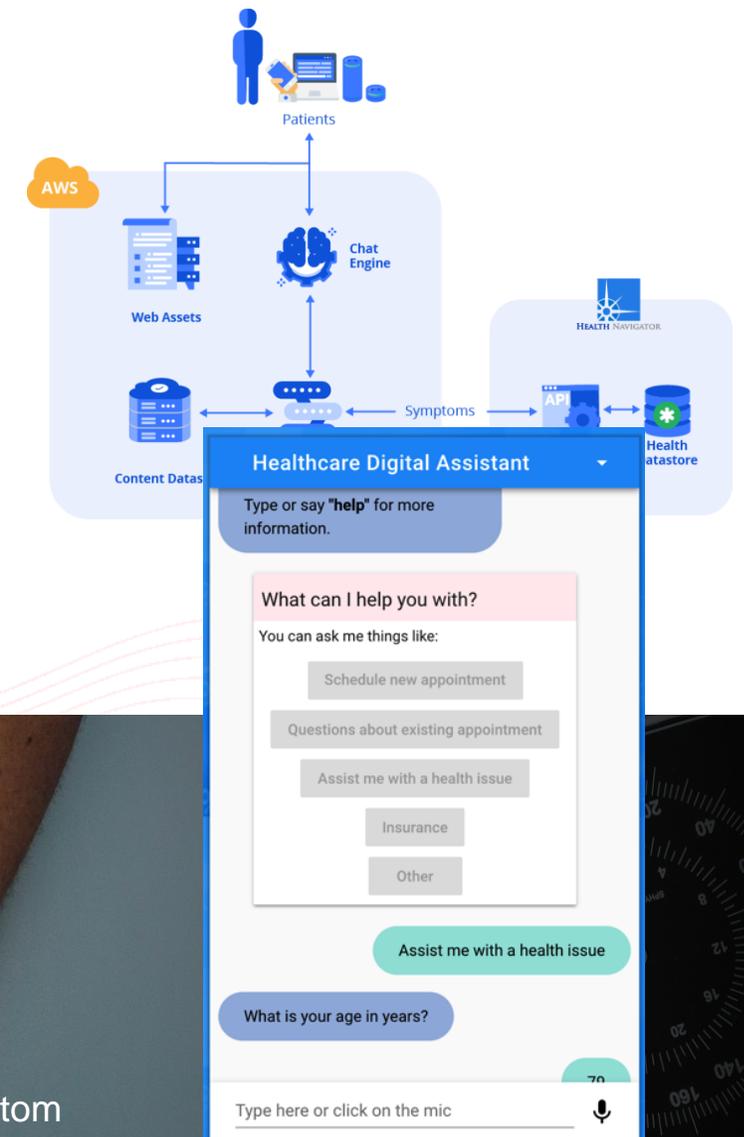
Built in just 6 weeks from idea to MVP deployment, the solution was installed and tested during one of the busiest air travel holidays of the year at Christmas. The MVP achieved 89% accuracy during trial runs, and validated the technical feasibility assessment of the project.



VOICE & CHAT HEALTHCARE 2.0

Enhanced voice and chat solutions improve the customer experience, and help modern care organizations to realize a patient-centric view of healthcare. As leaders in digital transformation, Valence helps our clients realize this future by extending our voice and chat framework with a **domain specific natural language processor and symptom diagnosis engine**.

Provides patients with a personalized experience by providing assistance specific to their care throughout the full lifecycle of an appointment, including driving directions, reminders, custom Q&A, and follow-up information.



520
unique
diagnoses

41 seconds
Avg time to
diagnosis
(based on **keyboard**
symptom inputs)

53 seconds
Avg time to
diagnosis
(based on **voice** symptom
inputs)

VOICE & CHAT VALENCE BOT

Built on Amazon Web Services using the Lex engine paired with Alexa for Business, the Valence Bot provides employees access to internal resources through their own personal Alexa devices via a natural language interface.

Tracking down operational information within a company can be a challenge. Whether it's questions around benefits, health care, or IT-related issues, employees often spend valuable time digging through handbooks, emails, or websites trying to find answers.

The Valence Bot eliminates this hassle by providing employees instant access to this information from anywhere using Alexa.



✓ Operational Information

Allows employees to quickly access benefits information such as vacation policies, health coverage, as well as company infrastructure information such as shipping addresses and expense reimbursements.

✓ Support Requests

Through a simple voice dialogue, employees can request IT services such as ordering equipment and resolving issues. They can also specify issue priority and specify contact preferences.

✓ Employee Communication

Employees can stay aware of new employee hires, what projects people are working on, and where they are located. Key company events such as holiday party or summer picnics are also a simple question away.

WEATHER ACOUSTICS, EDGE ML

IDENTIFYING WEATHER EVENTS WITH AUDIO & AI

Challenge

Utilize AWS IoT services and Machine Learning services to create an AI/ML edge solution capable of locally identifying a specific weather event and notifying our client on occurrence. Based on comparable in-market solutions and weather ground stations, utilizing audio as the input signal is a unique approach that the team was tasked to validate for technical feasibility and accuracy.

- ✓ Designed and configured Machine Learning model
- ✓ Supervised training for initial model built with 10,000 seed audio files spanning variable weather conditions.
- ✓ Deployed TensorFlow model for ML inference to network of edge devices, running ARM64/Linux
- ✓ Cloud-based interpolation algorithms and scoring mechanism to determine likelihood of a weather event by location
- ✓ Leverages cloud-to-device communication to allow for ML model updates

85%+ detection accuracy
in initial Pilot

500 edge devices with
deployed ML model by Jan
2019

12 weather event types and
severities detectable, and
increasing



Thank You!

Valence Bellevue

3005 112th AVE NE Suite
250, Bellevue, WA 98004

Phone

+206-494-4339

Website

www.valencelevel.com