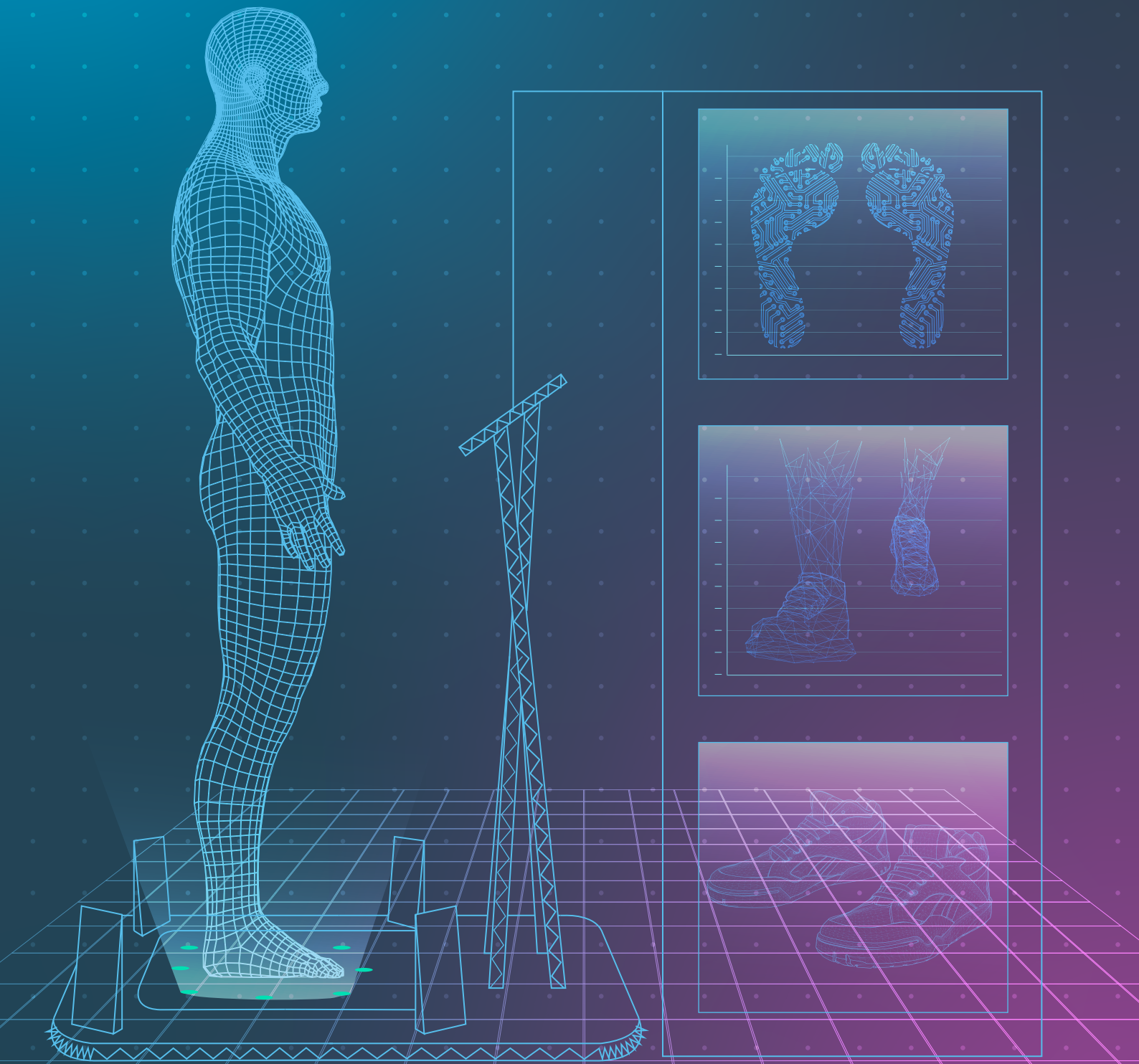
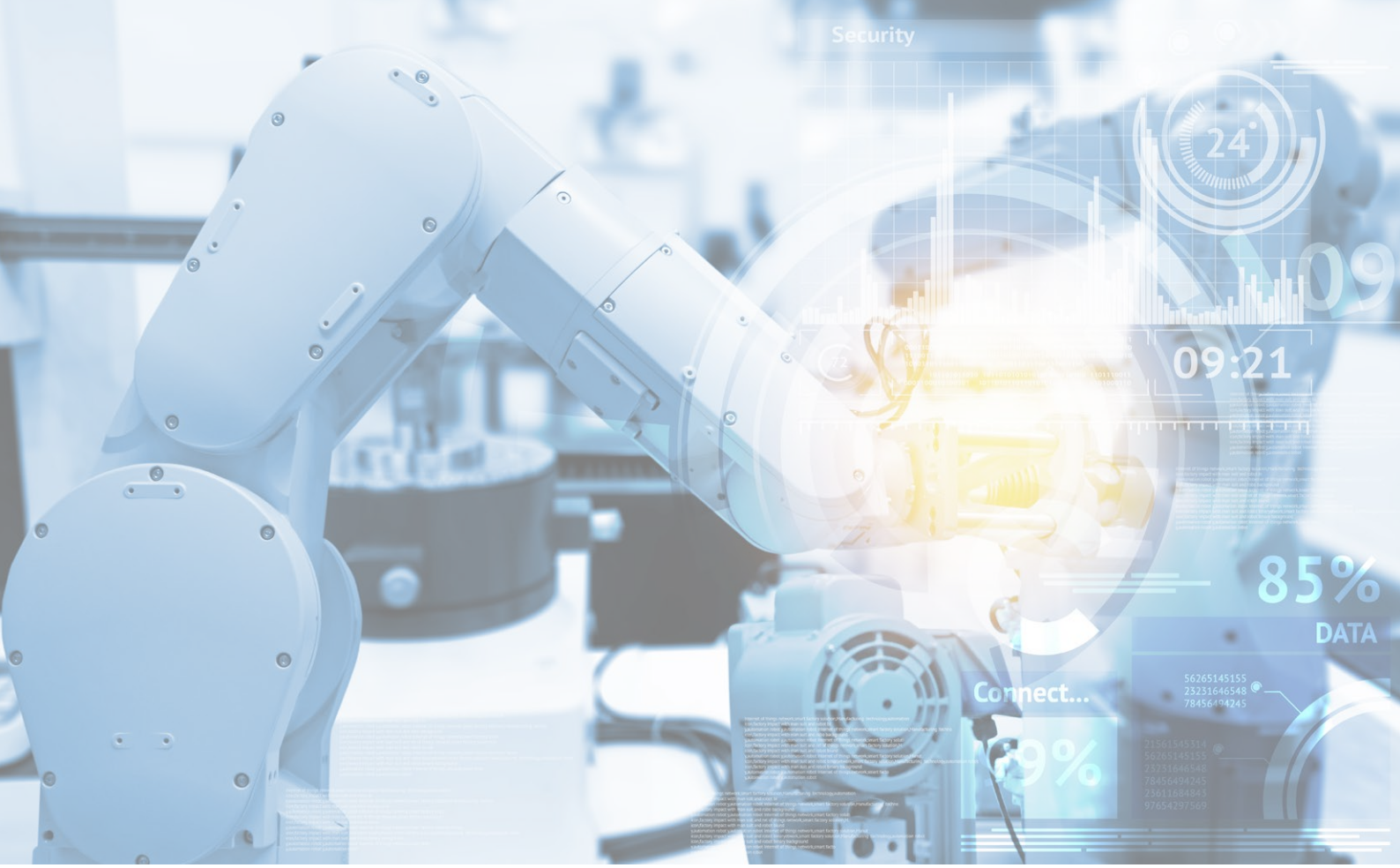
Industry 5.0:
Mass Personalization Driven by IoT and AI



