Blockchain Adoption in Switzerland

Rethinking enterprises, ecosystems and economies with smart contract frameworks

Introduction 1/2

Since the invention of the Internet, few other technologies created more myths and promises than the blockchain technology.

IBM's Institute for Business Value published a report on blockchain in June 2016 named "Fast Forward", which explains how the key characteristics of blockchain address shortcomings and frictions in today's business environments.

Blockchain can reduce the elapsed time of transactions because transparency and one single ledger allow a near real-time execution, save cost through the elimination of intermediaries, mitigate risks as business transactions become verifiable and auditable, and enable new business models by reshaping business networks and defining new profit pools.

Data is the world's natural resource. Today, data is owned, managed, exploited and potentially manipulated by a relatively small number of entities.

Blockchain promises a new era, in which transactions are not owned by specific organizations because they are stored in a distributed, secure and auditable way. This creates an opportunity for a much wider group of people – potentially everybody - to participate in the market, creating new business models or entirely new businesses.

The most prominent examples of blockchain are crypto currencies. However, blockchain goes way beyond the world of crypto currencies. A key concern for serious business use of blockchain are the applied consensus, identification and trust mechanisms inherent to some blockchain implementations. The implementation of 'permissioned' blockchains addresses these concerns by limiting blockchain access to an entitled group of participants. Permissioned blockchains can be used to break down barriers between different organizations, companies and industries so that new value chains can be created.

Introduction 2/2

Switzerland is at the very forefront of blockchain developments with a special focus on crypto currencies and FinTechs. The area between Zurich and Zug is nicknamed 'Crypto Valley'. IBM Switzerland wanted to know the current state of adopting blockchain in Swiss companies. Therefore we have conducted an empirical market survey in Switzerland across multiple industries and organization with different sizes. We are pleased to share the results of the study.

? *Is blockchain seen as an opportunity to preempt or counter disruptions from digital invaders?*

? *Do companies in Switzerland view blockchain as a way to gain a competitive edge by developing new systems of engagements or do they see blockchain as an also ran?*

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Contents

Adoption of blockchain by enterprises in Switzerland

2016 was the year in which blockchain definitely started to be noticed in established businesses in Switzerland. Not surprisingly, a search on «blockchain» shows 15m results.

The 2016 Blockchain Adoption Study Team at IBM Switzerland wanted to know more and therefore conducted a blockchain survey focusing on blockchain adoption by enterprises in Switzerland.

