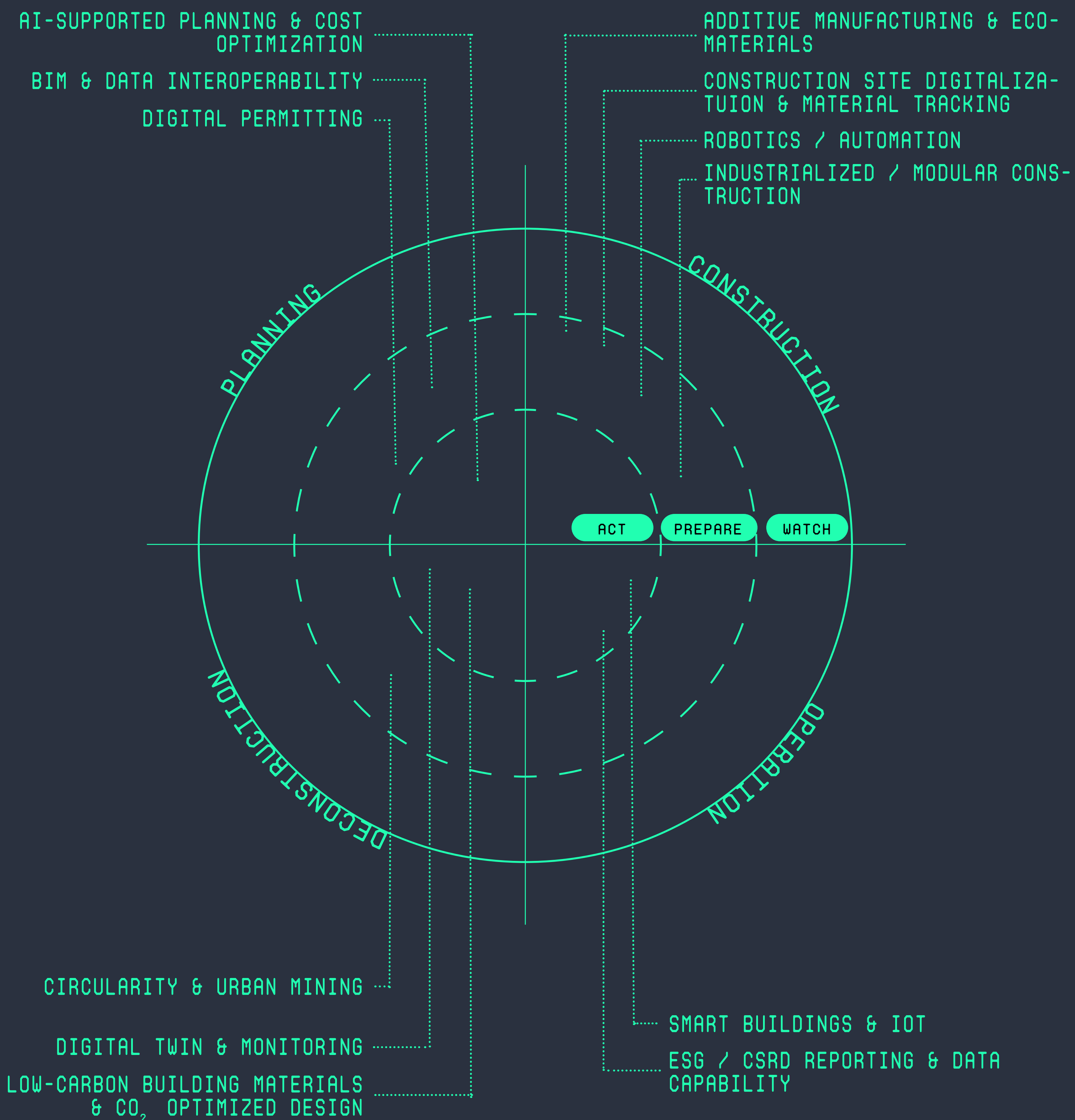
GROUNDBREAKERS

TRENDRADAR 2026



CONTENT

METHODOLOGY

The content of Trend Radar is based on a combination of desk research, a standardized survey, and in-depth expert interviews.
The aim was not only to collect trends, but also to classify them along the construction value chain and derive action-oriented priorities.

The first step was to conduct a structured trend screening.
To this end, current trend signals from relevant sources in the construction and real estate industry were identified and clustered. These include, in particular, start-up and technology ecosystems, industry platforms and trade media, market and trend reports and scientific publications. In addition, practical knowledge from the GROUNDBREAKERS environment was incorporated. The focus was on application-oriented innovations and realistic use cases.

In a second step, the identified trends were quantified and evaluated in detail via an online survey.
The survey was conducted as part of the GROUNDBREAKERS Summit 2025 in Stuttgart (n = 43).

