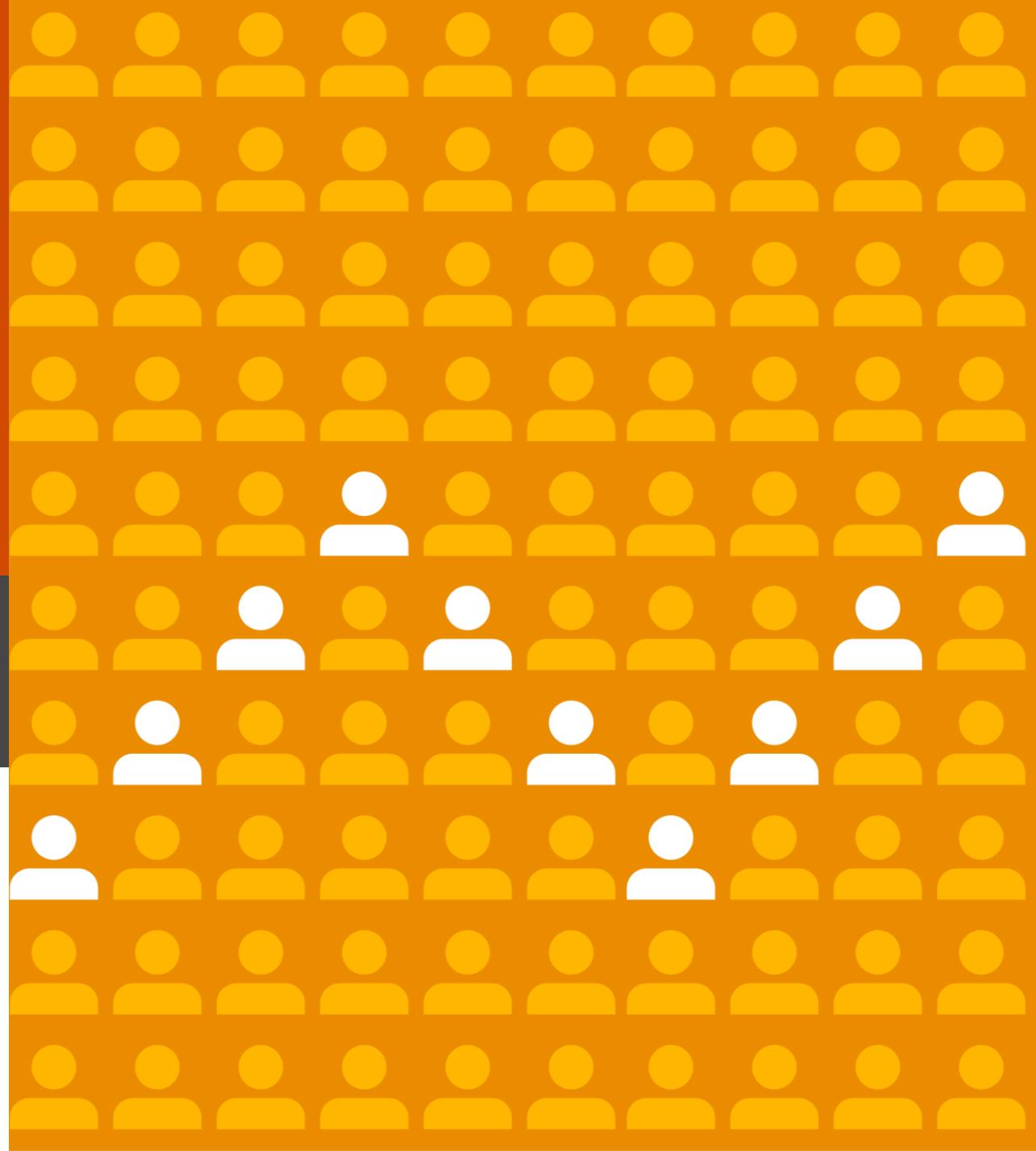


# Digitization of the German construction industry

2019



# Digitization of the German construction industry

# 2019



Summary

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Results

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Working with Building Information Modeling (BIM)



Experience with BIM



BIM in tenders



Challenges, benefits and improvements



Changes due to the application of BIM



Turnover and investments



About the study

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Contact

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# Summary

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## Use of BIM

From 2020 on the **use of Building Information Modeling (BIM)** will be mandatory for all new public infrastructure projects. With BIM every project is built twice: **digital and real**. From the beginning, all disciplines involved in the project are working on the same model, which includes all relevant information. **Collision checks** can be performed on the model, which contains important data for efficient operations. BIM describes a method for **optimized planning, execution and management** of buildings and facilities supported by software.



## BIM strategy

About 20 % of the companies already have a mature **BIM strategy**, and about 40 % are in the process of developing one. ▶ Every third company is even executing an **implementation roadmap**. Almost one quarter has a concrete plan for this. ▶

More than half of the companies have **already worked with BIM**, on average in 17 % of their projects. ▶ Only 35 % of the companies that worked with BIM have a mature **strategy**, 61 % are working on it. ▶



## Experts

92 % of companies using BIM employ experts, in particular own **BIM modelers** (65 %). One out of four works with external BIM experts. ▶ In the largest projects of companies that currently work with BIM, it is used particularly in the **planning phase** (77 %). ▶

From an expert perspective, the use of BIM is most notably **a technical challenge** (63 %) and time-consuming to implement (52 %). ▶ Especially experts from the field of planning & design report positive experiences and **work facilitation**. ▶



## Tenders

Around 60 % of the experts state that BIM has been required in **tenders** in the last 12 months, on average in 10 %. ▶

In addition, eight out of ten tenders asked for **further technologies**, in particular 3D printing (40 %), cloud technology and 3D laser scanning (both 34 %). ▶

# Summary

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## Advantages and applications

For about half of the experts, **high investments** and a **lack of skilled workers** are the biggest challenges when it comes to working with BIM. ▶  
The use of BIM would particularly lead to **more efficient operating sequences, shorter planning and construction times and better cooperation** with all stakeholders. ▶ This is confirmed by respondents who are already using BIM in projects. ▶

In order to improve the application possibilities of BIM in Germany, the experts primarily point to the **continued expansion of the digital infrastructure** (61 %). However, more financial support from the federal government and **more incentives on the clients' side** for interdisciplinary cooperation are also regarded as very important by more than half of the respondents. ▶



## Influence on the construction industry

Six out of ten decision-makers assume that the use of BIM will lead to **major changes** in the **construction industry** within the next five years. ▶  
Especially planners & designers and BIM-experienced experts assume a significant change. ▶

In addition, every second decision-maker believes that the business model of their company will **change dramatically as a result of BIM.** ▶  
BIM-experienced experts are more likely to assume a major **change in their business model** over the next five years than experts who have not yet worked with BIM. ▶



## Outlook

Almost 80 % of the companies **intend to use BIM** in the next few years. ▶ More than one in three companies that intends to use BIM in the next few years anticipates an **increase in turnover**, on average by 10 %. ▶

The majority cannot estimate the costs. Only around one quarter already knows the level of investment. ▶

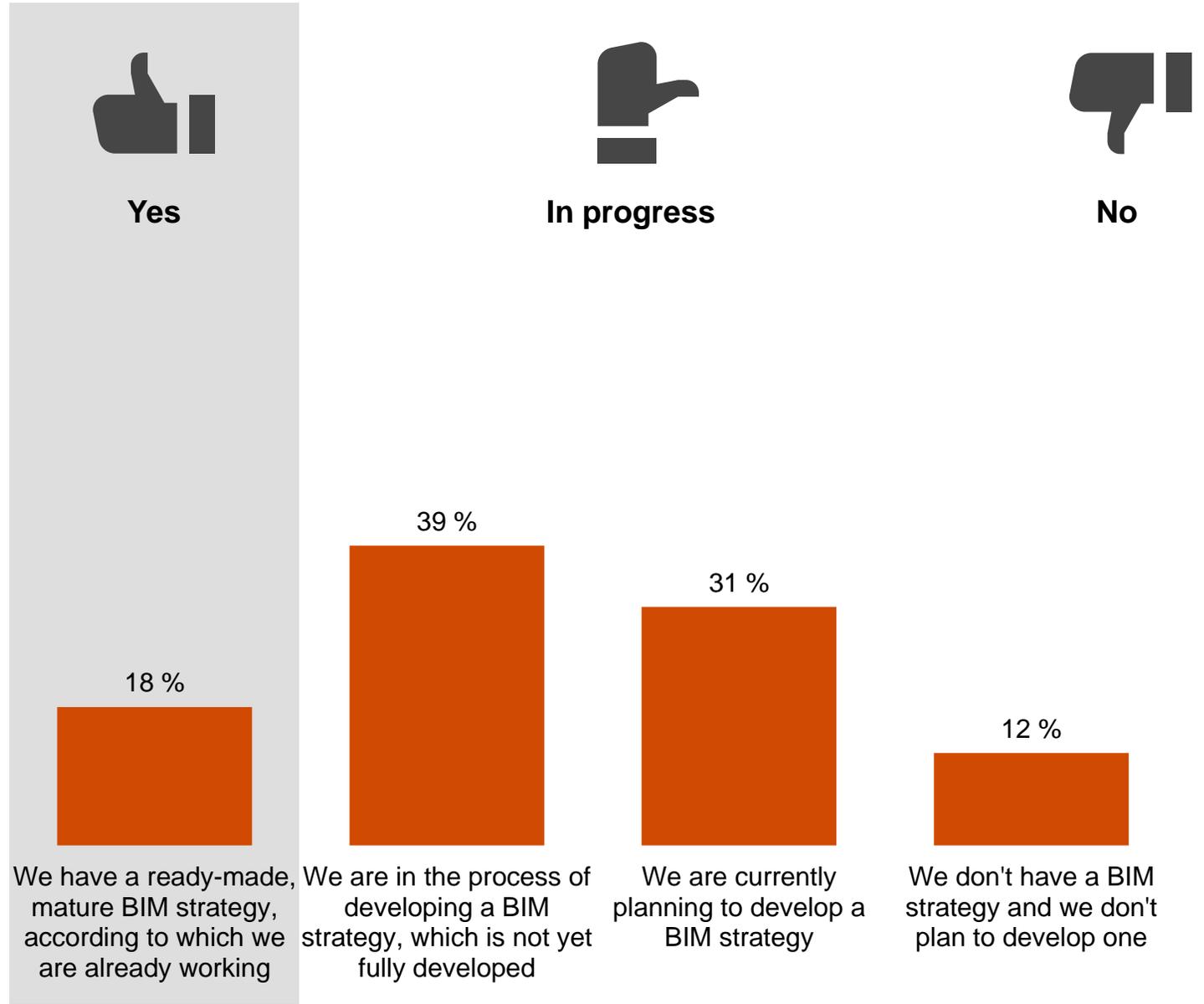


# Is there a BIM strategy?

About every fifth company already has a mature BIM strategy in place.

Question 1: Let's first get to the building information modeling strategy in your company. Please indicate which of the statements most closely matches your company's BIM strategy.

Basis: all respondents, N = 100 (single response)





# Is there a BIM strategy?

About one third of the construction companies and one third of the plant manufacturers are still planning to develop a strategy for BIM.

Question 1: Let's first get to the building information modeling strategy in your company. Please indicate which of the statements most closely matches your company's BIM strategy. Basis: planners & designers, N = 35; construction companies, N = 33; plant manufacturers, N = 32 (single response)





# Is there a BIM strategy?

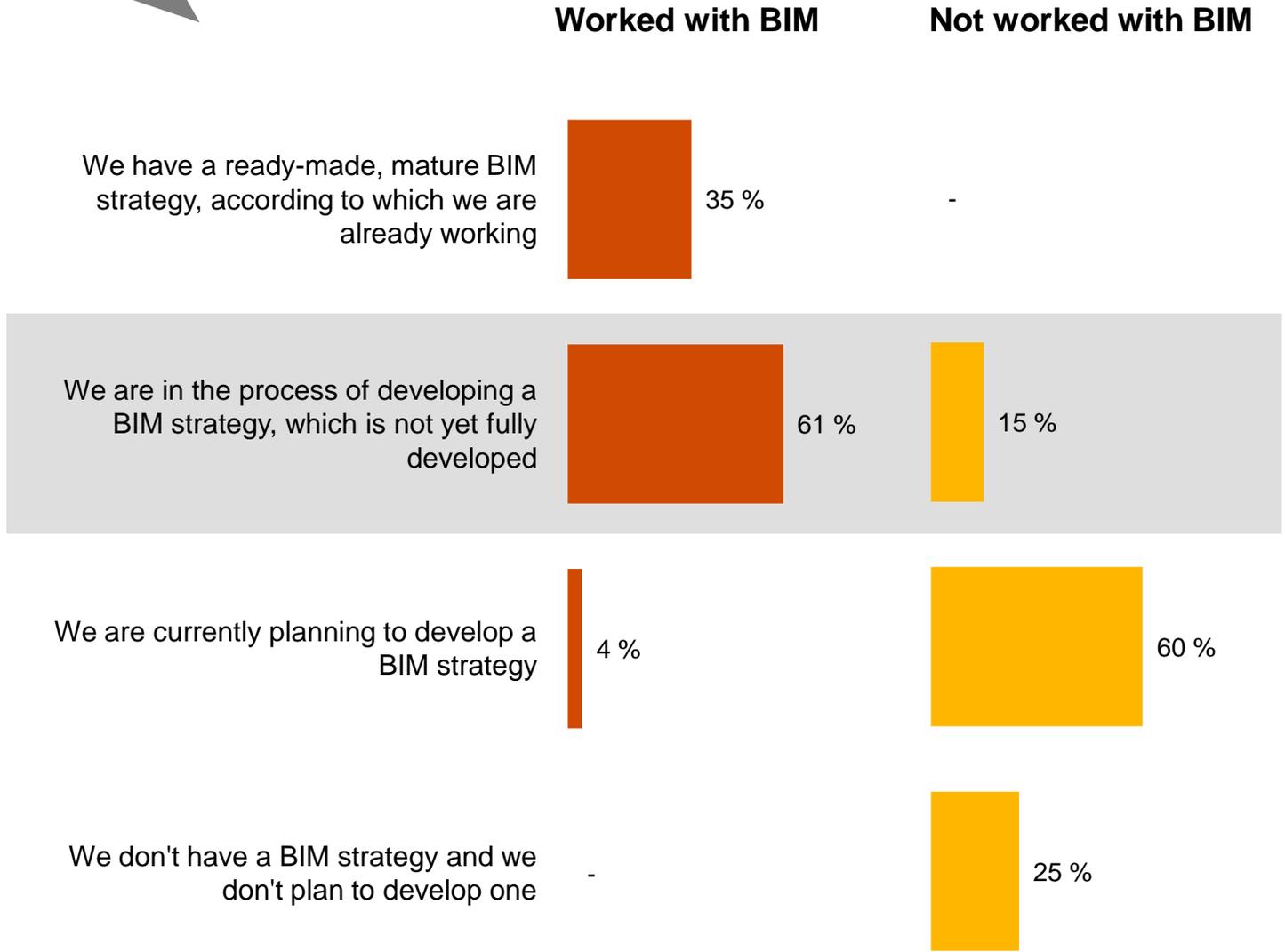
Six out of ten companies already working with BIM are in the process of developing a BIM strategy.

Question 1: Let's first get to the building information modeling strategy in your company. Please indicate which of the statements most closely matches your company's BIM strategy.

