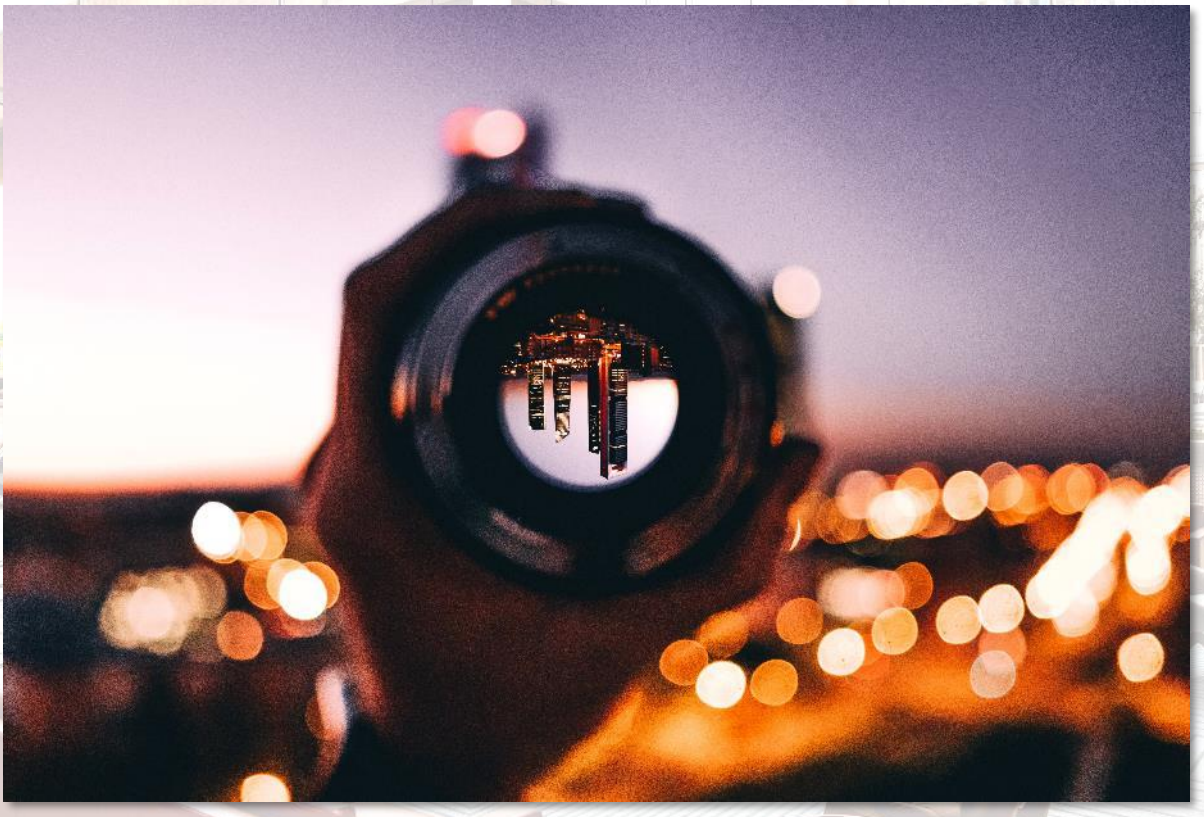
Facility Management Nederland

The FM(N) hype cycle

FMN Technology Expert Team



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Preamble

In November 2019, the FMN Technology Expert Team presented the first FM(N) hype cycle (2019) at the FMN Connect XL 'Bits don't bite: FM and technology' conference in Ede. Due to the coronavirus pandemic, we chose to publish a white paper in lieu of giving an update, thus also making the content available to a wider audience. The 2019 hype cycle has been updated to reflect the state of affairs at the end of 2020/early 2021. We delve deeper into the technology, its significance for FM and our working environment.

Despite the promises and the enthusiasm and the technological progress made, the positions of the most important technologies have barely changed for FM. The expectations (the hype) thus are clearly not in step with the technology. This year the new trend of 'social distancing technologies' was added, shooting right to the top of the ranking, which comes as no surprise given the current context..

Every year, Gartner compiles hype cycles for a range of technologies. We partly took inspiration for this FM(N) hype cycle from the work that Gartner shares publicly and also partly relied on it as a source of information for this document. In addition to this, we also refer to the sources of Verdantix, which tends to focus more on (smart) buildings, analysing technology that is relevant for FM. These insights have been supplemented with various other sources. We have endeavoured to list as many of them as possible in our reference list. Various links were also added to the annexe, which can serve as a starting point for more in-depth information.

We have limited ourselves to the trends that we deem most relevant. In line with the structure of Gartner's Priority Matrix, we focus on trends that become visible in the short term and may have a great impact. As such, we tend to ignore trends that we expect will have a smaller impact or will be another five years in the making. This selection is not science-based. It is merely an assessment by our expert team, based on the knowledge that we have acquired. We welcome suggestions and questions (et_technologie@fmn.nl). If FMN members would like us to delve deeper into a certain technology, we welcome their suggestions and will include them in a future version or addendum.

This white paper is the work of the FMN Technology Expert Team:

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The FMN Technology Expert Team gets very excited about new technological opportunities. We look beyond the hype and trends, choosing to focus instead on technology that will be mainstream in two to five years. We do this by explaining developments, studying the first applications and highlighting them for our peers. If this ties in with the federation's mission, we also provide support for the development of these technologies for the benefit of the entire industry. As such, we represent the FM when agreements or standards are developed in relation to new technology.
Find out more about FMN and our expert team!