More than 50 enterprises have participated. The questionnaire was administered mostly via face-to-face interviews.
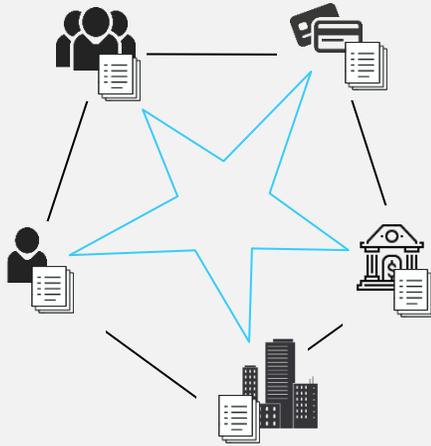
This report summarizes the results and provides a perspective on how to go about adopting blockchain solutions.
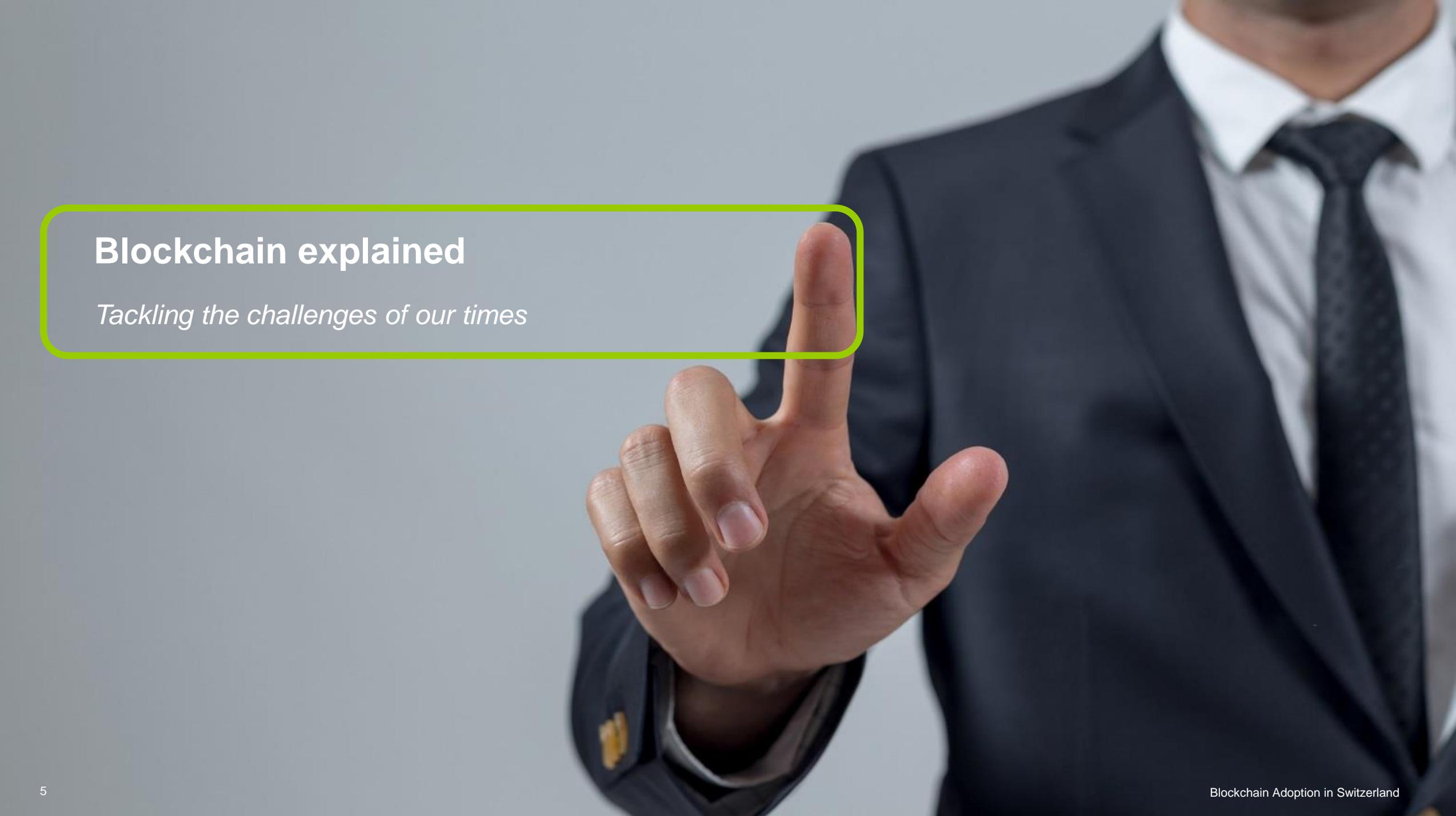
Blockchain explained

Tackling the challenges of our times

Blockchain Adoption in Switzerland

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A paradigm shift towards distributed ledger solutions

Up to now …

The classical way to handle information exchange in a business network is that everyone records their version of each transaction in a personal ledger. Whenever a new transaction is made, information is exchanged through different communication channels and each party updates their respective ledger.

This leads to various difficulties in case a dispute over a transaction arises such as who has the true ledger content and so forth.
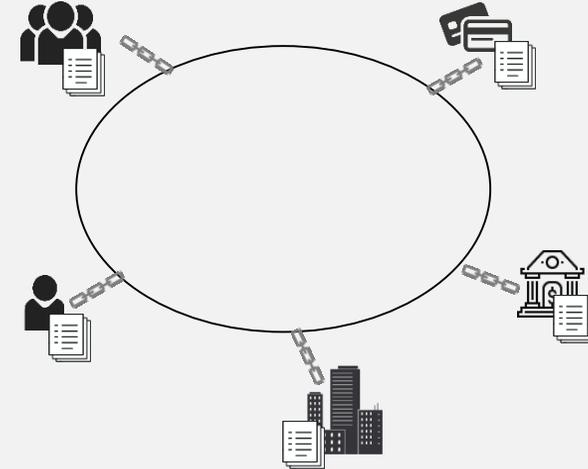
… the proposed solution

Blockchain aims to shift the way we exchange and store information; instead of letting every participant of a business network record the history in a personal ledger, information is stored in a common ledger which is distributed to all participants in the network. This ledger is automatically updated after consensus among the participants is reached.
Like this, information is stored in a completely decentralized way, leading to a distribution of trust among the participants.