Basis: Respondents who have ... worked with BIM in the last two to three years, N = 52; ... have not worked with BIM in the last two to three years, N = 48 (single response)



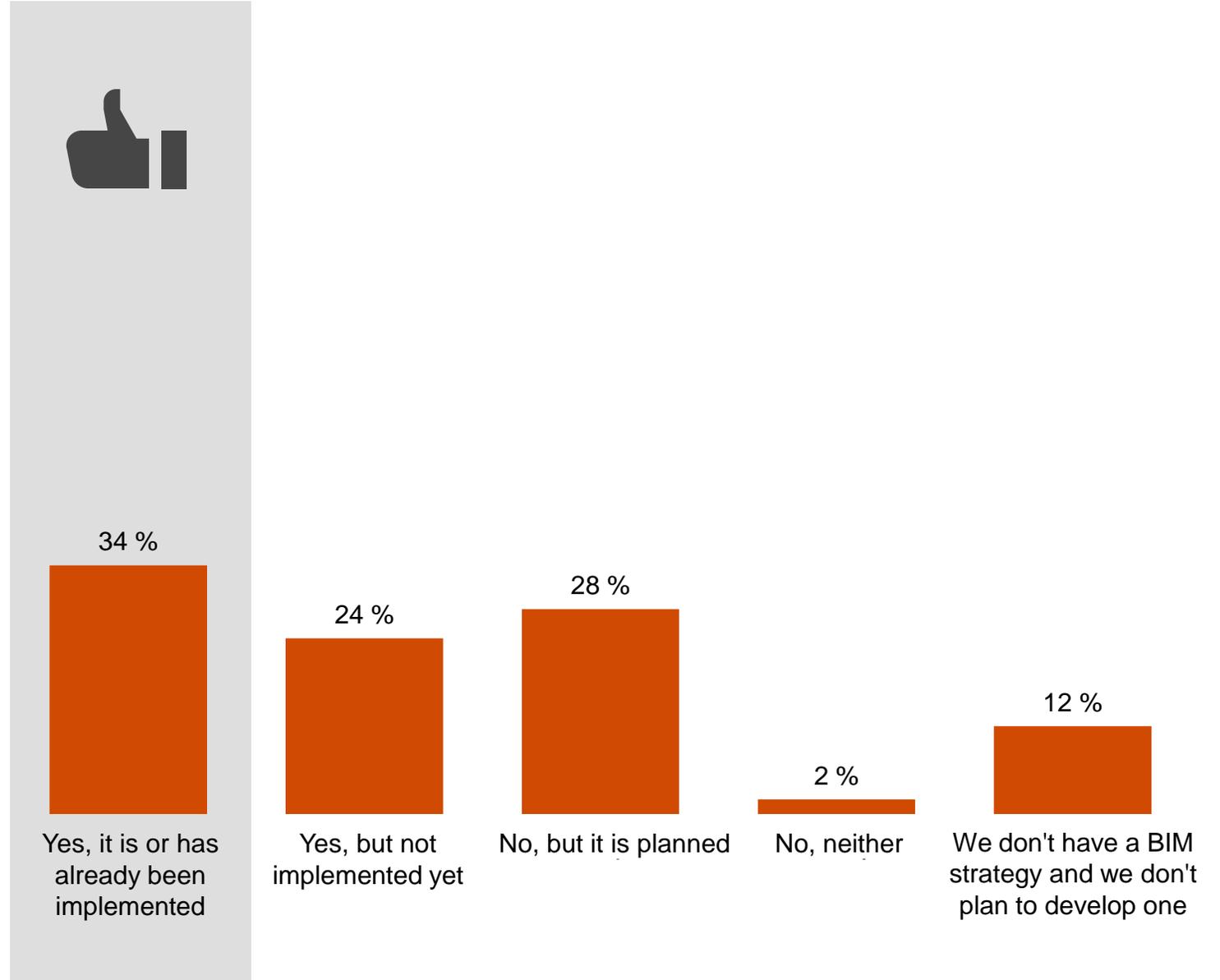
## BIM strategy





## Is there a roadmap for implementation?

Around one third of the companies are already realizing a roadmap for implementation. Almost a quarter has at least a concrete plan.



Question 2: Does your company have a concrete roadmap for the implementation of Building Information Modeling (BIM) and is it already being implemented? Basis: all respondents, N = 100 (single response)

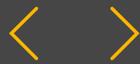




# Is there a roadmap for implementation?

When it comes to implementing BIM, planners & designers and plant manufacturers have a clear lead over construction companies.

Question 2: Does your company have a concrete roadmap for the implementation of Building Information Modeling (BIM) and is it already being implemented? Basis: planners & designers, N = 35; construction companies, N = 33; plant manufacturers, N = 32 (single response)





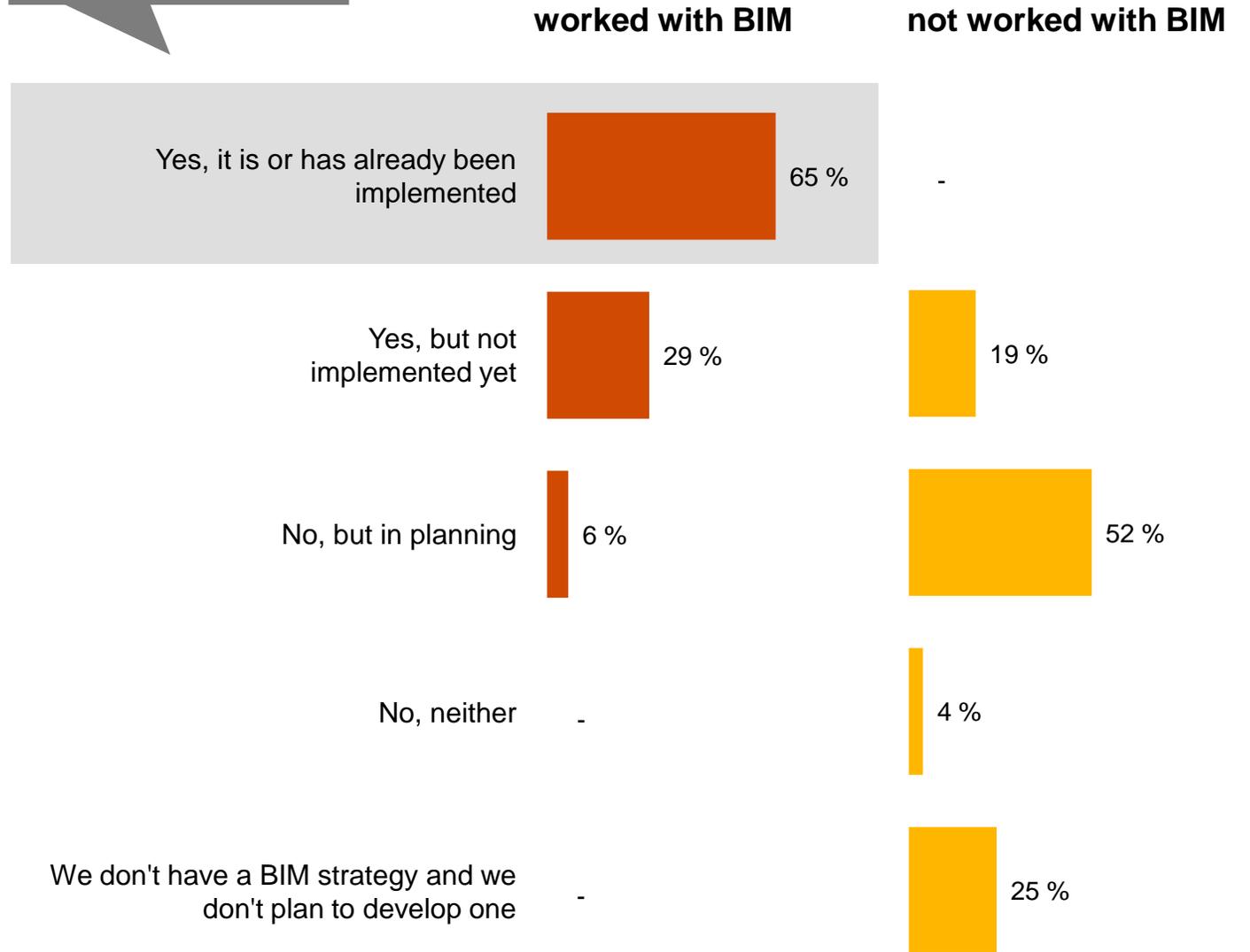
# Is there a roadmap for implementation?

Less than two-third of companies already using BIM have implemented a roadmap for implementation.

Question 2: Does your company have a concrete roadmap for the implementation of Building Information Modeling (BIM) and is it already being implemented? Basis: Respondents who have ... worked with BIM in the last two to three years, N = 52; ... have not worked with BIM in the last two to three years, N = 48 (single response)



## Implementation

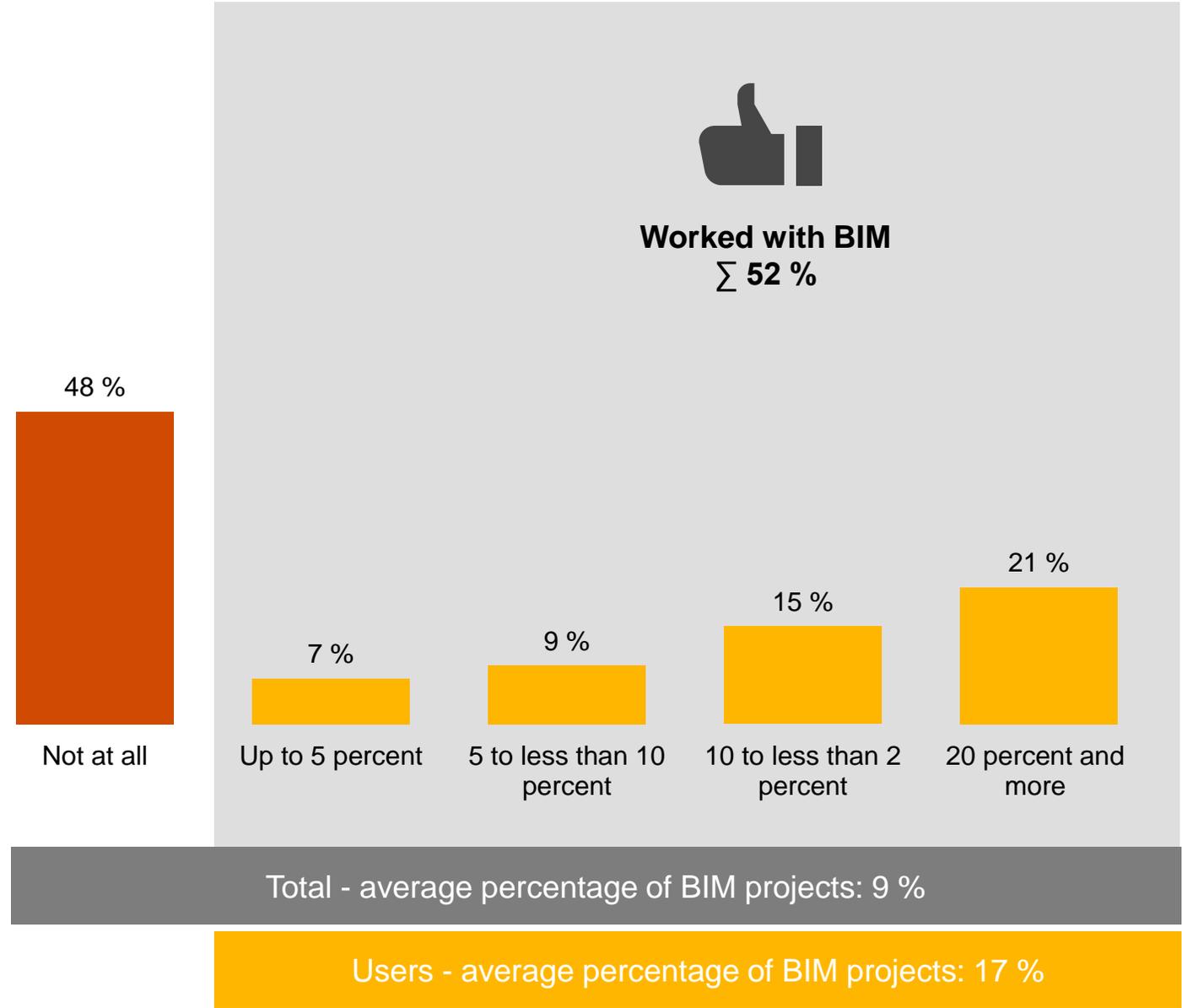




# How often is BIM used?

About one out of two companies has already worked with BIM, on average in 17 % of their projects.

Question 3: Please think about the projects of your company in the last two to three years. What is the percentage of projects where you have worked with BIM? If you don't know for sure, please guess. Basis: all respondents, N = 100 (single entry, open entry, in percent)





# How often is BIM used?

In comparison, planners & designers use BIM in slightly more projects.

Question 3: Please think about the projects of your company in the last two to three years. What is the percentage of projects where you have worked with BIM? If you don't know for sure, please guess. Basis: all respondents, N = 100; respondents who have worked with BIM in the last two to three years, N = 52 (single entry, open entry, in percent)



## Share of BIM projects

	Total	Field		
		Planners & designers	Construction companies	Plant manufacturers
Basis	100	35	33	32
Not at all	<b>48 %</b>	37 %	58 %	50 %
Up to 5 percent	<b>7 %</b>	3 %	12 %	6 %
5 to less than 10 percent	<b>9 %</b>	9 %	3 %	16 %
10 to less than 20 percent	<b>15 %</b>	17 %	18 %	9 %
20 percent and more	<b>21 %</b>	34 %	9 %	19 %
Total - average percentage of projects using BIM	<b>9 %</b>	12 %	6 %	8 %
<b>Users - average percentage of projects that have worked with BIM</b>	<b>17 %</b>	<b>19 %</b>	<b>15 %</b>	<b>17 %</b>



## Which BIM experts are deployed?

More than 90 % of companies using BIM work with BIM experts, especially with their own BIM modelers. One in four uses external BIM experts.

Own BIM modelers



Own BIM coordinators



Own BIM managers



External BIM experts



No, neither



92 %  
work with BIM experts

Question 4: Do you have your own BIM experts in your company or do you work with external experts?