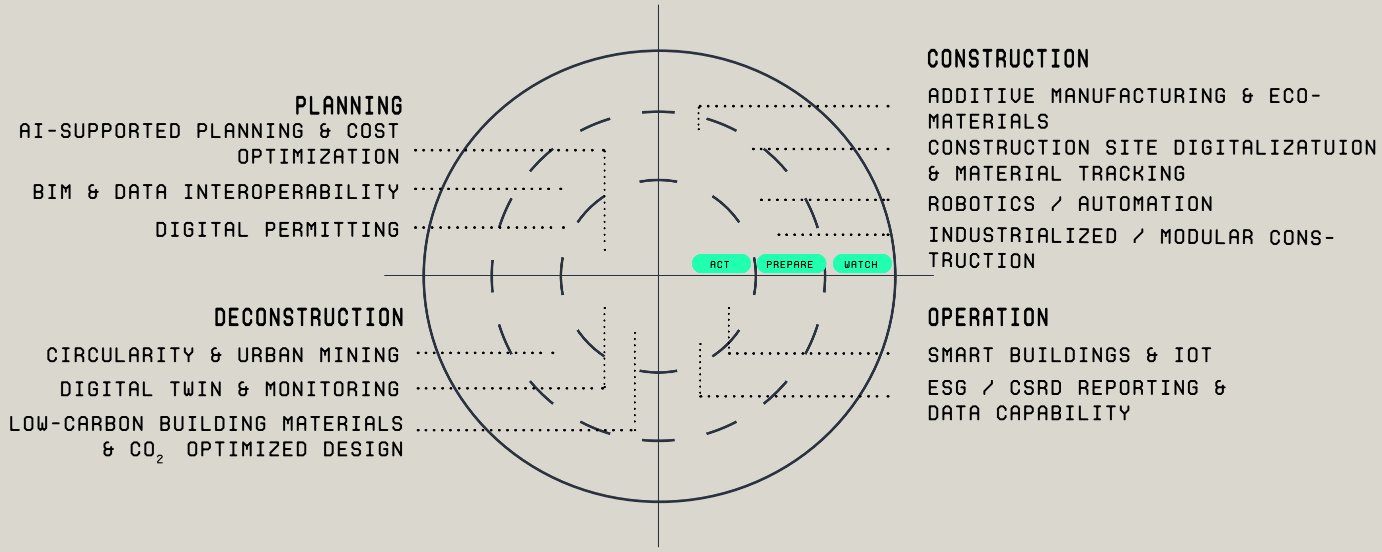
Participants indicated their role or professional background and their position in the value chain. This made it possible to compare assessments along the chain. The participants then evaluated the trends.

In the third step, the results were validated and supplemented by follow-up interviews with industry experts (n = 5). These interviews served to contextualize the survey results and explain patterns. In addition, differences between planning, construction, operation, and deconsruction were specifically analyzed.

Another focus of the interviews was on trends that were underrepresented in the survey or are newly emerging. This sharpened the content of the trend landscape and supplemented it with missing perspectives.

The final classification in the radar is based on two core dimensions: the expected impact on the industry and the timeline for widespread adoption (mainstream adoption).
Both dimensions are not derived from a single source, but from a triangulated overview of desk research, surveys, and expert interviews. Although many trends are relevant across multiple stages of the value chain, each trend is positioned only once in the Trend Radar to ensure clarity and comparability. Trends are therefore assigned to the value chain stage where their relevance and impact are estimated to be the highest.

STRUCTURE OF THE TREND RADAR



The core structure of the radar is the value chain. The circle is divided into four segments: planning, construction, operation, and deconstruction. These segments are intentionally broad. They serve as a guide for identifying trends in areas where they have their primary application and impact. This helps to identify the phase in which the greatest need for change or the greatest potential for benefit is likely to arise in the industry.

Each mark on the radar represents a trend cluster. The trend names are placed on the edge and assigned to the respective position via lines. The position of the mark is the central source of information. It condenses the classification of a trend into two dimensions: first, the reference to the value creation phase via the segment, and second, the priority for action via the ring zones.

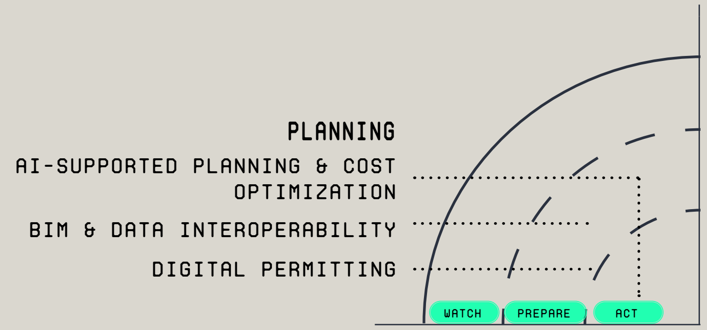
The ring zones represent the reading logic “ACT,” “PREPARE,” and “WATCH.” These three categories translate the radar position into practical guidance for decision-makers.