intellias

Table of contents



Executive summary

Henry Ford's visionary ideas and inventions well outlived him: the assembly line made its way from Industry 3.0 to Industry 4.0, where it became more "connected" and efficient.

The smart factories of today differ greatly from early industrial setups. They're data-driven, populated with sensors and industrial IoT systems, have augmented teams of humans and robots on the floor, or even function autonomously with the lights out.

Yet most manufacturers still operate under Ford's philosophy: "Any customer can have a car painted any color he wants so long as it is black."

In the past, industrial leaders could afford to shy away from personalization. Today, however, consumers are getting more vocal with their demands for custom goods and ultra-personalized services. And when a company fails to deliver that, most consumers are quick to move to a competitor that offers a more tailored customer experience.

Industry 4.0 failed to fully acknowledge this demand for personalization. Industry 5.0 is here to make amends.

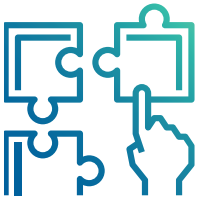
In this white paper, we explore how cutting-edge technologies such **as machine learning (ML), artificial intelligence (AI), computer vision,** and **cognitive systems** can be fine-tuned to support mass personalization and add a much-needed human touch to production (and beyond).

Industry 5.0 – Human-centric AI-driven solutions

Industry 4.0 had four main goals:

Improved connectivity.
Digitize all data exchanges, enable digital-to-physical processes, and improve horizontal integration.

Optimize processes.
Increase networking, digitization, and automation; boost efficiency; improve/eliminate error-prone processes; reduce waste.



Increase coordination.
Move to fully digital supply chain management from sourcing to post-sales.

Create new business models
such as servitization and enhanced product development.