Basis: Respondents who have worked with BIM in the last two to three years,

N = 52 (multiple answer)

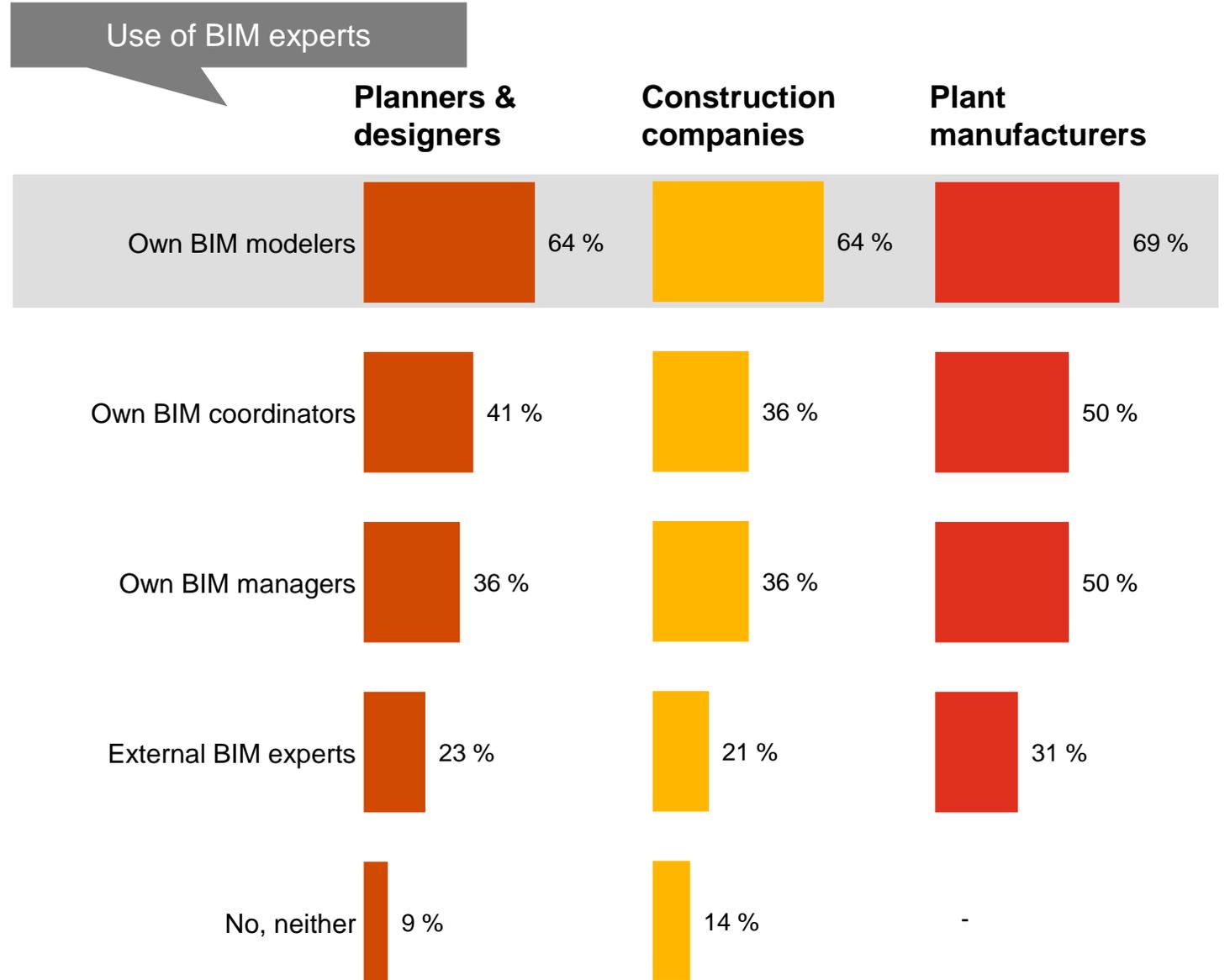




# Which BIM experts are deployed?

BIM modelers are in particular employed by planners & designers.

Question 4: Do you have your own BIM experts in your company or do you work with external experts? Basis: respondents who have worked with BIM in the last two to three years; planners & designers, N = 22; construction companies, N = 14; plant manufacturers, N = 16 (multiple answer)

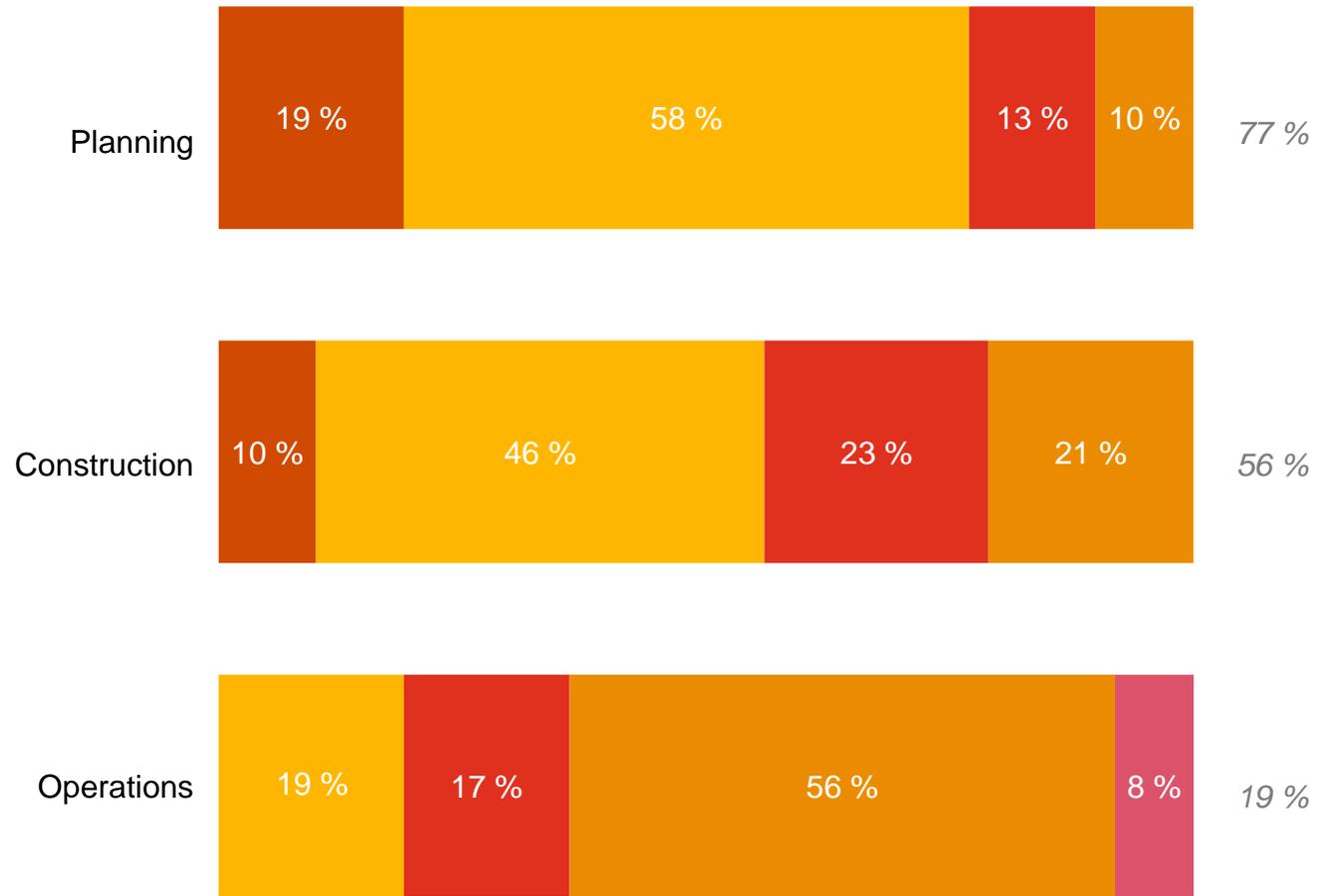




# How intensively is BIM used?

In the largest projects for which the companies currently use BIM, it is used especially during the planning phase.

Top two:



■ Very intense ■ Rather intense ■ Less intense ■ (Almost) not at all ■ Do not know

Question 5: Please think of your largest project at the moment, for which you are currently using BIM. For the planning, construction and operation phases, please indicate how intensively BIM is used. Basis: respondents who have worked with BIM in the last two to three years, N = 52 (scaled query)

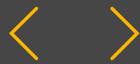




# How intensively is BIM used?

Planners & designers who use BIM for their current largest project do so in the planning phase amongst others for coordination, planning, modelling and material planning.

Question 5A: Please provide project examples for the phases for which BIM was used. Basis: Planners & designers, for whose largest project BIM was used intensively, N = 21 (open entry), without "don't know/no answer".



## Planners & designers - Planning phase

3D CAD <b>modelling</b>	<b>Coordination</b> of the time schedule of the different disciplines	<b>Modelling</b>
General <b>concept planning</b> , implementation analyses	<b>Coordination</b> of individual phases, <b>planning</b> of time periods	Strategic <b>planning</b> and implementation analyses
Requirements such as energy efficiency, cradle-to-cradle and safety aspects	<b>Coordination</b> and implementation of the disciplines	Strategic <b>planning</b> , construction planning
<b>Execution planning</b> for construction projects in general, e.g. residential buildings, a virtual building model is visualized geometrically and all relevant building data is recorded and combined	Product and technical specifications, function plans, measuring point directories, operation- and observation concepts	<b>MEP planning</b>
Energy efficiency, the interaction of all parties involved	<b>Material planning</b> , general <b>engineering planning</b> , cooperation with all parties involved	Implementation review and feasibility studies
Creation of the models and implementation of the individual disciplines	<b>Material planning</b> , cost planning, strategic planning	Hospital, office building
Integration of the requirements of different disciplines	<b>Quantity determination</b> , determination of construction stages	Various constructions, e.g. maintenance hall, office building



# How intensively is BIM used?

In the construction and operation phases, planners & designers cite coordination, optimization and cost reduction as examples of what BIM is currently being used for in their largest project.

Question 5A: Please provide project examples for the phases for which BIM was used. Basis: Planners & designers, for whose largest project BIM was used intensively, N = 17/8 (open entry), without "don't know/no answer".



## Planners & designers - Construction phase

Process organization, general <b>coordination</b>	<b>Coordination</b> of the construction	Temporal <b>coordination</b> of the individual stages, increasing efficiency
<b>Coordination</b> with the disciplines involved	Model circuit systems guideline	Cooperation of project participants, <b>coordination models</b>
Basis for communication between the different construction stages	<b>Optimization</b> of the different construction stages	Hospital, office building
The entire construction process is accompanied	<b>Interface optimization</b> of the disciplines involved	Various constructions, e.g. maintenance hall, office building
Integration of various disciplines	Standardization of materials, clear interfaces	Residential buildings
<b>Coordination of</b> the disciplines and the various construction stages	Realization of the schedule of the different disciplines	

## Planners & designers – operation phase

Discover <b>optimizations</b> and efficiency gains	Reduction of <b>operating costs</b>	Hospital, office building
Search for and implement <b>optimization potentials</b>	Verification and realization of <b>cost optimization</b>	Residential buildings



# How intensively is BIM used?

Construction companies using BIM for their current largest project use it during the construction phase e.g. for the areas of process organization as well as material and quantity determination.

Question 5A: Please provide project examples for the phases for which BIM was used. Basis: Construction companies for whose largest project BIM was used intensively, N = 11/13 (open entry), without "don't know/no answer".



## Construction companies - Planning phase

Determination of different construction stages, <b>control</b> of the client	Speed and process depth	Office building, shopping center
Construction and assembly	Strategies, requirements and measures are formulated	Project for car manufacturers
<b>Control</b> of the plans, definition of the construction stages	Improvement of model data and calculation processes	Hospitals
Concept-, construction-, budget-planning, technical and schedule planning		

## Construction companies - Construction phase

<b>Process organization</b> even for large construction sites	Easier coordination of several construction companies, more current construction status	Linking appointment planning
Structural and <b>process organization</b>	Construction and assembly	Office building, shopping center
Construction and operating processes	<b>Quantity determination</b> in shell construction	Hospitals
Accompanying construction, budget oriented, <b>material organization</b>	Speed of standards	Senior center



# How intensively is BIM used?

Plant manufacturers who use BIM for their current largest project use it in the planning phase for visualization, control and improvement of planning processes, among other things.

## Construction companies - Operation phase

Costing models

Mall

Hospitals

Senior center

## Plant manufacturers - Planning phase

**3D modeling**, general **models**

**Scale control, surface control, control** for derivation from the model

**Schedule and material planning, production planning**

**5D planning**, detailed presentation, stages, coordination, automated links

Model-based quantity determination and calculation according to group standard

**Visualization**

General **control** of the construction stages

**Models**

Ventilation shafts multistory car parks, warehouses

Elevators, integration into the existing concept

**Planning** of production plants, development of planning and working methods to improve collaboration between all parties involved in the **planning process**

Coordination between all parties involved

**Planning model**, methods for data models

Question 5A: Please provide project examples for the phases for which BIM was used. Basis: Construction companies or plant manufacturers for whose largest project BIM was used intensively, N = 5/15 (open entry), without "don't know/no answer".





# How intensively is BIM used?

For the construction phase, plant manufacturers cite, among other things, flow charts and organization as examples of what BIM is currently being used for in their largest project.

## Plant manufacturers - Construction phase

3D representation, optimization of the individual construction stages	Construction of production plants	Exchange of data
<b>Schedules</b> , rapid deployment plan	Construction stages with schedule comparison	Assembly, supervision of the entire project
Record and coordinate all processes and all parties involved in the construction phase	Construction phase, provision of quantities, material coordination	Timing coordination, <b>process organization</b>

## Plant manufacturers- Operation phase

Commissioning of production plants, record life cycle costs	Costs can be reduced	Process integration especially for the construction industry
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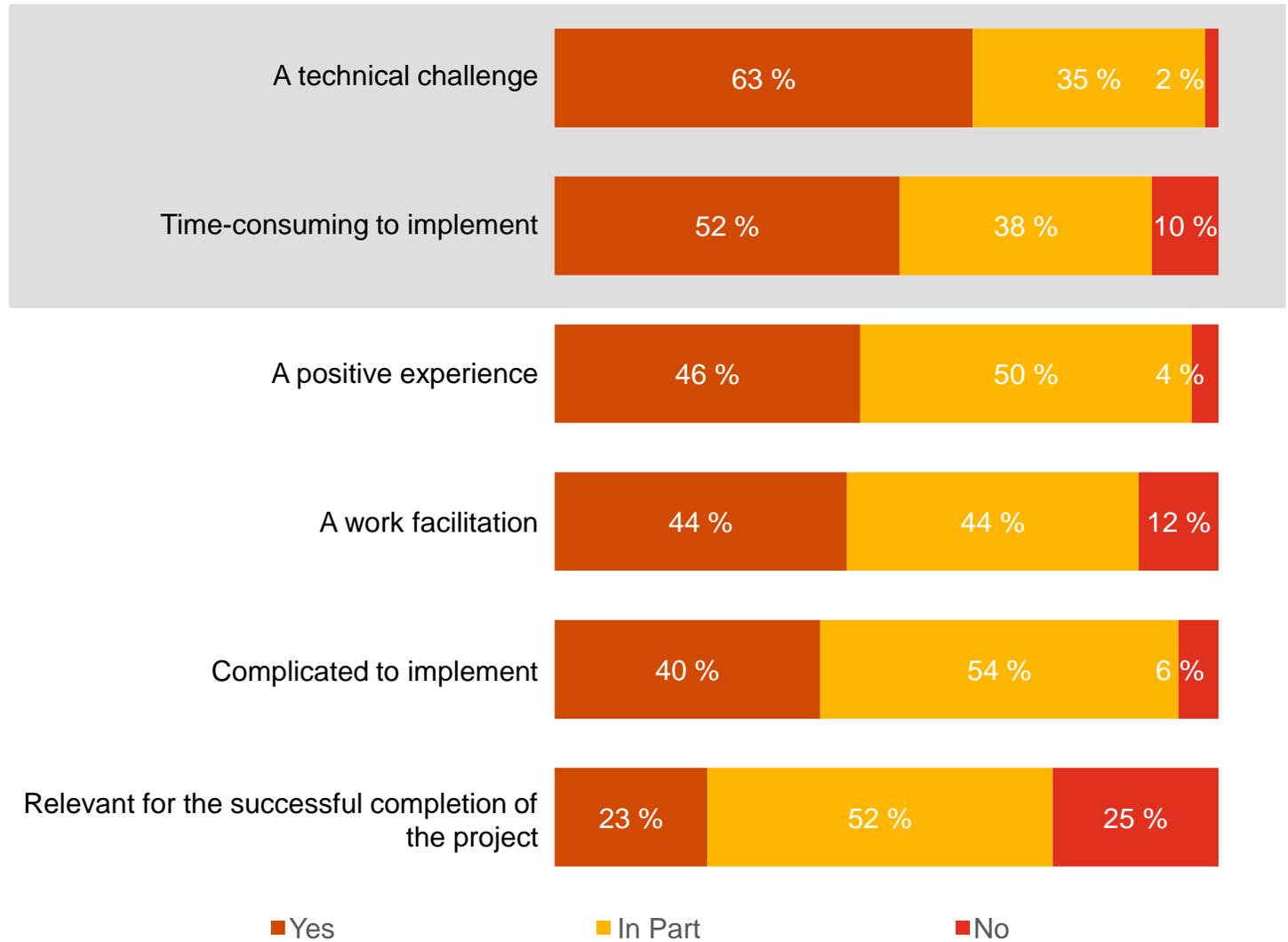
Question 5A: Please provide project examples for the phases for which BIM was used. Basis: Plant manufacturers for whose largest project BIM was used intensively, N = 11/6 (open entry) without „don't know/no answer“





# What are the experiences?

From the perspective of experts, the use of BIM is above all a technical challenge and time-consuming to implement.