ACT indicates very high urgency and short-term relevance. The recommendation here is to launch specific pilot projects and quickly validate whether the trend delivers measurable benefits in your own context. If the results are convincing, the project should be scaled up quickly and anchored in the organization so that the tests become a repeatable standard.

PREPARE describes medium urgency, where relevance is already apparent but broad implementation is often still premature. The focus is on building capabilities, a database, a partner network, and a clear roadmap so that decisions can be made and implemented quickly later on. Small proof-of-concepts are useful, but should be clearly limited and pursue a specific learning objective.

WATCH stands for low urgency and a longer time horizon, where impact and timing are still uncertain or highly context-dependent. The right response is structured monitoring with defined signals and triggers, rather than immediate large investments. Selective experiments can be useful, but should remain resource-efficient and only take place where they fit strategically.

TRENDFOKUS PLANNING



AI-SUPPORTED PLANNING & COST OPTIMIZATION

DEFINITION: The use of artificial intelligence (AI) and advanced analytics in project planning, scheduling and cost estimation to improve accuracy, optimize resources, anticipate overruns and support decision-making in construction and related industries.[4]

OPPORTUNITIES:

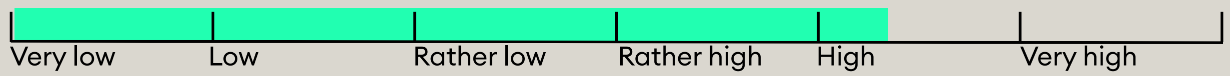
- Enhanced cost prediction accuracy and reduced budget overruns[4].
- Better scheduling and resource optimization through AI-driven planning tools, reducing delays and waste.[5]
- Early identification of deviations and risks enabling proactive cost control.[6]

RISKS:

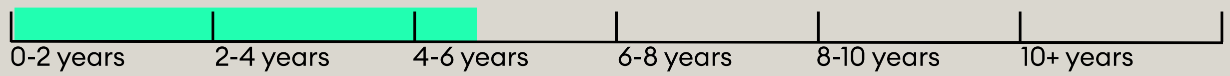
- Data quality issues, fragmented legacy systems and skills gaps hinder effective AI adoption.[7]
- High initial investments, uncertain ROI, and resistance to organizational change may slow rollout.[6]
- Dependence on black-box algorithms, lack of transparency, and legal implications in cost decisions.

STARTUPS FROM OUR NETWORK

IMPACT ON INDUSTRY

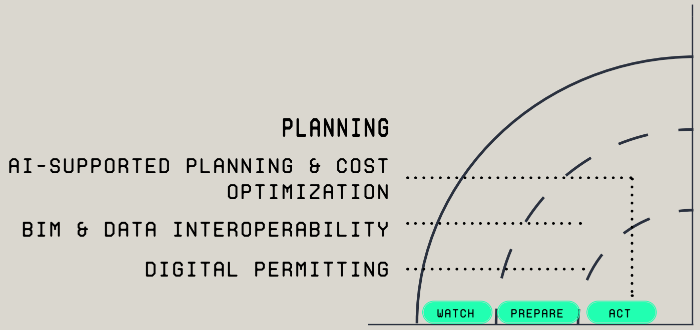


TIME OF MAINSTREAM ADOPTION



PREPARE

TRENDFOKUS PLANNING



BIM & DATA INTEROPERABILITY

DEFINITION: The capability for digital building models and associated data (via IFC, open BIM standards etc.) to be exchanged, integrated and reused across stakeholders, software platforms and lifecycle phases.[1]

OPPORTUNITIES:

- Enhanced collaboration and reduced errors when models and data are interoperable.[1]
- The asset lifecycle, from design to construction to operations, generates valuable data that can be utilized across phases.[2]

RISKS:

- Lack of semantic/data-standards or immature workflows leads to data loss, fragmentation or vendor-lock-in.[3]
- Implementation cost, training needs and organizational alignment remain barriers.[1]

STARTUPS FROM OUR NETWORK

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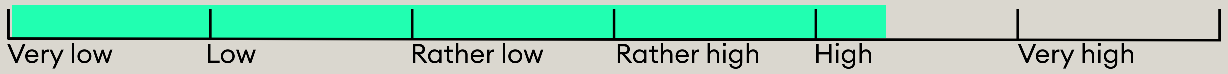
IMPACT ON INDUSTRY