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Key properties of blockchain

Several flavors of blockchain implementations and projects do exist, e.g. Bitcoin, Ethereum, Dash, Lisk, Steem, Ripple and Hyperledger. One of the key differentiators is the property of being permissioned or non-permissioned, meaning that actors have to enroll and the activity within the network can or cannot be limited based on the identity of the actor. Nevertheless, there are properties which are common to both, independent of the blockchain being permissioned or non-permissioned. For enterprises, IBM foresees primarily the use of permissioned blockchains.

Distributed Ledger
A ledger holds all the transactions of the system, which is then distributed to participants in real time. This distribution of trust and information improves transparency and increases the overall flow of information
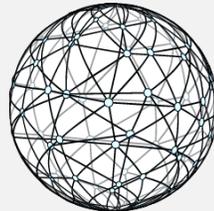
Consensus
All participants of the system must agree on the validity of a transaction through a common method/algorithm of consensus. Furthermore, transactions are timestamped, creating a verifiable history of all transactions

Security
Transactions can be encrypted, allowing for precise access control by giving users the necessary permissions to see the relevant information. Furthermore, the ledger is immutable; changes can only be undone through new transactions, and the complete history is always available

Smart Contracts
The business logic of the network can be encoded in so called smart contracts. Each invocation of such a contract will result in a blockchain transaction, making business process more trackable & auditable
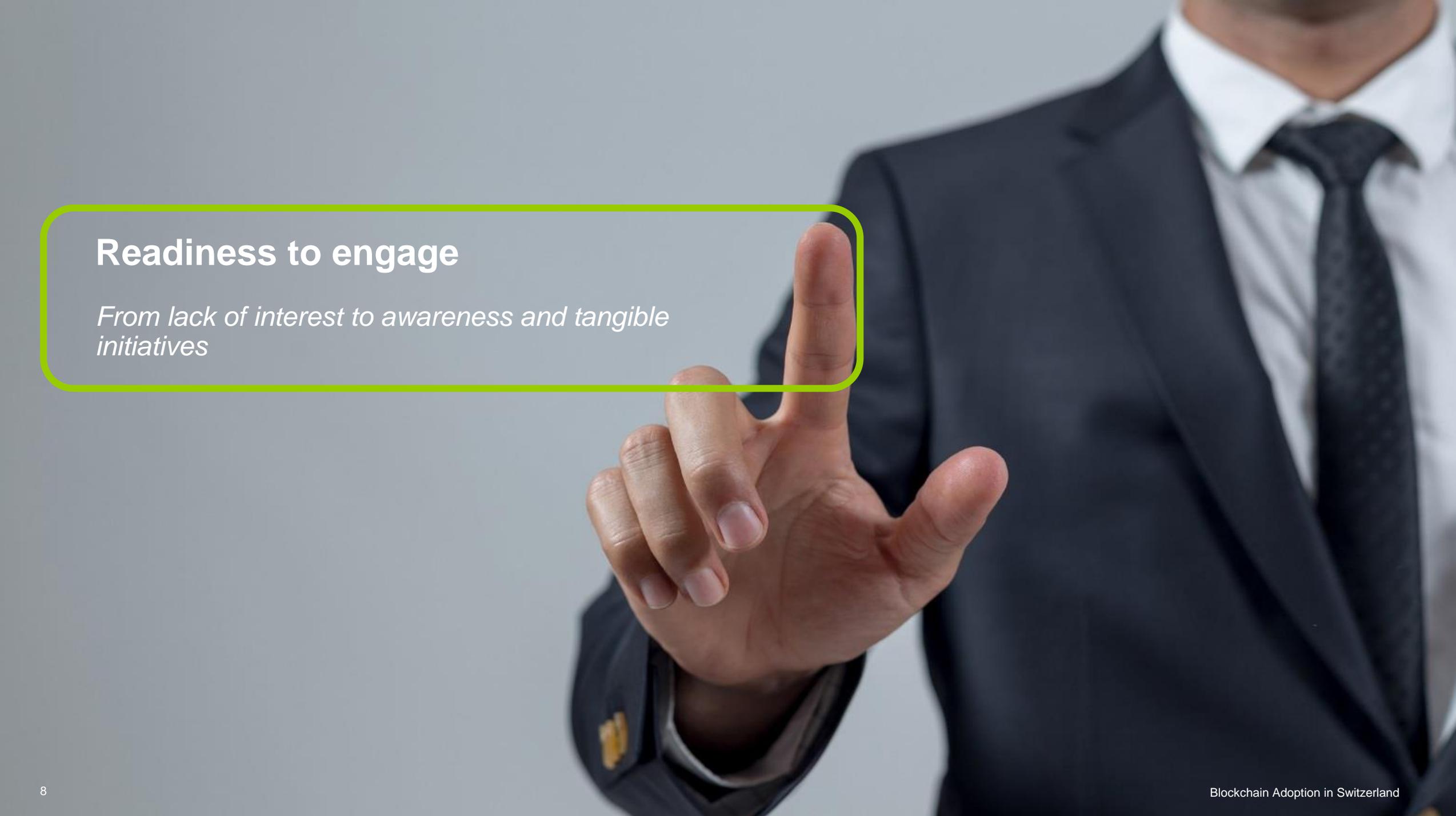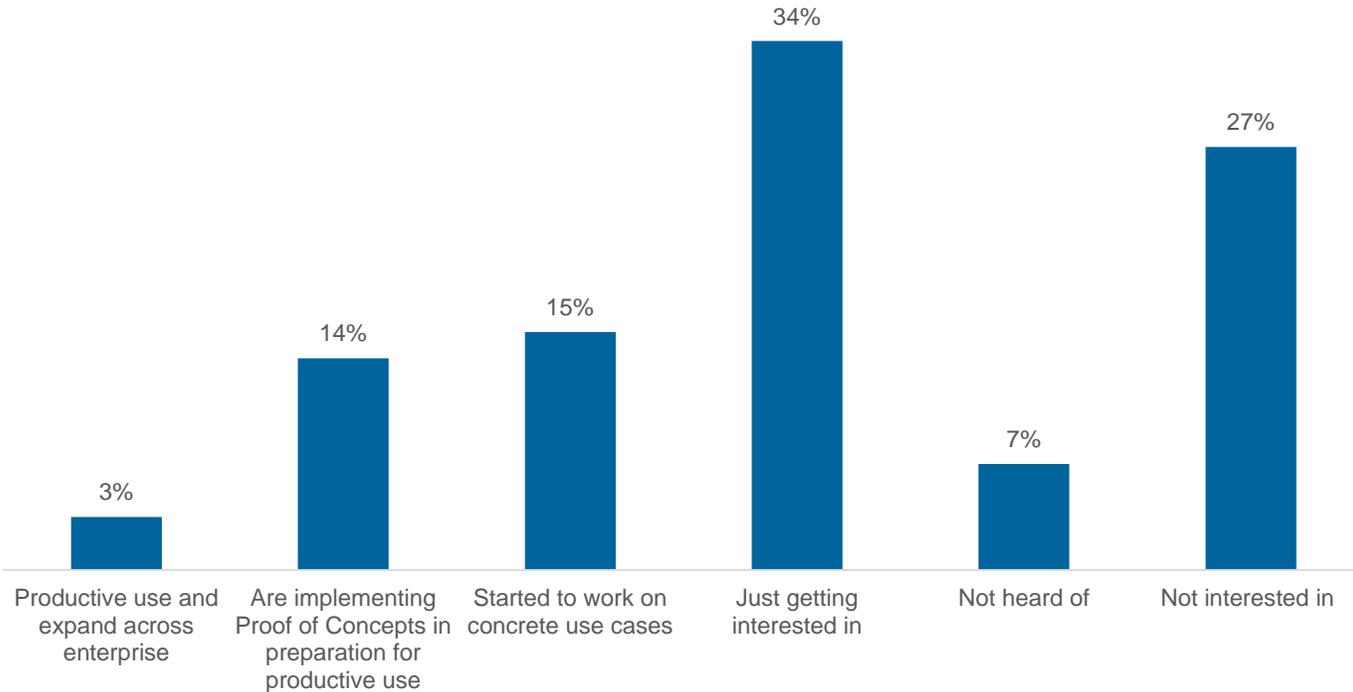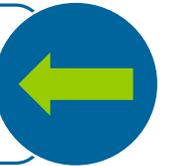
Readiness to engage

