

Use of digital solutions for more effective and timely management decision-making at all stages in the life cycle of investment construction projects



EY

Совершенствуя бизнес,
улучшаем мир

Presenter



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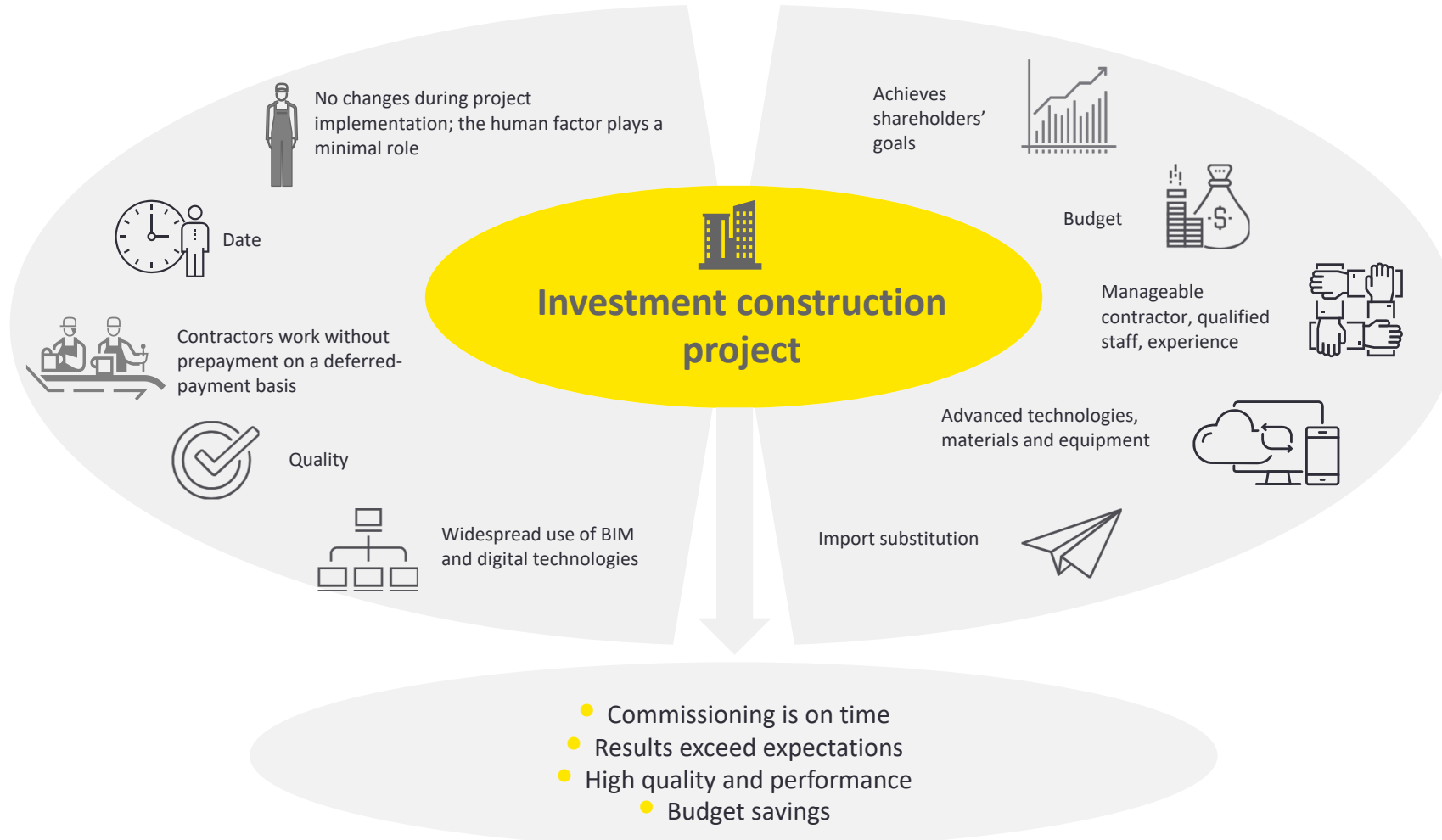
Director, Transactions Real Estate

- ▶ Expert, TC 465 Construction, since 2012 (expertise with construction regulatory documentation: SP, GOST)
- ▶ Chair, ISO/TC 59/SC2 Buildings and Civil Engineering Works
- ▶ Expert, ISO/TC 267 Facility Management

Key topics

- **More effective and timely management decision-making**
- **Digital technologies are the future** of investment construction projects
- **Experts are the key to success** in today's conditions
- **Integrated** balanced **planning** taking the interests of all parties into account
- **Unified** software product is missing