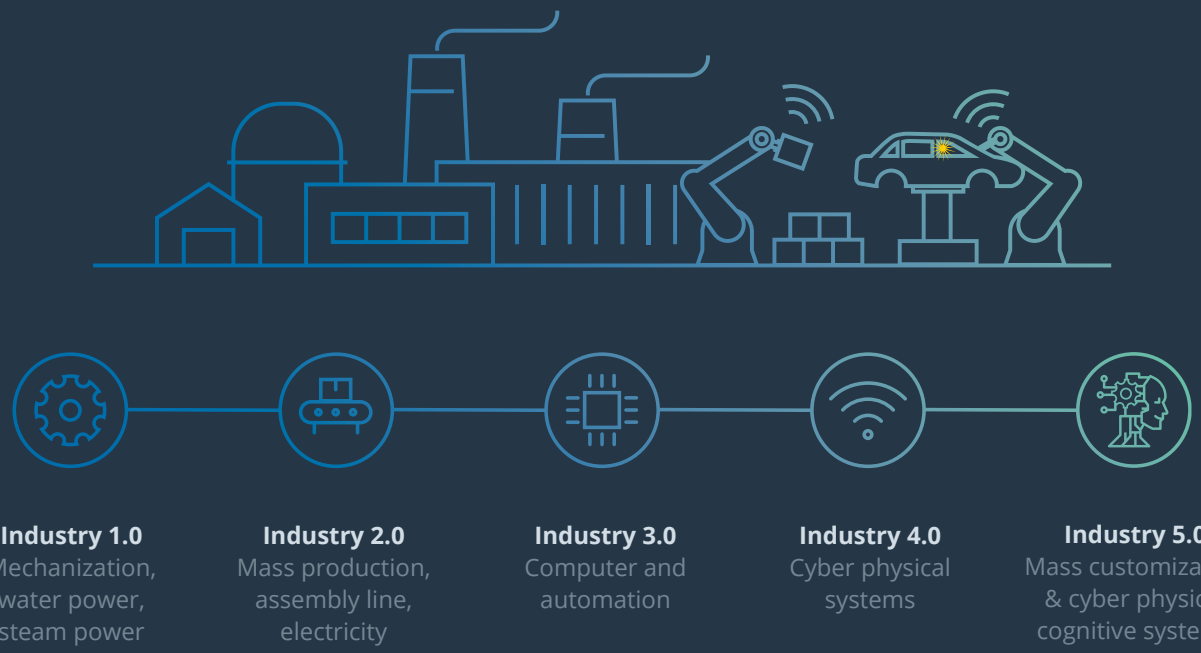
Newly emerging smart factories and production lines powered by Internet of Things (IoT) technologies, predictive maintenance, and real-time data analytics boast unprecedented cost-efficiency, quality control, and overall effectiveness.

Digitization and smart automation are expected to contribute as much as 14% to global GDP gains by 2030, equivalent to about US$15 trillion in today's value.

"Global Digital Operations Study 2018"[1]

Mass customization of customer experience during digital transformation

Figure 1.



Source: Furniturk Magazine Online — Ready for Industry 5.0[2]

Thanks to recent advances in machine learning and deep learning, AI and industrial robotics have achieved a new level of quality. The newest generation of machine vision–powered systems can inspect goods and detect potential defects with higher precision than any human operator. **Heineken**, for example, employs a machine vision system at a beer bottling facility in France that can inspect up to 80,000 bottles per hour with a 99.99% accuracy rate[3].

The oil and gas industry heavily relies on sensors and AI-powered anomaly detection systems to register abnormalities in equipment behavior and detect potential damage. Some trailblazers in this industry have even gone a step further and have robots working alongside humans on manufacturing floors. **Nike** and **Adidas** are heavily investing in industrial robotics to improve their manufacturing processes and offset the cost of human labor.

Siemens, another leader in the Industry 4.0 space, has managed to automate approximately 75% of the production processes[4] at one of their plants. Now roughly 1,500 of the company's field employees are responsible for operating software and monitoring production instead of performing so-called "3D" — dirty, dangerous, and difficult — tasks. That's the kind of synergy Industry 5.0 aspires to.

While the ultimate vision of Industry 4.0 was near-total automation, Industry 5.0 places a stronger emphasis on the interplay between humans and machines.

The main goal of Industry 5.0 is to create a new vector of collaboration between humans and technology (robots, cobots, IoT devices, and other cognitive systems) at production facilities and beyond.

In Industry 5.0:

Technology
performs the mundane, repetitive, error-prone tasks

Humans
set the strategy, provide oversight, and add creative input

This new division of labor will help businesses not only save money but also tap into new value streams generated by the human touch.

Industry 4.0 — Mass production with high efficiency and low waste

Industry 5.0 — Mass personalization with high accuracy and at low cost

Tighter collaboration between cognitive systems, robots, and humans can help businesses harmonize manufacturing processes and become more agile to accommodate market changes and customization requests.

"As we move into Society 5.0 all people's lives will be more comfortable and sustainable as people are provided with only the products and services in the amounts and at the time needed."

The Government of Japan, "Realizing Society 5.0"[5]

By sizing their manufacturing operations just right to meet highly individual needs, companies can address several pressing issues at once:

Public concerns regarding sustainability and overproduction. Providing customers with the right products at the right time can reduce dead stock, production waste, and logistics costs associated with returns and recalls.

The rise of on-demand services and sharing business models. For Millennials and Gen Z, the two generations with the most buying power at present, consumption no longer equals ownership. Bringing intelligent and connected products to the market and launching servitized offerings can help manufacturers maintain a connection with every customer long after the initial sale.

Consumption as an avenue for self-expression. Gen Z's product choices are largely driven by their beliefs, personal preferences, and individual identities rather than popularity alone. What's more important, though, is that giving customers the ability to personalize their products can help a brand's bottom line.