From lack of interest to awareness and tangible initiatives

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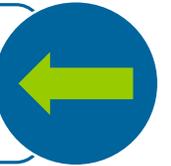# 32% of respondents are actively engaged with a blockchain initiative

Blockchain Innovation Cycle

Two third of the respondents fall into "not interested in", "not heard of" and "just getting interested in"

One third of respondents have a blockchain initiative under way with a few that are already leveraging blockchain productively

			34%		
		15%			27%
	14%				
3%				7%	
Productive use and expand across enterprise	Are implementing Proof of Concepts in preparation for productive use	Started to work on concrete use cases	Just getting interested in	Not heard of	Not interested in

Question no. 11: Where in the innovation cycle is your company when it comes to applying and leveraging blockchain?

Distribution and Financial Services companies are further ahead than Industrial, Communications and Public companies

Blockchain Innovation Cycle by Sectors
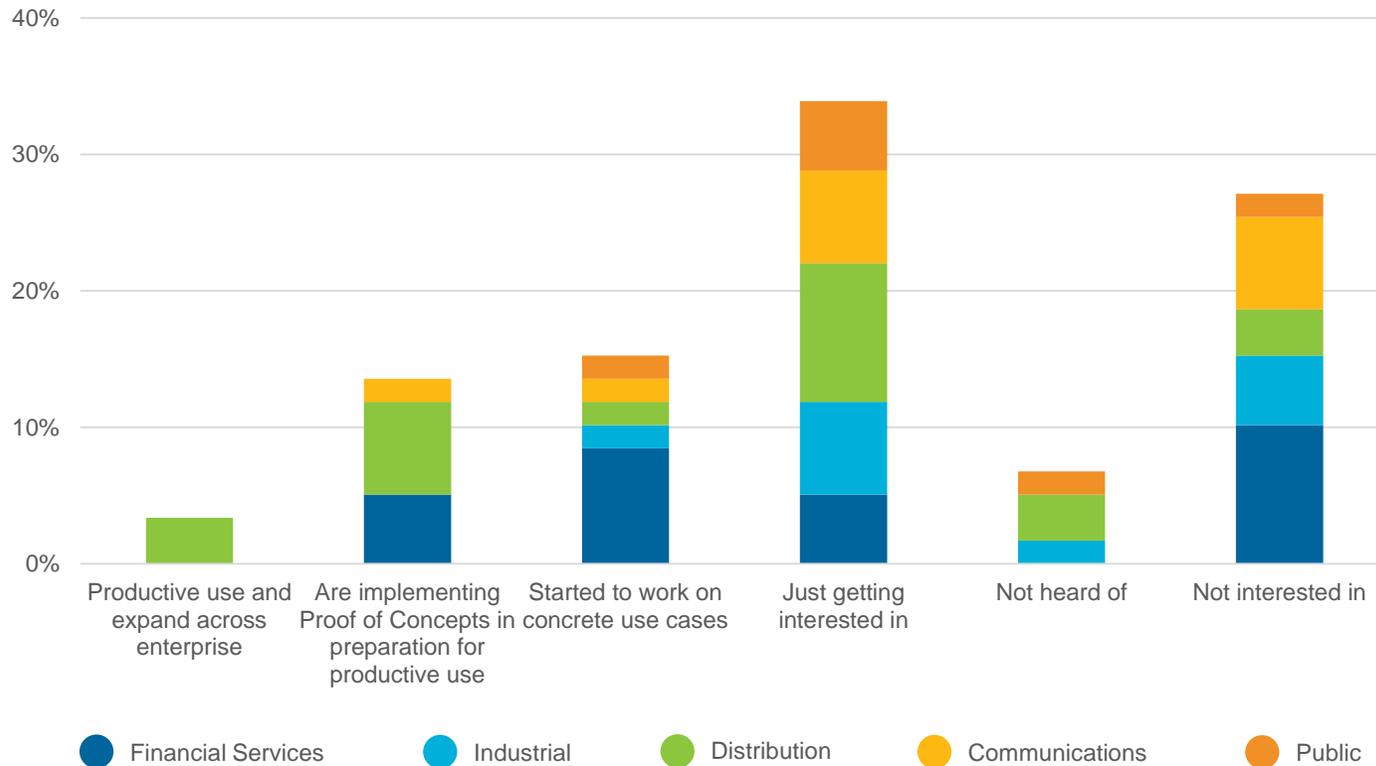
Most Distribution sector respondents are implementing or are at least interested in blockchain
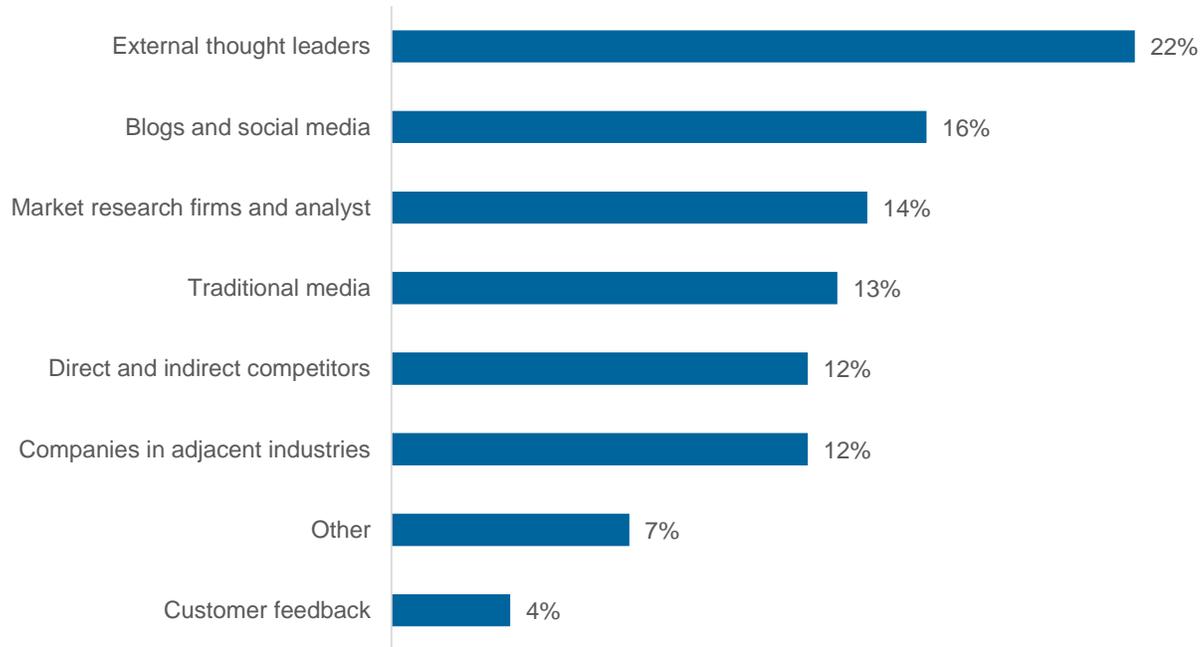
Financial Service companies are divided between being actively engaged and not being interested in blockchain