The FM(N) hype cycle

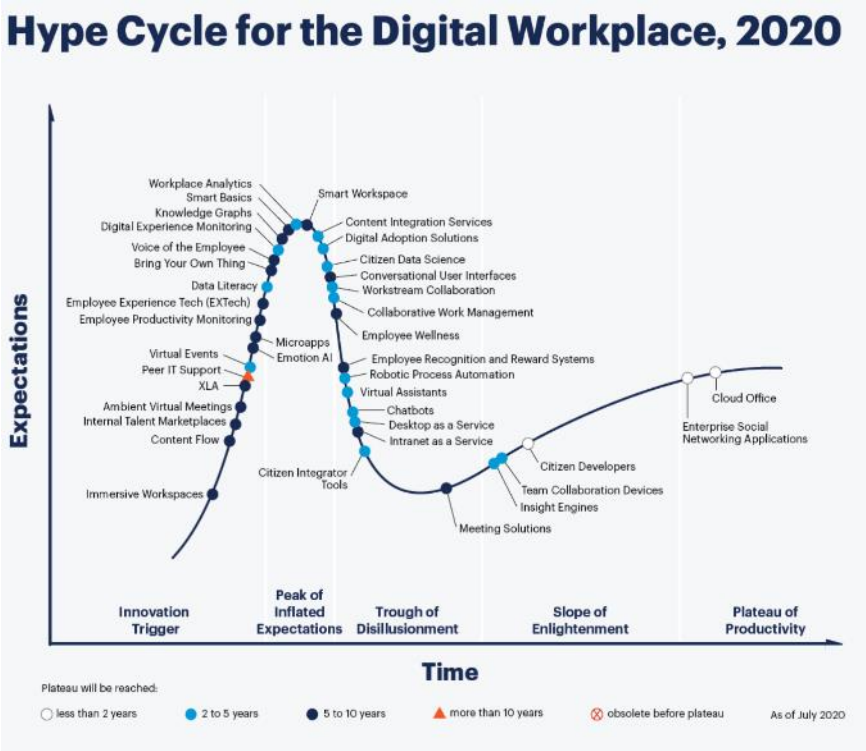
This white paper covers the following topics:

Part 1: Hype cycles

What are hype cycles?[1]

New technologies make bold promises, but how to distinguish between the hype and what is of commercial or strategic value for an organisation? And how long will it take before we reap the fruit of such claims - some of which may never materialise? Every year, Gartner publishes its hype cycle, a graphic visualisation of the maturity and acceptance of technologies and their applications. This hype cycle highlights how these technologies can potentially help solve real business issues and take advantage of new opportunities.

The methodology gives an idea of how a technology or application will evolve over time and is a good source of insight. This can be used to make choices about the implementation of a technology or application, in line with an organisation's specific objectives. Besides publishing the hype cycle, Gartner discusses these technologies in more detail, by market segment, in supplementary white papers, adding suggestions for their use and implementation.



Source: Gartner

How to use a hype cycle?

Hype cycles are used to gain an insight into the promise of an emerging technology in your industry and the extent to which you are prepared to take the risk to get on board quickly or instead adopt a more expectant attitude. Garner assesses within which time frame this technological development will become mainstream. Based on a trend's place in the hype cycle and the expected time to maturity, an organisation can determine when to capitalise on this trend.

[1] https://www.gartner.com/en/research/methodologies/gartner-hype-cycle

If you are prepared to take risks with investments that are not always successful, first movers may reap the fruits of early adoption/acceptance. In the event that too many questions about an emerging technology's commercial viability go unanswered, it may be worth waiting until others are able to deliver tangible value and then get on board.

How does the hype cycle work?

Each hype cycle consists of the five life cycle stages or plateaus a technology goes through. Below we provide a brief description of each stage with a recognisable example.

Innovation trigger

The starting premise is a potential technological breakthrough. Early proof of concept stories and media interest soon garner a lot of publicity for a technology. Often no usable products are available yet and the technology's commercial viability has yet to be proven.

Example: In 2019, the first foldable telephone was launched to market. In early 2021, there still are only a few models on the market but these telephones do garner a lot of attention.

Peak of inflated expectations

The early publicity results in a small number of success stories, that get a lot of attention. Some companies may feel compelled to take action, many choose not to.

Example: Smart buildings (and the Smart Workplace) is one of the most important topics in FM and real estate and is included as a theme in many visions and annual plans. While this seems very promising, only a small percentage of buildings is really smart.

Trough of disillusionment

Interest is waning because the good stories and implementations fail to live up to expectations or because the technologies are difficult to use. The wheat is separated from the chaff in the case of the manufacturers of this technology. Further investments are only made when the surviving manufacturers improve their products to the satisfaction of early adopters.

Example: In early 2021, the hydrogen car finds itself in this trough. Manufacturers have been promising for a number of years that this technology can store and move sustainably generated energy. Currently this technology is still very difficult to scale up and commercialise. Its success will depend on more efficient production and the development of an ecosystem. Google Glass was also hyped but has been in this trough for several years, even though business applications are being developed.

