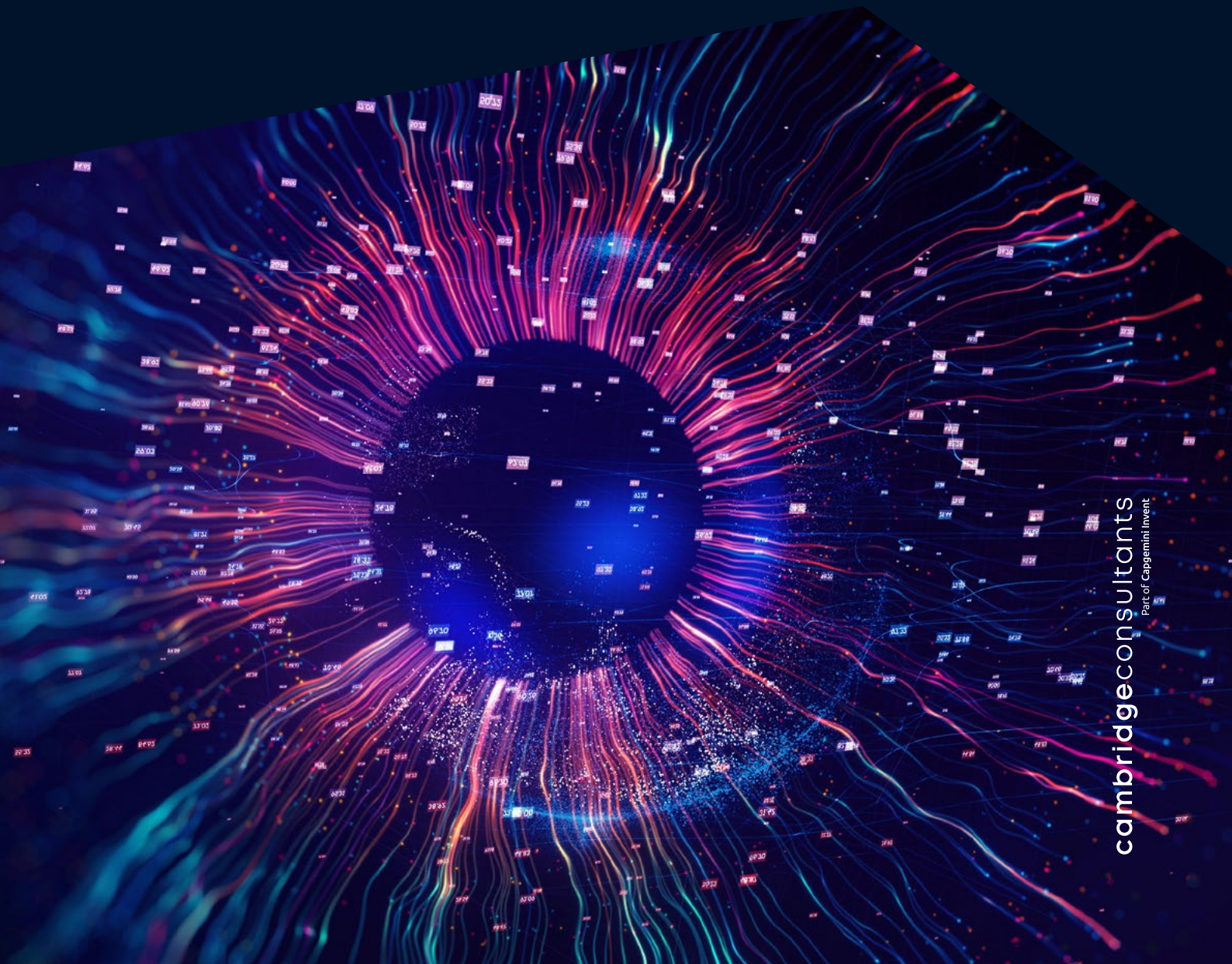# Towards Industry 5.0:

How Converged Experiences Empower the Smart, Connected Worker

Contents

1 Executive summary

Unlocking Industry 5.0 hinges on the orchestration of humans and machines to drive productivity and value. Central to this is the smart, connected worker: a workforce empowered by immersive digital experiences that will revolutionise the way they perceive and interact with their environment.

Cambridge Consultants' (CC) vision to achieving this future is through an exciting field we've termed "converged experiences." Converged experiences aim to align the physical and digital worlds through multiple sensory techniques, such as 3D vision, voice and haptics, allowing users to interact with the physical world with valuable insights displayed through a digital overlay. As we move towards Industry 5.0, converged experiences will become the bridge between human potential and technological innovation, allowing you to better support your team's interactions with your systems, unlock new opportunities and more powerful, streamlined operations for your business.

By investing in converged experiences for an industrial setting and a smart, connected workforce, you can foster greater productivity and new business opportunities that address the fundamental requirements of modern industry, from increased autonomy to achieving net zero emission targets and modernising national infrastructures.

In this whitepaper, we will:

- Explore the value and business opportunities that come from using converged experiences to unlock Industry 5.0.

- Reveal how converged experiences can bridge the gap between the digital and physical worlds in your business to unlock previously unseen insights and opportunities.

- Discover how to get started on your converged experiences journey with a review of high value application areas and enablers.

Ultimately, this paper will act as your essential guide to integrating converged experiences into your business and elevating your workforce in a way that is only possible when people and machines work harmoniously together.

"As we move towards Industry 5.0, converged experiences will become the bridge between human potential and technological innovation, allowing you to better support your team's interactions with your systems, unlock new opportunities and more powerful, streamlined operations for your business."