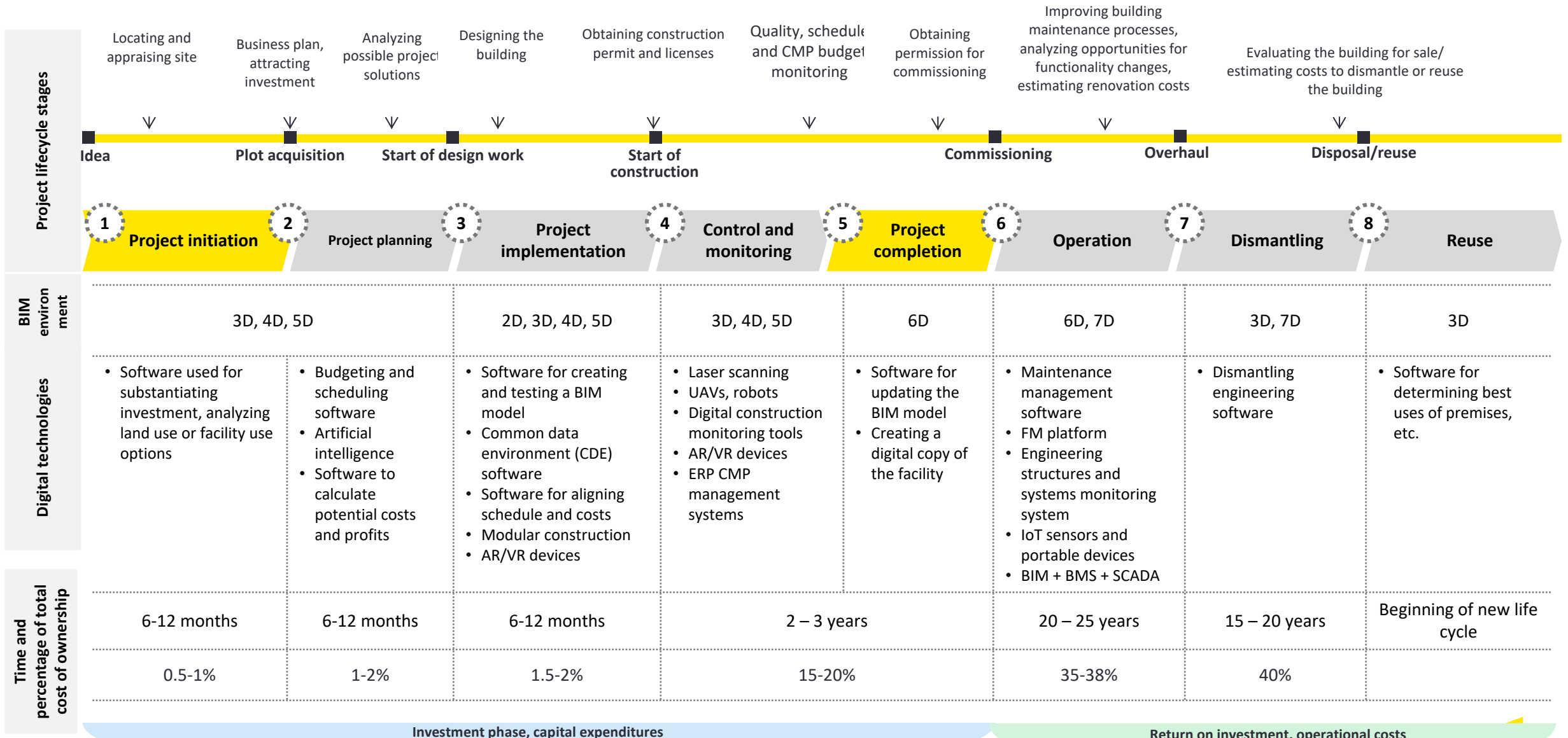
What does an ideal investment construction project look like today?



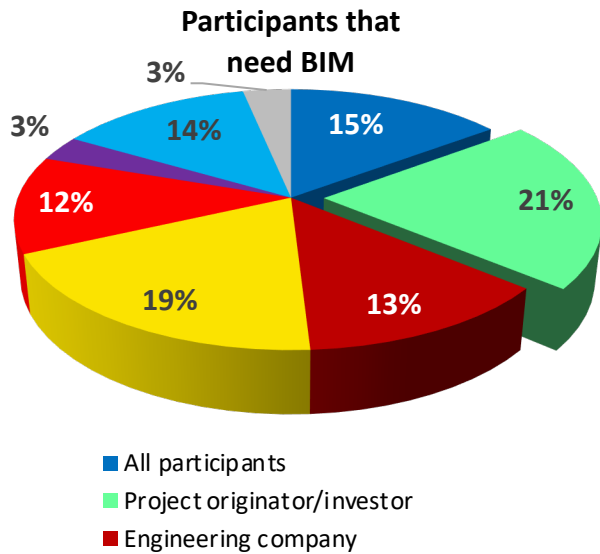
The involvement of professional experts (individuals) at all stages of a project is still essential to success

Human resources are central to projects, and software solutions are merely a tool

Key approaches to and opportunities for the use of digital technologies for raising project efficiency at all stages of the life cycle

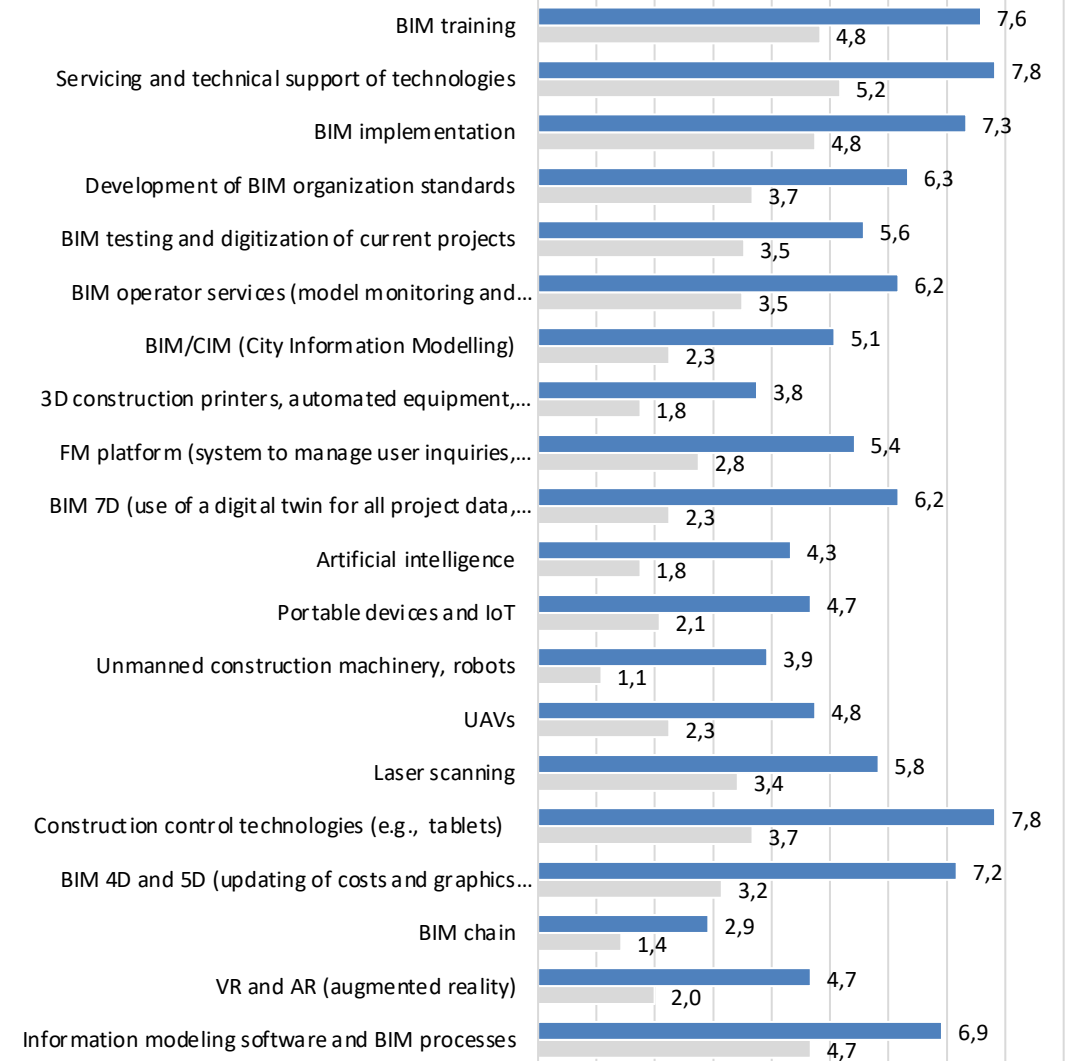
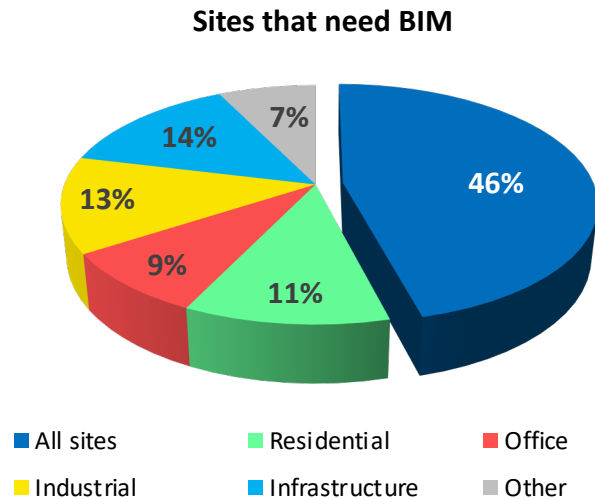