Slope of enlightenment

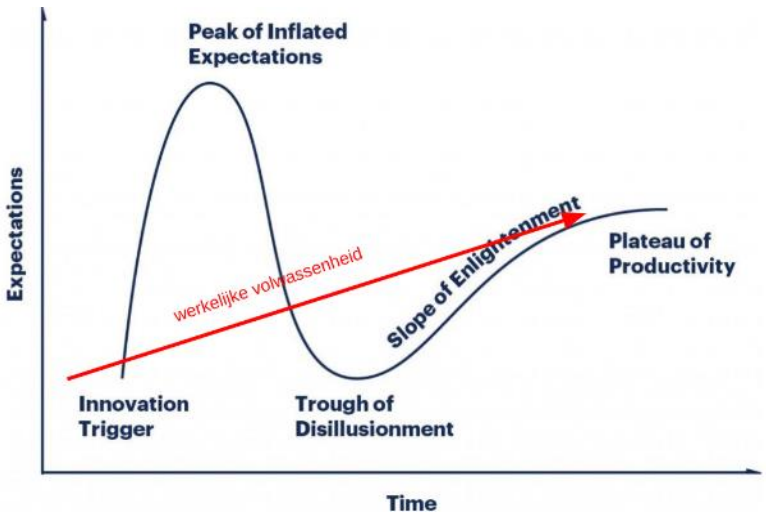
The number of examples of how the technology can benefit a company are increasing. The technology is crystallising and is being more widely understood. Second and third generation products are being launched to market. The early adopters are adopting more pilots. Conservative companies adopt a more cautious stance.

Example: For quite some time, smartwatches were a hype and cool, thanks to Fitbit and Apple Watch. During this initial phase, the smartwatch was searching for the right functionality. Making photos, calls or watching films were not a success. Now that the transition to health and quantified self has been made, the product has become mainstream and has become part of our world.

Plateau of productivity

Mainstream acceptance is slowly picking up. The criteria for assessing the technology's viability have been more clearly defined, a 'winning' design was developed and there probably already is an NEN/ISO standard. The wider applicability and relevance of this technology are clearly successful.

Example: Since 2020, electric vehicles are often cheaper than fossil fuel-powered cars based on the total cost of ownership. Following the increase in their range and the number of charging points, the obstacles for use are gradually being eliminated.



Icons are a recent addition to hype cycles. These indicate how long it will possibly take until a trend plateaus or becomes productive in five categories, ranging from 0 to 10 years.

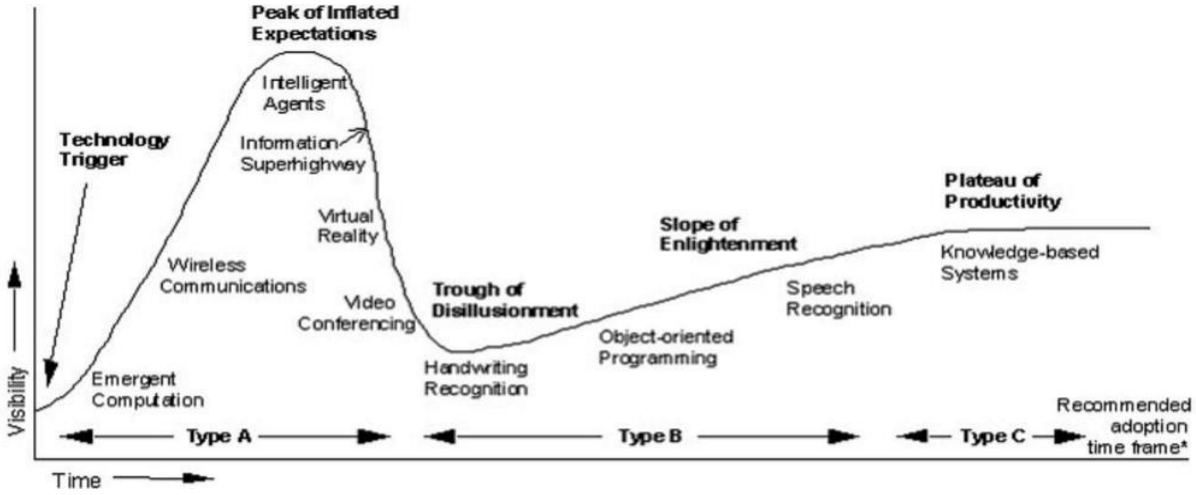
Hype cycles: some nuance

While the assumption is that the development of technologies fluctuates, like a wave, this is mainly the end user's perception. In reality, technological development is a far more linear process. Opportunities are created precisely because of the differences between perception and the actual development. In some cases, coming on board during the peak can be a very smart choice for a specific organisation, while it may backfire for others. The choice will ultimately depend on the

industry, the USPs and the extent to which an organisation wants to stand out as an innovative organisation.

Joining in the trough, when attention has waned, may be a smart decision for some organisations. The first steps have already been taken, the technology is more mature, and the cost is thus reduced. You may not be the first, but you are an early adopter, meaning you still stand to gain an advantage on the competition. Joining one stage later, on the plateau, has the benefit that you can work with proven technology, meaning lower costs and risks. But at this stage the competitive advantage is zero.

A critical look at the development of the hype cycle reveals that the prediction often also does not come true. Below we give an example from the 1995 hype cycle.



