UNext

Shaping The Next-gen Architects For The Automotive Industry

How UNext Enabled An Automotive Pioneer Gear Up For A New Era Of Innovation

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Overview

We are living in one of the most interesting times. Over the last few years, we have been gradually moving towards a more connected world and as days pass by, it increasingly feels that the wall between virtual and reality is being blurred.

With the rise of Meta and wearable devices, we are becoming more of a metaphysical species rather than a physical one. The best part is that this development or advancement is seeping into diverse industries and market segments. The most unique implementation and experimentation of advancing technologies has been in the automotive space.

Today, we are at the dawn of a new era of automobiles and vehicles that are shattering conventions, reengineering legacy practices and pushing the throttle on performances. From fuel-based vehicles, we are also witnessing the surge of hybrid and electric vehicles. We have connected cars with the most insightful infotainment systems, the use of predictive analytics and advanced automotive algorithms to accurately prophesize accidents, road blocks, weather conditions and more, sophisticated back-end systems to manage fleets from remote, self-driving cars, futuristic concept cars like AVTR and what not.

As both consumers and manufacturers, the timing to indulge in the best of automotive experience can't be better. However, behind all the glamor and glitz of fast-moving cars, fully-functional autonomous vehicles, consumer cars and supply-chain fleets, lies full-fledged R&D at its core.

We have people working day in and out to not just crack the most airtight design but the backend systems, networks, infrastructure and applications as well. White-collar sweat goes into delivering the experience expected out of brands and to stay ahead of the race (mild pun intended).

This case study acknowledges and reflects on such crucial advancements and implementations and goes on to shed light on how a global automotive leader collaborated with UNext to transform its leadership workforce to handle architecture documentation and pave the way for far more superior R&D operations.

Key Automotive Industry Statistics

- The market value of the global automotive industry was at around **$2.7tn in 2021.**
- It is estimated to increase to **$2.8tn in 2022.**
- Experts predict a paradigm shift in the preference of automotive vehicles with stats pointing out that close to **26%** of all new cars sales to be of electric vehicles.
- It is also projected that close to **58 million** autonomous vehicles will hit the road this year.
- Expenses in R&D by leading automotive players is also increasing to **6.6%,** which is higher than average expenses witnessed in the industry.
- US-based automobile manufacturers alone spend close to **$18bn** in R&D every year.

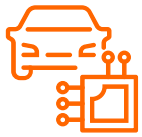
The Role Of Industry 4.0 In Shaping Today's Automotive Industry

The entire automotive manufacturing ecosystem is getting transformed by the onset of Industry 4.0. From the increased integration of OEMs to influencing the supply-chain network of spare parts and assembly lines, digitization has set new standards and benchmarks for productivity, efficiency and performance.

Thanks to the collective potential and implementation of trending technologies like cloud computing, Artificial Intelligence (AI), the Internet of Things (IoT) and more, automobile manufacturing brands are not just becoming more flexible and airtight in their manufacturing and R&D processes but becoming more responsible in terms of energy consumption and creating an ecological impact as well.

To give an idea of the advancements Industry 4.0 has brought in to the automotive ecosystem, here's a quick infographic:

Digital Twins – a virtual counterpart to the actual physical vehicle, this concept allows manufacturers to seamlessly simulate performances and efficiencies virtually and rapidly build vehicles at a much cost and time-effective manner.



Additive Manufacturing – where designers and engineers can churn out prototypes and designs faster with the liberty to flexibly innovate and integrate into their outputs

Autonomous Robots – an incredible value addition to the assembly lines, these robots can perform with agility, speed and efficiency human efforts can hardly match. From painting and sealing to welding and spotting anomalies, they can pull anything off. Let's not overlook RPAs as well.

Cloud Architecture – this helps manufacturers deliver a better connected experience with crucial vehicle insights through dedicated apps and allows them to engage with potential customers in sales and marketing phases.

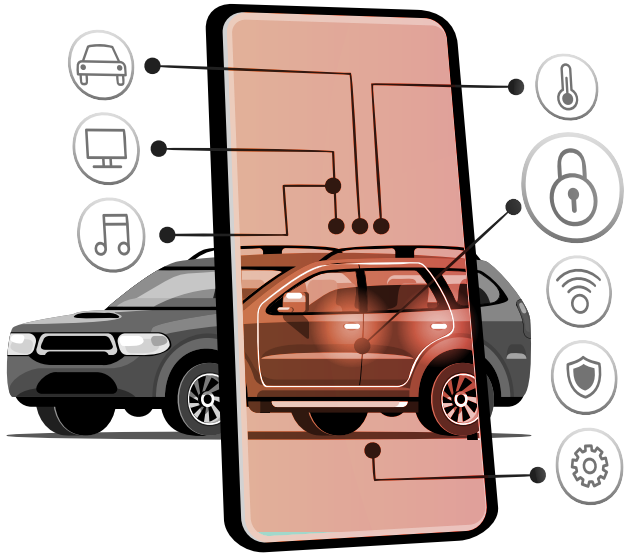
Digital Threads – a single cloud entity that is home to a treasure-chest of data on a product's manufacturing lifecycle. This enables professionals in an automotive company access data for their requirements, bringing in a sense of collective involvement away from siloed operations.