2 Introduction

We envision a future where the boundaries between the digital and the physical worlds are dissolved through converged experiences. These converged experiences will revolutionise how we interact with our surroundings, replacing traditional screens and paper-based interfaces with immersive digital systems that reduce the friction between people and technology and better support your human team.

Converged experiences will act as personalised metaverses to empower users in complex environments, reducing cognitive load, enabling more intricate procedures and boosting your worker's wellbeing while offering new market and revenue opportunities.

This is central to Industry 5.0, which, as defined by the European Union,[1] "places the wellbeing of the worker at the centre of the production process and uses new technologies to provide prosperity beyond jobs and growth", complementing the Industry 4.0 approach by "specifically putting research and innovation at the service of the transition to a sustainable, human-centric and resilient European industry." In other words, Industry 5.0 requires a mix of resilience, sustainability and the orchestration of humans and machines.

But achieving Industry 5.0 is not the only reason this innovation is needed. Across the industrial and manufacturing sectors, we're seeing fundamental shifts that are prompting profound transformation and strategic adaptation, including:

- **Sustainability factors:** as businesses work to achieve net zero emissions goals, they require upgrades to equipment and manufacturing processes to streamline their performance for maximum efficiency, prompting radical changes in the energy industry and beyond to provide alternative energy sources, re-engineer energy grids and connect to new sources of renewable energy.

- **Optimising national infrastructures:** national infrastructure in transport and utilities are becoming smarter to improve resilience and deal with obsolescence and pressures from changes in urbanisation. These changes are widespread, ranging from smarter roads and signalling to counter the effects of rising congestion to intelligent curb infrastructure to support electric vehicle charging to upgrades and, particularly in the US, preparing infrastructure for the arrival of Advanced Air Mobility (AAM) specifically short hop air taxis.

- **Increased autonomy:** global competition and the continuing drive for increased productivity demands improved industrial autonomy. This puts pressure on smart factories, smart construction and development processes and the need for smart, connected workers – a new generation of human workers who will need to interact more closely and easily with machines than ever before.

- **Divide between human and machine workforces:** increasing industrial and factory autonomy will produce human-free dark factories that increase efficiency and remove humans from dangerous or unsavoury work. However, this creates a divide between your human team and machines, meaning we lose the crucial elements only a human team can offer, including decision making, empathy and creativity – all of which are vital to support the industrial transformation.

What's clear to us is that the orchestration of human and machine can be best achieved through the development of converged experiences. These immersive digital experiences can support, enhance and revolutionise human work to curate more efficient, differentiated and valuable operations that are ready to tackle what lies ahead for your business.

Let's start by exploring further the opportunity converged experiences offer for your business.

3 What are converged experiences?

The phrase "converged experiences" refers to both the multiple sensory techniques of new digital interactions, such as 3D vision, voice, haptics, alongside the direct integration of the physical world with a digital overlay – enabling new personal metaverses which will occur first in industrial settings.

Simply put, converged experiences act as a bridge between the physical and digital worlds. Our exploration of Extended Reality (XR) digital technologies is allowing for new levels of interaction with physical objects enabled through human gestures within a shared 3D experience.

This vision for converged experiences encapsulates CC's deep tech approach, harnessing radical science and engineering to drive service and product transformation. This is based on improving the situational awareness of users over two key dimensions:

1. Augmenting a range of human senses with digital experiences conveyed in 3D vision, gestures, haptics, and spatial sound.
2. Allowing seamless connection between physical and digital assets to ensure the data and control of physical systems can be easily accessible and rendered in digital forms.

Take the example of a factory worker who, with appropriate converged experience devices, can see an electrical motor which visually declares it has an IoT interface. The worker can then make a natural gesture to easily connect to the motor and view status information, such as signs of intermittent operation suggesting that maintenance is required. This would make their work more reliable, efficient and conducive to your business' larger goals.

While in principle the technical components to achieve this are attainable now, the challenge is to make these experiences seamless enough to be used as part of everyday industrial work – much like smartphones and tablets are today.

Making converged experiences a common place tool requires a combination of the necessary underpinning technology, including XR devices, IoT systems, low latency wireless networks and more. Here, CC's deep tech approach becomes key to advancing converged experiences into the future, with our scientific and engineering expertise expanding across multiple technological areas in need of innovation.

"Converged experiences act as a bridge between the physical and digital worlds."

4 Elevating your human team through smart, connected work

Central to the need for converged experiences is the growing cognitive load for workers within this new and future industrial context. These increasing demands on your workers stems chiefly from:

- The increasing inclusion of AI powered systems provide new information sources to augment the human worker. As the machines and systems improve around the workers, there is growing demand for precision and adaptability – for example, working alongside cobots (collaborative robots) which might be undertaking the graft and drudgery of machine loading.

- Connected IoT systems mean that there is now an abundance of data. The workers need support in how to digest the insight that comes from this data to make sense of it and make decisions based on it.

- The new digital pace also means that the workers need to be conducting continuous education in the workplace. Moreover, the workers that achieve the highest operational performance can share their best practices with others as their actions can be captured and shared as new digital workflows with others, leading to the overall workforce improving.

This increasing cognitive load can only be effectively managed if your team is given the right tools to manage it, requiring a continuing digital enablement of the smart connected worker.

Depending upon a worker to refer to a smart tablet or return to a workstation won't cut it, not least because it would mean interrupting important and often intricate work. This is why a new form of digital in-context engagement is needed – one with situational awareness that is provided within their gaze and uses all their senses.