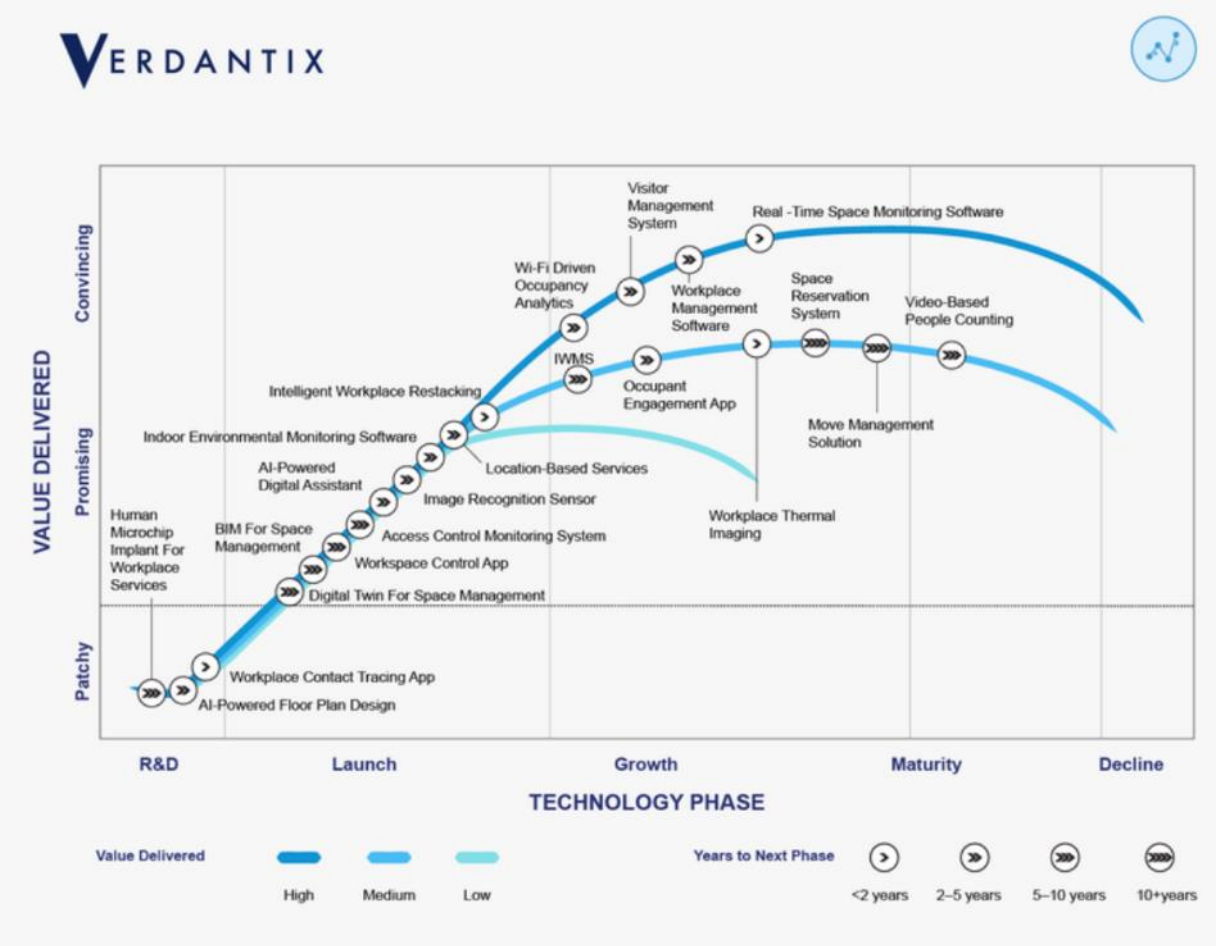
'Handwriting recognition' and 'virtual reality' were already included in the 1995 hype cycle. Twenty-five years later, this technology has still not reached maturity. On the other hand, concepts such as the 'information superhighway' – what later became known as the 'internet' – and 'wireless communication' effectively made a breakthrough. Since March 2020, video conferencing has finally become mainstream. You can read an interesting post on the development of hype cycles by Michael Mullany here.

The hype cycles of 2020

The main trends in the hype cycles are available to everyone on the Gartner website. You can also download a more detailed explanation (after payment). There is not one single hype cycle. Instead, Gartner has clustered more than 2,000 trends in comprehensible themes. For this document, we mainly focused on the following themes:

- Hype cycle for the digital workplace infrastructure
- Hype cycle for frontline worker technologies
- Hype cycle for IT

Another player that publishes trend analyses for the facilities market is Verdantix, although they do not use the term 'hype cycle'. Verdantix plots comparative developments on a somewhat different scale although they too try to predict when a technology or software application will move to the next stage in its maturity.