58%

of Gen Z consumers with a monthly income of $6,631 and above are willing to pay more for personalized offers.

70%

will pay a premium for goods from brands that embrace causes they identify with[6].

Why product hyper-personalization pays off

Personalization
is tailoring a service or a product to accommodate the customer's preferences.

Customization
is the customer's ability to modify and individualize the supplier's product or service using a filter or a set of choices.

Ultra-personalized products and services (UPPS)
give the best of both worlds. Products are created to fully match the customer's unique profile, often on-demand or in small batches. Additional value is delivered on a continuous basis with servitized offerings.

Personalization and hyper-personalization are hardly new concepts. Bespoke products have existed since medieval times, and today, exclusive craftsmanship still thrives in the luxury domain (with a respective price tag).

While Industry 4.0 laid the basis for product personalization and customization, Industry 5.0 promises to offer **ultra-personalized products and services** at scale, with both functional and aesthetic purposes.

"This desire for mass personalization forms the psychological and cultural driver behind Industry 5.0 – which involves using technology to return human value add to manufacturing."

Esben H. Østergaard, PhD, CEO of REInvest Robotics7

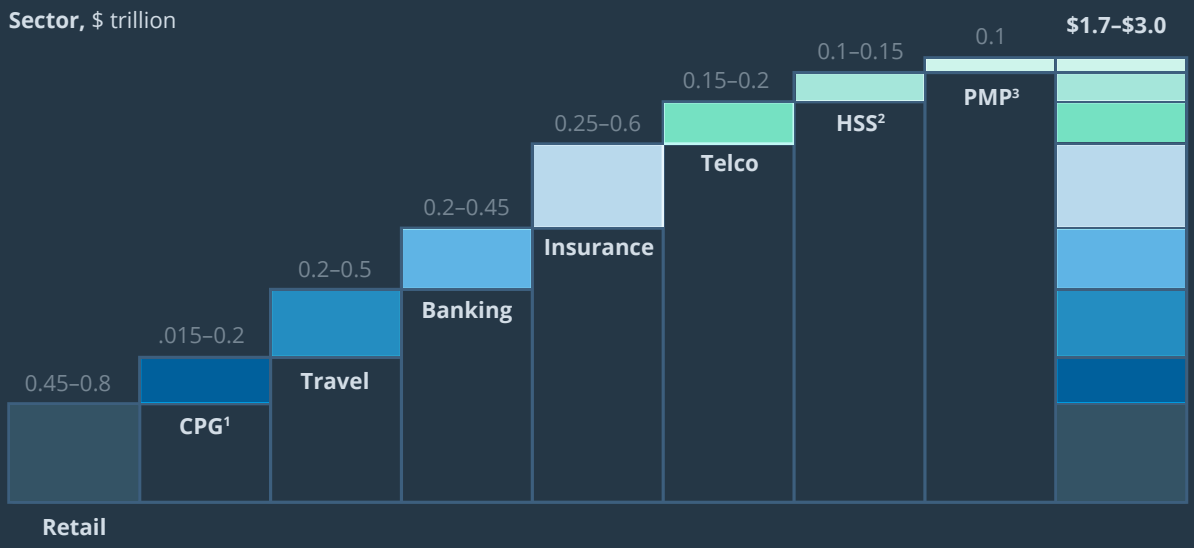
Several factors are contributing to the rise of ultra-personalized products and services:

- Commoditization of big data analytics and machine learning
- Major improvements in computer vision and 3D scanning/modeling
- Lower prices for and wider use of cobots
- Wider adoption of 3D printing for prototyping
- Higher degree of supply chain digitization

Leveraging these innovations not only improves the quality, effectiveness, and speed of your manufacturing processes but lets you tap into the trillion-dollar value pool created by personalization.

The value of personalization is in the trillions of dollars

Figure 2.



Source: McKinsey[8]

The modern customer is already spoiled by highly personalized digital services thanks to Amazon, Netflix, and the like. Now they want to bring that newly developed habit to the physical realm.

62% **of customers are ready to pay more to customize their electronic devices, such as phones and tablets.**

"Five Expert Insights into Digital Manufacturing and Mass Customization"

Industry Week[9]

In the health and wellness domain, hyper-personalized products, especially those created based on a customer's DNA or other health data, are in high demand.

According to a research survey published in the Journal of Business Research[10], participants were ready to pay:

- a price premium of 127% for a hyper-personalized facial serum (before questioning the serum's quality)
- a 22% price premium for hyper-personalized meals delivered to them
- a 33% price premium for hyper-personalized vitamins.

Beyond that, survey participants expressed high interest in personalized preventive health plans based on their behavior as well as alert systems for falls. In fact, health and healthcare is the domain where people are willing to pay the most for UPPS.[11]

By 2030, most American consumers expect personalized products and services to be commonplace and are willing to pay a premium for them.

CITE Research for Dassault Systèmes[12]

Data sharing and privacy, however, remains a stumbling block to wider adoption: [13]

- 96% of consumers are concerned about their data privacy.
- 6 out of 10 consumers will be more willing to share private data if it's anonymized.
- 88% will revoke a helpful personalized service if they have concerns over data management.