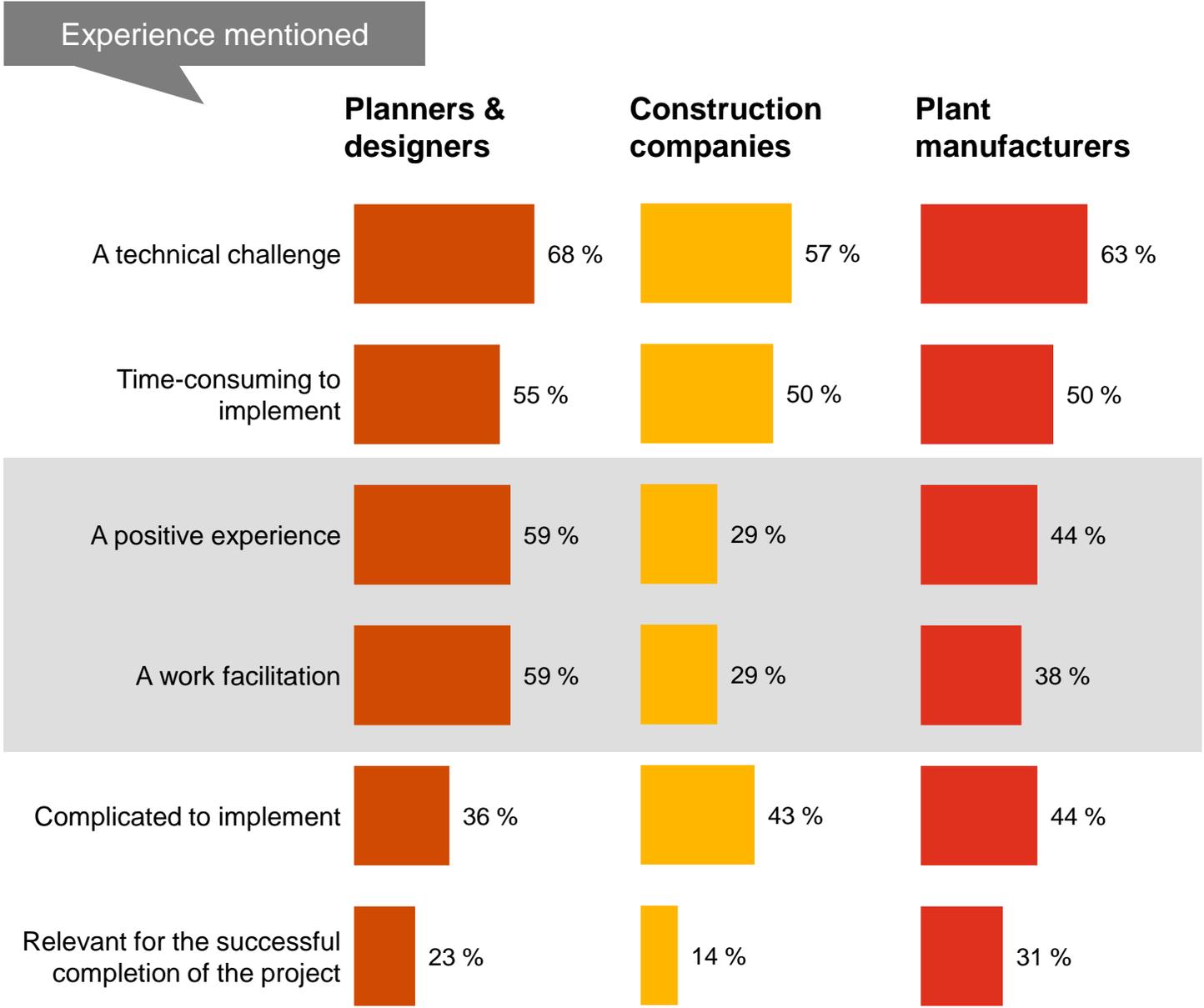
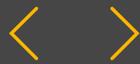
Question 6: Let us now turn to the experiences you have had with the use of BIM. Would you confirm, partially confirm or deny that the use of BIM was...for your business? Basis: respondents who have worked with BIM in the last two to three years, N = 52 (scaled query)



# What are the experiences?

Mainly decision-makers from the plan & design sector report positive experiences and work facilitation.

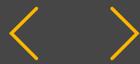
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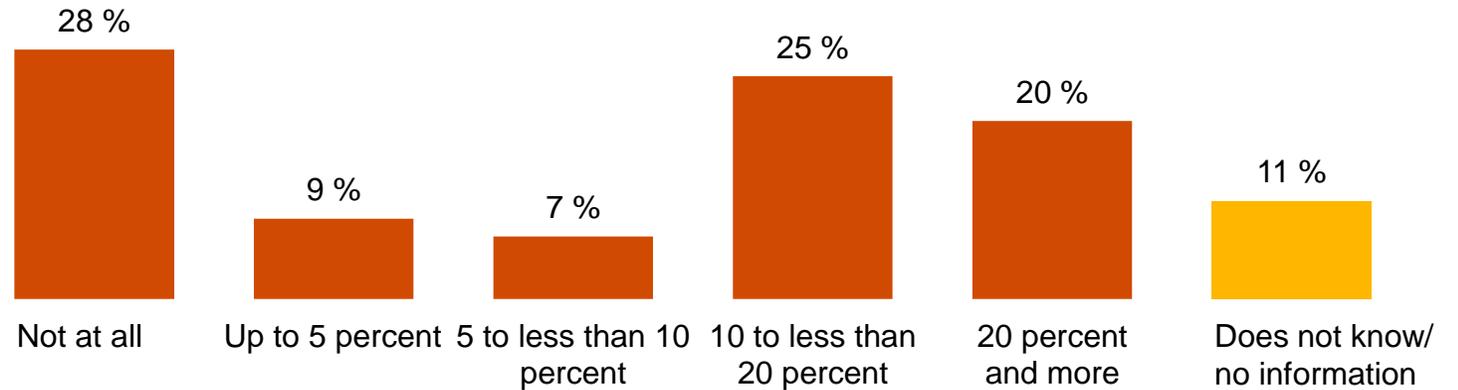
# How often has BIM been required?

On average, in the last 12 months 10 % of tenders required the use of BIM.

Question 7: In about what percentage of the tenders that you have reviewed in the last 12 months was the use of BIM required? If you don't know exactly, then please guess. Basis: all respondents, N = 100 (single entry, open entry, in percent)



61 % of the experts say that BIM has been required in tenders in the last 12 months.



Average BIM required in tenders 10 %.



# How often has BIM been requested?

Especially for planners & designers BIM has been a requirement in tenders within the last 12 months.

Question 7: In about what percentage of the tenders that you have reviewed in the last 12 months was the use of BIM required? If you don't know exactly, then please guess. Basis: all respondents, N = 100 (single entry, open entry, in percent)

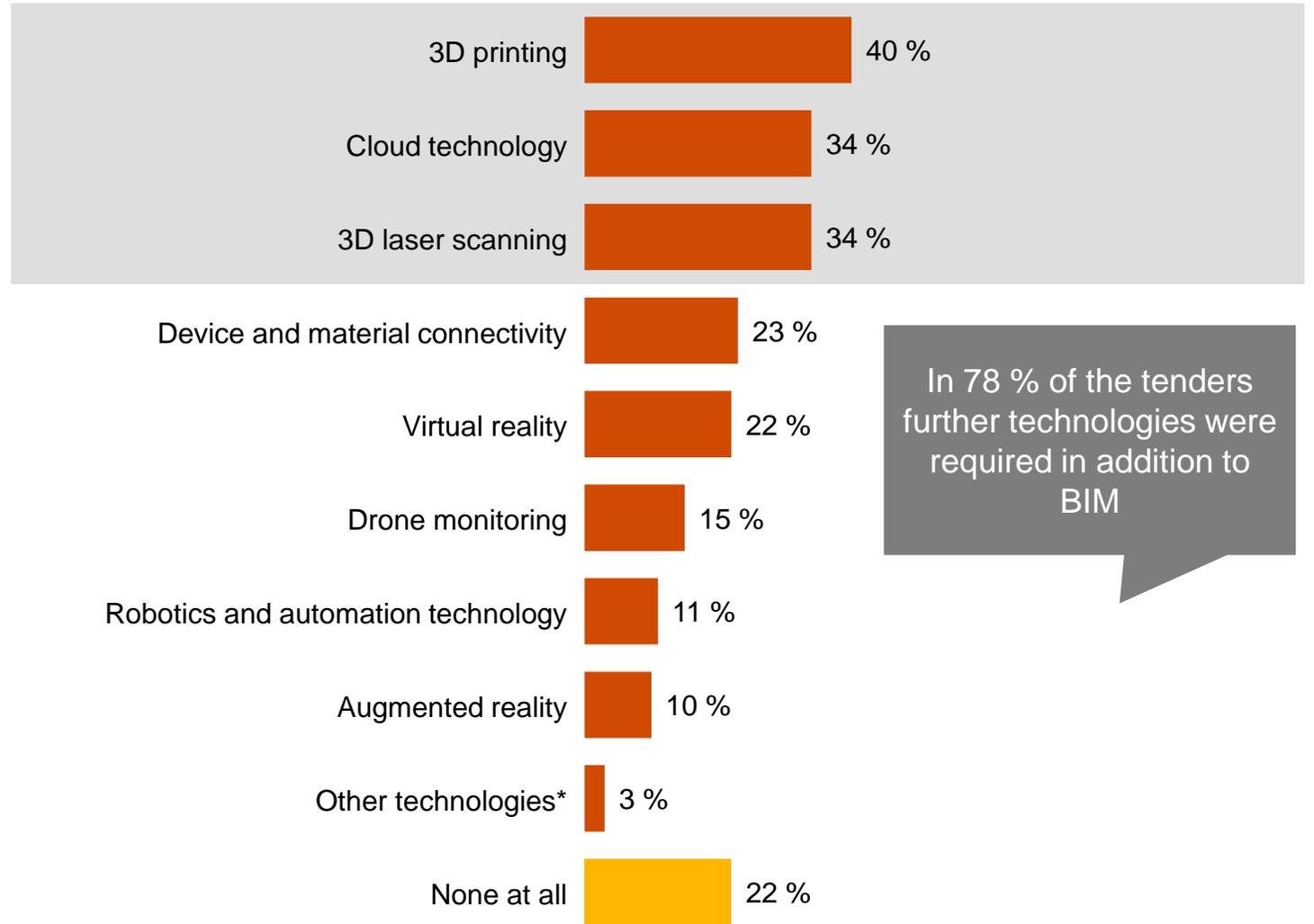


	Tenders	Total	Field		
			Planners & Designers	Construction Companies	Plant manufacturers
Basis		100	35	33	32
Not at all		<b>28 %</b>	20 %	31 %	34 %
Up to 5 percent		<b>9 %</b>	6 %	12 %	9 %
5 to less than 10 percent		<b>7 %</b>	8 %	9 %	3 %
10 to less than 20 percent		<b>25 %</b>	29 %	21 %	25 %
20 percent and more		<b>20 %</b>	23 %	21 %	16 %
Not white / not specified		<b>11 %</b>	14 %	6 %	13 %
<b>Average: use of BIM was required</b>		<b>10 %</b>	<b>14 %</b>	<b>8 %</b>	<b>9 %</b>

## Are there any other requirements?

In almost 80 % of the tenders in the last 12 months, other technologies were requested in addition to BIM, in particular 3D printing, cloud technology and 3D laser scanning.

Question 8: What other technologies have been requested in the last 12 months for the implementation of projects? Basis: all respondents, N = 100 (multiple answers)

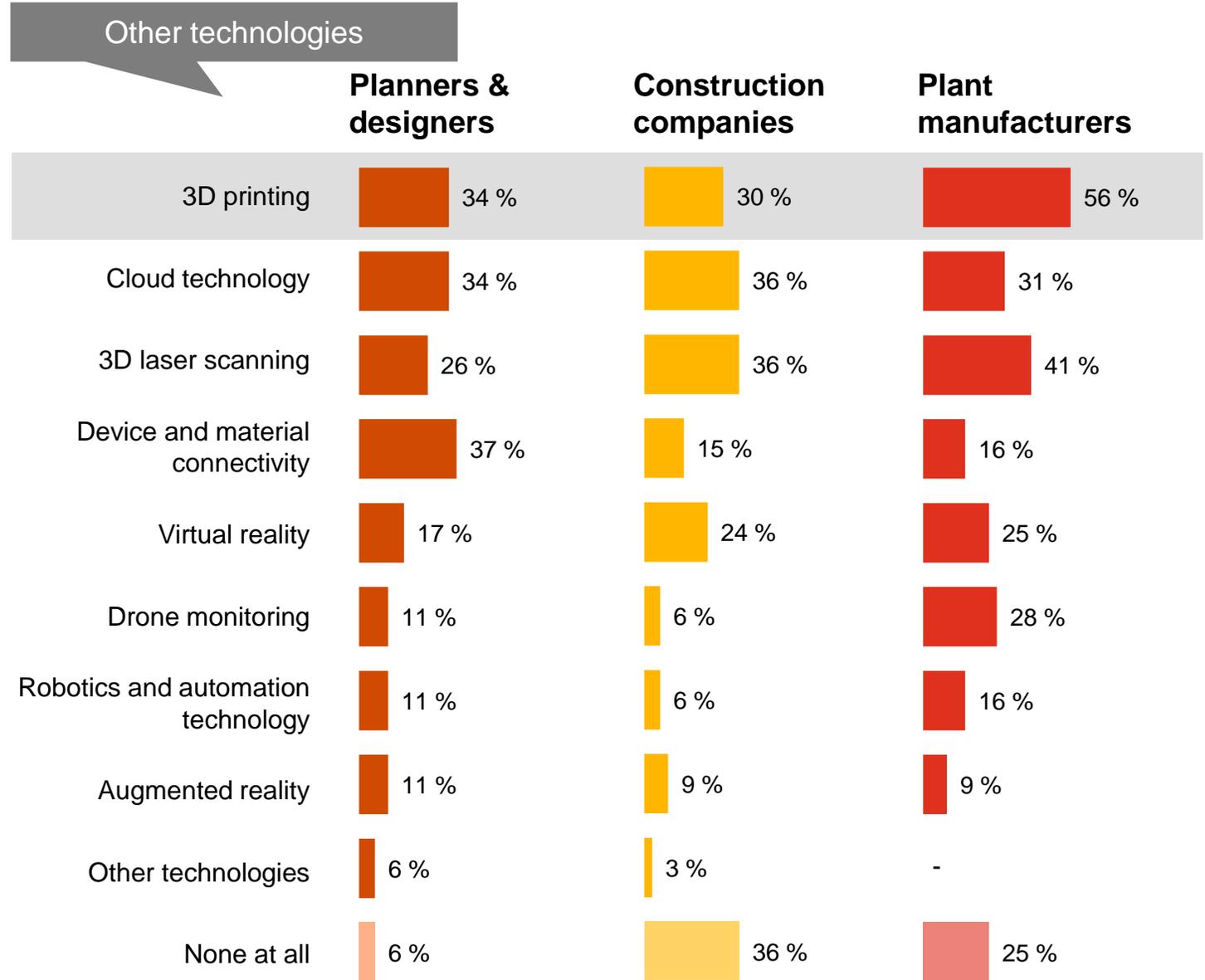


\* Prefabrication of components, permits; modeling; model-based data exchange

# Are there any other requirements?

More than every second plant manufacturer was required to use 3D printing for the realization of projects.