Our digital services team at CC have always looked to assist human users by connecting with human senses from images, sound, voice and haptic feedback. We are now moving into a new wave of 3D engagement enabled by Virtual Reality (VR)/Augmented Reality (AR) devices, such as goggles and headsets, along with gesture detection to provide more immersive experiences that engage your full 3D view rather than confining it to the 2D world of screens.

We can also supplement these digital experiences with spatial sound and digitally created aromas to further guide, educate and even warn users. These additions are not just useful but what is expected – after all, in gaming and virtual worlds, digital entities already provide audio support and indeed a quiet immersive world would feel strangely out of place – things that move and appear are expected to have a sound.

There is huge value to be unlocked from these fully digital virtual realities and the industrial metaverse[2] to conduct predictions from models. One such opportunity lies in the exploration of how the laws of physics can be manipulated by virtually accelerating time or changing environmental conditions within an immersive environment. But once these predictions and scenarios have been explored, the real value comes from how these new understandings are used to change our physical world and how these insights can be made accessible to the smart connected worker through converged experiences.

For progressive business leaders with the vision to see the power of technology, the promise of converged experiences presents a prime opportunity to transform your business operation. You may already be looking to invest in new machines and digital systems to maintain your competitiveness and rise to the new challenges we've explored above. But we argue that your human workers must be seen as an integral part of these new technology systems, making converged experience development essential.

Improving this orchestration between humans and machines through converged experiences is more than just a strategy – it's a necessity to creating sustainable growth as the landscape shifts towards Industry 5.0. Without it, your business cannot operate in a way that is safe, ethical, responsible or beneficial to your worker's wellbeing and productivity.

"Improving this orchestration between humans and machines through converged experiences is more than just a strategy – it's a necessity to creating sustainable growth as the landscape shifts towards Industry 5.0."

5 See the unseen: our vision for converged experiences

As we actively conduct experimental research into the field, our vision for converged experiences, as illustrated in Figure 1, focuses on bridging the gap between the digital and physical worlds to combine the best of technological innovation with the best of your human workforce.

Our development so far harnesses many of the new technological building blocks available today, such as VR glasses and gaming engines. But to achieve new levels of experience, the applications and solutions require first principle thinking alongside new scientific and engineering approaches.

Central to this converged experience concept is the experience flow of **discover: see: select: bind: interact**. This is the pursuit of the of the concept of "zero UI"- a term originally coined by Andy Goodman of Fjord[3] which centres on moving away from digital experiences being limited to clicking on items on a screen. Instead, users can explore the natural world and control the digital experience through natural gestures.

The basic requirement for this is to have an Augmented Reality (AR) device that features forward-looking cameras and is connected to the network, allowing for augmented digital overlays to be added into and over the viewed image.
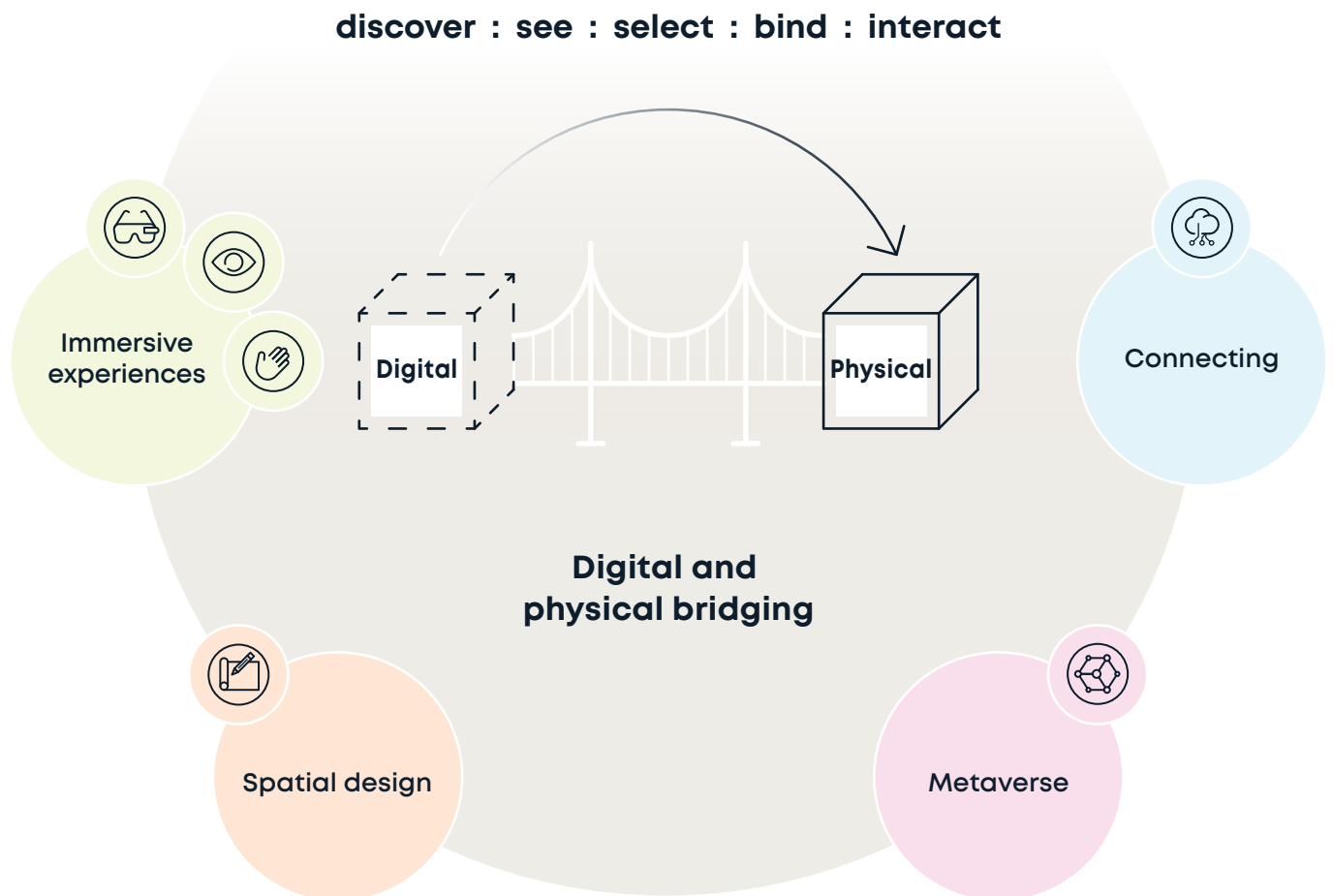