Establishing a secure, anonymized, and streamlined data management process is among the key prerequisites for hyper-personalized manufacturing.

However, the more important point on a brand's agenda is figuring out how to use customer data and AI for personalization in a non-invasive manner.

There's a fine line between delightful ultra-personalization and outright trespassing of personal boundaries. This is illustrated by the fact that 75% of consumers[14] view personalized ads and branding as at least somewhat creepy.

To avoid creeping out customers, companies need to keep a sharp focus on how cognitive technologies can be used to develop new ultra-personalized products and services rather than to sell more mass-market products.

Ultra-personalization and mass customization done right

Industry	Examples of mass customization	Examples of ultra-personalization
Apparel	The ability to choose custom design elements (colors, materials, heel type, etc.) for a shoe *Example: Nike By You*[15]	Garments produced on-demand to fit the customer's unique body shape based on personal data/body scans *Example: Proper Cloth*[16]
Food	Assemble your own sandwich or salad; customized CPG products such as beverages, pre-made meals, etc. *Example: Custom Taco Bell order*[17]	Ultra personalized meal plans or supplements created using a customer's DNA or health data *Example: Rootine Vitamins*[18]
Cosmetics	Customizable ingredients, textures, and formulas for beauty and skincare products *Example: Clinique ID*[19]	Bespoke cosmetics personalized for each customer based on their unique concerns and preferences *Example: Curology*[20]
Consumer electronics	Offering an option to customize a device's design, hardware, etc. *Example: HP laptops custom built to your specs*[21]	Fully individualized design, artwork, and hardware elements *Example: Google's Project Ara (modular smartphone)*[22]
Medicine & pharmaceuticals	Precision medicine: personalized treatments, customizable prosthetics *Example: Glaze Prosthetics*[23]	Artificial organs made to fully match a patient's body type; hyper-personalized biomechatronics solutions *Example: Mini customized parts*[24]
Automotive	Customization of vehicle aesthetics and configurations *Example: Audi car configuration*[25]	Advanced personalization to meet a customer's ergonomic preferences, design tastes, etc; custom-built parts: engines, ADAS, etc. to match a customer's driving style *Example: Mini customized parts*[26]

Source: Allure[27]

Cosmetics case study

During CES 2020, L'Oréal unveiled its new Perso 3-in-1 personal beauty device that uses AI and 3D printing technologies to create custom skincare and beauty formulas.

"With Perso, we are putting personalized technology directly into the hands of our consumers."

Guive Balooch, Head of the L'Oréal Technology Incubator[28]

Using a companion mobile app, Perso users can run a quick assessment of their overall skin condition (fine lines, pore visibility, complexion, etc.) and receive preliminary suggestions. Perso also leverages a customer's geolocation to collect data on local environmental conditions — UV index, humidity, temperature — to refine the product formula.

Users can further personalize their products by indicating their preferences regarding texture, skin hydration level, and so on. Using all of this data, Perso creates a personalized product blend right on the spot and dispenses it in the perfect dose. This device automatically adjusts a user's regimen for morning and evening applications and improves itself as more data becomes available. L'Oréal reports that Perso uses self-learning AI algorithms that get better over time.

Further, L'Oréal plans to launch additional AR functionality for Perso that would enable users to "try out" different makeup looks before asking Perso to print out their favorite color of lipstick and foundation.

Retail case study

In 2018, ECCO launched a test of its hyper-personalized shoe offering, Quant U[29]. This product is currently available in select locations in Europe and Japan. The shoemaker developed a unique three-step process for capturing data on a customer's feet, rendering that data into a custom shoe design, and 3D-printing custom shoes in-store within an hour.

"We focused heavily on the digital capture and interpretation of motion and orthotic data, then made sure this experience would be no more complicated than trying on a shoe in the store and walking for a few minutes. We truly translated more than 50 years of shoemaking experience into an algorithm."

Patrizio Carlucci, Head of the ECCO Innovation Lab[30]

First, ECCO uses a combination of body scans and sensor data to:

- create a digital footprint of a customer
- understand how the customer moves in the environment.

This biomechanical data is then used to create a custom midsole for the shoe. Using machine learning algorithms and structural simulations, ECCO creates an augmented pattern for the new shoe that ensures maximum comfort and performance.

Using 3D printing tech and additive manufacturing, ECCO then creates a customized midsole in silicone and assembles an ultra-personalized shoe for the customer.

Healthcare case study

FabRX, a UK startup founded by a group of researchers from University College London (UCL), is pioneering personalized medicine. The startup is working on a flexible platform for on-demand production of custom medicine — Printlets — that can be precisely adapted to a patient's needs in terms of dosage, shape, size, and release profile.

In addition to producing on-demand single-purpose drugs, FabRX is working on polypills — individualized medicine that contains more than one drug in a single pill. Polypills may majorly improve medication adherence among patients as well as reduce the complexity and cost of manual compounding.

