New tools for construction management

ERNST² ARCHITEKTEN AG
Dipl.-Ing. Architect Stefan Ernst

Brief introduction
Introduction
Time travel 1990/2025
Digital planning meets traditional execution
Conclusion
Recommendations for action

ERNST² ARCHITEKTEN AG

Aalen Augsburg Berlin Bremen Düsseldorf Erfurt Frankfurt
Freiburg Hamburg Hannover Heidelberg Heilbronn Karlsruhe
Köln Konstanz Leipzig München Münster Nürnberg
Regensburg Stuttgart Tübingen Würzburg

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Über ERNST²

1998 Foundation of ERNST²
Stefan + Markus Ernst

2012 Transformation into
ERNST² ARCHITEKTEN AG
CEO Stefan Ernst
CEO Markus Ernst

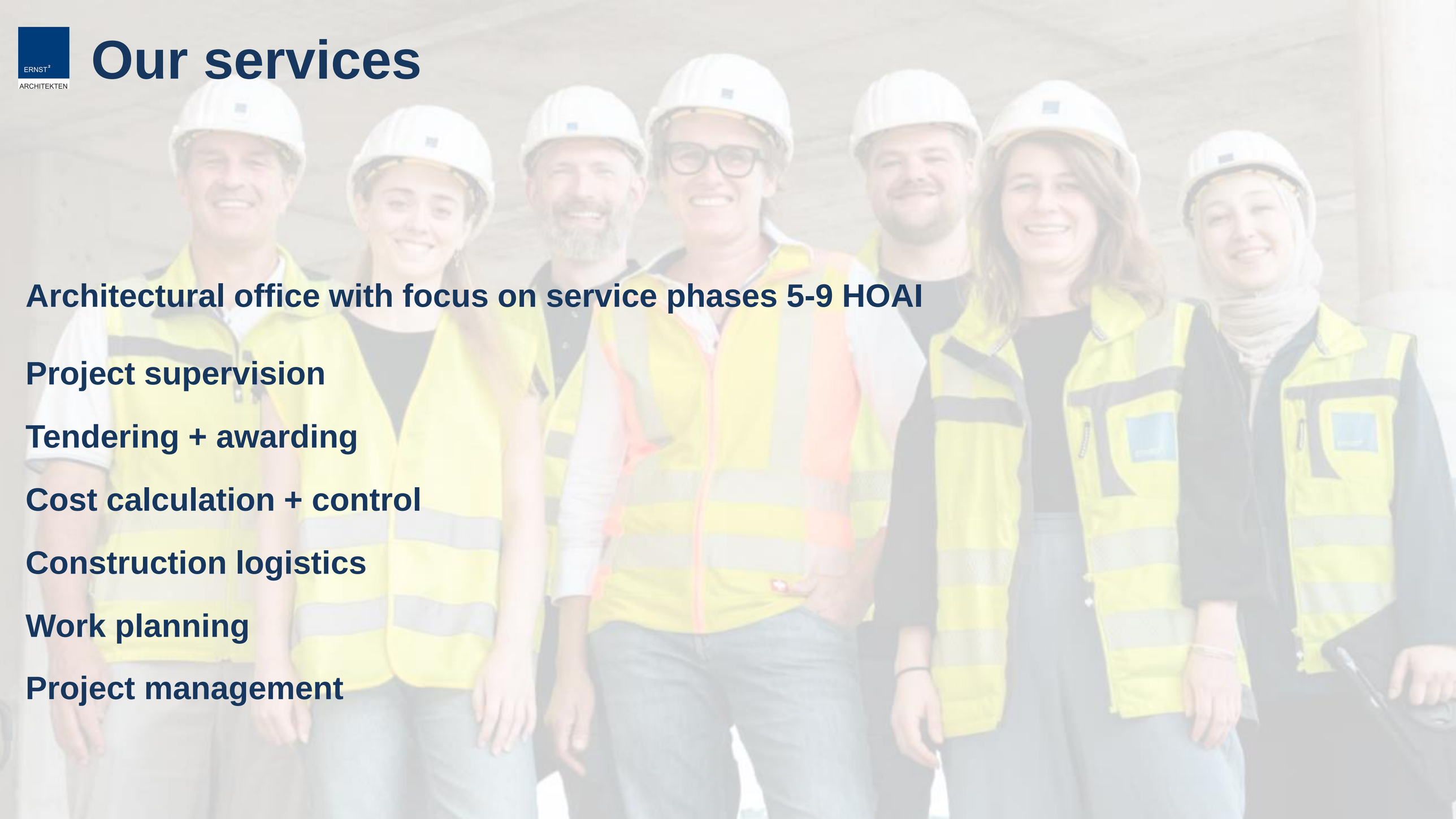
2022 Management Board Olaf Sachter

2025 Head office Stuttgart
550 employees
23 locations
50 location managers +
other managers

CEO: **Dipl.-Ing. Olaf Sachtler,**
Dipl.-Ing. Architekten Markus and Stefan Ernst

Foto: Simon Gerlinger

Our services