Figure 1: Concepts of converged experience

Below is an example of CC's research on converged experiences showing a user viewing their environment through a digital overlay that offers insights into the world of connected devices around them, such as the plant needing to be watered, the room's temperature, and the ability to adjust the light source through a natural gesture from a distance.

Converged Experiences

While this research explores how converged experiences could be used in a domestic setting to improve homeowner convenience and accessibility, the ultimate aim is to deploy this technology across a range of scenarios, from enterprises to industrial applications.

Our converged experience research provides a system to enable "pairing" with digital connected devices based on eye tracking and gestures. As part of this work, we are developing the design and development experience to recognise what is pairable with and then how to render (e.g. using NERFs) and place in the user's vision. NeRFs, or Neural Radiance Fields, is a machine-learning technique used in the creation of 3D digital assets representing 3D scenes and objects as continuous functions.

This exploration of XR digital technologies is enabling our clients to deliver new levels of interaction with physical objects, all enabled through human gestures within a shared 3D experience. Our development presents exciting new market and revenue opportunities to offer hands-free support for users in a range of complex environments – from industrial to military operations – to reduce cognitive load and enable more intricate procedures through immersive digital services.

*"For the smart connected worker, being able to **see the unseen** through a converged experience allows them to make decisions quickly and respond to industry challenges more effectively…"*

This research illustrates the central experience flow of discover: see: select: bind: interact in action, following five distinct steps:

1 Discover

Through ubiquitous private wireless networks, Industry 4.0 strategies and the availability of APIs for components, the interfaces needed to allow digital connections are now available, allowing us to explore readily discoverable interfaces that allow digitally enabled objects to be found and connected in real-time.

A first step towards this is for digital interfaces to naturally support automated discovery. We're actively developing technology that addresses the challenge of dynamic discovery and automated ontology integration which involves seamlessly combining independently developed ontologies into a unified framework. Our work will create a streamlined discovery process as a first action, with early process shown in our video demo when the user's display "discovers" connected devices. In our example we've used a smart lamp as part of our early research, but in an industrial section this could apply to the inspection of a step down transformer in the local grid to find real-time insights on voltage range, efficiency and coil coolant temperature.

2 See

Once a connection has been discovered and established, it's time to engage with the object. Converged experiences primarily do this through eye tracking. Focusing visually on the object can provide a very accurate target, while gesturing can help reaffirm engagement if needed.

The other aspect of seeing is recognition. Once an item is targeted, objection recognition is used to determine what the object is. The recognition of a discoverable item in the viewed scene activates an affordance indicator: a digital overlay shown against the viewed item. The indicator provides a visual clue that a discoverable element is in the viewed vicinity and can then change state, such as colour or motion, when the object is seen.

3 Select

To initiate the connection to a discoverable item the selection is activated by some form of gesture or verbal utterance. This achieves the same result as a mouse click. Gestures have become more common place thanks to recent gaming engines and augmentations to devices, such as with the Apple Watch, but we see a huge opportunity for even more subtle and sophisticated ways to gesture and select. This will become incredibly useful for workers who are using their hands to do intricate work to avoid interruption.

4 Bind

Following selection, bind then connects the digitally enabled object with the digital asset associated with the object, displaying it clearly in the viewed scene. This connection can appear in multiple ways, with object anchored in the user's vision or located next to the viewed item. There is a range of digital assets that can be used, such as displaying information or providing active controllers. For example, a speed controller for a surgeon's drill to sophisticated dashboard panels for maintenance records or even 3D objects that guide a repair procedure. The displayed items might be permanently displayed or activated so that they display only when triggered.

5 Interact

As well as providing a visualisation of a digitally enabled object, the bind allows interaction. This completes the bridge from the digital to physical worlds in that the physical object can be controlled by the interaction and manipulation of the associated digital asset.

Beyond these five steps, a final important concept to support this process is **multi-user collaboration**. In many industrial use cases, more than one person will be working together to complete a task through a converged experience, either locally or remotely. Each worker may have a slightly different viewpoint on the same physical scene and may be sharing the same digital assets. For example, in a chemical lab, a team of industrial chemists involved in the same experiment can share views of the temperature of the chemical and pH, all while each worker controls different instruments within the experiment. Incorporating multi-user collaboration will be the final step to completing the converged experience flow, allowing for streamlined and cooperative teamwork.