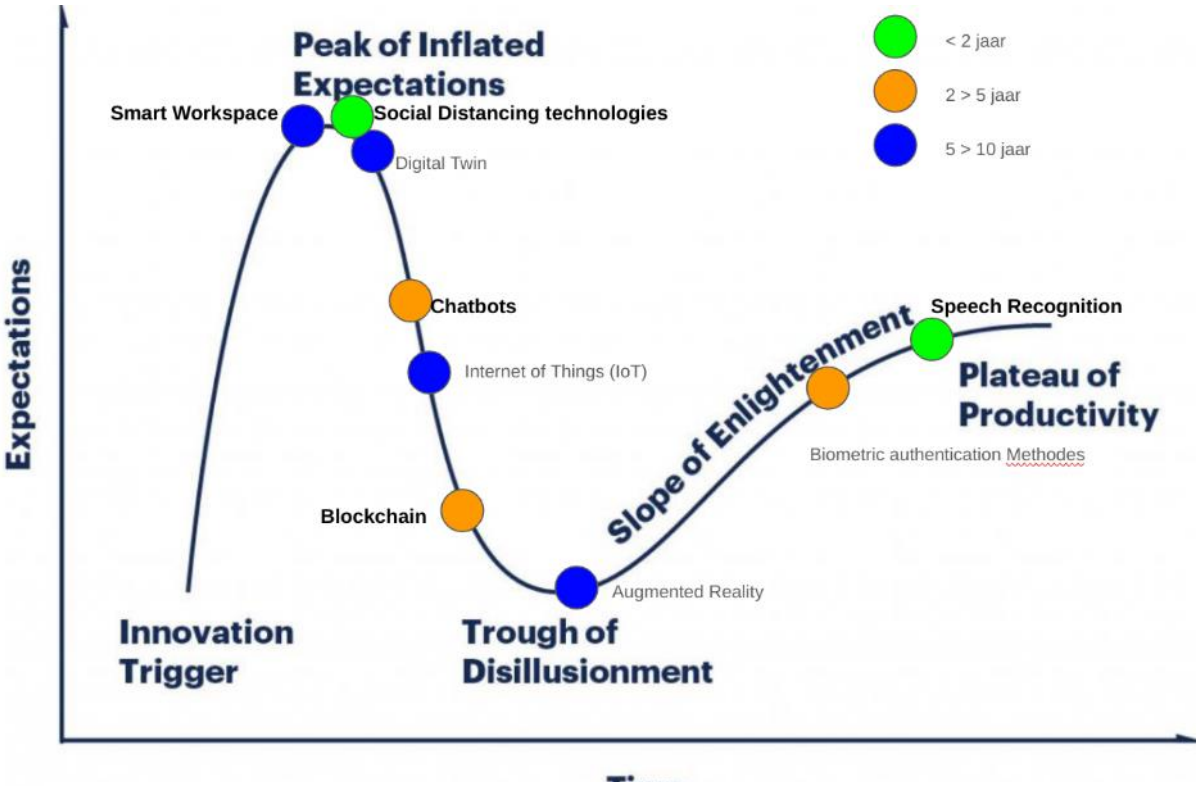
Source: Verdantix

Above we have shared an example taken from the 2019 Verdantix Tech Roadmap for space and workplace management software.

Part 2: The FM(N) hype cycle

We use the FM(N) hype cycle to help our industry better assess which technology may become important and deserves attention. It also visualises at which point it is too early to come on board or when companies need to start monitoring developments.

As an expert team, we have selected a number of relevant technologies for FM and delved deeper into the concepts and their significance for FM. We discuss 'speech recognition' and the 'cloud' which are on the 'plateau of productivity'. Expectations are that they will be commonplace now or within the next two years. 'Smart workspace' (internet of things in the workplace), 'chatbots' and the 'digital twin' are currently situated on the 'peak of inflated expectations'. Much is currently expected from these technologies. Despite these expectations, the 'digital twin' in particular is only expected to become mainstream in five to ten years.



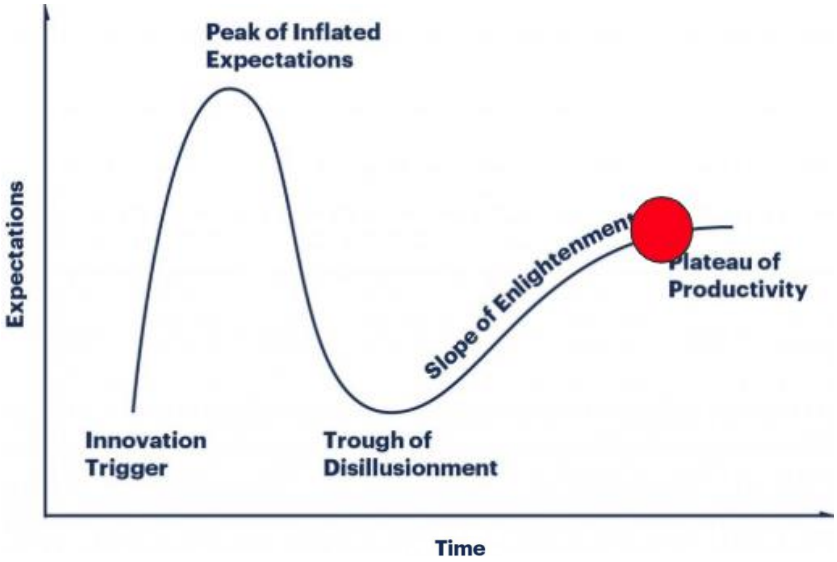
Source: Harm van den Boogaard - An interpretation of the Gartner hype cycle

We discuss a number of these technologies in the next section. Why are they here and where can you already find examples of these technologies in FM? Besides the four technologies that we think are most relevant, we also briefly elaborate on five other trends that seem important for FM.

A number of hypes in the spotlight and their application for FM

Speech recognition

Speech recognition enables computers to translate spoken language into text so that it can be digitally processed And is also often offered as text to speech again.



Source: Harm van den Boogaard - Position of speech recognition on the hype cycle

When the hype cycle was first launched in 1995, this development was already situated on the plateau of productivity where it can still be found today. According to the hype cycle, this technology only made limited progress between 2019 and 2020. And yet almost all telephones and a growing number of households now have an intelligent assistant, with a voice interface. Speech in cars is working increasingly well, sometimes involving a linked telephone, and is being used far more frequently. According to estimates, half of the world's population on average uses speech recognition on occasion. In the Netherlands this percentage is lower. In countries with lower literacy levels than the Netherlands, speech recognition along with the rapid spread of mobile telephones, has given more people access to the internet and digital services. Applications mainly focus on voice commands when you cannot use your hands or when the control is not within hand's reach. Commands such as 'switch on the lamp' or 'set the timer to two minutes'. Increasingly, however, speech is used for more complex service dialogues, which are also a promising addition for FM.

