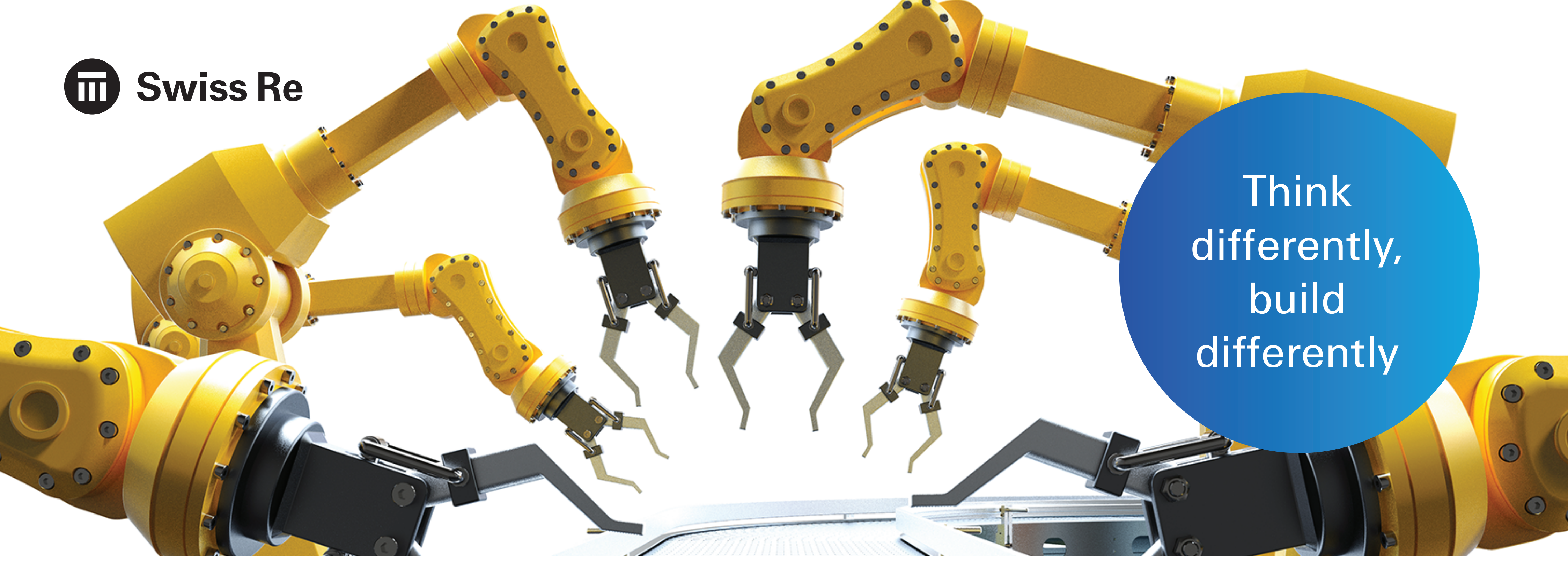
Swiss Re



Digitalisation and its impact on the construction and insurance industries

Breaking the mould: trends, challenges, innovations

Macro trends

- Population growth
- Urbanisation
- Energy transition
- Climate change

Construction market **13%** global GDP, 2015

More housing & infrastructure

40% 2015 - 2020 Growth in construction market

Challenges

- Low productivity
- Traditional planning & prediction methods
- Limited constructible space
- Ageing workforce

Innovations

Digitalisation optimises processes

- Robotics
- Sensor technologies
- Network & communication equipment
- Building Information Management

Shifting risk landscape: key technologies driving risks and opportunities

Opportunities

- Quality
- Monitoring
- Speed
- Transparency
- Reliability
- Safety

Risks

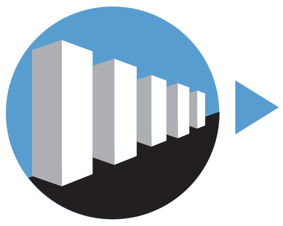
- Cyber risk
- Liability risk
- Transportation
- Loss of expertise
- Risk of serial loss
- Data overflow

Digitalisation: what is in it for insurance?

Advantages

- Early involvement
- Access to full project data
- Closer collaboration between all parties
- Improved project visualisation and risk identification