Overall, this experience paradigm of discover:see:select: engage:interact can be captured in the phrase **"see the unseen."** In other words, converged experiences allow us to render previously unseen digital information connected to physical systems and overlay it on a real-time view of the physical system. For instance, it could allow a user to see the reach of an electromagnetic spectrum from a Wi-Fi router, or to see the maintenance status of a device component hidden inside a physical casing.

For the smart connected worker, being able to see the unseen through a converged experience allows them to make decisions quickly and respond to industry challenges more effectively, all leading to a more streamlined and elegant result for your business.

6 Future advancements

We've established that converged experience development begins with achieving the fundamental activities of **discover:see:select:engage:interact**. This must be delivered seamlessly to be integrated naturally into a worker's actions, while also being compatible with new product development to give your business a competitive advantage.

Naturally, this is still an emerging technology, so it would be remiss for us to not touch on the wider picture around enablers for converged experiences to be integrated into industry, further technological developments that provide opportunities for converged experiences to continue to advance, and the remaining barriers to adoption that we can work together to address.

As development continues, CC's exploration is extending to the following areas to further support our clients on their journey to converged experiences:

- **3D asset capture:** capturing and integrating objects as a 3D asset to be used within mixed realities will provide even more immersive experiences. For new physical objects there is often a digital design, but for existing objects – particularly from "brownfield" sites – there is unlikely to be digital source. This is why we have been investigating the use of AI techniques such as NeRFs and Gaussian Splats to create a three-dimensional scene from basic two-dimensional images, meaning we can use limited imagery or from photogrammetry techniques to create higher fidelity 3D models.

- **Manual vs automated taxonomy integration:** with the engage and interact modes, we will likely be using manual integrations as opposed to automated integrations, requiring developer intervention. But with the expansion of more smart devices and with mixed industry sources, the challenge will be how to dynamically build automated integrations for objects that have not been previously seen so no developer intervention is required. We have research underway looking at the use of Generative AI and Large Language Models (LLMs) to comprehend the APIs coded into the programme and dynamically create these integrations.

- **Human Machine Understanding (HMU):** we believe there are still exciting opportunities to extend the integration with human sensors by examining how we include the emotional state of the users into the converged experience and adapt in real time. Find out more about CC's approach to Human Machine Understanding.[4]

6.1 Key enablers

Meanwhile, the opportunity to develop sophisticated converged experiences depends on several key enablers, with their advancement being key to what makes our approach possible now for the early adopters. Before we can move further towards Industry 5.0, development is needed around the following technologies:

XR devices

AR and VR devices are crucial to delivering converged experiences. Competitive headset offerings from Meta, Microsoft and Apple have already propelled the industry forward, but have been targeted very much at the consumer market. Meanwhile, we are seeing progressively more lightweight AR glass vendors such as Magic Leap and Vuzix which provide more wearable solutions. Worn AR glasses are the reality for the immediate future, while smart contact lenses have been presented by companies such as Mojo Vision, although they remain a proof of concept.

To develop solutions that can meet the demands of the future, there is an undeniable dependency on front facing cameras and access to the connected video feed. Currently, not all the devices are providing this vital access, either for privacy reasons or to lockdown the applications to their own network. Meanwhile, a widefield of view will be essential to provide sufficient vision to work effectively with the viewed physical environment to locate digital assets.
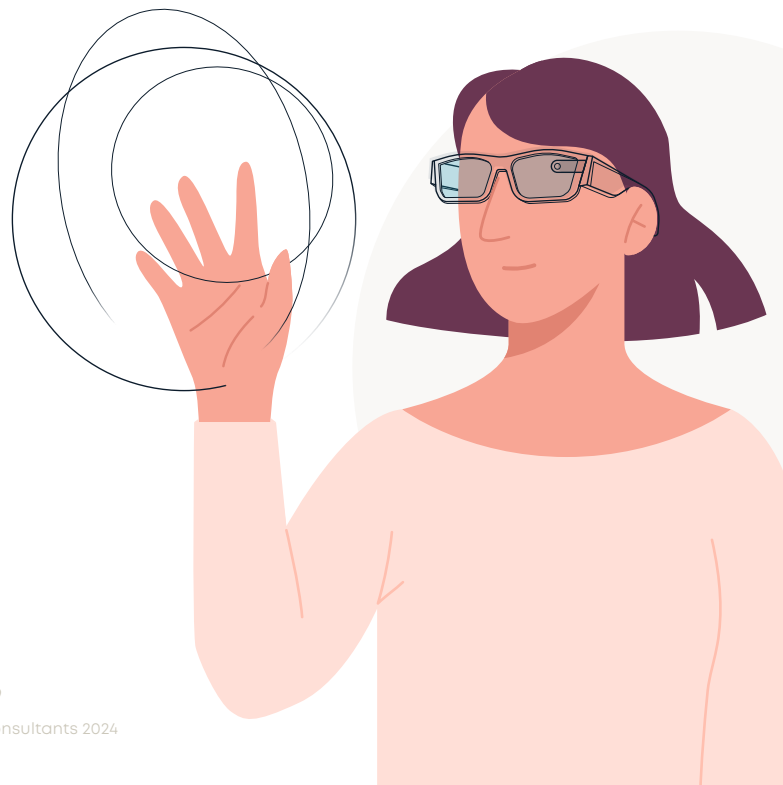
XR platforms

The details of developing for XR vary by headset, with each headset vendor making their own software development kit (SDK) for their devices. Some are designed to run applications on the device itself, while others can be tethered to a high-powered PC, or both. But for either option, latency is a key issue, making running immersive XR applications in remote cloud data centres unfeasible at present. The workaround has been adding supporting functions into edge cloud, but this is a very nascent technology, with the major players already showing signs of building out the platform ecosystem to support developers.