There are still a lot of privacy and data-related issues that need resolving, mainly because currently these data are often processed in the cloud in the USA. Soon, however, speech will be locally processed, in the Netherlands, thanks to improved AI and more processing power. And in a next phase in the device itself. The first Google telephones can already do this. The current privacy and data objections will be eliminated in the future, rapidly paving the way for more possibilities.

The second restriction is the small Dutch language area. Amazon, Google (mainly English-speaking) Baidu and Tencent (both Chinese) process large amounts of speech, improving their models at a rapid pace. Our Dutch language area is currently lagging in this respect. Other small European languages are no different.

Google Assistent can make simple phone calls in a number of countries. Facility employees will only start to feel the pressure in a few years from now. In principle, speech recognition can be used for anything that is currently operated with a button. We expect that speech recognition will experience significant uptake in 2021 because we are more aware of hygiene and contact/exposure due to COVID-19. Local speech assistants will partly replace simple buttons and touch panels for more complex questions.

This also offers opportunities for improving inclusiveness. This technology already helps people with impaired eyesight. Everyone also stands to benefit from being able to operate equipment hands-free when they cannot use their hands. In working environments, speech can help to simplify the sometimes complex user interface of software. E.g., to draw up a transcript or minutes of a meeting, or as an interface for equipment in the working environment.

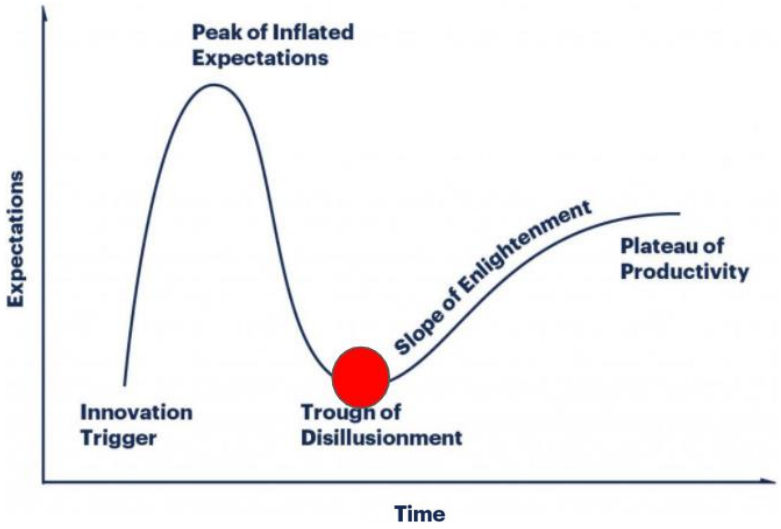
The market is still fluctuating significantly. In the coming years, a lot of specialist knowledge and time will be required to manage speech applications. Individual speech modules are already available, which can be linked to an existing system but specialists that have developed their own systems are also emerging.

Expectations are that the use of speech recognition will increase greatly in the next two years, bringing about significant changes. Consumer products paved the way for this and supply and demand will only increase in the working environment. Organisations can already take small steps now to get acquainted with speech recognition as an organisation. E.g., by offering information that is already available as text in the form of speech. The next steps are two-way traffic and the extension of applications.

Nederlandse Amberscript, a Dutch company that develops software to draw up automated transcripts of conversations and meetings, is a good example.

Blockchain

Blockchain is a decentralised register of information, whereby the majority decides what is the truth. Blockchain probably is the biggest hype of the past ten years. The price of bitcoin (a currency based on blockchain technology) fluctuates tremendously. At the start in 2010, its price was less than a dollar. On 21 February 2021, it briefly traded at 48.143,18. This is consistent with the public perception of blockchain. The high expectations have not yet been fulfilled, knowledge is required, and the number of applications is limited for now.



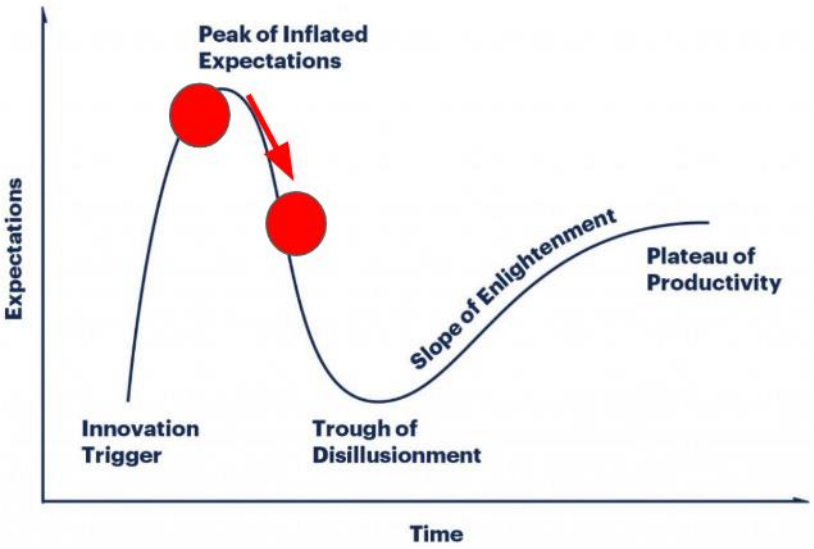
Source: Harm van den Boogaard - Position of blockchain on the hype cycle

Nevertheless, the first interesting applications are already emerging within the working environment as an alternative to a central database. One example is Niaga, a company that uses blockchain to provide a materials passport for floor coverings. This documentary by Dutch broadcaster NOS featured Chinese blockchain chickens, which are supposed to inspire more trust in consumers because of the increased transparency.

