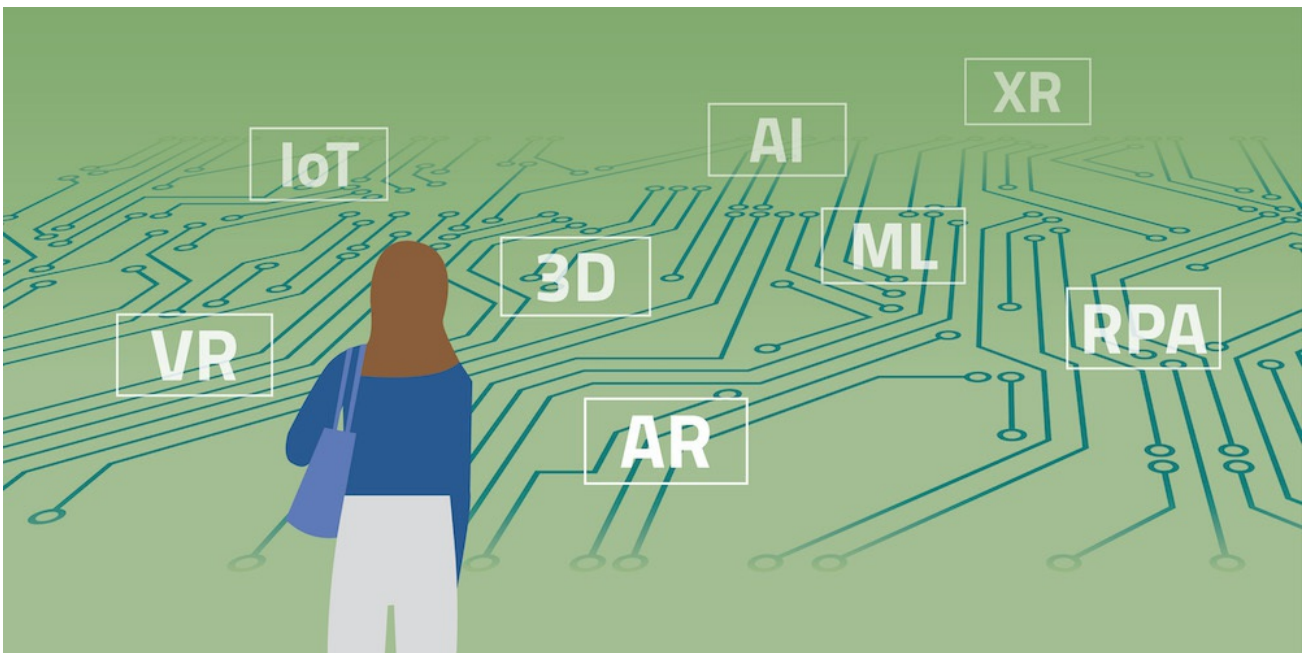


# Wayfinding and the future: integrated, intelligent and effective, but also human

Louise Kristiansen, [Steinar Valade-Amland](#) and Peter Donner | 25 Sep 2020

This paper looks at the future of healthcare wayfinding solutions, considering issues such as human behaviour factors and the integration of digital and technological aids with the physical environment.