In addition to native SDKs, many vendors provide integrations with popular 3D engines such as Unity and Unreal. There are also standards like SteamVR or OpenXR that allow developers to build applications in a hardware agnostic way, though typically these standards will not expose all the features that a particular headset's native SDK can provide, such as eye tracking. This situation is improving all the time, and there is even an early standard proposal for building immersive experiences that run in a web browser called WebXR.

But to provide a more complete connected solution and to support the spatial design experience, there needs to be supporting platforms. These will host the 3D digital assets and provide the intelligence behind the 3D assets. As the demands of applications become greater, the CPU computing within the devices will limit applications, creating the need for supportive processing in the backend platform e.g. object image recognition and algorithms providing the digital simulations.

Connectivity and edge compute

Wireless connectivity is also essential to realising converged experiences, and given the industrial and manufacturing context, private wireless networks will be instrumental. These video and real-time applications must have very low latency requirements for at least three reasons:

1. Low refresh rate and lack of synchronisation between the digital asset movement and the viewed reality has been flagged as a major contribution to motion sickness in users.

2. Ensures there is a high fidelity and fine motor gesture within the seeing and selection phases to support accurate and detailed work.

3. Supports the collaborative work of two of more workers operating on the same activity.

These are important requirements to achieve the highest level of acceptance for converged experiences in meaningful commercial applications. Low latency wireless communications and the location of ancillary edge compute can help achieve this. For telecoms vendors, this offers a great opportunity to provide the higher value capability offerings and the services from 5G and 6G networks to support these applications alongside edge cloud computing offerings.

Industrial IoT adoption

The converged experience concept depends on the availability of the digitally enabled systems within industrial settings. We look to the initiatives of Industry 4.0 to drive the smart factory and provide the interfaces that allow the AR enabled control. Currently, general adoption levels of IoT are reported to be within around 25% of businesses,[5] with this number only set to grow.

Many new industrial machines and systems will have an API and a digital control option by default. The challenge is that much of the industrial landscape is brownfield, comprising of older systems that do not have the digital interfaces to control the system. These older brownfield systems will require the most maintenance. Meanwhile, to have a holistic understanding of a complete system, the older systems must be controlled alongside newer digitally enabled systems.

One option for older systems is to retrofit with external sensors that can be then connected into the Industrial IoT. Other techniques include to manually locate a machine or system or use image recognition to enable the system and then to associate a simulated model of that system to have a predicted view of its operation. On this topic, CC has been experimenting with photogrammetry and Neural Radiance Fields (NeRFs) technology to capture models of existing systems.

Digital twins and industrial metaverse

The intelligence that converged experience brings to physical assets vary from simple data visualisation to remote digital asset control. But increasingly the digital augmentation will come from far more sophisticated models of the industrial systems, such as digital twins.

Digital twins are models or simulations of physical systems which are based and informed from real data sensed from the physical system. They provide the basis for understanding the operation of the internal mechanisms of the system, allowing for simulations of future potential behaviour to be conducted. The converged experience concept allows these digital twins to be made more relevant and viewed in context of the physical system.

For example, if we have a digital twin of an air taxi's quadcopter blade, a maintenance engineer can view insights from a digital twin to understand the status of the blade, potentially identifying a blade to be replaced before failure for predictive maintenance.

Spatial design

Another vital area to the adoption of converged experiences on an industrial, and indeed commercial level, is the refinement of the spatial design. Designers of digital experiences face numerous challenges in crafting 3D environments that engage multiple senses, including hearing, touch, and smell, to create more interactive and intuitive user experiences. While User Experience (UX) methodologies have evolved sophisticated techniques for 2D environments, navigating the realm of 3D introduces an additional layer of complexity, requiring consideration of different zones of vision.