EY's 2021 study on the outlook for digital technologies in construction



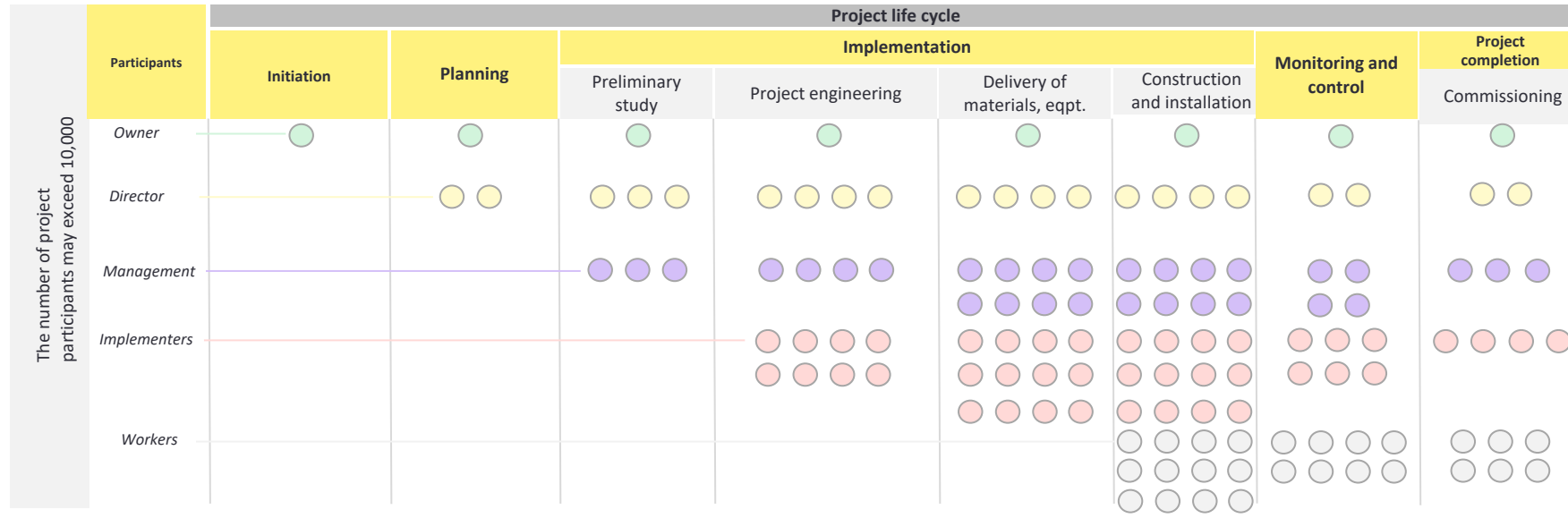
- ▶ BIM technologies are most needed by property developers/technical customers
- ▶ Engineering companies have the greatest interest in software
- ▶ BIM/CIM (City Information Modeling) and construction control technologies will be most needed by government agencies performing oversight and expert functions

- ▶ Not tied to a specific site
- ▶ Most extensive use of BIM for infrastructure and industrial sites



■ 5 years from now ■ Now

How decisions determine the success of a project at various stages in its life cycle



*** Legend**

- Project owner
- Director
- Management
- Implementers
- Workers

The owner, in one way or another, controls the processes involved at all stages of an investment construction project and directly influences its end results and success.

How to set up a stable “communication elevator” between a project’s owner and participants
 If the right approach is found, the latest digital technologies and various combinations thereof are effective tools for ensuring stable communication and input data for analysis as well as for making decisions and achieving a project’s goals