The use of blockchain is still quite limited in services. Blockchain has the potential to replace stamps and coupons in customer loyalty programmes. Possibly forms of this may also find their way to the working environment, to replace stamp cards or incentives to influence behaviour.

Chatbots

Chatbots use language to interact with people and mimic a conversation. Usually in text, but increasingly also in speech. As such, chatbots and speech technology enhance one another. Chatbots are one of the first visible applications of artificial intelligence (AI) in our working environment. Customer services, IT helpdesks and self-service systems already use them. In 2019, chatbots were still situated high up on the peak of inflated expectations. In 2020, the wind seems to have been taken out of their sails and chatbots were thus relegated to the trough of disillusionment. Gartner expects that this development will be mainstream in two to five years.



Source: Harm van den Boogaard - Shifting position of chatbots on the hype cycle

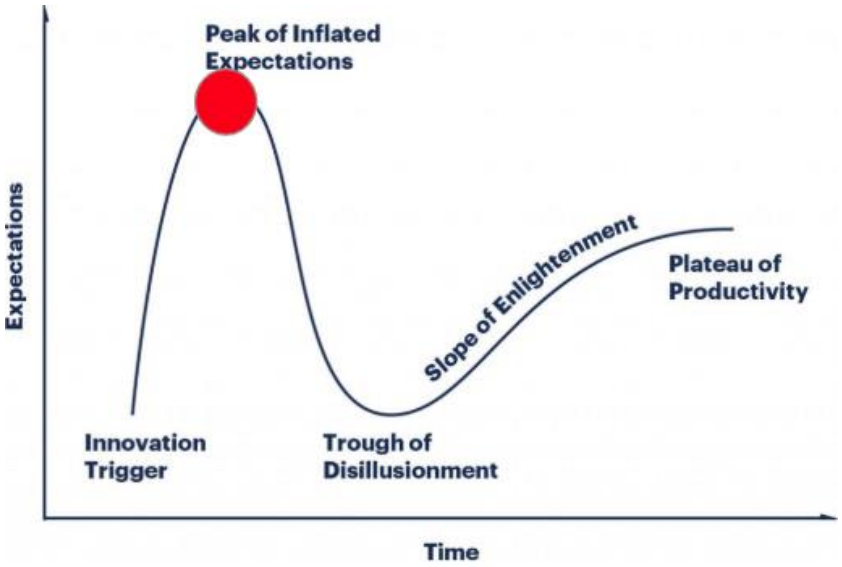
The first chatbots recognised keywords in a question, replying with a standard text message. If this process was repeated a number of times, the conversation was transferred to a human employee. In modern versions, a bot examines the context of the discussion and adopts a certain tone of voice depending on the conversation topic. Usually the conversation is still diverted to a human in the case of complex questions or when the bot is unable to provide a satisfying answer.

In 2021, 15% of people will regularly interact with a chatbot. According to Gartner, in 2022 half of all office employees will interact with a chatbot on a daily basis in their working environment[2]. Chatbots can take over a significant volume, i.e., 20-40% of questions, from employees and are also available 24/7. They mainly take over monotonous routine questions from employees, giving them more time to deal with more complex customer issues.

[2] https://www.gartner.com/smarterwithgartner/chatbots-will-appeal-to-modern-workers

Social distancing technologies

As a result of the coronavirus pandemic, social distancing technology is the highest newcomer in this trend ranking. Technology that helps people to keep their distance from one another and to visualise contacts is being deployed at a rapid pace. Wireless technology is often used, but other options, such as cameras, can also help establish mutual proximity.



Source: Harm van den Boogaard - Position of COVID social distancing on the hype cycle

Because this new application uses existing technology, it will probably reach maturity in the next two years. Its rapid adoption also raises concerns about reliability, privacy, user acceptance and accuracy, however. This technology can be valuable as part of a good mix with multiple, risk-mitigating measures.

In addition to keeping one's distance, limiting the number of people in a place or space is also an important measure. To this end, various parties have developed booking solutions that can be integrated with workplace sensoring but which can also be used as an individual solution. Small device that measure the mutual distance or smartphone apps that also do this are also available.

Smart workspace

Smart workspaces are being created as a result of the increasing digitisation of objects and physical working environments. Devices are connected to a network of sensors, beacons and other actuators. Systems that can improve effectiveness and efficiency can also be integrated. This facilitates new ways of working (together), sharing information and using company resources. Any site where people work can become a smart workspace: a workplace in the office, a meeting room, but also a home workplace.

Moreover, the smart workspace is connected with personalised devices and supplemented with software that can improve effectiveness and efficiency.

In 2019 and 2020, this development was situated on the peak of inflated expectations. The expectation was that it would become mainstream in two to five years. The digital transformation of the workplace and working (together) remotely have accelerated the development of the smart workspace. At the same time, we think that two years seems a bit soon and that only the forerunners will be operational by then. We expect widespread adoption of a mature product in our industry to only happen in five years.