In this intricate design process, several factors come into play. Designers must determine whether digital assets should be transparent or solid and strategically position them within the various zones of vision. Placing a digital asset too close to the eye may enhance readability but could obscure the view of physical objects. Meanwhile, peripheral vision presents unique opportunities for utilising digital elements, such as notifications or alerts, which elicit different reactions from users. Spatial sound adds another dimension, capable of complementing visual cues or simulating directional audio feedback for a more immersive experience
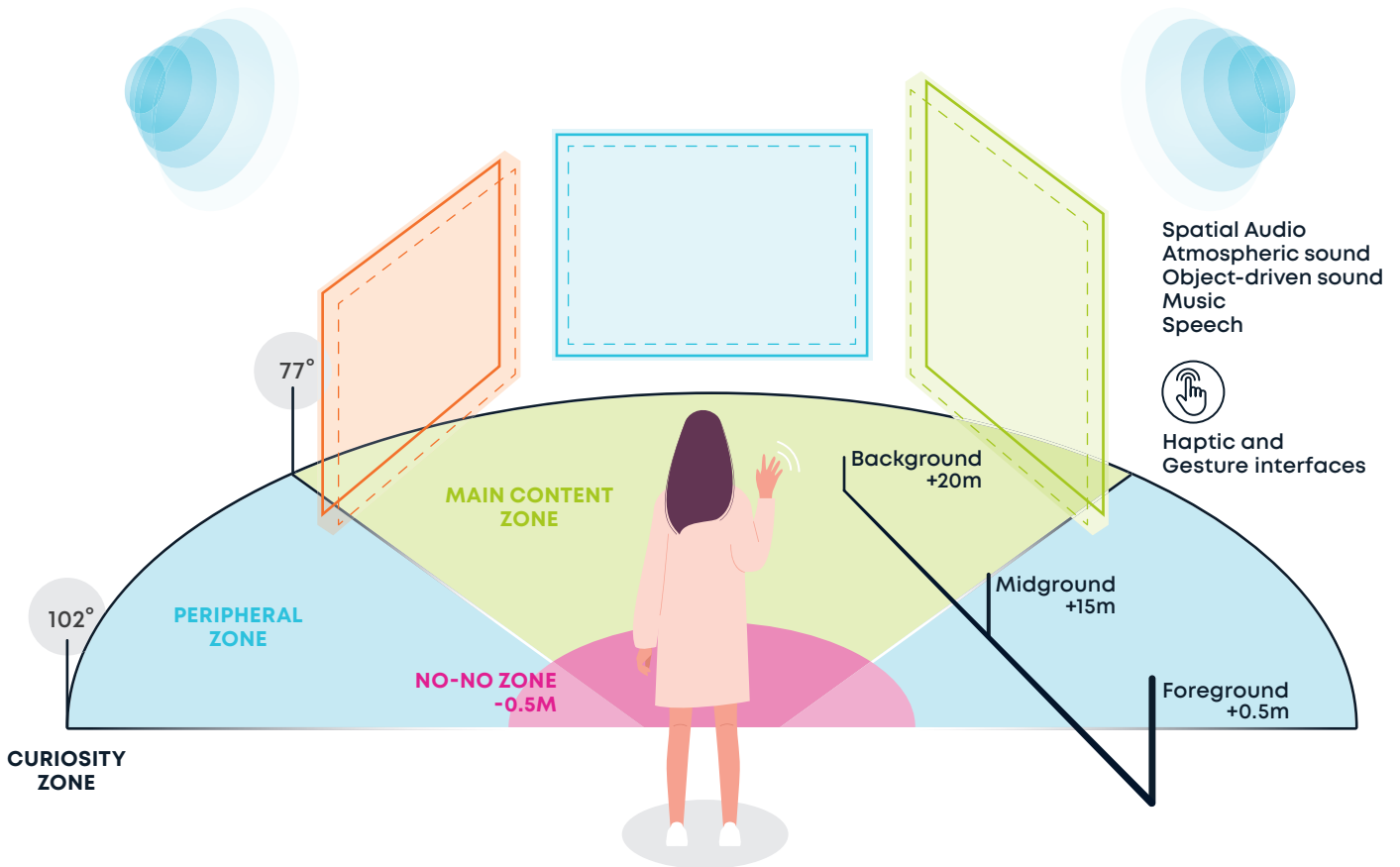

Figure 2: Example of spatial design

6.2 Addressing concerns around adoption

Our vision for converged experiences signals a progressive, forward-facing approach to ambitious industrial equipment vendors and industrial operations, but concerns around adoption remain within the wider landscape that we can work together to solve. These include:

- **Data privacy:** many solutions around converged experiences require cameras, the use of which can raise concerns around individuals' data privacy. While the camera feed will provide highly valuable auditing and AI training data, users may be reluctant to have their activity recorded. Data sovereignty is a complex question, particularly when users are working in a commercial capacity, but a first step is to acknowledge the challenge and work together towards an agreement.

- **Motion sickness:** converged experiences can initially be disorientating for some users. This is particularly true of VR, though less so of AR. But with refined spatial design, solutions are at hand – plus, with extra training, it will become easier for individuals to naturally adjust.

- **Safeguarding:** there is a general case for safeguarding when using AR and VR in the workplace. One of the objectives of converged experience is to combat cognitive overload, but it's clear with a poorly implemented system it could also lead to mental overload of the user. We believe the answer here lies in good spatial design which can be harnessed to improve user experience and lessen the cognitive load.

- **Resistance to the new:** any significant change can bring resistance. Many new autonomy tools are not adopted by operators purely due to teams being used to their current work environment and reluctance to adopt a new approach. But we urge you to push past this fear as we believe converged experiences and the ability to see the unseen will eventually become as universal as the smart phone app has become to digital adoption. What seems new now will one day be the standard – the key is to embrace the change early.

Ultimately, while they require consideration, we feel none of these concerns are true barriers or deal breakers. We feel all can be addressed as technology continues to advance. Our goal is to work with you to accelerate the journey towards converged experience adoption and integration.

7 Getting started: your journey to converged experience development

So how can you begin to invest in converged experiences and apply them into a practical action plan to improve your worker's wellbeing and output?

The most important aspect is to apply this development within a commercially viable business plan rather than a pursuit of technology alone. There is a wide range of application areas, but our research points to the most pressing and transformational being around the "Guide" and "Plan" areas that are outlined in Figure 3 below.

Both areas keep your workers safer and more productive, offering insights and information that improve their situational awareness and reactions while actively running risk assessments, maintenance and process optimisation.