- The **total number** of possible combinations is **155 million**

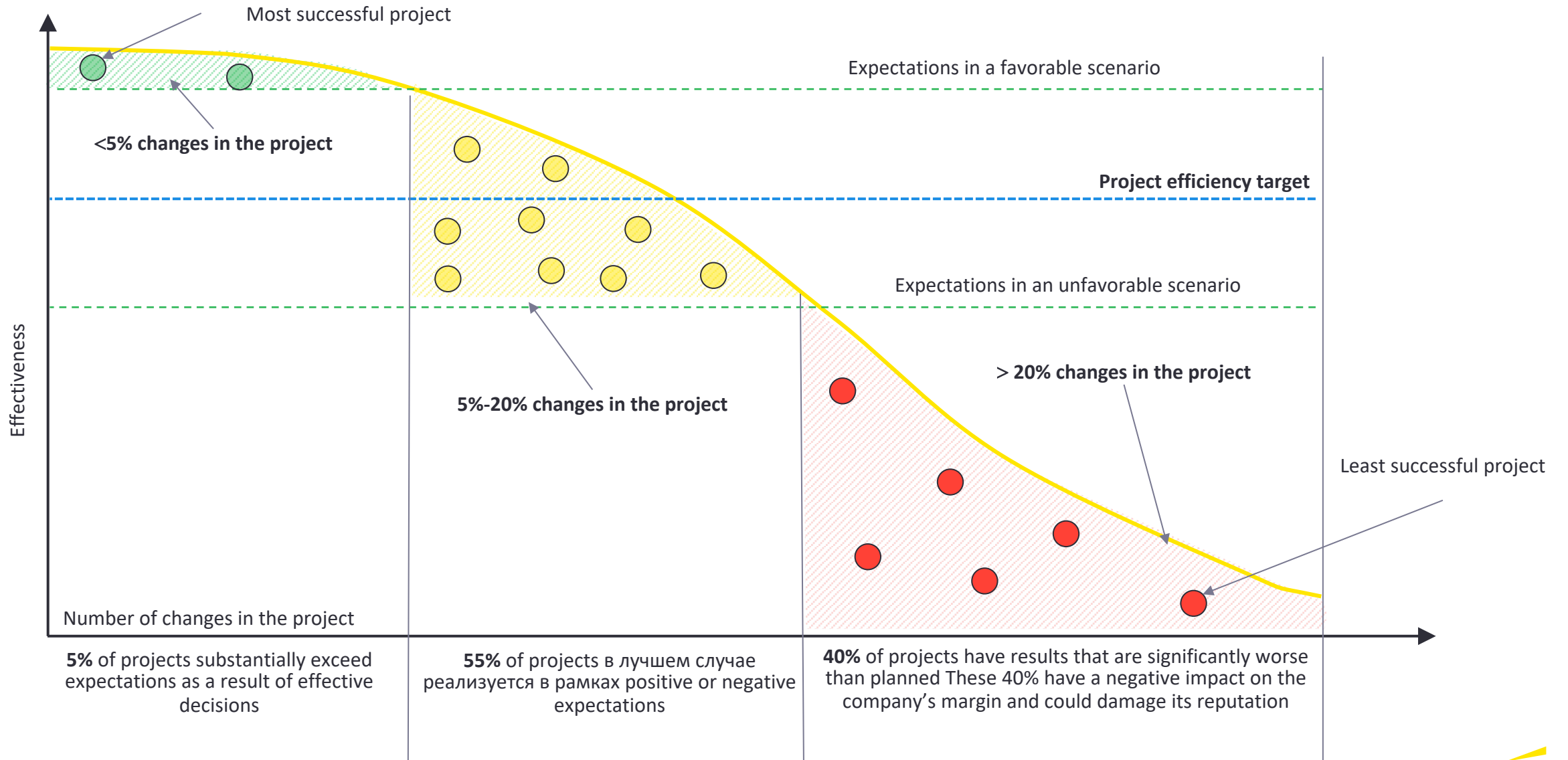


- The **total number** of possible combinations is **infinite**.

A project’s initial stage has a large number of possible outcomes. The **owner** is a key factor influencing a project.

How to determine the consequences of decisions in advance and make the right decision

EY study on the success of global projects involving changes in the implementation process

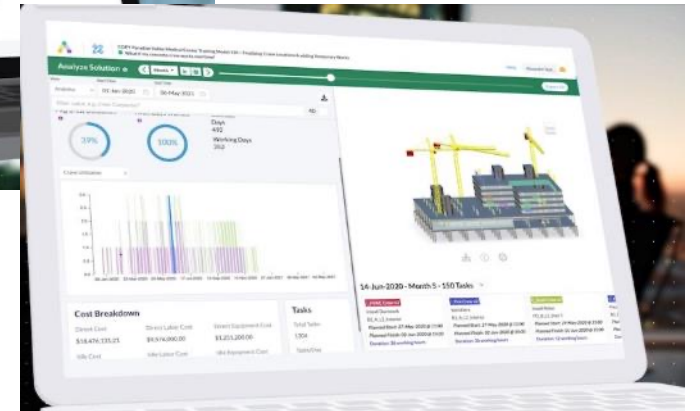
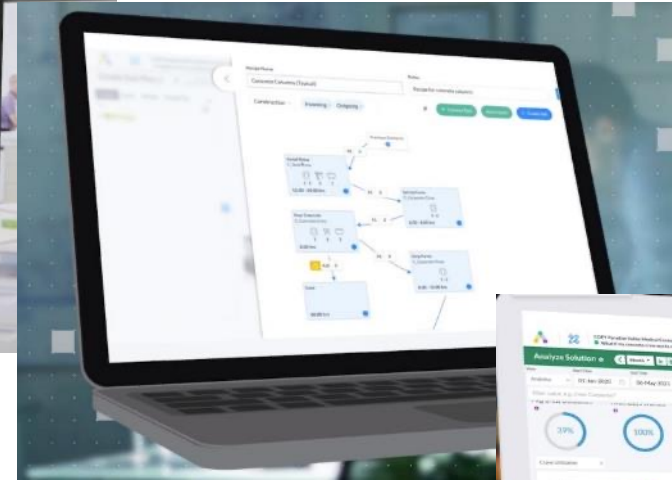
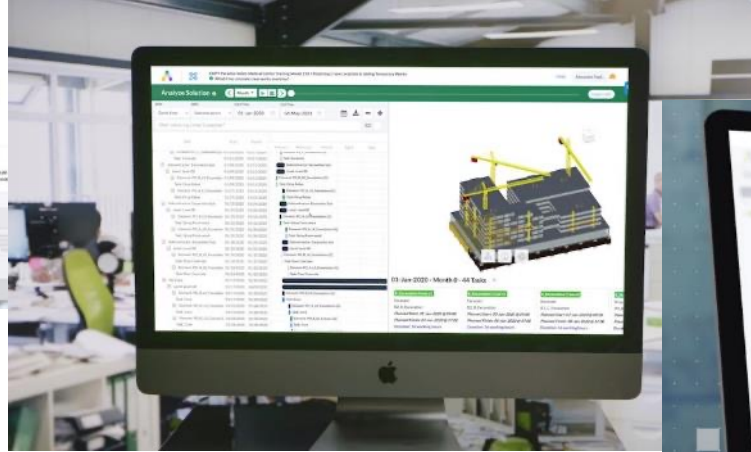
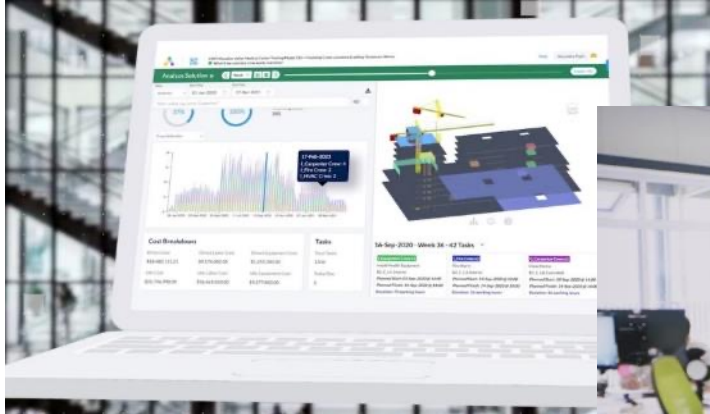