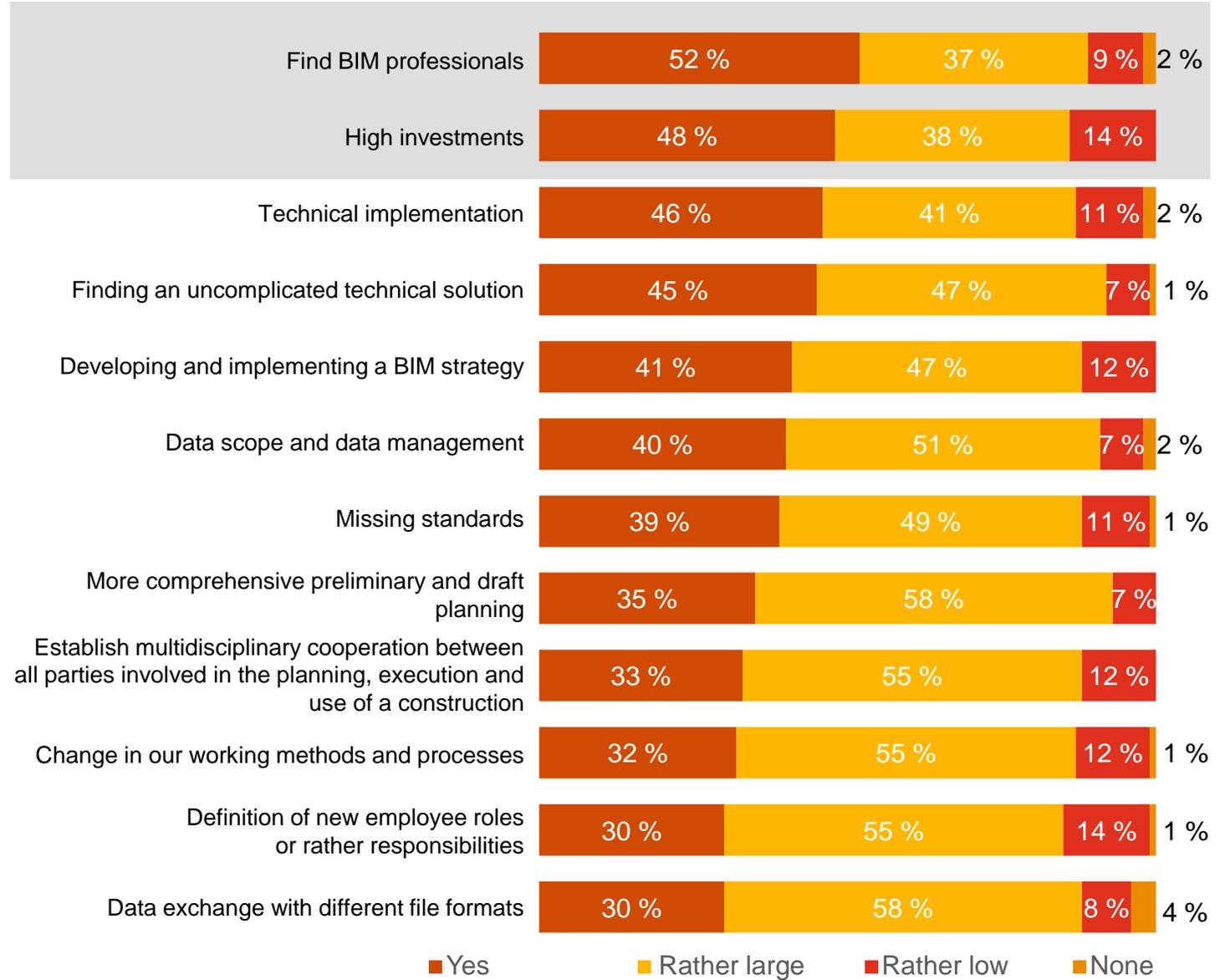
Question 8: What other technologies have been requested in the last 12 months for the implementation of projects? Basis: planners & designers, N = 35; construction companies, N = 33; plant manufacturers, N = 32 (multiple answers, sorted by total)





# What are the challenges?

For about half of the experts, high investments and a lack of skilled professionals are the biggest challenges when it comes to working with BIM.



Question 9: Let us now move on to the challenges associated with working with BIM. Please indicate whether the following aspects are or would be very big, rather big, rather small or no challenges for your company.

Basis: all respondents, N = 100 (scaled query, sorted by top)





# What are the challenges?

Especially for construction companies the search for BIM professionals is a major challenge.

Question 9: Let us now move on to the challenges associated with working with BIM. Please indicate whether the following aspects are or would be very big, rather big, rather small or no challenges for your company.  
Basis: all respondents, N = 100 (scaled query)



Major challenges	Total	Field		
		Planners & designers	Construction companies	Plant manufacturers
Basis	100	35	33	32
<b>Find BIM professionals</b>	<b>52 %</b>	<b>43 %</b>	<b>61 %</b>	<b>53 %</b>
High investments	48 %	31 %	55 %	59 %
Technical implementation	46 %	37 %	45 %	56 %
Finding an uncomplicated technical solution	45 %	43 %	42 %	50 %
Developing and implementing a BIM strategy	41 %	23 %	52 %	50 %
Data scope and data management	40 %	29 %	52 %	41 %
Missing standards	39 %	14 %	45 %	59 %
More comprehensive preliminary and draft planning	35 %	29 %	30 %	47 %
Establish multidisciplinary cooperation between all actors involved in the planning, execution and use of a construction	33 %	31 %	33 %	34 %
Change in our working methods and processes	32 %	26 %	33 %	38 %
Definition of new employee roles or rather responsibilities	30 %	29 %	30 %	31 %
Data exchange with different file formats	30 %	17 %	33 %	41 %



# What are the challenges?

Technical implementation of BIM is especially seen as a major challenge by experts who have not yet worked with BIM.

Question 9: Let us now move on to the challenges associated with working with BIM. Please indicate whether the following aspects are or would be very big, rather big, rather small or no challenges for your company.  
Basis: all respondents, N = 100 (scaled query)

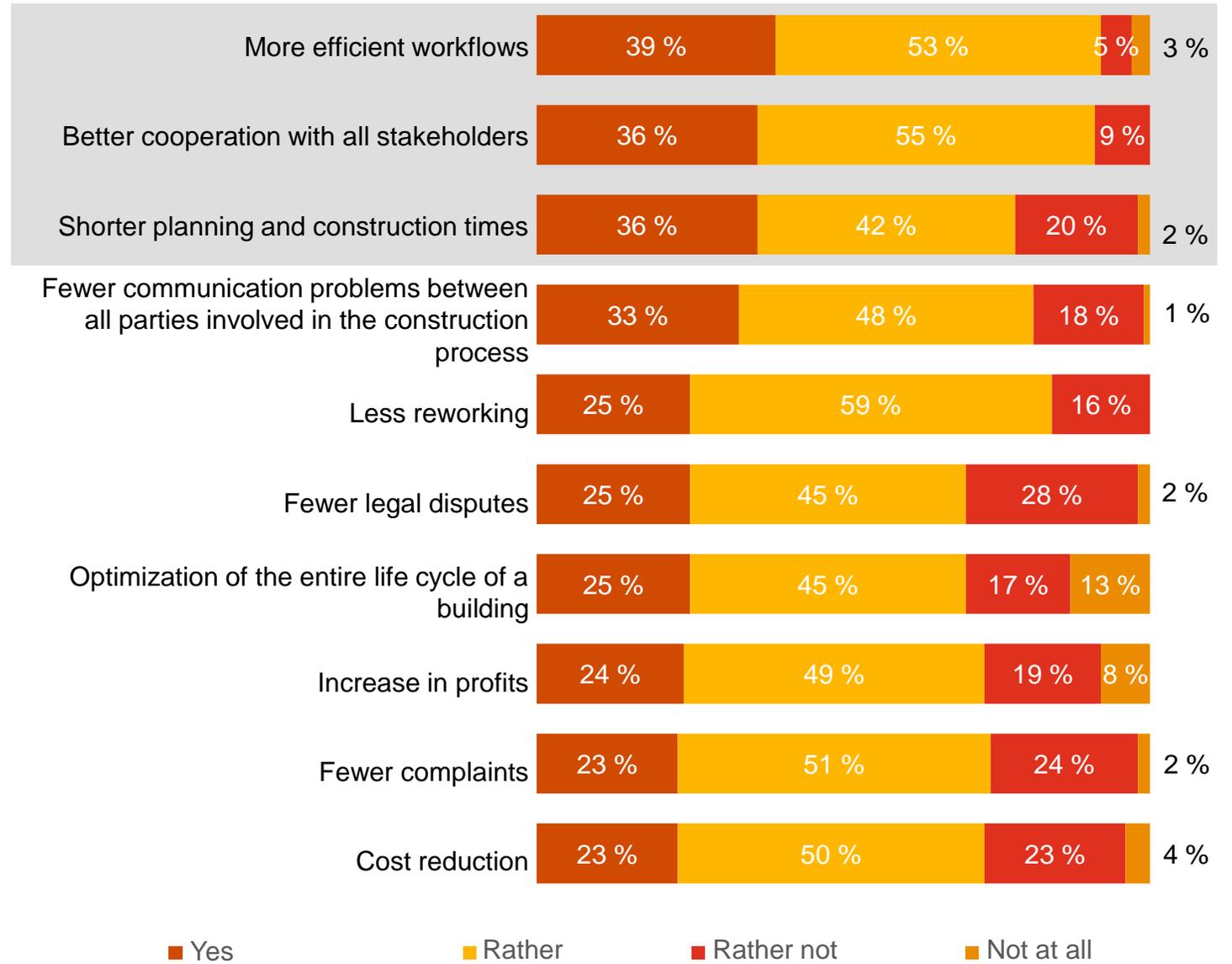


Major challenges	Total	Worked with BIM	
		Yes	No
Basis	100	52	48
Find BIM Professionals	<b>52 %</b>	42 %	63 %
High investments	<b>48 %</b>	44 %	52 %
<b>Technical implementation</b>	<b>46 %</b>	<b>35 %</b>	<b>58 %</b>
Finding an uncomplicated technical solution	<b>45 %</b>	42 %	48 %
Developing and implementing a BIM strategy	<b>41 %</b>	29 %	54 %
Data scope and data management	<b>40 %</b>	44 %	35 %
Missing standards	<b>39 %</b>	33 %	46 %
More comprehensive preliminary and draft planning	<b>35 %</b>	31 %	40 %
Establish multidisciplinary cooperation between all actors involved in the planning, execution and use of a construction	<b>33 %</b>	33 %	33 %
Change in our working methods and processes	<b>32 %</b>	31 %	33 %
Definition of new employee roles or rather responsibilities	<b>30 %</b>	27 %	33 %
Data exchange with different file formats	<b>30 %</b>	27 %	33 %



# What are the advantages of BIM?

The use of BIM can lead particularly to more efficient work processes, shorter planning and construction times as well as better cooperation with all stakeholders.



Question 10: Now it's about the advantages that can be gained by working with BIM. Please estimate whether, from your point of view, using BIM in your projects would definitely, rather, rather not or not at all lead to the following aspects. Basis: all respondents, N = 100 (scaled query, sorted by top)





## What are the advantages of BIM?

More than every second expert in the field of planning & design thinks that their projects would definitely benefit from the use of BIM through shorter planning and construction times.

Question 10: Now it's about the advantages that can be gained by working with BIM. Please estimate whether, from your point of view, using BIM in your projects would definitely, rather, rather not or not at all lead to the following aspects. Basis: all respondents, N = 100 (scaled query)



	Total	Field		
		Planners & designers	Construction companies	Plant manufacturers
Basis	100	35	33	32
More efficient workflows	39 %	43 %	30 %	44 %
Better cooperation with all stakeholders	36 %	40 %	33 %	34 %
<b>Shorter planning and construction times</b>	<b>36 %</b>	<b>54 %</b>	<b>18 %</b>	<b>34 %</b>
Fewer communication problems between all parties involved in the construction process	33 %	46 %	27 %	25 %
Less rework	25 %	17 %	36 %	22 %
Fewer legal disputes	25 %	26 %	21 %	28 %
Optimization of the entire life cycle of a building	25 %	29 %	18 %	28 %
Increase in profits	24 %	29 %	18 %	25 %
Fewer complaints	23 %	26 %	21 %	22 %
Cost reduction	23 %	26 %	12 %	31 %



# What are the advantages of BIM?

Experts who are already using BIM in their projects confirm that this especially lead to more efficient workflows, shorter planning and construction times as well as better cooperation with all stakeholders.

Question 10: Now it's about the advantages that can be gained by working with BIM. Please estimate whether, from your point of view, using BIM in your projects would definitely, rather, rather not or not at all lead to the following aspects. Basis: all respondents, N = 100 (scaled query)



In any case

	total	worked with BIM	
		yes	no
Basis	100	52	48
<b>More efficient workflows</b>	<b>39 %</b>	<b>44 %</b>	<b>33 %</b>
<b>Better cooperation with all stakeholders</b>	<b>36 %</b>	<b>40 %</b>	<b>31 %</b>
<b>Shorter planning and construction times</b>	<b>36 %</b>	<b>42 %</b>	<b>29 %</b>
Fewer communication problems between all parties involved in the construction process	<b>33 %</b>	37 %	29 %
Less reworking	<b>25 %</b>	25 %	25 %
Fewer legal disputes	<b>25 %</b>	23 %	27 %
Optimization of the entire life cycle of a building	<b>25 %</b>	29 %	21 %
Increase in profits	<b>24 %</b>	21 %	27 %
Fewer complaints	<b>23 %</b>	19 %	27 %
Cost reduction	<b>23 %</b>	25 %	21 %



# What other advantages does BIM offer?

The experts see further advantages in better and faster coordination, more efficient planning as well as time and cost savings.

Further advantages through BIM		
Completed <b>planning</b> at the start of construction	Greater efficiency	Save human resources, also <b>save</b> a lot of <b>time</b> and <b>money</b>
Better visualization, <b>presentations</b>	Good standards, equal levels	Simplifies handover and cooperation
Better <b>coordination</b> of external planners	Good overview, models	Linked execution of interdisciplinary <b>planning processes</b> and fewer Lacks of information
Better and faster <b>coordination</b>	Mainly <b>cost</b> and error avoidance	Prevention of errors, <b>time savings</b> and effectiveness
Better overview, better <b>presentations</b>	Mainly <b>time</b> and Cost saving	Visualized construction sequence
Database exchange	Compressed working	Advantages for large-scale construction projects, then <b>costs</b> can be <b>reduced</b> , Can lead to more <b>planning adequacy</b> In the companies
Efficiency of <b>planning</b> , construction and operator processes	<b>Cost savings</b> , one can <b>Plan better</b>	Fewer errors, thus also <b>cost savings</b>
Better linking of the individual parties and thus <b>more efficient planning</b> and fewer errors	Shorter time-to-market requirements	Less reworking in any case
It can initially <b>save time</b> , but can also help to <b>reduce costs</b> if it is properly designed	One can coordinate all disciplines better and one can work <b>more cost-efficiently</b>	<b>Time savings</b> , material savings, employee capacities can be better planned
Interdisciplinary cooperation, shorter communication channels	More communication among each other	<b>Time saving</b> due to more parallel tasks

Question 10A: In your opinion, what other advantages can arise from working with BIM?