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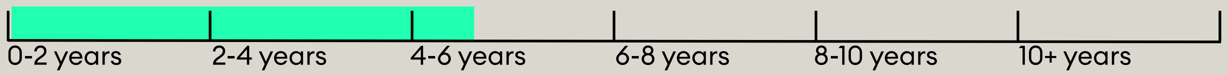
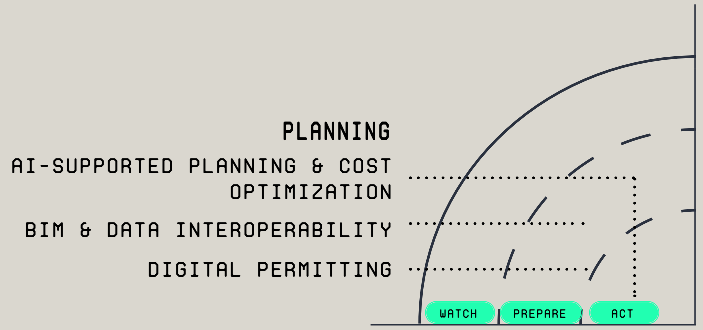


PREPARE

TRENDFOKUS PLANNING



DIGITAL PERMITTING

DEFINITION: Digital permitting refers to the digitalisation and automation of permit applications, reviews, approvals, and compliance tracking across sectors such as construction, energy, and industrial operations. It replaces paper-based and fragmented approval systems with integrated, data-driven digital workflows.[15]

OPPORTUNITIES:

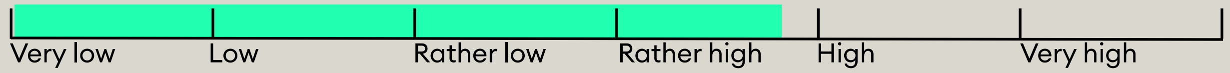
- Significant reduction in lead times for construction and infrastructure approvals.[18]
- Higher efficiency through automation, standardised data formats, and transparent process tracking.[15]
- Supports large-scale decarbonisation and infrastructure programmes by accelerating project delivery.[16]

RISKS:

- High implementation complexity: many stakeholders, different legal frameworks, and heterogeneous IT systems.[17]
- Low interoperability: without common standards, digital processes remain fragmented.[18]

STARTUPS FROM OUR NETWORK

IMPACT ON INDUSTRY



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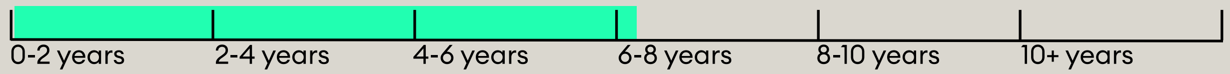

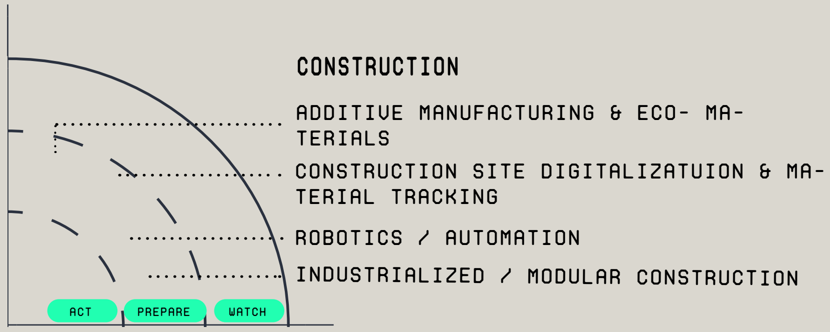

ADDITIVE MANUFACTURING & ECO-MATERIALS

DEFINITION: Additive Manufacturing refers to layer-by-layer fabrication of parts from digital models. In combination with eco-materials, it focuses on bio-based, recycled, or low-carbon feedstocks that reduce environmental impact while enabling advanced manufacturing applications.[28]

OPPORTUNITIES:
- Material efficiency & waste reduction through near-net-shape production and optimized geometries.[29]
- Supports circular construction by enabling fully recyclable building components made from renewable materials.[30]

RISKS:
- High energy consumption of certain Additive Manufacturing processes, reducing net sustainability gains.[29]
- Lack of standards & certification, slowing industrial adoption in regulated sectors.[31]

STARTUPS FROM OUR NETWORK

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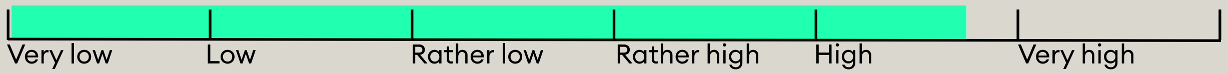
IMPACT ON INDUSTRY