Opportunities for software in view of construction resources and technology

Correct planning of resources, costs and time

Ability to calculate changes in work procedures, depending on the circumstances

Objective input data for tender and contract procedures



Metrics that matter



Reduction in project duration

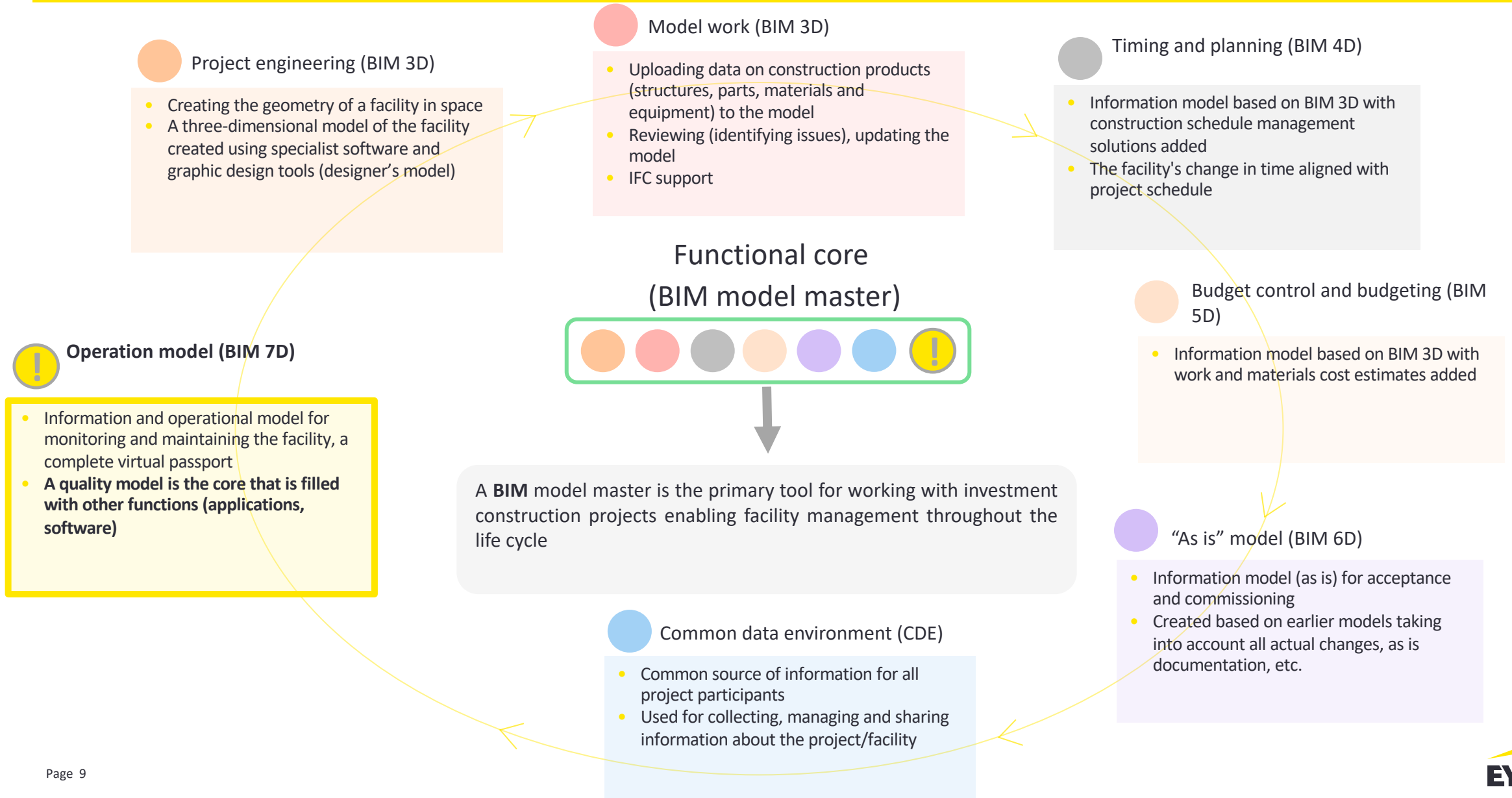


Labor cost savings



Equipment cost savings

Opportunities for software to create a common data environment



Use of BIM technologies in project management

Schedule management



- ▶ Aligning project implementation schedule with vendors' project delivery plans
- ▶ Integrating traditional planning tools and the BIM model (BIM 4D)

Budget management



- ▶ Using information models to estimate the scope of construction work and generate a work scope list for budgeting software (BIM 5D)
- ▶ Integrating BIM 4D + 5D schedule and cost oversight tools

Risk management



- ▶ Identifying issues before the start of construction
- ▶ Construction and OHS oversight using information modeling and augmented reality tools
- ▶ Modeling emergencies using risk forecasting and mapping people's location at each moment in time

Communication management



- ▶ Collaborative work of separately placed teams in a common data environment (CDE)
- ▶ Access to information for all participants: communication between the designer, builders and contractors
- ▶ Personnel work monitoring (working hours recording) using portable devices

**BIM
4D**

Model + Time: project implementation schedule monitoring and updates, plan-vs-actual analysis, critical path analysis