Architectural office with focus on service phases 5-9 HOAI

Project supervision

Tendering + awarding

Cost calculation + control

Construction logistics

Work planning

Project management

Personal details

57 Jahre, Diplom 1996 University Stuttgart

Dipl. Ing., Architect, Executive Board

Important projects:

Stuttgart, Robert-Bosch Hospital

Tübingen, Uni Mikrobiologie/Virologie

Hamburg, UKE, new build Klinik West

Munich, LMU, new build BMC

Hannover, KRH, new build Siloah

Hannover, BIVRC Boehringer Ingelheim

Arnstadt, new build Ersol/Bosch Solar

Munich, LMU, new build CIO

Actually

Freiburg, new build Corum/Falk Pharma

Munich, LMU, new build Hauner

Stefan Ernst

New tools for construction management

Technological progress in many areas of everyday life and the professional world is changing at an unprecedented speed.

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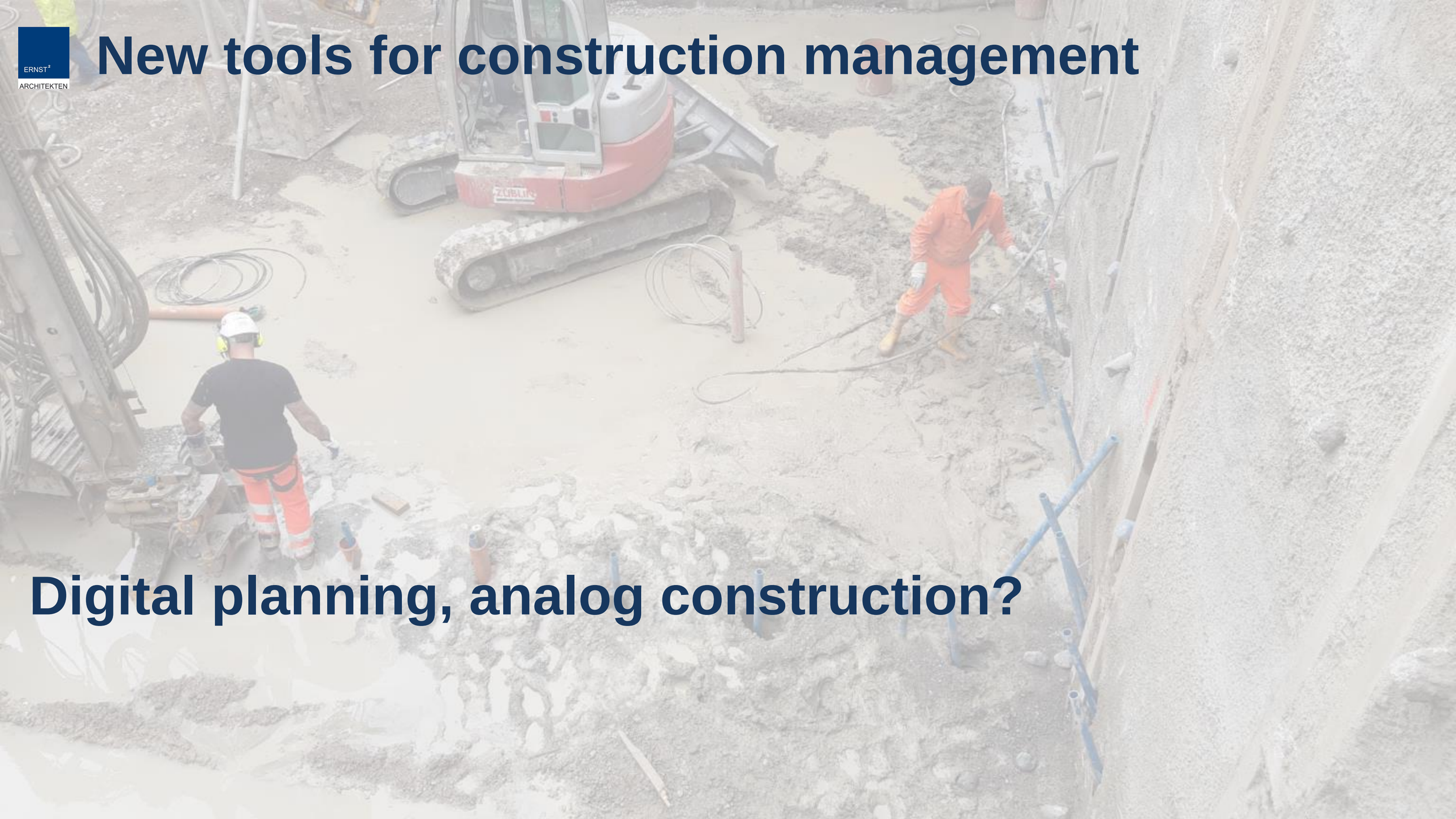
New tools for construction management