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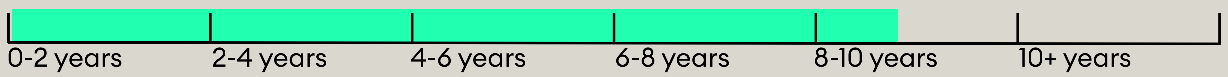
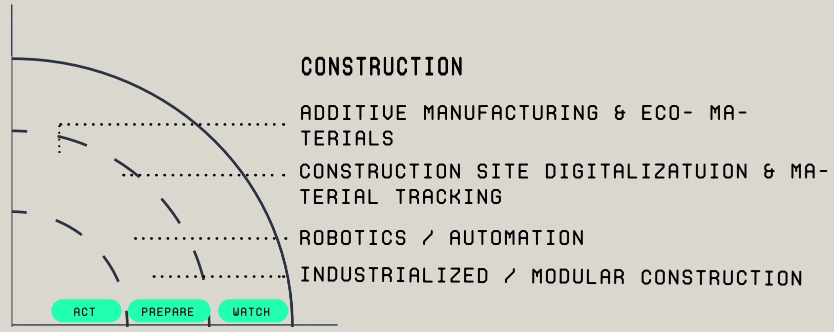




CONSTRUCTION SITE DIGIZATION & MATERIAL TRACKING

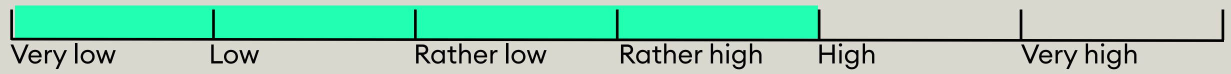
DEFINITION: Construction site digitization and material tracking refers to the use of digital tools to monitor materials, assets, workflows, and site progress.[25]

OPPORTUNITIES:
- Real-time visibility of materials, equipment, and site progress increases productivity, reduces delays, lowers downtime, and improves planning accuracy.[26]
- Precise material tracking reduces costs and waste, avoids over-ordering, and supports circular construction practices.[26]

RISKS:
- Technical barriers: Fragmented processes, lack of interoperable systems and insufficient site connectivity slow down digital workflows and real-time tracking.[27]
- Financial barriers: High investment costs for hardware, software and staff training.[27]

STARTUPS FROM OUR NETWORK

IMPACT ON INDUSTRY



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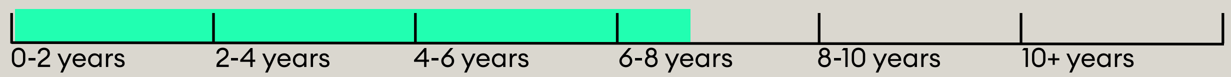

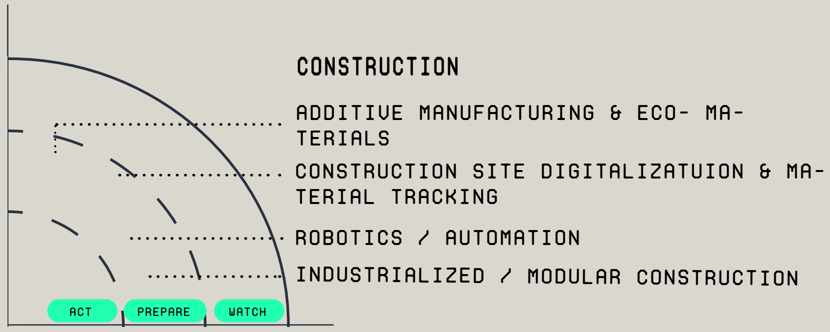

ROBOTICS & AUTOMATION

DEFINITION: Robotics & Automation refers to the deployment of industrial and collaborative robots, combined with automation technologies, increasingly powered by AI, to perform manual or repetitive tasks in manufacturing, logistics or services more efficiently, safely, and flexibly.[22]

OPPORTUNITIES:
- Productivity & efficiency gains: Robots significantly increase output and reduce error rates in manufacturing and logistics.[23]
- Response to labour shortages: Automation helps compensate for Europe's structural shortage of skilled workers and demographic decline.[24]

RISKS:
- High investment & integration barriers: Upfront costs and complex system integration remain obstacles.[24]
- Job transformation & quality concerns: Automation may reduce autonomy in low-skilled jobs and increase work intensity.[24]

STARTUPS FROM OUR NETWORK

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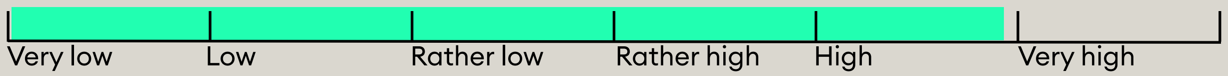
IMPACT ON INDUSTRY