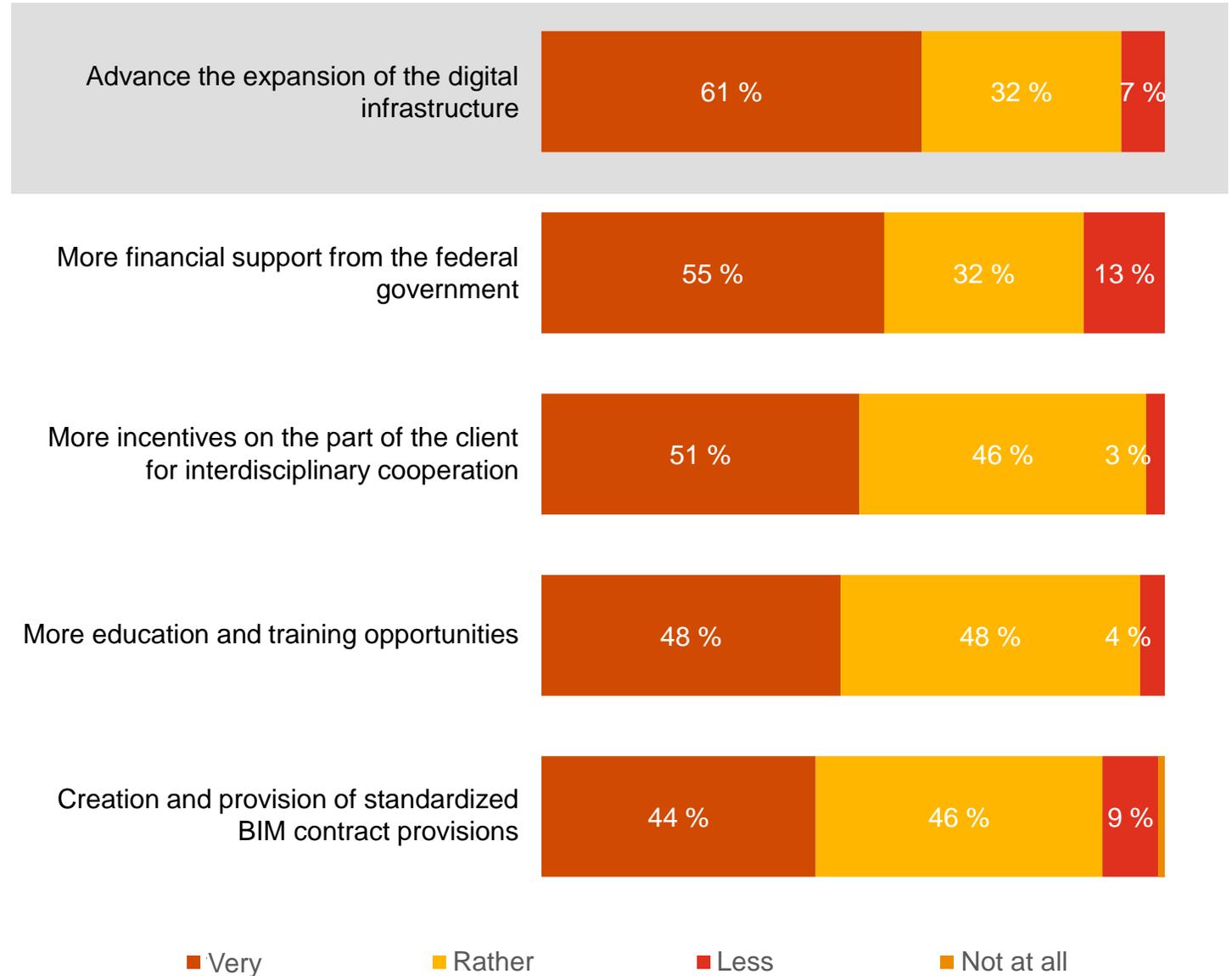
Basis: respondents who mentioned further advantages, N = 31 (open question)





# What possibilities are there for improvement?

Six out of ten decision-makers regard the advancement of the expansion of the digital infrastructure as very important in order to improve the application possibilities of BIM in Germany.



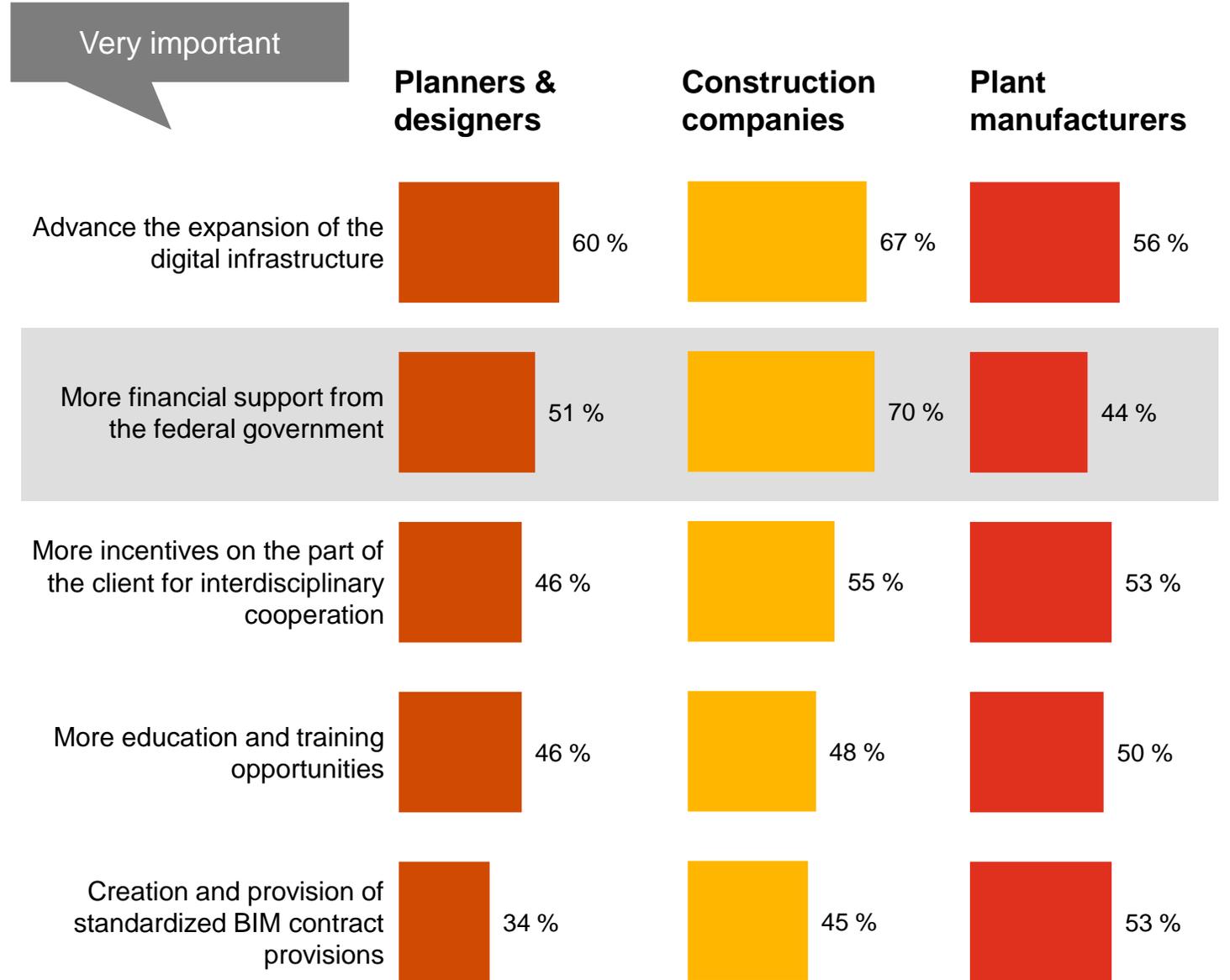
Question 11: In your opinion, are the following aspects very, rather, less or not at all important when it comes to improving the possibilities for using BIM in Germany? Basis: all respondents, N = 100 (scaled query, sorted by top)





# What possibilities are there for improvement?

More financial support from the federal government is very important, especially for experts from construction companies, in order to facilitate the use of BIM in Germany.



Question 11: In your opinion, are the following aspects very, rather, less or not at all important when it comes to improving the possibilities for using BIM in Germany? Basis: planners & designers, N = 35; construction companies, N = 33; plant manufacturers, N = 32 (scaled query, sorted by total)





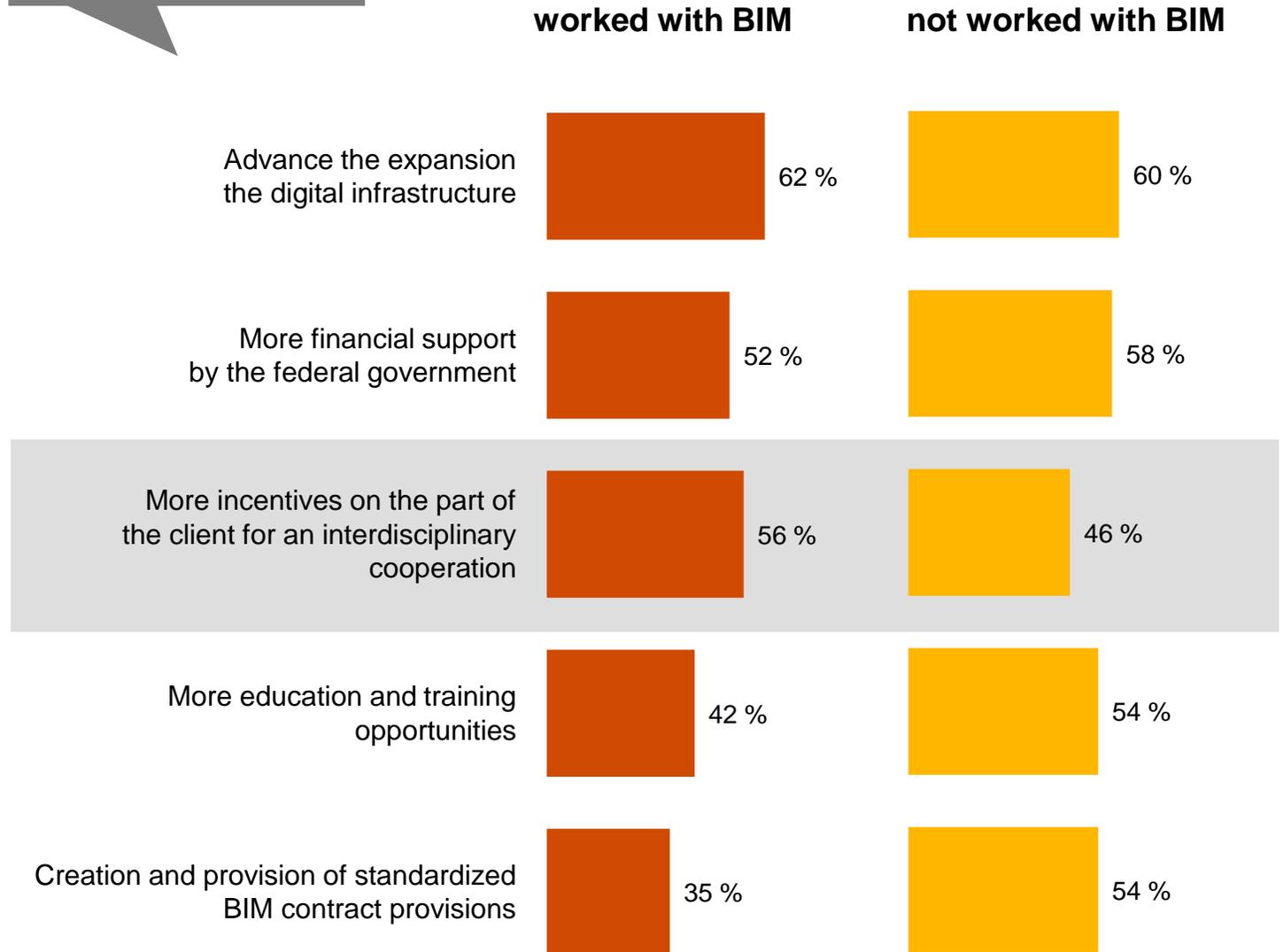
# What possibilities are there for improvement?

In particular, companies that already work with BIM would like to see more incentives for interdisciplinary cooperation on the part of clients.

Question 11: In your opinion, are the following aspects very, rather, less or not at all important when it comes to improving the possibilities for using BIM in Germany?  
Basis: Respondents who have ... worked with BIM in the last two to three years, N = 52; ... not worked with BIM, N = 48 (scaled query, sorted by total)



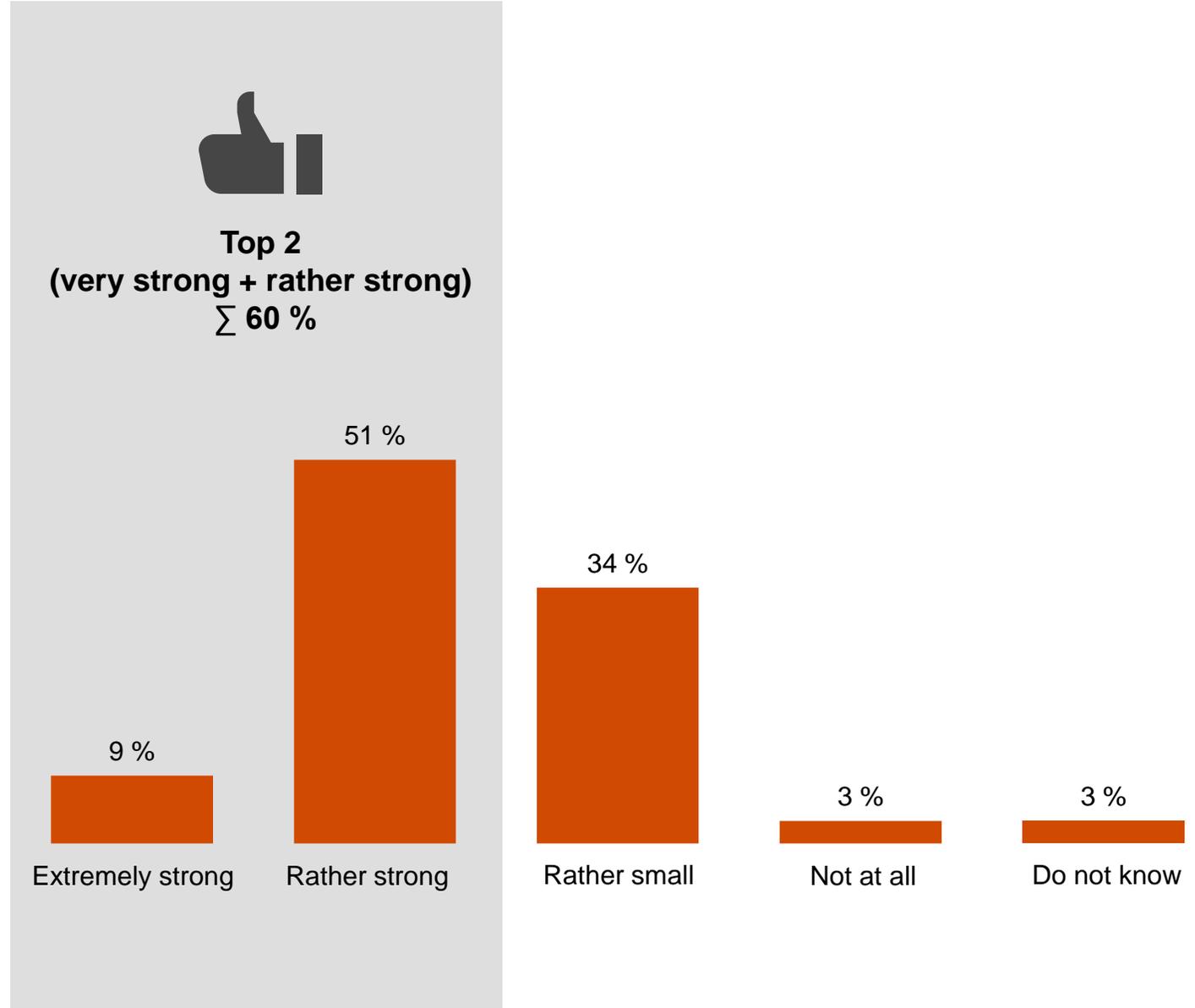
Very important





## To what extent will the construction industry change?

Six out of ten decision-makers expect the use of BIM to bring about a major change in the construction industry over the next five years.