Digital planning, analog construction?

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Zeitreise

telecommunications as a benchmark

1990

Landline telephones
Mobile telephones for “at home”
Mobile telephones for “everyone”
Mobile network 2G, SMS

2025

Voice over IP
Smartphone
5G Network, Internet

New tools for construction management

Why innovation in construction (often) works differently.

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Zeitreise

The construction site 1990.

Zeitreise

The construction site 2025.

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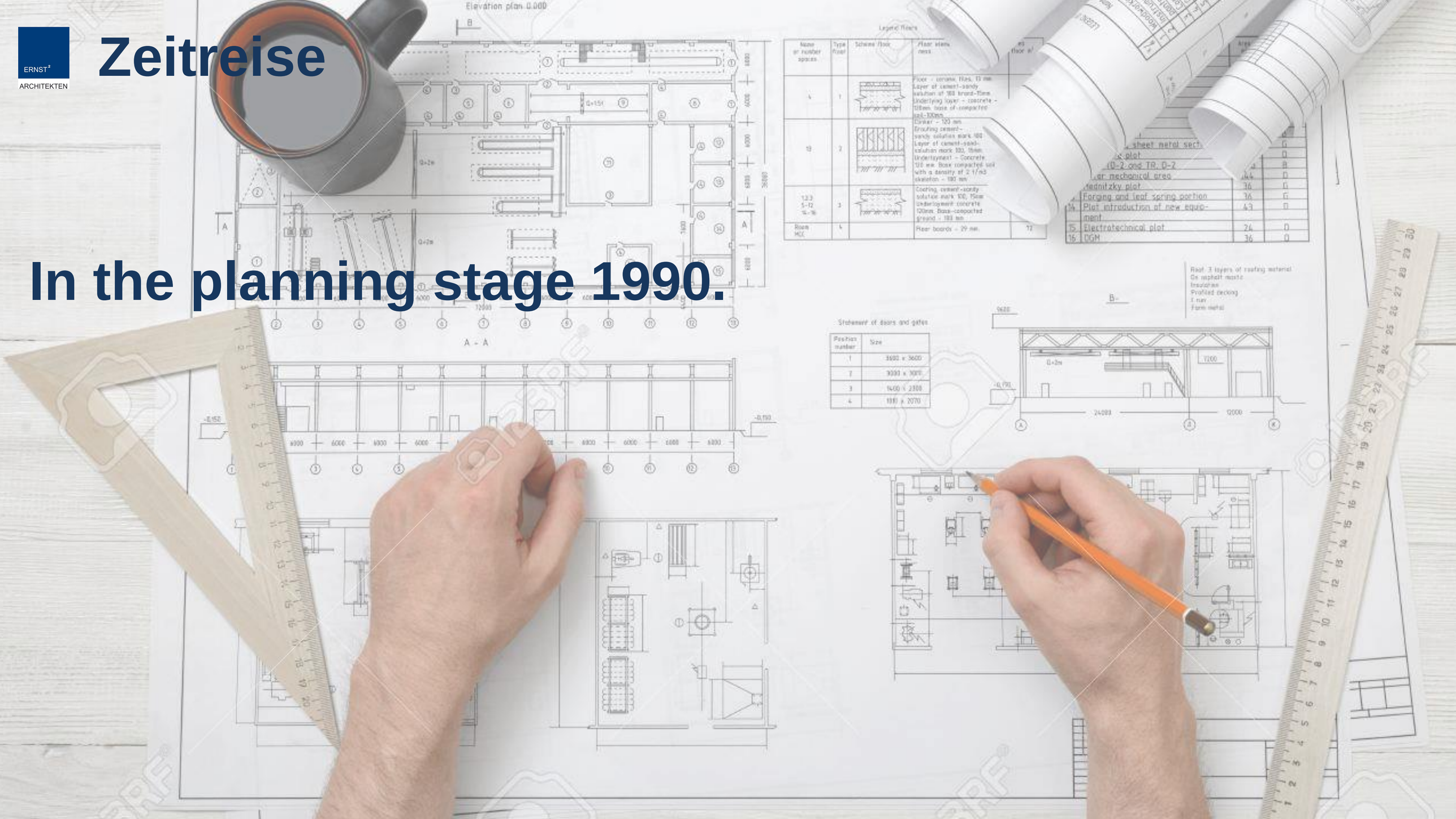
Zeitreise