Data-driven solutions

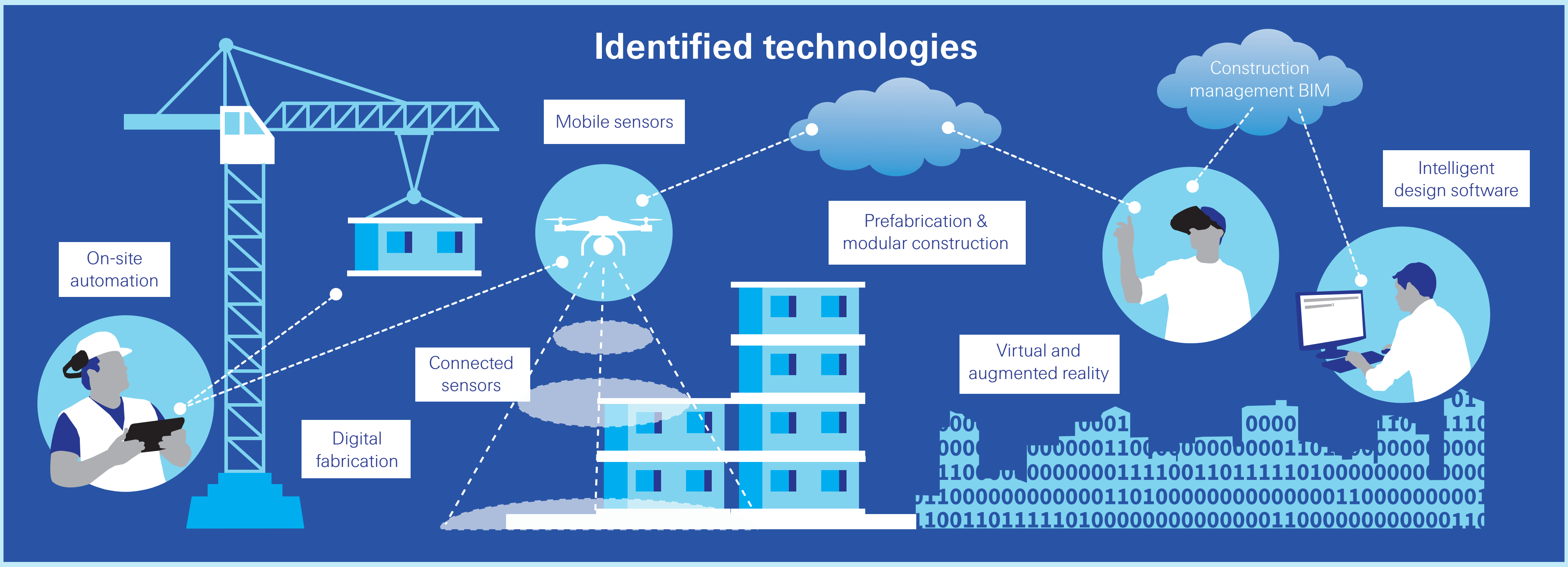


Secure, reliable, transparent data exchange

Improved insurance products

- Tailor made products
- Efficient Risk Management
- Faster claims payment
- Serving the client at all fronts

Swiss Re is advancing its underwriting tools and solutions as the digital transformation of the construction industry continues



List of technologies: pros and cons

	Pros	Cons
Intelligent design software Predictive analytics software simulates the use of a building or structure by its future end users.	The design of a building or infrastructure project reflects end user movements and consumer behaviour at an early stage.	Results are only as good as the input parameters and may lead to suboptimal, rigid designs.
Virtual and augmented reality Visual representation of a project helps to dynamically translate a projected situation into an actual design.	Delivers proportions, functionality and configuration of a project and enhances quality control.	May not reflect a realistic design and gives a false impression fo the end result.
Connected sensors Wireless sensors enhance monitoring with real-time tracking of atmospheric conditions, concrete setting, structure load and displacement.	Constant monitoring from multiple sources reduces risk of false alarm and need for human surveillance.	Failure of the sensors will be worsened by the reduced attention that their presence creates.
Mobile sensors, unmanned aerial vehicles Mobile sensors enhance monitoring of construction with more accurate 3D representations, elevation, volume and surface calculations.	Instantaneous surveillance of progress and monitoring for maintenance purposes.	Mismatch if sensors are not calibrated correctly and loss of experience in topographic measure-ments.
Construction management BIM BIM increases collaboration between the various actors of a construction project and breaks down the work process in a series of optimal construction sequences.	Better collaboration reduces risk of planning errors and improves quality. It also enables insurers' earlier involvement.	Granulated design, loss in accuracy of drawings, systematic errors can lead to problems.
On site automation Automation in construction, particularly for linear and repetitive tasks, greatly enhances productivity.	High precision and elimination of human errors could compensate for the lack of or ageing of qualified workforce.	Automated machines could lead to loss of experience in the workforce and currently insufficient safety guarantees.
Digital fabrication Digital fabrication such as 3D software feeds a design to a machine without human interaction, combining aesthetics with structural function.	Permits the design of complex shapes with high precision, combining structural and aesthetic functions.	Calibration requirements are high and critical, high dependency on the quality of the material used.
Prefabrication and modular construction Prefabrication produces building elements offsite in a protected space for easier assembly and replication.	Improved quality management, simplified onsite logistics and just in time delivery enhance efficiency and speed.	Systematic errors can originate in the manu-facturing process and construction depends wholly on delivery of components.

DOMAIN Modelling & Visualisation · Data management · Construction management · Prefabrication

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