Participants from the Industrial sector are mainly at the beginning of the blockchain innovation cycle and the Public sector mostly falls into the limited awareness categories

Legend:
- Financial Services
- Industrial
- Distribution
- Communications
- Public

X-axis categories:
- Productive use and expand across enterprise
- Are implementing Proof of Concepts in preparation for productive use
- Started to work on concrete use cases
- Just getting interested in
- Not heard of
- Not interested in

Question no. 11: Where in the innovation cycle is your company when it comes to applying and leveraging blockchain?

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# External thought leaders are sought out for insights for blockchain – Customer feedback is of low interest

Sources for Exploring Potential of Blockchain

Source	Percentage
External thought leaders	22%
Blogs and social media	16%
Market research firms and analyst	14%
Traditional media	13%
Direct and indirect competitors	12%
Companies in adjacent industries	12%
Other	7%
Customer feedback	4%

External thought leaders, blogs and social media are key information sources to acquire knowledge about blockchain
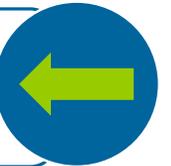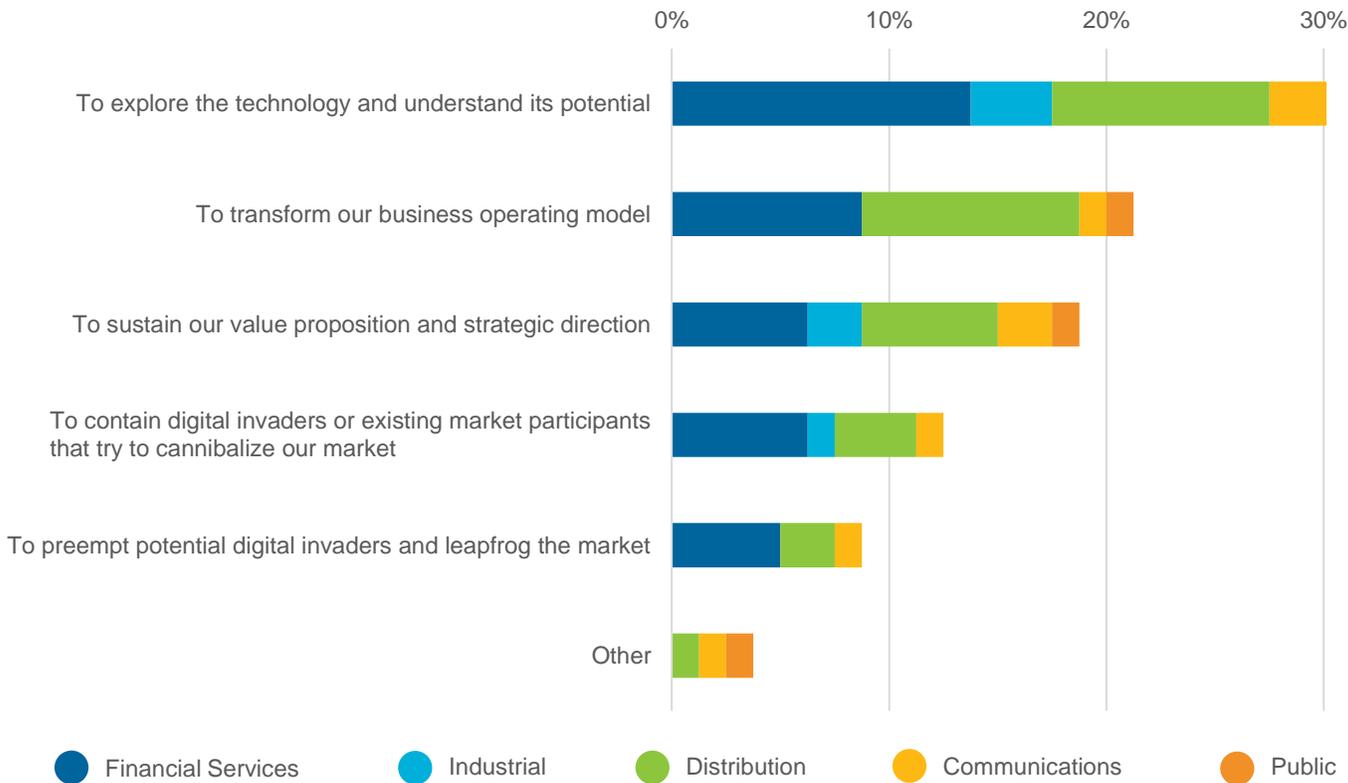
Surprisingly customer feedback is not actively pursued by survey respondents
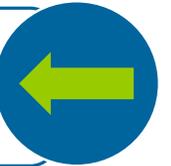
Question no. 12: What are the top 3 external sources you use to explore the potential of blockchain for your enterprise?

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Technology and its potential is the main interest factor

Main Reasons for Interest in Blockchain by Sectors

Bar chart categories (top to bottom):
- To explore the technology and understand its potential
- To transform our business operating model
- To sustain our value proposition and strategic direction
- To contain digital invaders or existing market participants that try to cannibalize our market
- To preempt potential digital invaders and leapfrog the market
- Other