In the planning stage 1990.



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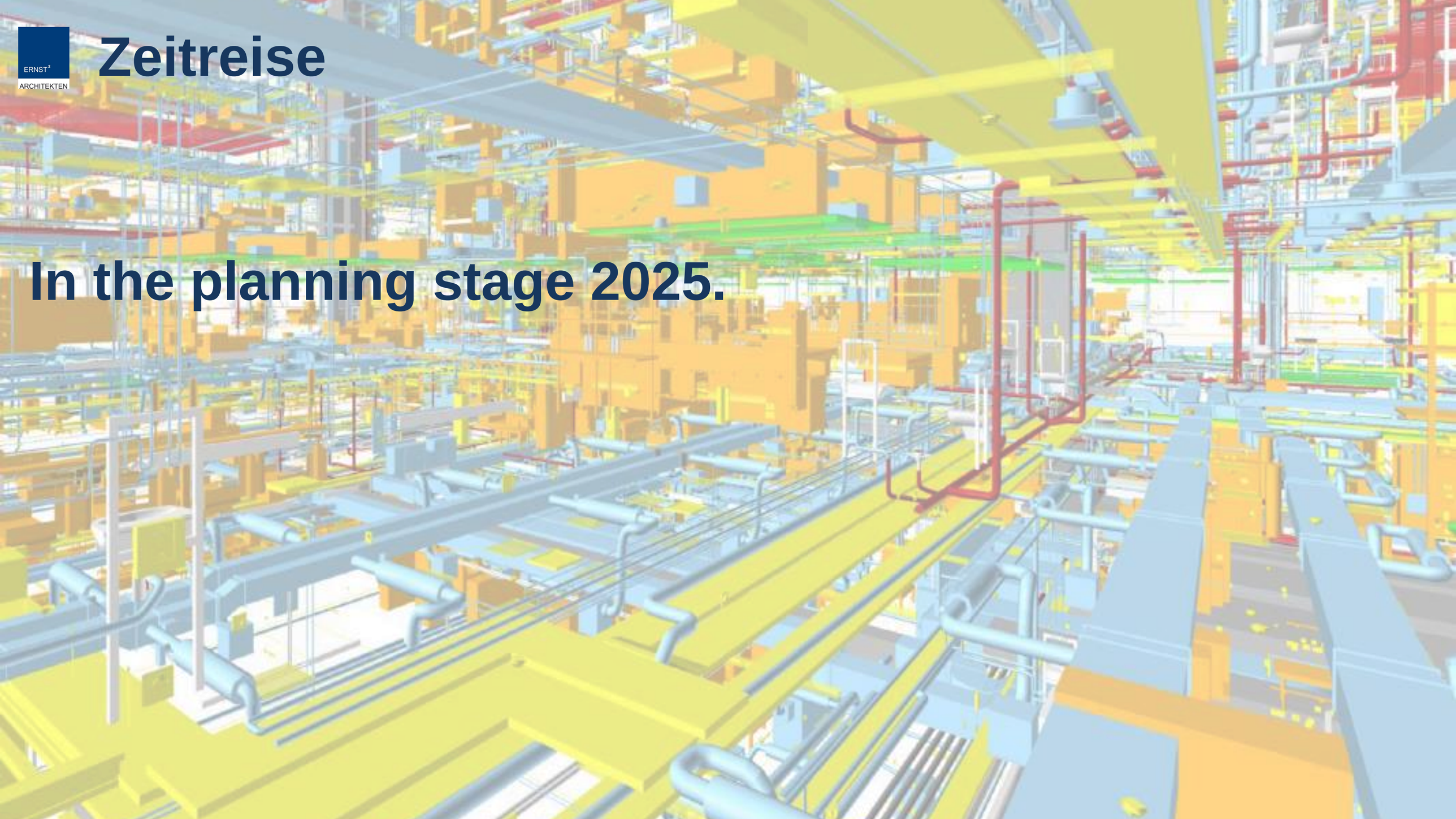
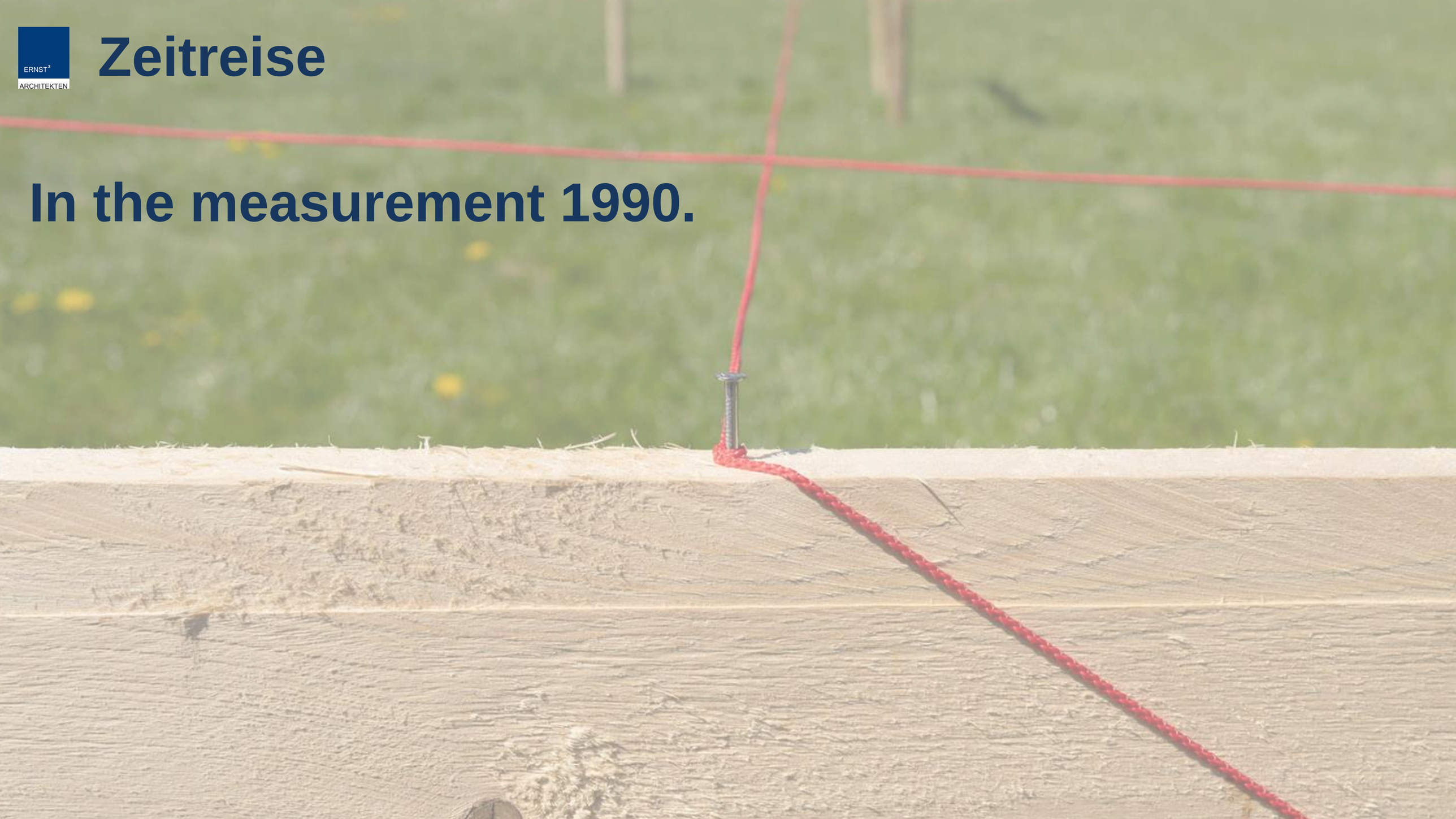
Zeitreise