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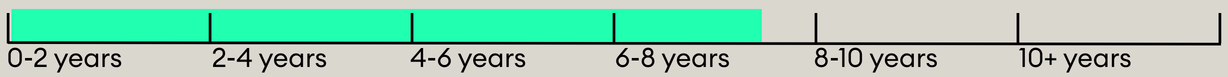
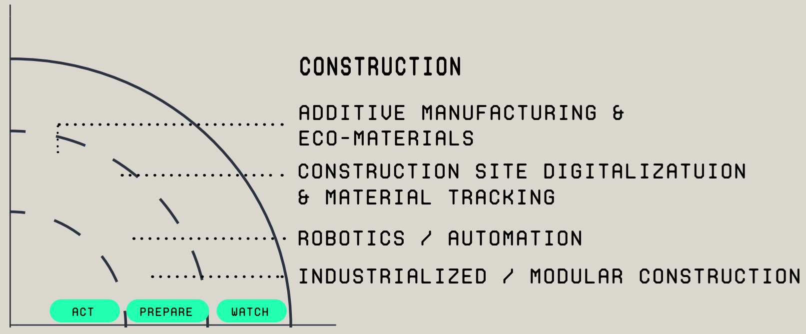




INDUSTRIALIZED / MODULAR CONSTRUCTION

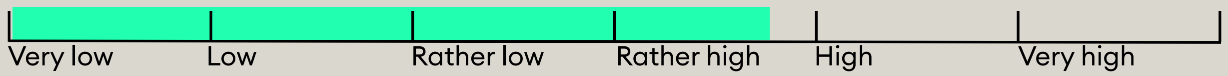
DEFINITION: Industrialized / modular construction refers to the off-site, factory-based production of standardized building modules or components that are transported to the site for assembly, shifting construction from a traditional on-site project approach to an industrialized, modular, product-oriented logic.[19]

OPPORTUNITIES:
- Shorter on-site construction time: modules are built in parallel with site works, indoor factory conditions reduce delays.[20]
- Improved quality control & fewer defects through factory environment.[20]
- Reduced waste, better sustainability (less site disturbance, less material waste).[21]

RISKS:
- Logistical challenges & transport complexity: large modules need to be moved, raising cost/time risk[19].
- Up-front investment and changes to the business model are required[19].
- Standardisation vs. customization tension: balancing customer/architect demand for uniqueness with module reuse.

STARTUPS FROM OUR NETWORK

IMPACT ON INDUSTRY



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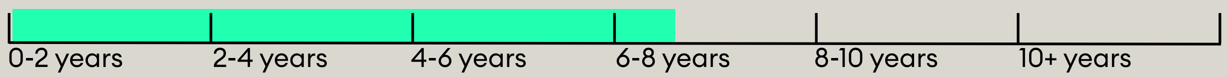

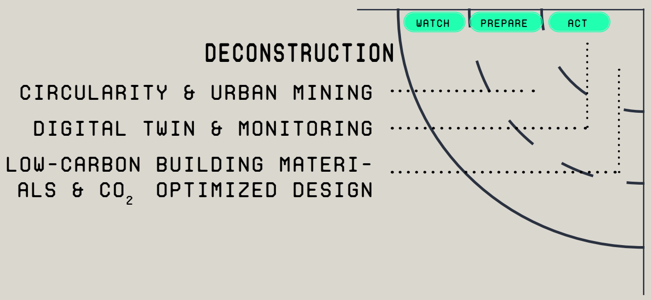

CIRCULARITY & URBAN MINING

DEFINITION: Circularity and urban mining refer to strategies that keep materials in continuous use by reducing waste and enabling reuse, recycling, and the recovery of valuable resources from existing buildings, infrastructure, and construction waste.[37]

OPPORTUNITIES:

- Reduces demand for virgin materials and raw-material imports, thereby strengthening supply security and resource resilience.[38]
- Reduces waste and environmental impact.[38]
- It creates new circular business models, e.g., remanufacturing, recycling, and material passports.[37]

RISKS:

- High logistical, economic and technological barriers to efficiently recovering materials on a large scale.[37]
- Gaps in regulations and standards slow the market uptake of reused and recycled building components.[37]

STARTUPS FROM OUR NETWORK

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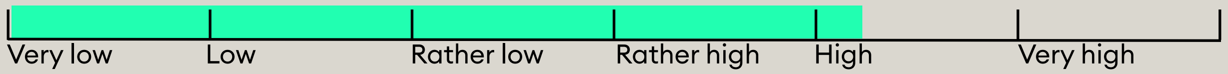
IMPACT ON INDUSTRY