"3D printing offers many opportunities in the pharma industry; it can be used for the manufacture of medicines that are prepared in industrial facilities, or [it] can be implemented – and this would be the novelty – as a dispensing technology to fabricate personalized medicines of a specific dose at the dispensing point in hospitals. In the future, patients will have medicines manufactured in hospitals specifically for them with the right combination of drugs and the correct dose."

Alvaro Goyanes, Director of Development and Co-founder of FabRx[31]

A recent clinical trial[32] conducted with pediatric patients suffering from maple syrup urine disease, or MSUD, a rare metabolic disorder, showed that Printlets were as effective as conventional medicine that was prepared manually. What's more, due to improved dosage precision, patients who took Printlets had isoleucine values closer to the target with less variation when compared with blood levels achieved by conventional compounded treatment. The custom flavors and more convenient form of Printlets also had a positive impact on patients' acceptance of their treatment.

The tech prerequisites for ultra-personalized manufacturing in Industry 5.0

Transitioning to a more agile supply chain and manufacturing process is the first integral step toward mass personalization. However, to remain personal, these processes will also need to include a human touch: input from customers and the production team. And at the end of the day, the viability of mass personalization strongly depends on its cost-effectiveness.

The Intellias data science team has created a baseline technological blueprint for Industry 5.0 initiatives that should help accomplish all of the above.

Data management platform & data governance processes

Problem:
Most customer data required for hyper-personalization is either trapped in silos or cannot be effectively delivered to a centralized repository for real-time analysis.

Solution:
Create a unified data management platform that can collect and process all customer insights/inputs, transmit them further down the supply chain, and make them instantly available to different departments.

Learn more about our experience building data management platforms.

Multiscale dynamic modeling and simulation

Problem:
Mass customization increases the complexity of the manufacturing process. Predicting the effectiveness and performance of modified products can be tough without prototypes. Yet creating prototypes for custom products increases manufacturing costs.

Solution:
Creating a digital twin for complex processes, products, or services can be a viable alternative to prototyping. The current state of machine learning allows for the creation of highly accurate models of physical objects that can be used to run various simulations to improve performance, predict failure, and improve design.

Data-driven modeling can aid in the design of more accurate models for hyper-personalized products (e.g. simulate the performance of a prosthetic limb and the fit for a particular patient).

Also, having a comprehensive digital twin of an entire manufacturing facility can help reduce waste in the manufacturing process.

As we showed in a case study, digital twinning can be a solid tech backbone for a highly accurate positioning system to scan, map, visualize, explore, navigate, analyze, and optimize any industrial or commercial property.
Read more about digital twin technologies.

Intelligent autonomous systems

Problem:
Mass customization increases the complexity of the manufacturing process. Predicting the effectiveness and performance of modified products can be tough without prototypes. Yet creating prototypes for custom products increases manufacturing costs.

Solution:
More advanced AI systems, powered by deep and reinforcement learning, are required to run autonomous manufacturing of custom parts. To be effective, algorithms will need to be trained to make optimal decisions with incomplete information, e.g. when the customer fails to provide some input. The agents overseeing production will also require access to better monitoring solutions, in particular for inventory management, supply/demand matching, and maintenance.

AI solutions can also be employed to manage logistics and mobility on your premises and beyond them. In fact, manufacturers can take a page from mobility services providers who are using cognitive systems to better organize transportation flows and optimize routing.

Cognitive systems and new types of human machine interfaces

Problem: In most cases, industrial automation does not fully remove humans from the manufacturing floor. Instead, human agents need to safely work alongside their autonomous counterparts.

Solution: Thanks to advances in computer vision and deep learning, modern industrial systems can “see” and “sense” human agents working nearby and act accordingly. Newer cobots (collaborative robots) are also equipped with advanced cognition capabilities, making them excellent assistants in various workplace tasks such as palletizing, assembling small parts, packaging, polishing, and inspecting. The issue is that most cobots today have only basic learning capabilities, as they mostly rely on sensor data that communicates distance, speed, proximity, and some other variables required for safe and effective operations.

Advances in AI are improving the capabilities of cobots by enabling them to learn and optimize their performance over time. Infusing a cobot with computer vision could help it “see” in real time how its human partners operate and adjust its routine accordingly. It could also allow cobots to move around more effectively and jump on a task whenever their help is needed.

Adding vision and voice as other human machine interfaces could also improve the effectiveness of industrial cobots. Instead of waiting to be programmed with new instructions, a cobot could just ask a human partner for new instructions and move on to execution.

Additive manufacturing

Problem: Most off-the-shelf enterprise resource planning (ERP) solutions cannot track individual custom-made parts, such as those produced by 3D printing. Some systems may consider customized parts as a single product (SKU). If no identification is manually added to each part, customers may receive the wrong item.

Maintaining quality digital records from each stage of the design and manufacturing process is essential to control quality, reduce waste, and capture even more value from additive manufacturing.

Solution: To add additive manufacturing to their mix, most companies will need to rethink their data architecture and build a viable pipeline for instantly available insights.

In most cases, this would require further customization in ERP modules.

The human touch

Automation isn't a threat to human jobs; it's an opportunity to step away from 3D (dirty, dangerous, and difficult) work to 3C (collaborative, creative, and custodial) tasks.