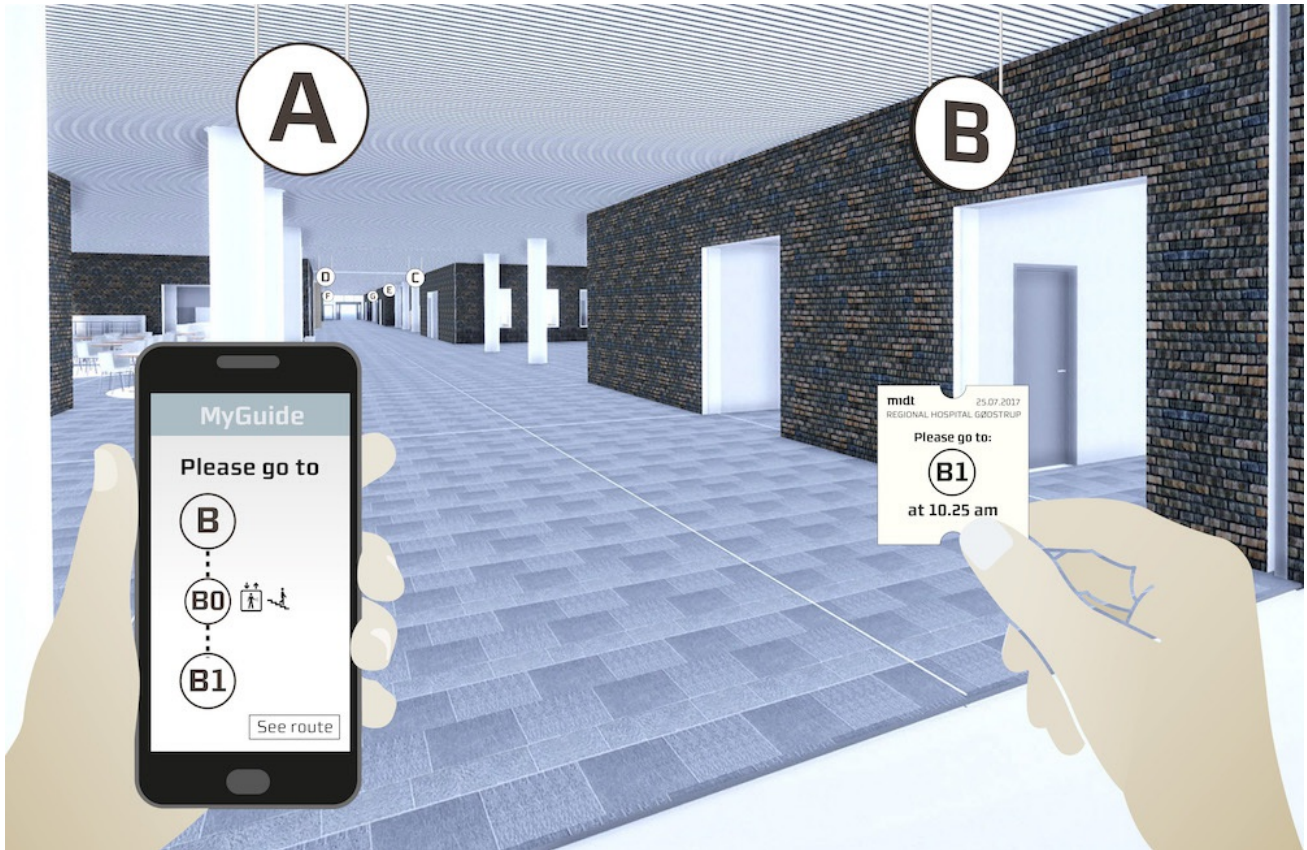


Remember the anecdote from *Alice in Wonderland*, where Alice asks the Cheshire cat to show her the way. “Where do you want to go?” asked the cat. “I don’t know,” Alice answered. “Then,” said the cat, “it really doesn’t matter, does it?”

When you do know where you want to go, it does matter how you get there. It matters whether you get there on your own or whether you need to ask someone for help, or whether you’re running late as a result of getting lost along the way. Good wayfinding enables users to go where they want to go – as easily and intuitively as possible. It requires a thorough understanding of both human behaviour and of the factors influencing our perception of physical spaces to provide them with the best experience when navigating in unfamiliar and complex environments. And, while good real-time wayfinding strategies in themselves empower, the added value of encompassing means to improve service journeys through integrating digital aids on all relevant platforms should not be underestimated.

Integrating digital wayfinding with due consideration of how the physical environment is reflected digitally is a requirement to achieve a consistent and logical user experience. The national health authorities in Denmark are increasingly recognising the role and significance of exploiting the synergies between physical and digital facilities. “The aim is that citizens should experience the healthcare system as one coherent network, which is inherently digital while being experienced as human.”<sup>1</sup>

Making sure that the right platforms and interfaces are employed to achieve the best possible integrated service journey is crucial. It strengthens the sensation of empowerment, as each individual user is allowed to engage in and take control of the service transaction that finding one’s way has become. It does, however, require an understanding of the complex and inextricable relation between the physical environment and the affordances already provided, the wayfinding strategy, and the individual capabilities of users. Bringing all this together entails the assertion, preparedness and trust needed to provide the sense of empowerment.



**Illustration 2: At the Regional Hospital West Jutland a coherent integration of digital wayfinding system has been developed to achieve a consistent and logical user experience**

### A smart future

Artificial intelligence (AI), virtual reality (VR), augmented reality (AR) and extended reality (XR), Internet of Things (IoT) and 3D. The future is smart – increasingly harvesting from decades of research and exploration of digitisation and new technologies – and changing the way we see and relate to experiences and knowledge, physical environments, manufacturing, service provision, teaching and learning. The future is virtual and tangible at the same time. And intelligent – both artificially and for real.

We claim the right to a future that is human. One that balances what is possible and what is good – measured not only by technological advances but also by how technology resonates with the needs and confidence of its users.