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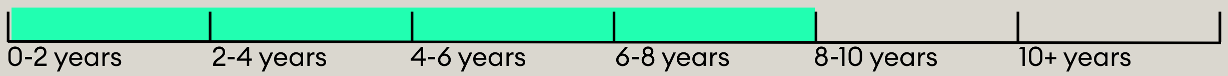

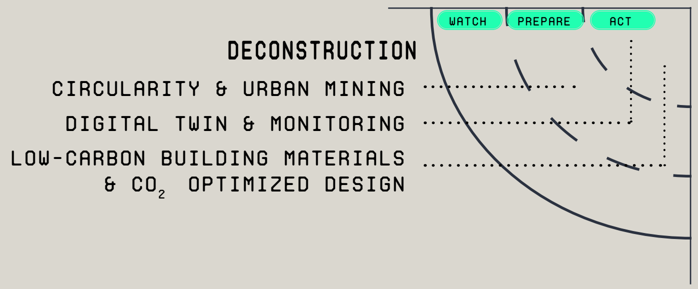

DIGITAL TWIN & MONITORING

DEFINITION: A digital twin is a dynamic, virtual replica of a physical asset, system, or process. It uses real-time data for simulation, monitoring, and performance optimization throughout the asset's lifecycle.[35]

OPPORTUNITIES:

- Improved operational efficiency through real-time monitoring and simulation.[36]
- Reduced downtime and lifecycle costs by identifying failures before they occur.[36]
- Enables performance optimization and data-driven decision-making.[36]

RISKS:

- High implementation and integration complexity, especially when connecting legacy systems and heterogeneous data sources.[36]
- Data quality, cybersecurity and data governance challenges due to continuous, high-volume data flows.[36]

STARTUPS FROM OUR NETWORK

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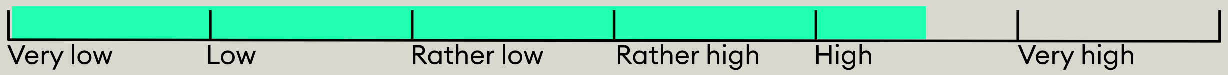
IMPACT ON INDUSTRY



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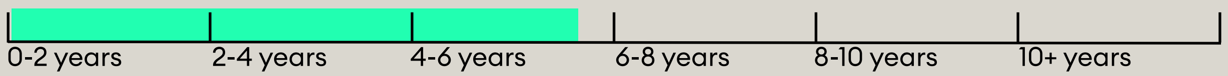
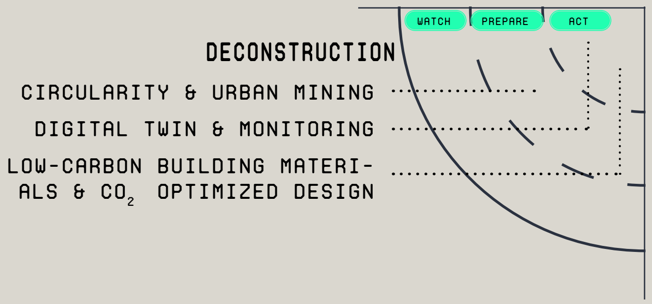


ACT

TRENDFOKUS DECONSTRUCTION



LOW-CARBON BUILDING MATERIALS & CO2-OPTIMIZED DESIGN

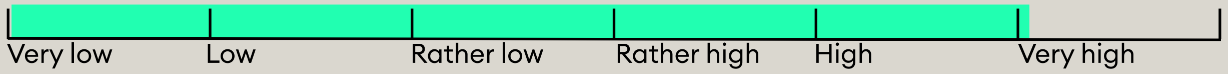
DEFINITION: Low-carbon building materials and CO_2-optimized design refer to the selection of low-carbon building materials and resource-efficient planning and construction methods with the aim of significantly reducing a building's CO_2 emissions throughout its entire life cycle–from manufacture to operation to demolition [8].

OPPORTUNITIES:
- Significant reduction of the built environment's carbon footprint. The building and construction sector is responsible for approximately 37% of global CO_2 emissions.[9]
- Material innovation: Bio-based materials, for example, can become carbon-negative and provide carbon storage benefits.[10]

RISKS:
- Higher upfront costs and supply constraints for alternative materials make the business case uncertain[11].
- There are performance, durability, and long-term data gaps for new materials. There is a risk of unintended consequences [9].