Question 12: To what extent will the construction industry in Germany change in the next five years due to the use of BIM?

Basis: all respondents, N = 100 (single response)





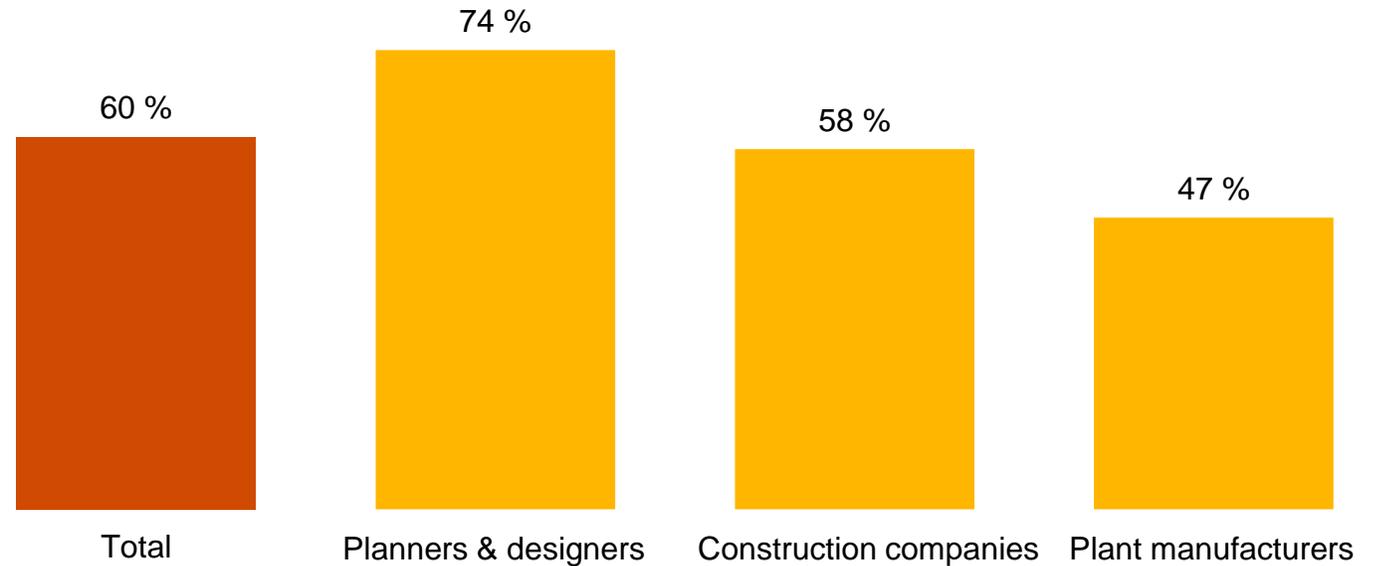
## To what extent will the construction industry change?

More frequently than experts from construction companies or plant manufacturers, planners & designers expect the construction industry to change dramatically over the next five years as a result of the use of BIM.

Question 12: To what extent will the construction industry in Germany change in the next five years due to the use of BIM? Basis: all respondents, N = 100; planners & designers, N = 35; construction companies, N = 33; plant manufacturers, N = 32 (single response)



Within the next 5 years.  
very strong + rather strong change



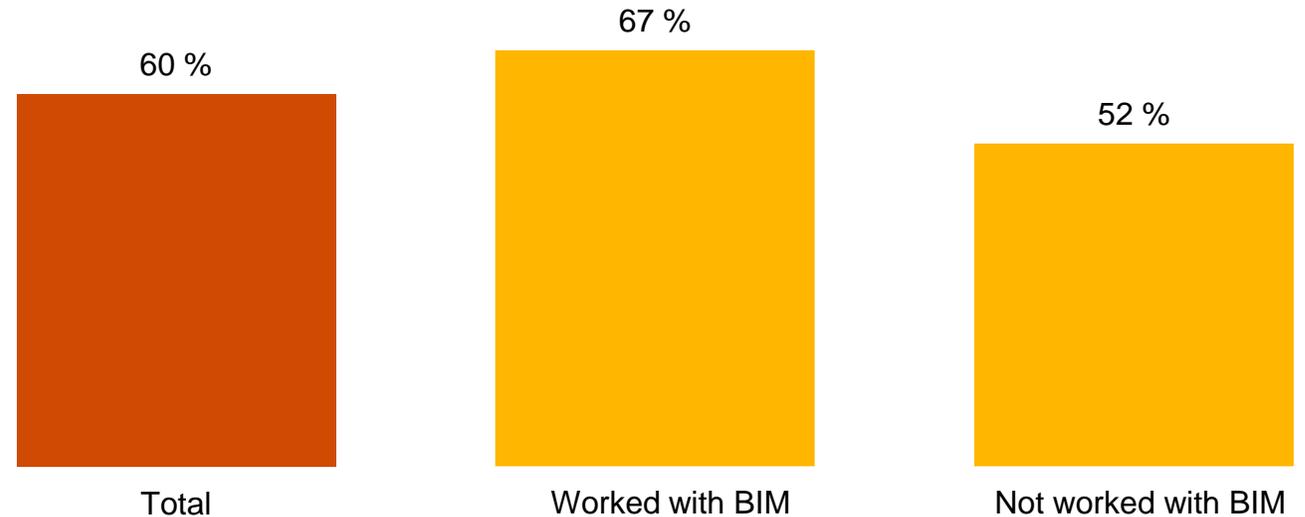


## To what extent will the construction industry change?

BIM-experienced experts assume much more frequently that the construction industry will change considerably in the next five years as a result of the use of BIM.

Question 12: To what extent will the construction industry in Germany change in the next five years due to the use of BIM? Basis: all respondents, N = 100; respondents who ... have worked with BIM in the last two to three years, N = 52; ... have not worked with BIM, N = 48 (single response)

Within the next 5 years.  
very strong + rather strong change



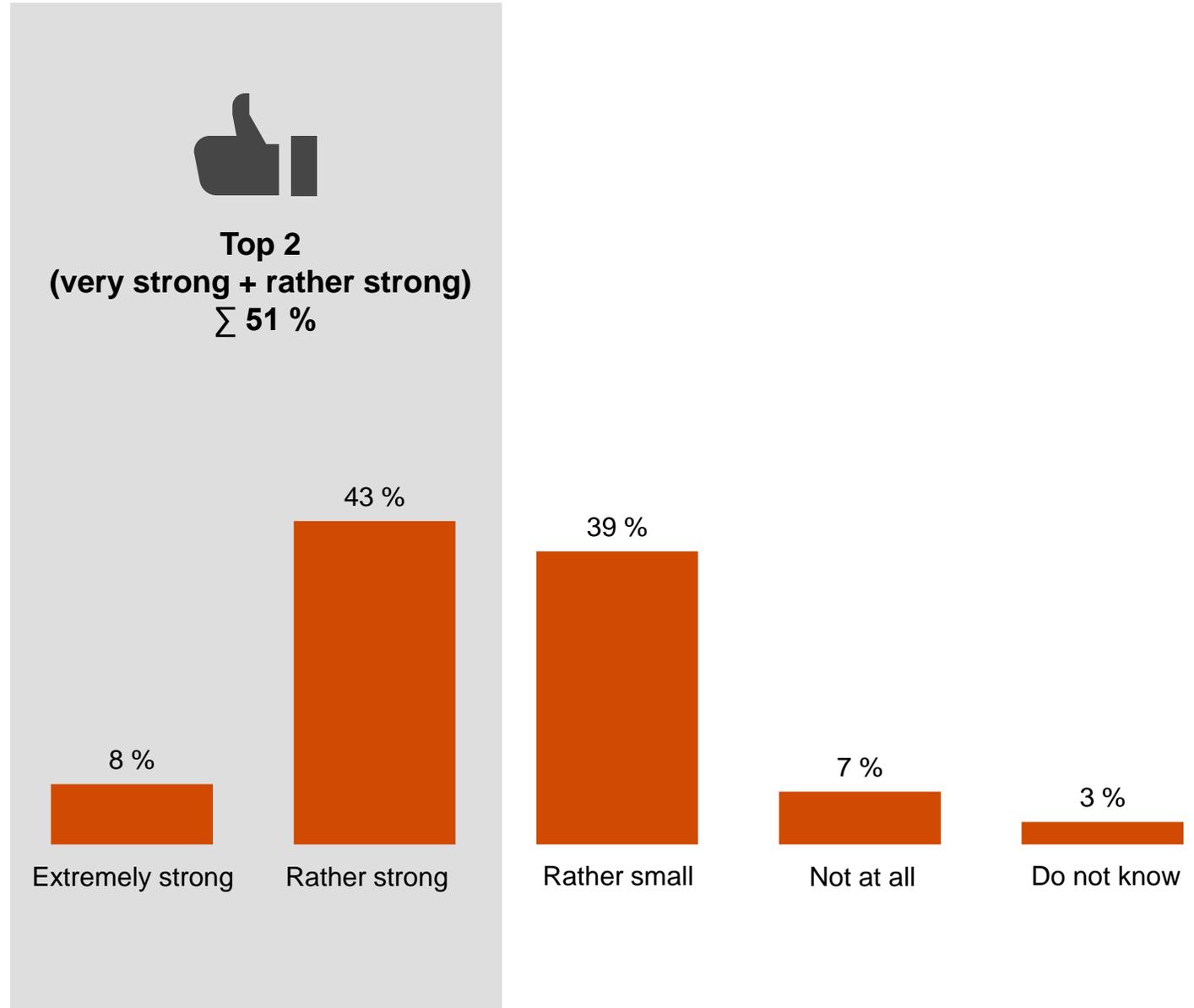


## To what extent will the business model change?

Every second decision-maker expects the business model of their company to change considerably over the next five years as a result of BIM.

Question 13: To what extent will BIM change your company's business model over the next five years?

Basis: all respondents, N = 100 (single response)

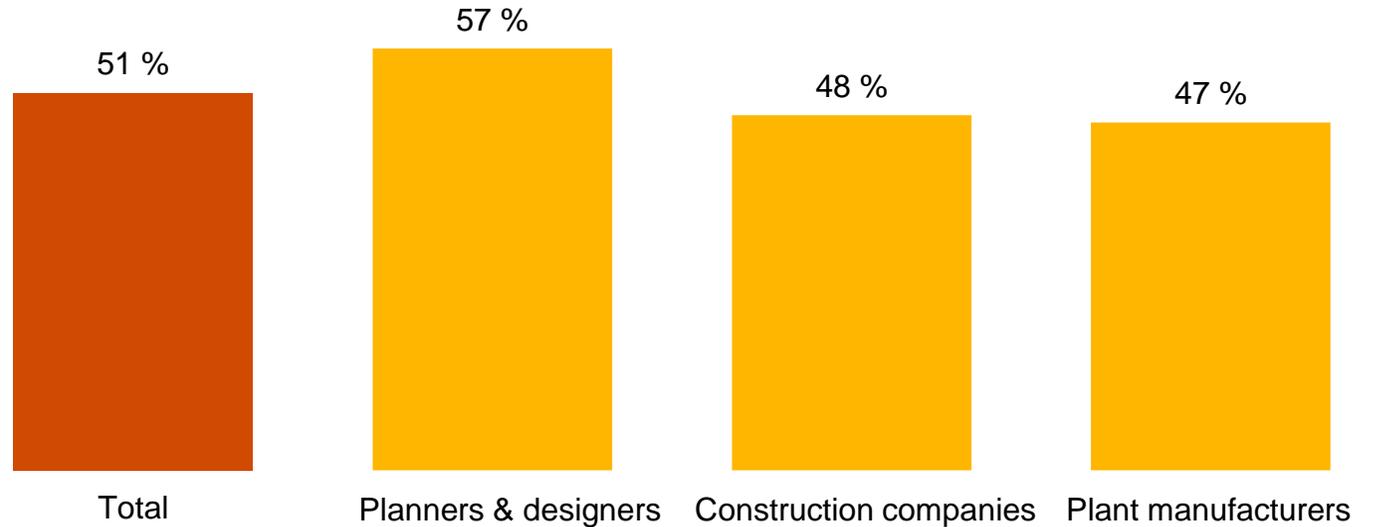




## To what extent will the business model change?

Planners & designers are more likely to expect a major change in their business model than decision-makers from construction companies or plant manufacturers.

Within the next 5 years  
very strong + rather strong change



Question 13: To what extent will BIM change your company's business model over the next five years? Basis: all respondents, N = 100; planners & designers, N = 35; construction companies, N = 33; plant manufacturers, N = 32 (single response)

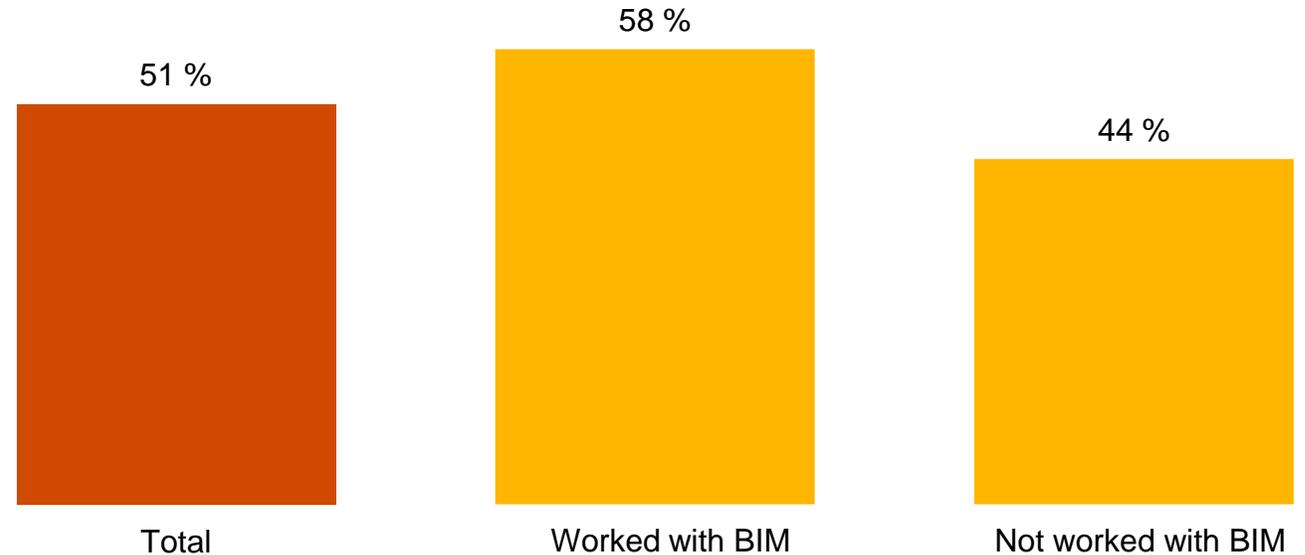




## To what extent will the business model change?

BIM-experienced experts are more likely to see a major change in their company's business model over the next five years.