In the planning stage 2025.



Zeitreise

In the measurement 1990.



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Zeitreise

In the measurement 2025.

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The reality:
Digital planning meets traditional execution.

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Time travel

In the construction technology 1990 - 2025.

Time travel

Concrete wall formwork 1968.

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Time travel

Concrete wall formwork 1990?

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Time travel

Ceiling formwork 1990?

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Time travel

Ceiling formwork 1990?

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Time travel

Ceiling formwork 1990?

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Time travel

Plasterboard wall 2025?

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Time travel

Floor screed 1990?

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Time travel

Timber windows 1990 and 2025.

New tools for construction management

While products and requirements are constantly evolving,

the actual construction and joining process remains essentially the same - slow, localized, handcrafted.

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Positive developments and success factors.
Where digitalization works.

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Innovation approaches in individual cases Example 3D concrete printer from PERI

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Innovation approaches in individual cases Example of drilling robots from HILTI

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New tools for construction management

Innovation approaches in individual cases

Digital printer from HP for TB marking on concrete floors

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Why good ideas often don't make it to the construction site.

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1. Interests hinder innovation
2. Lack of willingness to cooperate
3. Structural separation in the construction industry
4. Bureaucratic approval barriers
5. Risk shifting to subcontractors

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6. Small-scale supplier structure
7. Complexity and user-friendliness
8. Inadequate training and knowledge transfer
9. Discrepancy between digital planning and construction site reality
10. isolated product development

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Innovation needs cooperation.

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Digitalisation of construction management can only succeed where the tools offer real added value. Structural hurdles must be overcome, and where planning, execution and all parties involved work together in an integrated manner.

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New tools for construction management

Building for the future - what is needed now.

New tools for construction management

1. Creation of incentive systems for interdisciplinary cooperation
2. Improving communication between manufacturers and contractors
3. Simplification of approval procedures for innovative construction products
4. Incentive structures for subcontractors to use new tools

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5. Strengthening supplier cooperation through consortia and partnerships
6. User-friendly product development with ease of use
7. Participatory development with the involvement of construction workers Expertise
8. Comprehensive training programs for new technologies

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9. Socially responsible introduction of new tools, taking into account workplace effects
10. Close integration of digital planning tools with construction practice
11. Integrative product development taking into account all system components
12. Establish feedback loops between planning and execution

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13. Focus on measurable cost-benefit advantages for tool development
14. Error reduction as a sales argument for new construction site technologies
15. Development of common standards and interfaces

Thank you very much for your attention.

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