**BIM
5D**

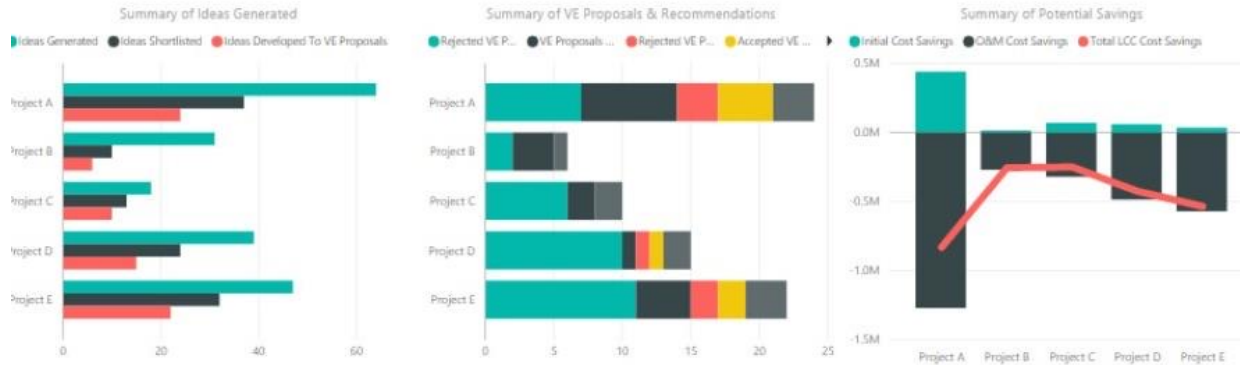
Model + Cost: project implementation cost control, plan-vs-actual analysis, cash flows analysis

Result

Engaging an independent consultant for project management helps manage projects in a much more efficient way, ensure oversight and transparency, achieve financial targets, and mitigate cost overrun, construction term extension and poor work quality risks

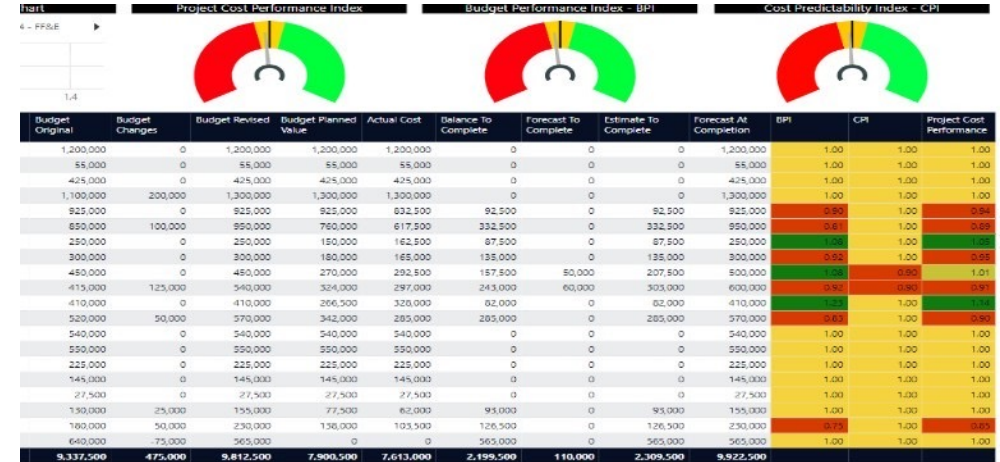
Opportunities for automating change management, based on software solutions

Tracking innovation proposals and monitoring their impact



| Project | Function | Ideas Generated | Ideas Shortlisted | Ideas Developed To VE Proposals | Rejected VE Proposals due to increased costs & not commensurate with benefits | VE Proposals considered for Design Improvements | Rejected VE Proposals after general considerations | Accepted VE Proposals for further consideration | Accepted VE Proposals at the Preliminary Design | Initial Cost Savings | O&M Cost Savings | Total LCC Cost Savings |
|--------------|-------------|-----------------|-------------------|---------------------------------|---|---|--|---|---|----------------------|-------------------|------------------------|
| Project A | Function AA | 30 | 15 | 10 | 2 | 2 | 2 | 1 | 3 | 100,000 | -400,000 | -300,000 |
| Project E | Function EA | 20 | 15 | 10 | 7 | 2 | 2 | 0 | 0 | -90,000 | -120,000 | -210,000 |
| Project A | Function AB | 20 | 12 | 8 | 3 | 2 | 1 | 1 | 1 | 80,000 | -250,000 | -170,000 |
| Project E | Function EB | 15 | 10 | 7 | 3 | 1 | 1 | 1 | 1 | 25,000 | -150,000 | -125,000 |
| Project D | Function DC | 12 | 9 | 6 | 5 | 1 | 0 | 0 | 0 | -50,000 | -50,000 | -100,000 |
| Project C | Function CB | 10 | 8 | 5 | 4 | 1 | 1 | 1 | 1 | 40,000 | -100,000 | -60,000 |
| Total | | 77 | 54 | 36 | 36 | 17 | 6 | 7 | 11 | 620,000 | -2,915,000 | -2,295,000 |

Real-time budget monitoring



Project information is collated on a single dashboard



Payment automation

What is it and what are its advantages?

Future of invoice processing

Payment Application Manged Service (PAMS) is an EY-tested technological solution for managing complicated invoices efficiently and accurately








Potential advantages

- 20% targeted reduction** in administrative expenses
- savings 4-9% of invoice cost:**
 - **Failure to comply with contract terms and conditions: 2-3%**
 - **Best deal: 1-3%**
 - **More beneficial tax treatment: 1-3%**
- All invoices are reviewed **within 10 days**
- 100% of lines reviewed** for accuracy and compliance
- Managed faster** allowing you to control payment schedule

The main reason organizations engage EY is they want us to prevent leaks of capital expenditures and facility management expenses, which allows them to focus on their core business

Advantages in detail

Instant improvements in cost, efficiency, accuracy, compliance and analytics

- 
Accuracy (trust)
- 
Efficiency (speed)
- 
Lower cost
- 
Risk control
- 
Business analytics

Every invoice is reviewed for accuracy and compliance before payment. Independent review creates a safe environment without disputes and inaccuracies. Each payment application is subjected to independent review before its release. Your clients can be fully confident that each payment application is accurate and complete in accordance with the contract.