Within the next 5 years  
very strong + rather strong change



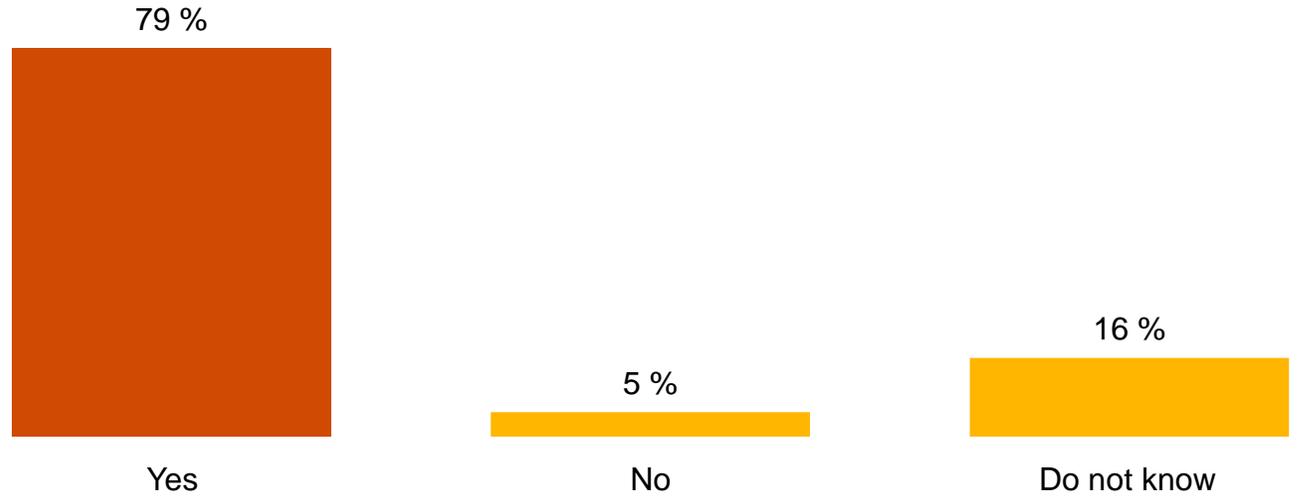
Question 13: To what extent will BIM change your company's business model over the next five years? Basis: all respondents, N = 100; respondents who ... have worked with BIM in the last two to three years, N = 52; ... have not worked with BIM, N = 48 (single response)





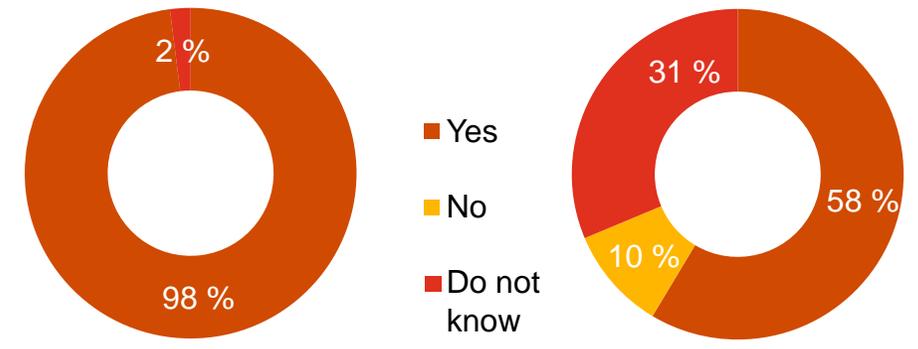
# Are the companies planning the deployment?

Almost 80 % of the companies intend to use BIM in the next few years. However, companies that have not worked with BIM yet more seldom plan to use it in the next few years.



Worked with BIM

Not worked with BIM



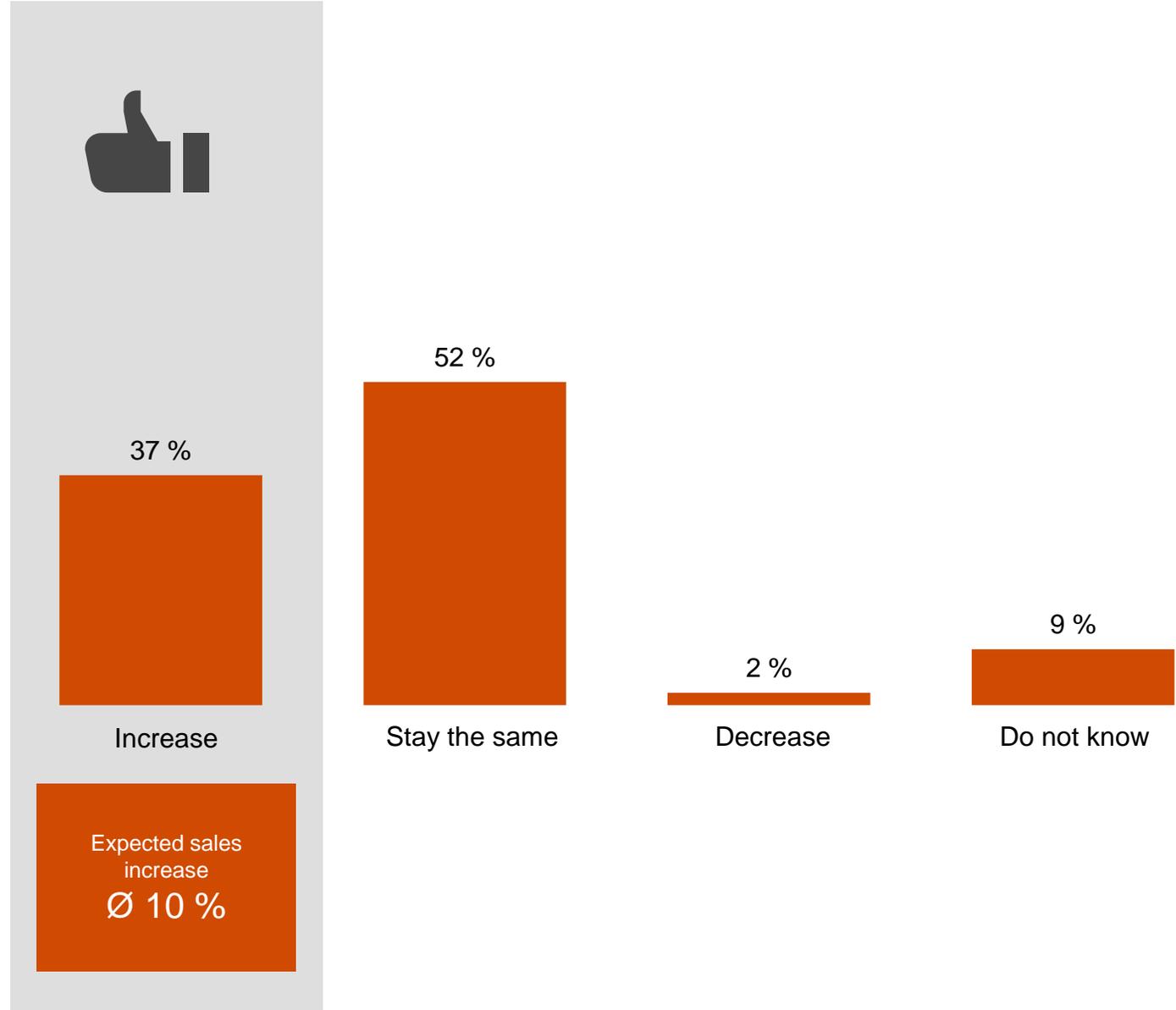
Question 14: Will you use BIM in your company in the next few years? Basis: all respondents, N = 100 (single response)





# How will sales change?

More than one in three companies that intends to use BIM in the next few years anticipates an increase in sales, on average by 10 %.



Question 15: Will the turnover of your company increase, remain the same or decrease in the next 5 years due to the use of BIM? Basis: respondents who will use BIM in the next few years, N = 79 (single response)

Question 15A: In your opinion, by what percentage will the turnover of your company increase in the next 5 years due to the use of BIM? Basis: Respondents who expect an increase in turnover through the use of BIM, N = 29 (single denomination, open denomination, in percent)

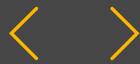


## How will sales change?

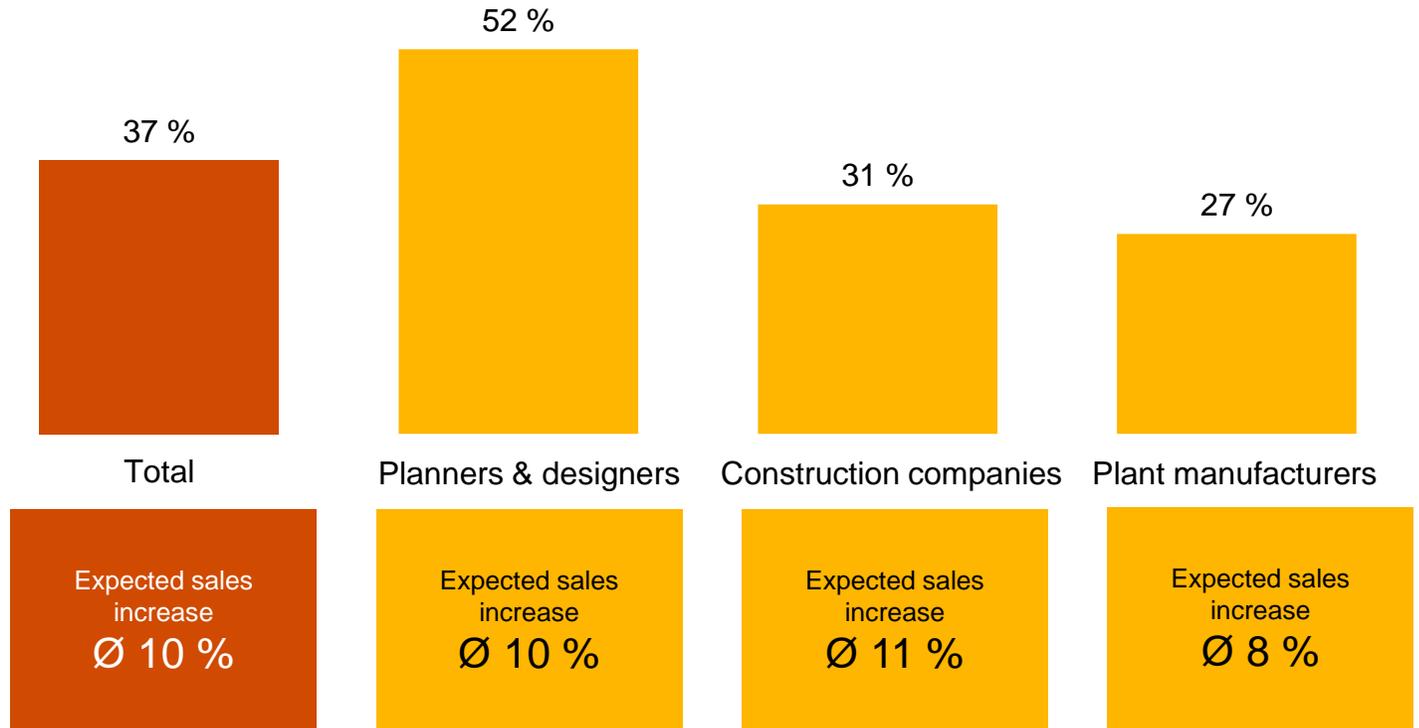
Planners & designers in particular are expecting an increase in sales through the use of BIM in the next few years, on average by 10 %.

Question 15: Will the turnover of your company increase, remain the same or decrease in the next 5 years due to the use of BIM? Basis: respondents who will use BIM in the next few years, N = 79; planners & designers, N = 27; construction companies, N = 26; plant manufacturers, N = 26 (single response)

Question 15A: In your opinion, by what percentage will the turnover of your company increase in the next 5 years due to the use of BIM? Basis: Respondents who expect an increase in turnover through the use of BIM, N = 29; planners & designers, N = 14; construction companies, N = 8; plant manufacturers, N = 7 (single denomination, open denomination, given as a percentage)



Increase in turnover

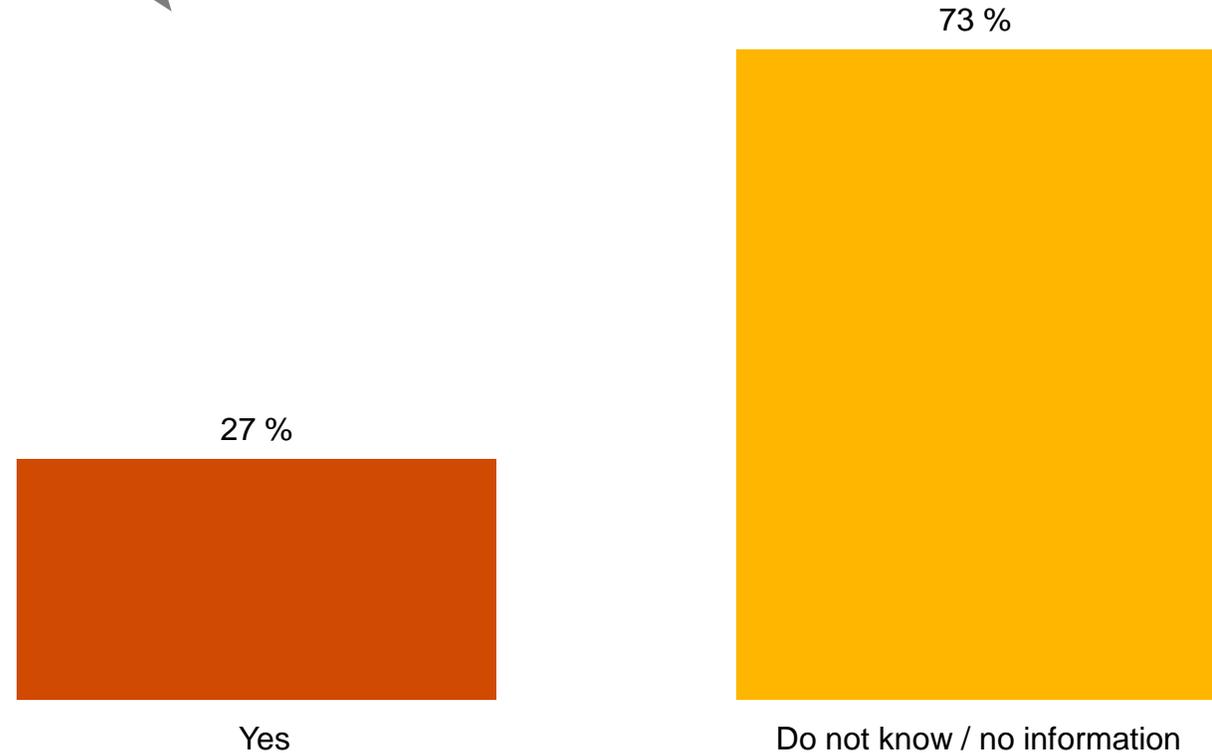




## Are the costs for the technical implementation known?

A large part cannot estimate the costs. Only around a quarter know the level of investment.

Costs known for the technical implementation



Question 16: Once regardless of whether you use BIM in the next 5 years or not. Do you know the costs for the technical implementation of BIM that your company will or would have to invest in the next 5 years? Basis: all respondents, N = 100 (single response)





# Background and research approach



## Background

The report volume presents the results of a CATI survey on the topic "**Digitization of the German Construction Industry**", which was conducted on behalf of PricewaterhouseCoopers GmbH.



## Research approach

- Survey method: CATI survey
- Target group: Decision-makers in the 1st and 2nd management level (board of directors/ management, head of new construction business, etc.) from the planning & design, construction and plant engineering sectors
- Sample size: N = 100
- Survey period: April/May 2019
- The results are rounded to whole numbers



# Statistics



Field	Total
Planners & designers	35 %
Construction companies	33 %
Plant manufacturers	32 %



Position	Total
Management director / executive management	46 %
Head of new construction business	22 %
Other positions of second management level	32 %



Number of employees	Total
Under 10	5 %
10 to less than 50	23 %
50 to less than 250	54 %
250 and more	18 %



Annual turnover planners & designers	Total
5 million to less than 7 million euros	34 %
7 million to less than 10 million euros	14 %
10 million euros and more	52 %



Annual turnover construction companies/ plant manufacturers	Total
10 million to less than 20 million euros	63 %
20 million to less than 50 million euros	17 %
50 million euros and more	20 %

Basis: all respondents, N = 100; planners & designers, N = 35; annual turnover construction companies / plant manufacturers, N = 65 (single response)





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