Automotive Architecture – A Quick Walkthrough

The automotive industry is no longer about assembly lines and engineering prototypes. Hardware and software concepts are not just applicable to the tech segment alone. Like we mentioned, we are increasingly witnessing the blending and interoperability of both.

The vehicles of today have equally powerful software applications and powering technologies as their engines or braking systems. With tech becoming a more integral part of an automotive experience, the R&D wings in manufacturers today have to push existing limits and work on implementing tomorrow's breakthroughs today.

The onset of IoT and other emerging technologies part of the connected vehicles environment work on diverse aspects to deliver a 360-degree experience to vehicle owners. And in each stage, software and network architectures play a key role in the development and deployment of ambitious models and visions. For a better understanding, we could classify the need for a solid software architecture blueprint into different user personas or segments.



Connected Vehicles

This ecosystem comprises infrastructure, peripherals, environment and people. Through the deployment of telematics, edge computing, AI, real-time data analytics and more, connected cars can deliver a driving experience that is beyond regular. From offering crucial insights on vehicle health, fuel efficiency and optimization to environmental conditions and more through dedicated apps and in-vehicle infotainment systems, connected cars are redefining standards and experiences today. For all this to happen seamlessly, architectures across networks, applications, backend systems need to be as airtight as possible.

Autonomous Vehicles

These are a step beyond connected vehicles, where depending on the level of classification, self-driving vehicles can go from offering driving assistance to functioning on autopilot. Apart from these, such vehicles demand sophisticated architectures to:

- Predict probable vehicle or spare part failure in advance and autonomously schedule servicing
- Suggest products and services based on vehicle data and location
- Initiate in-vehicle entertainment based on mood and preferences
- Collect seamless data on driving quality and assist in processing insurance and claims and more
- Retrieve results through dictation or mere human gestures
- Asses driver health by constantly reading facial and body gestures and more

Besides these aspects, architecture is also required by manufacturing companies to secure their networks and systems against loopholes, vulnerabilities and exploitations. Like you know, in a connected environment, an attacker needs just one loophole to gain access to an entire network. Precise architecture is also required to make the entire ecosystem foolproof, thereby optimizing cybersecurity.

Why A Global Automotive Leader Approached UNext For Talent Transformation

To consistently deliver experiences that are beyond the ordinary, having ambitions at a policy level alone isn't enough. The ambition has to turn to fragments of actions, which demands the trickling down of it across hierarchies of an organization.

To support such visions, talent pools that work on implementing them need to have the most relevant skills, have knowledge, exposure and hands on experience on the latest tools and industry practices, possess commendable industry connections, a solid portfolio and more. Organizations that take care of these in their workforces are the ones to arrive as pioneers in whatever they do.

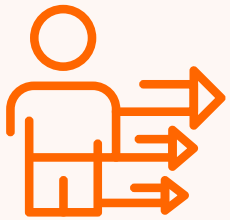
One such automotive pioneer recently approached UNext for a tailored transformation program. UNext , which has been offering personalized talent transformation programs across diverse domains and market segments, took it upon itself to ensure the goals put forth by the collaborating brand were not just met but fulfilled to the t.

The Objective

The challenge the client faced was that their Architects could/would not always defend their Architectural choices to SMEs and Architects sitting at client locations.

The need was to strengthen the Architect's self-confidence by building deeper functional expertise. And these Architects already had over 15 years work experience under their belt.

Our Approach

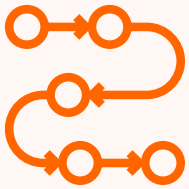


Our response was to design a unique "Assessment Driven Development" program for the Architects who participated in the program. There was NO teaching by a faculty.

We kick-started it by asking the participants to complete various online courses that the organization already had licenses for. The list of topics and their sequencing was curated by UNext 's SMEs.

UNext then authored industry and brand-relevant case studies from scratch based on the client's requirements and the functional subsystems in which the participants were working on. The participants were expected to develop and present an architecture document before an expert panel of high-profile representatives from the brand.

The Process



To make the transformation experience seamless, we divided the entire cohort into two teams. Each team had 3 participants and were given a case study each. The participants had to work on the case study assigned to them and ultimately develop an architecture document.

The Pedagogy

Stemming from the complexity of the case study and the resulting architecture document, the tenure of the entire program was scheduled for 7 weeks. The participants and the faculty from UNext connected twice a week for a duration of 70 minutes each.

However, the UNext advantage was in the fact that the sessions were nothing like the conventional instructor-led or classroom scenario, where the communication was mostly linear. It was more of a series of guided mentorship programs, where the faculty from UNext would spend most time on directing and recommending pointers to the participants on cracking solutions to concerns autonomously. The participants were expected to find the solutions to their problems themselves.

The mentoring sessions were driven by the participants that ultimately led the cohort to crack their architectural problem. Besides, participants had to submit their documents-in-progress at the end of every weekly sessions followed by the submission and presentation of the final architecture document at the end of week 7.