Automated digital tools and dedicated technical specialists in the area of immovable property, construction and compliance review complex contracts and invoices, which makes labor-intensive manual checks and some rejected invoice review operations unnecessary. You can be in control of your payment schedule and expect higher cash flows, trust and accurate reporting. This helps effectively eliminate any problems with payments off the table.

Exposure to non-compliance, fraud and overpayment is 1-3% lower. Administrative expenses are reduced by 20% and more. No initial expenditures are required, while lower operational costs help businesses save without investment. The best deal, benchmarking and tax savings can increase overall savings to 9% of the total bill.

EY's reputation rests on risk and control. This is encoded in our DNA. All invoices are reviewed for corruption and other risks. Invoices can be reviewed for compliance with key performance indicators that have an effect on prices and terms. We review SLA and KPI compliance with contracts and perform all audit-related reviews related to AP and AR.

All your invoices are managed in one place regardless of formats. After collecting data for 3-6 months, a single monitoring dashboard and reports are available for advanced analytics, business analytics and benchmarking based on your invoices.

Increased accuracy thank to independent review

It takes 10 or fewer days to review invoices.

Administration savings of up to 20% and more are aimed at reducing invoice management costs by 9%.

Preliminary audit of each line for compliance and risks.

Information dashboards and analytics to help you manage your business

20-30%
Lower invoice management costs

1-3%,
Errors resolved

1-6%
Best deal

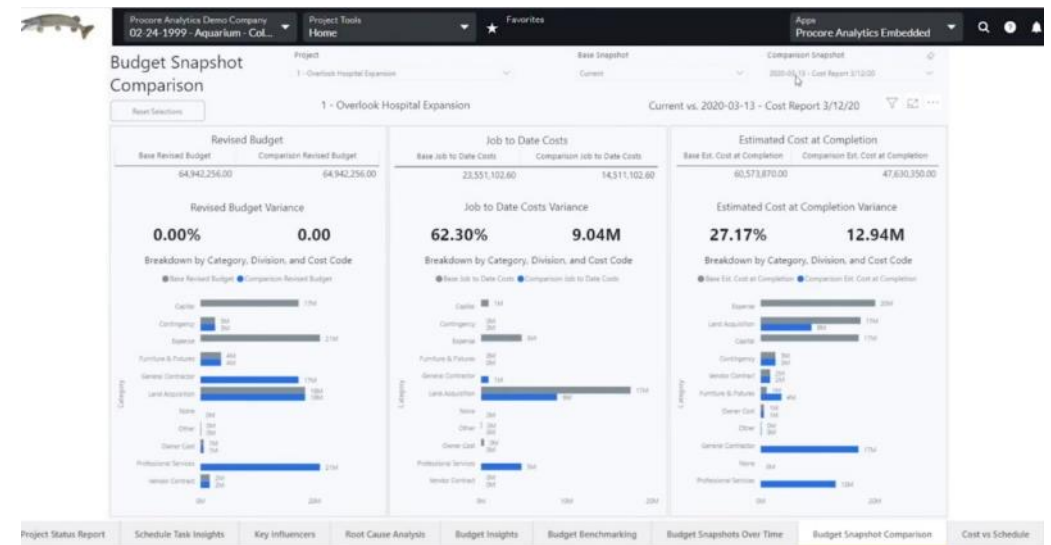
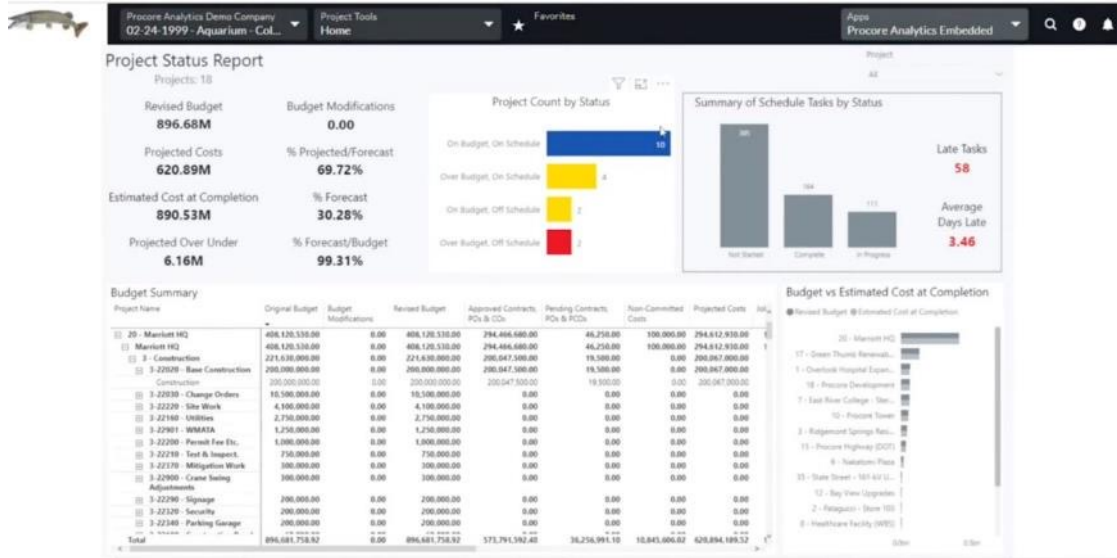
1-6%
More beneficial tax treatment