Despite all the current (and future) progress in AI and robotics, humans will remain uniquely qualified for certain roles.

Ideation, for one, is a domain where humans will excel no matter what. We have a natural ability to conceive new things, bring seemingly incompatible ideas together, and develop new and creative approaches to solving problems.

Self-learning algorithms, no matter how good they are, can only create new ideas. Their shortcoming is that they cannot assess how usable these ideas might be in the real world.

"ML models — specifically DL [deep learning] ones — have been successful at generating art images, using so-called neural style transfer. However, we doubt if it will work correctly for generating a new style for a car that will trigger the emotion of the customer, comply with safety and aerodynamic requirements, and match the visual signature of a brand."

Mohamed-Achref Maiza, Senior Data Scientist at Renault

Then there is decision-making. Algorithms have already proved to be much better analysts and thinkers than humans. But what they often lack is common sense to make the right judgment in a complex situation. Will switching to a non-eco type of product packaging reduce manufacturing costs? Yes, but it may not be the best call since doing so may also create dissatisfaction with the target customer base who supports the brand's green initiatives.

Finally, we have empathy — the ability to deeply relate to another human being and anticipate their needs and concerns. AI algorithms can predict what factors will delight a customer (based on data and feedback from humans).

Most successful ultra-personalization examples mentioned in the previous section heavily rely on these three uniquely human qualities: a creative and timely idea built around a strong need with a deep understanding of the problems faced by the target audience.

When it comes to manufacturing, a greater level of automation will also benefit the workforce in two ways:

- Enable people to focus on value-added tasks in production
- Free time for upskilling

Intelligent and autonomous systems still need oversight, both technical (aimed at improving efficiency and asset performance) and creative (experimenting with new products and services), especially if we're talking about ultra-personalization.

Industry 5.0 will not only encompass major technological change but will assume major mindset shifts, especially within the workforce.

(Wo)men+machine — right-sizing the workforce for Industry 5.0

Upgrading tools and manufacturing processes is just one part of the AI-driven industrial revolution. Investing in talent to support those new initiatives is far more crucial for long-term success.

For **36%** of manufacturers[33], the technical skills gap is a major stumbling block to realizing more value from their smart factory investments. In addition, **57%**[34] of industrial leaders say they lack AI talent — the enablers for all the autonomous and intelligent solutions that are to take over the 3D chores.

Sourcing the right talent is just one piece of the puzzle, though. Upskilling and training existing employees is far more crucial.

Smart tech isn't taking over human jobs per se. But it is radically changing the ideal employee skill set.

Top five critical skills for today and the future

Figure 3.

Skills today What adds the most value today	**Skills future** What to grow or strengthen for the future
1. Basics of modern programming or software engineering	1. Deep understanding of modern programming or software engineering techniques
2. Manufacturing skills	2. Digital dexterity, or the ability to leverage exiting and emerging technologies for practical business outcomes
3. Great communication skills	3. Data science
4. Innovation skills (e.g. brainstorming, design thinking)	4. Connectivity
5. Traditional IT skills	5. Cybersecurity
	6. Manufacturing skills

Reimagined roles: product manager

Mindy
the Data Product Manager

Availability	Full time (40 hr/wk)
Age	32
Location	US
Years experience	5

About

A creative and analytical problem-solver with high data literacy, statistics, and data science skills. A leader in determining viable, value-added AI use cases for B2C products.

Key responsibilities:

- Oversee the effective development and scaling of data management infrastructure. Closely collaborate with data engineers on new APIs to support product development.
- Perform data analysis, consolidation, and cleansing to support new AI use cases.
- Recommend the nature and scope of present and future product lines by reviewing technical white papers for recent cutting-edge products and assessing use cases based on proprietary data.
- Set success criteria for new AI products and map them to top-of-line business metrics.
- Evaluate bias in algorithms and develop new ways for reducing it.

Reimagined roles: factory supervisor

Sam
the Smart Factory Supervisor

Availability	Full time (40 hr/wk)
Age	28
Location	UK
Years experience	6

About

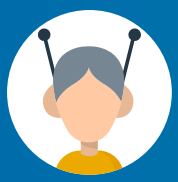
Proficient in automation, industrial IoT solutions, connectivity, and cognitive systems.

Ensures operational excellence and top-notch cybersecurity.

Key responsibilities:

- Program build schedules and optimize materials ordering based on demand forecasts delivered by a predictive AI.
- Report on quality issues and brainstorm new ways to mitigate them.
- Oversee predictive maintenance schedules and activities. Dispatch preventive maintenance units to address issues.
  Investigate anomalies in asset performance.
- Fine-tune the manufacturing setup to accommodate an incoming stream of UPPS orders that enter the factory directly from the eCommerce portal.
- Monitor security and ensure adherence to the latest cybersecurity protocols.

Reimagined roles: production team leader



Cathy
the Cobot Team Coordinator

Availability	Full time (40 hr/wk)
Age	36
Location	UK
Years experience	8

About

Experienced human + robot team leader.
Has successfully managed mixed manufacturing teams of 55+ workers using a mix of strong people and digital skills. Provides on-the-job training for new hires and fine-tunes the performance of new cobots.