STARTUPS FROM OUR NETWORK

IMPACT ON INDUSTRY



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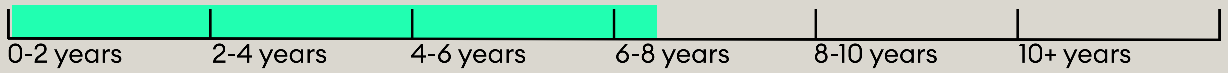
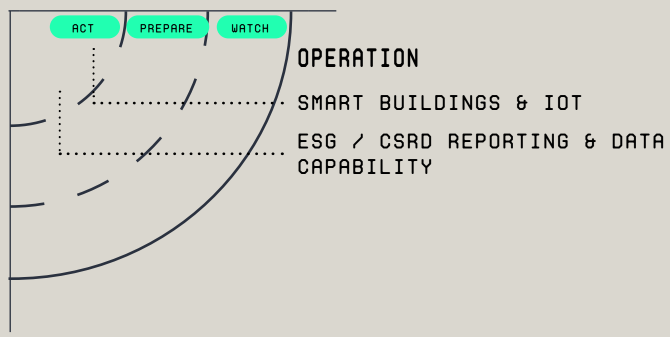


ACT

TRENDFOKUS OPERATION



SMART BUILDINGS & IOT

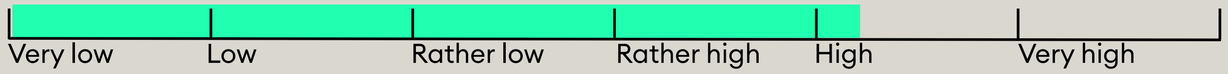
DEFINITION: Smart buildings use the Internet of Things (IoT) to improve building operations. This includes using sensors, connected systems, and data analytics to optimize things like energy use, maintenance, and security.[32]

OPPORTUNITIES:
- Improved energy efficiency and lower operating costs due to the use of IoT sensors that continuously monitor and optimize overall energy usage.[33]
- Predictive and data-driven maintenance because IoT devices provide real-time insights into building systems, enabling early detection of faults and performance issues.[34]

RISKS:
- Increased cybersecurity vulnerabilities since interconnected IoT devices create more potential entry points for attacks and system disruptions.[34]
- Privacy and data protection concerns because smart buildings gather sensitive occupant data.[34]

STARTUPS FROM OUR NETWORK

IMPACT ON INDUSTRY



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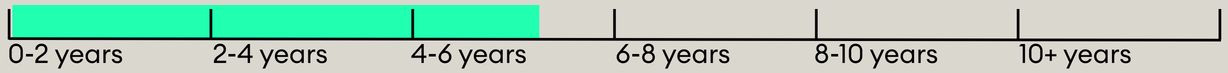
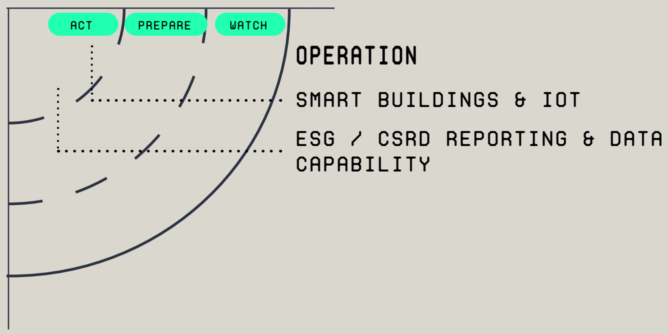


TRENDFOKUS OPERATION



ESG / CSRD REPORTING & DATA CAPABILITY

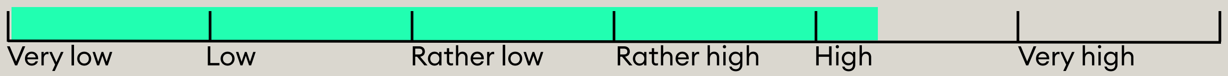
DEFINITION: The CSRD is a European Union directive mandating broad disclosures of environmental, social and governance (ESG) impacts by companies; under it, firms must follow the European Sustainability Reporting Standards (ESRS) and build data systems capable of collecting, assuring and reporting ESG metrics.[12]

OPPORTUNITIES:
- Enables companies to align with sustainable finance flows, access capital tied to ESG performance, and reduce risk of greenwashing accusations.[13]
- Investment in data capability drives digitalization and may support value chain improvements (e.g., tracking Scope 3 emissions).[14]

RISKS:
- High complexity and cost: firms may struggle to build effective processes, collect accurate data, and ensure materiality assessments and assurance requirements are met.[14]
- Data quality and comparability issues: without mature systems, disclosures may be inconsistent, reducing their usefulness.[14]

STARTUPS FROM OUR NETWORK

IMPACT ON INDUSTRY



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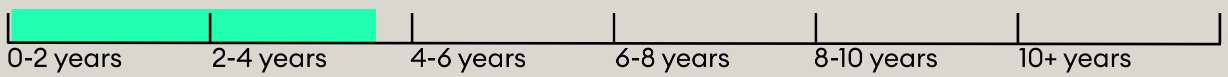

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GROUNDBREAKERS

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