Converged experiences for industrial scenarios are not currently available as off-the-shelf products. There is a range of starting points depending on your appetite for fundamental product development and the degree of customisation that that you want to explore. But at CC, we have the technical expertise, resources and strategic capabilities to help guide you on your journey, working with you to create custom converged experiences that can answer your business' needs and elevate your workforce.
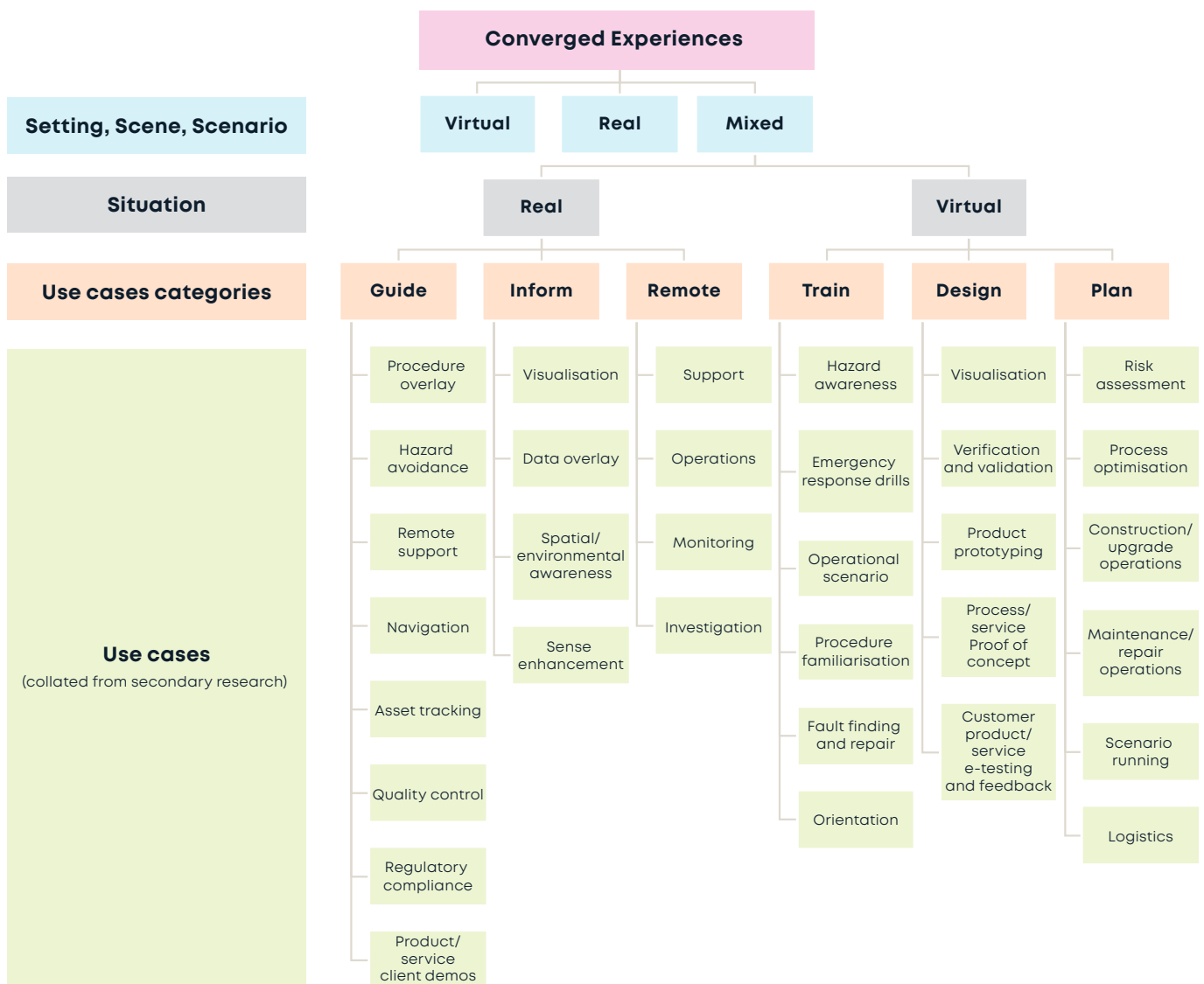

Figure 3: Analysis of use case areas for converged experiences

8 Conclusion

The transformational forces shifting the industrial and manufacturing sector are immense and vital to managing the effects of climate change and beyond. Autonomous connected industrial systems and the development of systems such as digital twins are crucial, but it's vital to remember that our human team remain an indispensable part of your operation. Ultimately, it will be the orchestration of machines and people through converged experiences that will be key to future success.

At the present, it has become the accepted reality to stare at the screens held in our hands for assistance – but the near future promises a deeper integration of digital augmentation and control over our very senses. This evolution heralds a paradigm shift where digital interfaces seamlessly blend with our human experience, amplifying our capabilities in unprecedented ways.

Only through the elevation of the smart connected worker using converged experience techniques will help you rise to the challenges that lie ahead. Together, and with a deep tech approach that can create true synergy between human and machine, we will unlock Industry 5.0 for a more streamlined, human-centric and future-ready operation.

We're excited to discuss how converged experiences could be integrated into your business and harnessed to support the development of new services, offerings or your business goals. Reach out to continue the conversation and take the next step towards Industry 5.0.

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As the deep tech powerhouse of Capgemini, Cambridge Consultants (CC), is a global team of 800 bright, talented people. We are united by the ambition to turn brilliant ideas into technologies, products and services that have never been seen before. And which will transform business, society and the planet. Deep tech is a mindset; a bold strategy that harnesses radical science and engineering to achieve things no-one else can. It enables our clients to gain unassailable commercial advantage from defendable technology that they own. We are trusted by some of the world's biggest brands and most ambitious start-ups to realise their critical technology-based aspirations – and we've been doing it for 60 years. Cambridge Consultants is part of Capgemini Invent.

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