The problem statements were complex enough and ambiguous enough to stretch the participants beyond their comfort zone.

The Outcomes

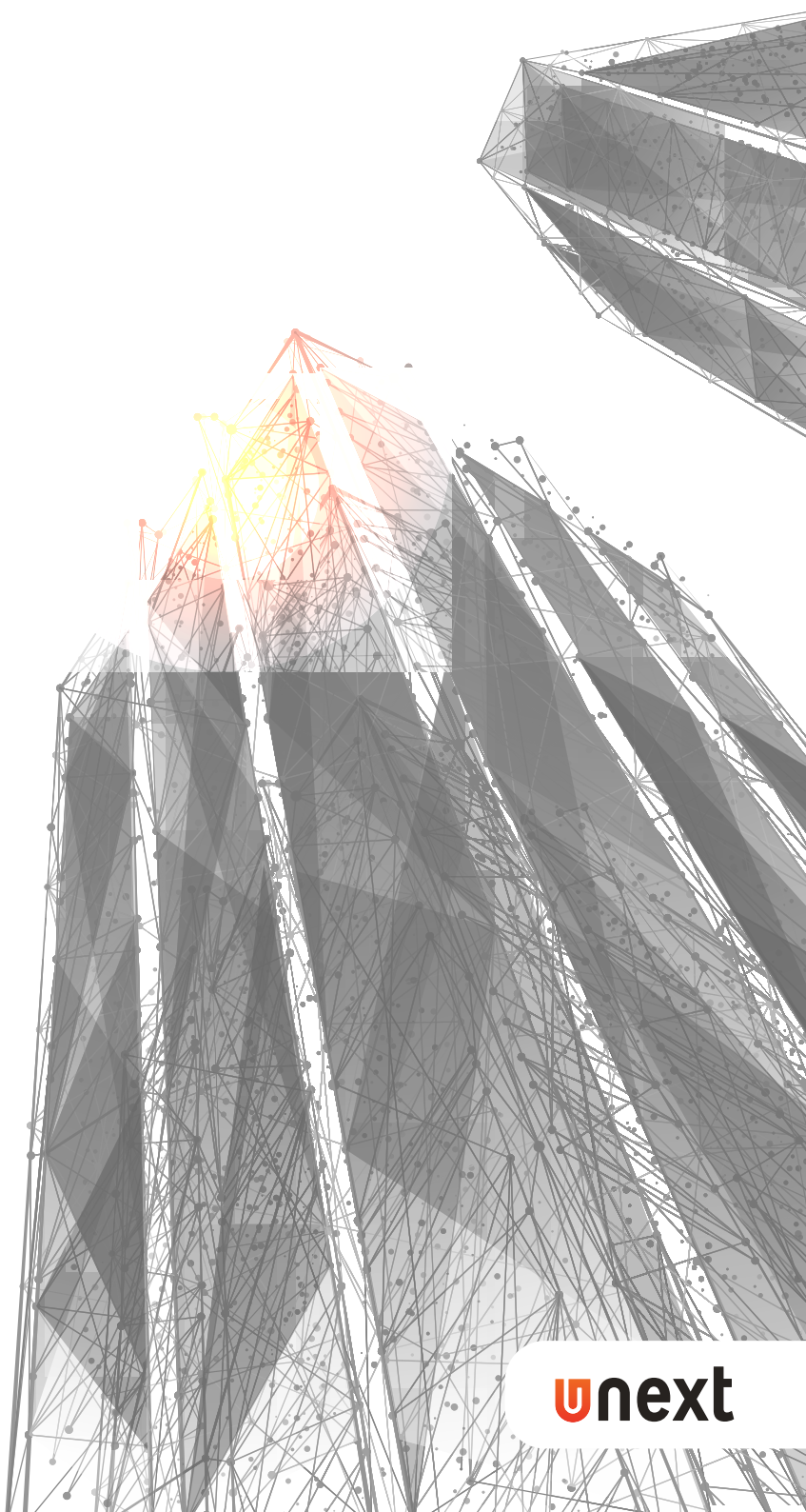
- Participants had far more confidence to present in front of a senior audience.
- Participants understood the nitty-gritties of Architectural decisions.
- Participants were able to defend their choices against both functional and business requirements.

UNext - Laying The Foundation For Superior Workforces In Organizations One Team At A Time

Having achieved what the brand had initially set out to, it acknowledged UNext's role in the talent transformation program. Its leadership workforce now has an added edge in the market and a new set of relevant competencies that will help their organizations achieve their visions and ambitions in the weeks to come.

UNext is, as always, proud to have collaborated with one of the top automotive market players and lending support to them in their journey. Not just in the automotive sector, UNext has transformed workforces across domains like IT/ITES, BFSI, Healthcare and more. We recommend checking out other case studies for a better understanding of our expertise and advantage as well.

To transform your workforce or teams to take charge of implementing the unthinkable, get in touch with us today. We will tailor a program for your needs.



Contact Us

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