4-9%
Weighted average savings

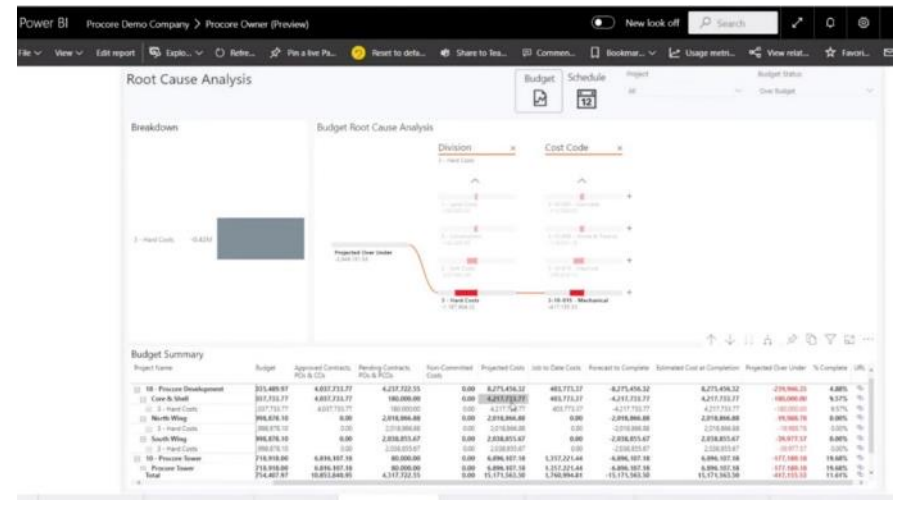
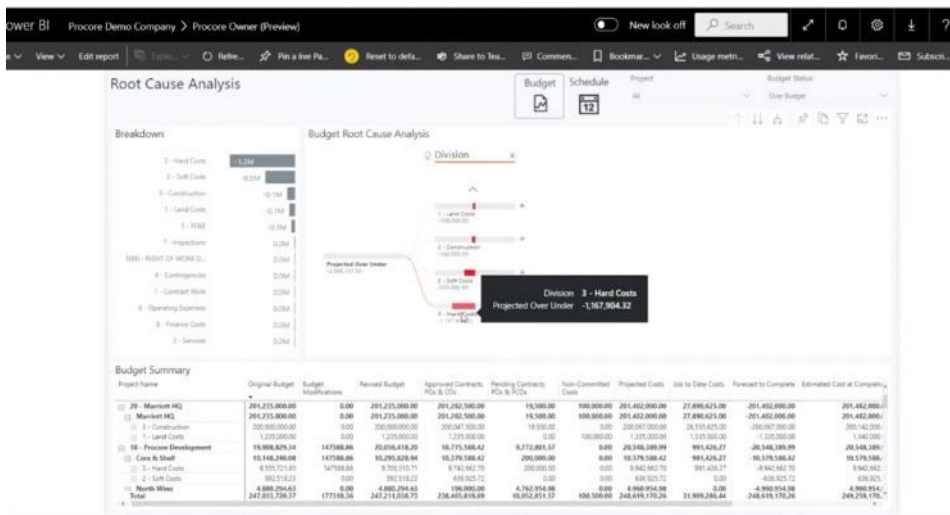
Opportunities for software to generate online project status reports for top management

General relevant information

Benchmarking value against historical data



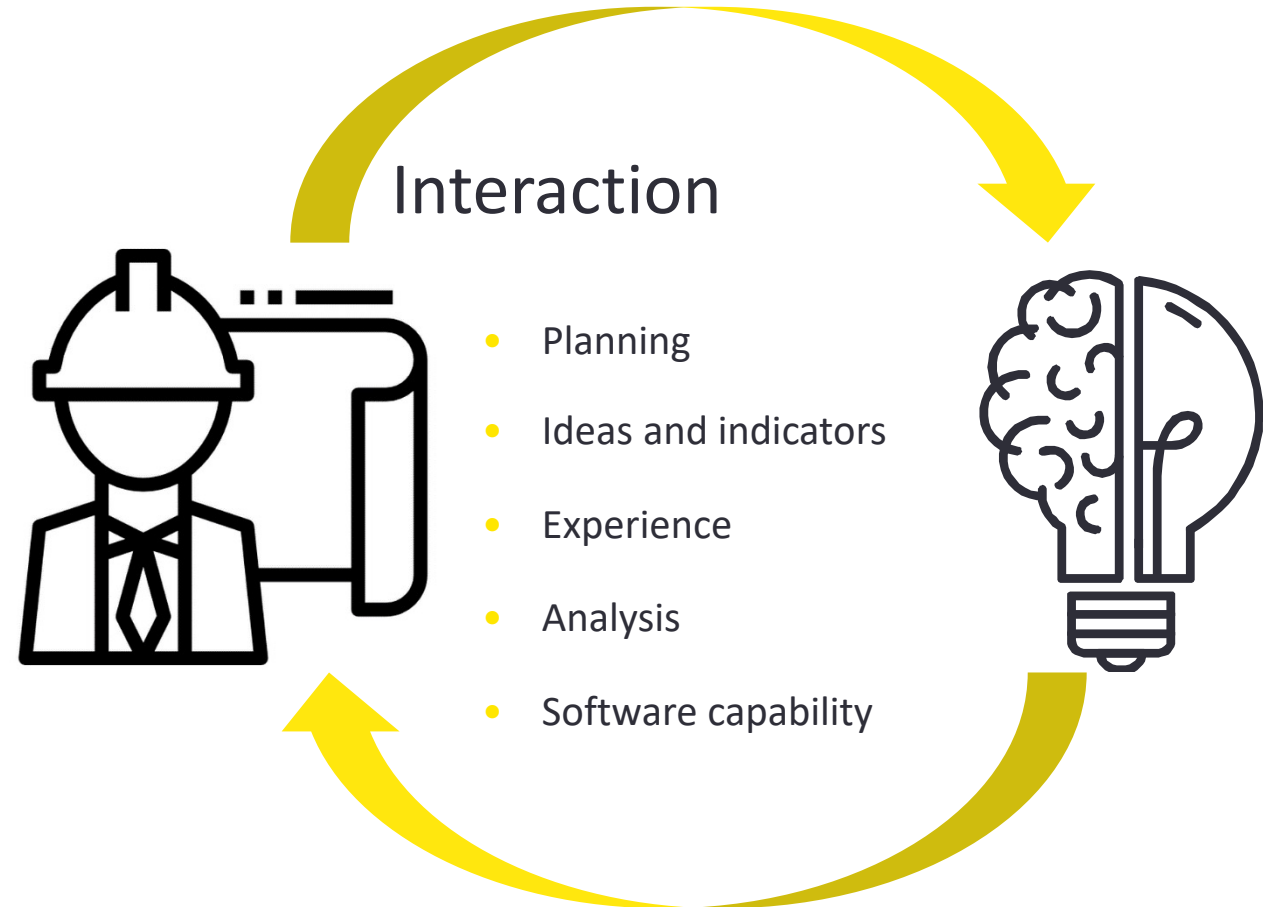
Analysis of deviations from targeted parameters



Conclusion

Conclusions

- Lack of a single software solution for all problems facing an investor/owner
- Software development orders depend on experts and specific projects' conditions
- Knowledge of modern software allows builders to enter required parameters and obtain the expected result
- All project participants must possess the required qualifications and work in an up-to-date common data environment
- Information systems currently used by the company impose restrictions on the use of other software products



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