Providers of service journeys – who in general strive towards better user experiences, more inclusion and empowerment – also embrace the diversity of technological opportunities. What kind of implications might this have on how we organise the individual components of such journeys and how they are interconnected? In the context of complex and dynamic environments and ecosystems such as airports, university campuses, hospitals and cities, wayfinding is such a component. It relates to the physical space and to the ever changing configuration of individual users, and it relies on a profound understanding of their behavioural patterns, their impulses and reactions, preferences and biases.

One of our priorities when working with wayfinding solutions for the future, and when assessing current and emerging technologies, is how we translate and embody this comprehension into usability and intuitiveness for the user. Moreover, we're dedicated to creating some harmony between the physical and the digital dimensions making up the entirety of a modern environment, to ensure a natural sense of coherence and making sure that no one is left behind.

Increasing globalisation and changing demographics require flexibility in the development and rethinking of wayfinding systems to ensure adaptability and sustainability. To underpin such a demand, customisation of information through digitalisation is an opportunity not to be missed. Such technologies include GPS- and GIS-based mapping, beacons and sensors, biometric and haptic devices, and a range of facilities based on IoT and AI, all underpinning user engagement and the potential for building stronger relations with each individual user.

When developing strategies for wayfinding, our focus is on making sure that emerging and already existing digital solutions support and enhance the user journey by making use of the wealth of evidence and experience on which we have based our analogue wayfinding solutions – keeping in mind that user satisfaction can be both enhanced and reduced by the use of digital solutions.



**Illustration 3: The wayfinding system at the new Başakşehir City Hospital in Istanbul is optimised and prepared for a future integration of digital wayfinding solutions**

### Enhancing factors and challenges to overcome

Factors that enhance the experience, in particular, include customisation and integration of information; immediate feedback and real-time updates on your journey; adaptability and flexibility to changes over time; and the activation of senses such as sound and touch, always tailored to the specific context.

The best effects in terms of user experience and effectiveness are found in interconnecting digital and analogue facilities, as observed in a study from 2016: “Even though GPS technology and tools can provide accurate guidance from a point to a destination, they do not give information on the surrounding passive environment, which may cause people to get lost.

“In addition, physical signage is preferable over digital systems in terms of permanence of locations. Thus, both passive and active wayfinding will probably still be indispensable for indoor navigating in the future. Combining conventional media such as static signage with the dynamic responses of digital information systems may provide synergistic effects.”<sup>2</sup>

In other words, a user-centred wayfinding strategy contains both digital and analogue, and dynamic and static components to accommodate all needs and capabilities, and to act as a mediator between the physical and the digital components of the user journey. There are also other bridges to be built.

The challenge of lacking standardisation, varying typologies and different solutions to the same problem in every new environment, as well as challenges related to GDPR, tracking and surveillance could be overcome through open innovation endorsed by major players – among others, the European Union, as indicated below.

“AI needs the trust of citizens to develop. To earn this trust, AI will have to respect ethical standards reflecting our values. Decision-making must be understandable and human-centric. This calls for a wide, open and inclusive discussion on how to use and develop AI both successfully and ethically sound.”<sup>3</sup>

This would allow, for example, AI-based wayfinding to be the future, requiring less attention from the user, as devices would already know you and your needs in advance, and would therefore demand less action on your part and provide you only with the information relevant to you.<sup>4</sup>

There are still unresolved issues with AI, and the time is now to make sure that it’s used for the good. In particular, in a context as delicate and critical to human beings as healthcare, the responsibility of ensuring that artificial intelligence develops ethically, safely and meaningfully needs to be taken seriously by all stakeholders involved.<sup>5</sup> However, in the pursuit of better healthcare systems, there is a wealth of promising opportunities provided by intelligent technologies to be explored.

### Striking a balance

We all have a responsibility not to leave the user – whether patient, traveller or visitor – waiting in vain. Rather, we need to strike the right balance between, on one hand, well-known and tested components – such as static and dynamic signage, sightlines and affordances based on our knowledge of different audiences' behaviour in wayfinding situations – and, on the other, testing out technological solutions, whether based on apps or more immersive technologies. This balance must strengthen the sense of coherence and empowerment for the user.

At its best a wayfinding system responds to the individual needs of every new user entering an unfamiliar environment – by offering varied means of guidance catering for as many individual intuitive ways of navigation as possible. It should be conceived and developed on the basis of solid evidence of how we as human beings react to the often overpowering complexity of certain environments, how the effects of this complexity can be negotiated, and how this knowledge translates into strategies that accommodate and enable intuitive user journeys.

Good wayfinding enables an intuitive journey, where minimum effort has to be invested in taking in and processing instructions, thereby leaving the user free to prepare for whatever the intention of their journey.

### **About the authors**

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