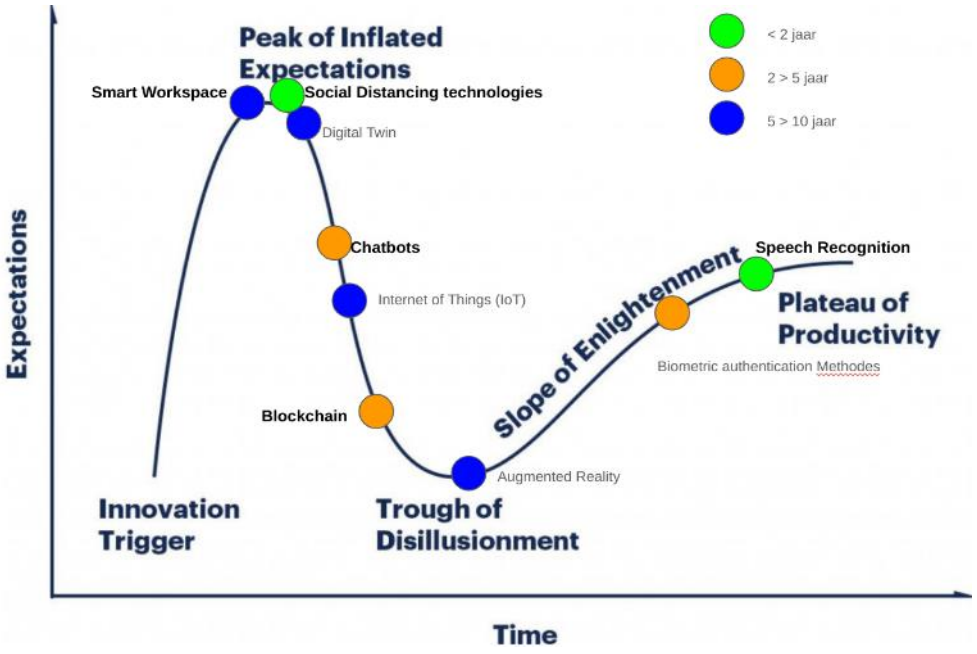
A smart workspace relies on various connected objects, such as equipment in the meeting rooms, climate control systems in the workplace, furniture and ICT equipment. But the employee's personal equipment such as smartphones and wearables are also connected. Initially, smart workspaces will be very diverse, because the connection of objects depends on the replacement cycle and the option of adding retrofit IoT components. Existing TL luminaires are adapted to LED lights with a sensor or sensors are separately fitted in the workplace.

ICT, real estate and FM must work very closely together to develop a smart workplace. The most important topics are privacy, IT security, physical access, identity and agreements about management, user-friendliness and value in use. Keeping an overview can be difficult, given the many available possibilities. The recommendation is to keep an eye out for opportunities and start small. In the short term, there are opportunities in meeting rooms, open plan office spaces and the 1.5-metre working environment, especially in light of the current pandemic.

Thanks to this development, the workplace extends beyond the walls of the organisation. The impact on FM services will become visible in the near future. ICT will be required to adapt its infrastructure and services. The FCM organisation will have to adapt because of the ICT issues that are raised within the organisation.

Other trends

There are many more interesting trends besides the five trends that we discussed above. In this chapter on other trends, we highlight three interesting developments, of which we will discuss the broad outlines. For more information, please refer to the sources in the reference list at the end of this white paper.



Source: FMN - The FM(N) hype cycle with trends from this document arranged on the hype cycle

Argumented reality

Various AR technologies are available, that are used to visualise a virtual world.

VR (virtual reality)

You are completely removed from reality, wearing smartglasses, and sometimes a headphone. VR is used for simulations, training and gaming. FM uses this technology to introduce employees to their new working environment before it is built. Virtual exercises for first responders are already available. Oculus, the market leader for this hardware with its Rift and Quest, is an important player.

AR (augmented reality)

This technology adds an extra layer to our reality, ensuring that both the technology and reality are visible. You can use your phone's camera for this, with images added as an overlay to reality. A popular example of this is the Pokémon GO game, but a development that is more closely related to FM can also be found at Ikea where you can use AR to 'try out' furniture at home. Microsoft's HoloLens is more advanced. It is used to carry out remote maintenance without having to send the expert onsite. It helped ASML to assure the continuity of its services to its customers during the pandemic.

Internet of Things (IoT)

IoT is a network of physical objects, that are equipped with a sensor and are connected to a network (the internet), and that can often perform actions. To make this work, you need an ecosystem that combines technology, communication protocols, data storage and data analysis. IoT is one component of smart buildings and the smart workplace.

When IoT is originally introduced, the objective is usually to make business processes more efficient and save on energy. Services then change during the development phase, when new services and models are developed. IoT may also pave the way for new pay per use business models in FM.

Digital twin

A digital twin is a virtual representation of reality. In the context of our working environment, this refers to the digital twin of a building. The building's digital drawings and layout are enriched with geographical information. Digital twins of objects, processes and organisations also exist in other fields. Currently less than 1% of all organisations have a digital twin of their working environment, while 6% are currently working on it. In the years to come, these design processes will increasingly often start from the digital twin. Construction will only commence when the building has been tested and approved. BIM is already widely used during the design process in the construction industry and this information is increasingly finding its way to the management phase.

This raises new questions about information management in facilities management. If the real-time link between reality and the virtual model is not properly established, maintaining such a system will be a costly affair.

For more information on BIM in facilities management, check our page on FMN or search 'BIM' on www.fmn.nl.

Conclusion

In this document, which is inspired by hype cycles, we selected a number of developments, that our expert team deems most relevant, based on their assessment and experience working in our industry. There is much to be said about this selection and we have purposefully chosen to not consider a number of interesting developments to provide some measure of focus.

In 2021, we will delve deeper into BIM and its relationship with FM and FMIS. We are studying the potential of chatbots, together with a graduate. We are conducting further research into the use of technology in our industry, the collaboration with start-ups, and are looking at ways to make innovation in our industry more visible.

As a member of FMN, you can help guide our activities and we invite you to engage with us and discuss this. Our expert team is always looking for people with a passion for technology and FM to join us. You can reach us through our group page at FMN.nl or at et_technologie@fmn.nl.

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