Key responsibilities:

- Set KPIs for cobots/robots and evaluate their performance every week. Provide feedback and suggestions to robotics officer(s) for further improvement.
- Deliver training to new human team members on the standards of collaborative work.
- Assist employees with adopting new robot-augmented work processes.
  Determine new opportunities for automation and robot deployments. Formalize practical use cases.
- Set and report on KPIs related to enhanced performance, human-hours saved, and other improvements.

Bridging the tech skills gap: practical suggestions

Most manufacturers still rely on a reactive approach to nurturing talent: offer higher salaries in hopes of attracting more skilled talent or attempt to close the gaps via outsourcing alone.

However, to arrive at the desired future state, we will need to switch to more proactive measures: investing in **employee upskilling, training** and **digital literacy.**

Your steps to develop a workforce transformation strategy:

1. Make a list of:

a. Low-skilled jobs that can be supplemented or replaced by automation and AI

b. Positions that require uniquely human skills

c. High-skilled jobs that will require additional tech training

d. New AI-specific jobs that require unique expertise

2. Develop an inventory of the core Industry 5.0 skills your company will need. Then ask yourself these questions:

a. How many internal resources do we have to meet these needs?

b. Which skills can we acquire externally (via outsourcing, partnerships, and contractors)?

c. What is the size of the remaining gaps we'll need to close by hiring, training, and upskilling?

3. Reimagine on-the-job learning programs with digital technologies.

Nearly 70% of manufacturers say they are creating or expanding training programs for their workforce.[35]

- Start assembling an e-learning portal that will contain your digital database of all training materials to promote self-learning.
- Use proprietary data collected from equipment along with tactical knowledge from senior employees to develop more targeted training.
- Leverage new technologies such as augmented and virtual reality to deliver immersive learning experiences.
- Look into MOOC offerings and prolific offerings jointly created by manufacturers. Example: The created jointly by the World Economic Forum and Tulip.

4. Explore alternative candidate sourcing models.

a. Tap into the open talent ecosystem — a portfolio of contract employees, talent networks, and external service providers that can fill your workforce needs on an ad-hoc basis.

b. Reactivate the retired workforce by providing retired employees with an option to work on short-term projects where their industry expertise is required or to participate in training development.

c. Engage with a managed remote team of domain specialists to work on new technological solutions.

Be proactive about explaining the implications of AI and robotics to your teams.

Communicate how you're planning to change your workers' roles and responsibilities and what benefits workers can expect.

Get them excited about the transition to 3C work rather than intimidated by the upcoming changes to their routines.

Get prepared for Industry 5.0 with Intellias

Delivering advanced technologies services with a vast AI and ML skill sets within Intellias expertise, we are helping manufacturing companies become leaders in the connectivity space. Our experts apply best machine learning, data science, and big data practices to shift from established routines and accelerate their solution and business capabilities.

Our cross-industry experience, spanning the automotive, agriculture, real estate, and retail sectors (among others) allows us to come up with creative and viable technical solutions to non-trivial problems. We've created ML algorithms to power ultra-personalization with supporting data infrastructure, intelligent inventory management systems to support personalized orders, predictive monitoring solutions, and more!

Learn more about our IoT capabilities and experience the true potential of AI-powered personalization in action

contact us

Sources

1. Friction Free, "Global Digital Operations Study 2018"
2. Furniturk Industry & Decoration, "Ready for Industry 5.0?"
3. Vision Systems Design, "Machine Vision System"
4. Thinkprogress by Lenovo, "What Is It and Why It Matters"
5. The Government of Japan, "Realizing Society 5.0"
6. McKinsey, “True Gen’: Generation Z and its implications for companies”
7. Quality Mag, “Welcome to Industry 5.0”
8. McKinsey, “A Technology Blueprint for Personalization at Scale”
9. Industry Week, “Five Expert Insights into Digital Manufacturing and Mass Customization”
10. Science Direct, “The product is me: Hyper-personalized consumer goods as unconventional luxury”
11. Dassault Systèmes, “CES 2020 Survey by CITE Research: Consumers Want Personalized Products but Won’t Wait for Them and Expect a Cost Benefit for Their Data”
12. Dassault Systèmes
13. Science Daily “Anonymizing personal data 'not enough to protect privacy,' shows new study”
14. InMoment, “2018 CX Trends Report”
15. Nike
16. Proper Cloth
17. Tacobell
18. Rootine
19. Clinique
20. Curology
21. HP
22. TechRadar, “Project Ara Not Dead?”
23. Glaze Prosthetics
24. MINI
25. Audi
26. MINI
27. Allure
28. L’Oreal
29. Quant-U
30. Quant-U - Press
31. 3D Print, “Interview: FabRx is on a Quest to Create 3D Printed Customized Drugs”
32. 3D Print, “FabRx: The First Clinical Study Using Personalized 3D Printed Pills (In Humans)”
33. Intel, “Creating Lasting Value in the Age of AI+IoT – Futureproofing your Business”
34. Forrester, “Industrial AI Development White Paper”
35. CNBC, “Manufacturers to spend $26.2 billion on ‘upskilling’ in 2020 to attract and keep workers”