X-axis: 0%, 10%, 20%, 30%

Legend: Financial Services, Industrial, Distribution, Communications, Public

Beside the understanding of the technology and its potential, participants view blockchain also as a vehicle to transform their operating model or to sustain their value proposition in the market
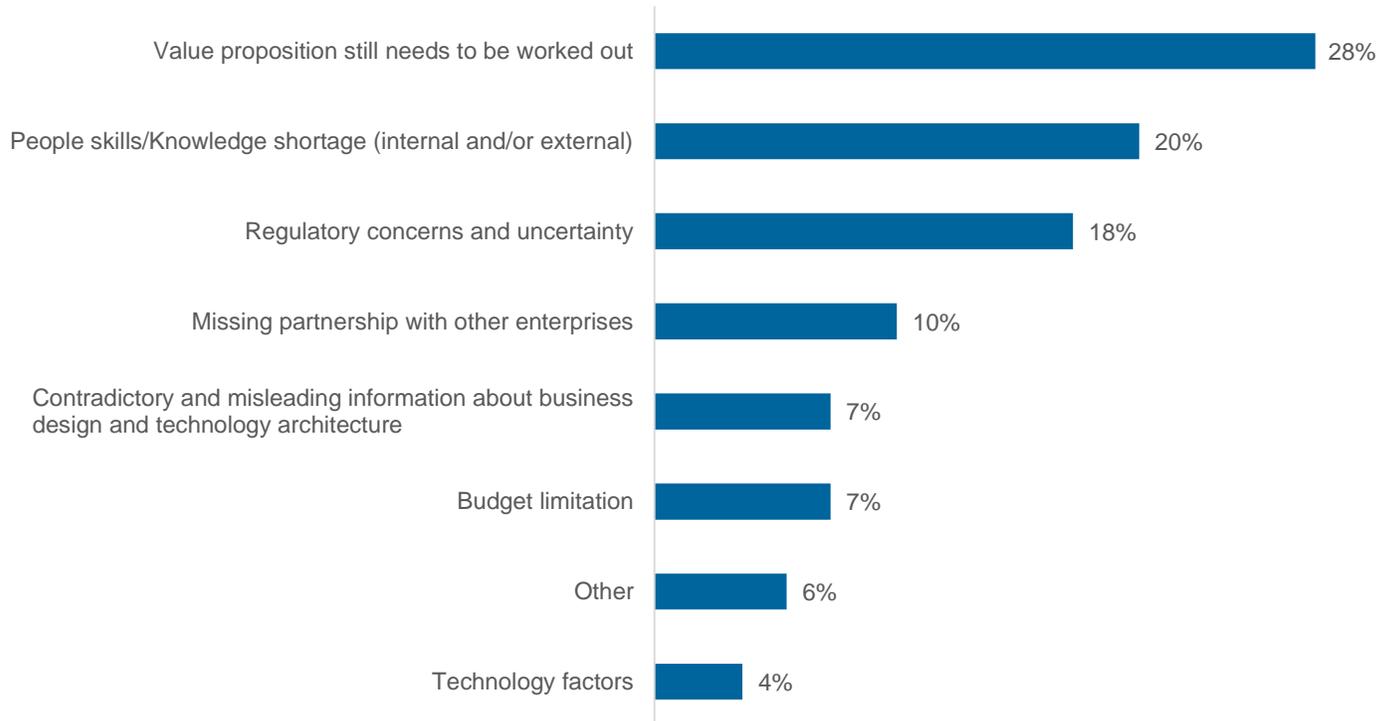
Some respondents also view it as an option to contain or preempt digital invaders

There are no significant relative weight variances of the interest factors across industries and size of the companies

Question no. 20: What are the main reasons for your enterprise's interest in blockchain today?

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The value proposition is the missing link to success in implementing blockchain today

Challenges for Blockchain in Enterprises

Challenge	Percentage
Value proposition still needs to be worked out	28%
People skills/Knowledge shortage (internal and/or external)	20%
Regulatory concerns and uncertainty	18%
Missing partnership with other enterprises	10%
Contradictory and misleading information about business design and technology architecture	7%
Budget limitation	7%
Other	6%
Technology factors	4%

The lack of a clear value proposition, which is viewed as the major challenge, is primarily voiced by Financial Services and Distribution sector respondents

The lack of people skills and knowledge is a key challenge for blockchain implementation initiatives

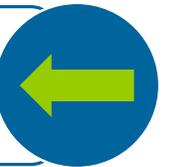*Many respondents voice regulatory concerns and therefore are uncertain whether or when they should move ahead*

Question no. 19: Which external or internal factors do you see as challenges of blockchain implementations in your enterprise?

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# Respondents view increased operational efficiency as the number one advantage of adopting blockchain
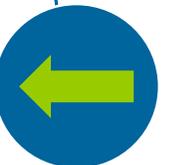
Areas of Biggest Advantage for Blockchain

Category	Percentage
Increase efficiency of business operations	30%
Extend the value chain into new areas not covered yet	22%
Develop stronger customer relationships	17%
Develop better products and services	13%
Make products and services more economical	12%
Other	5%
Improve effectiveness of marketing and sales	2%
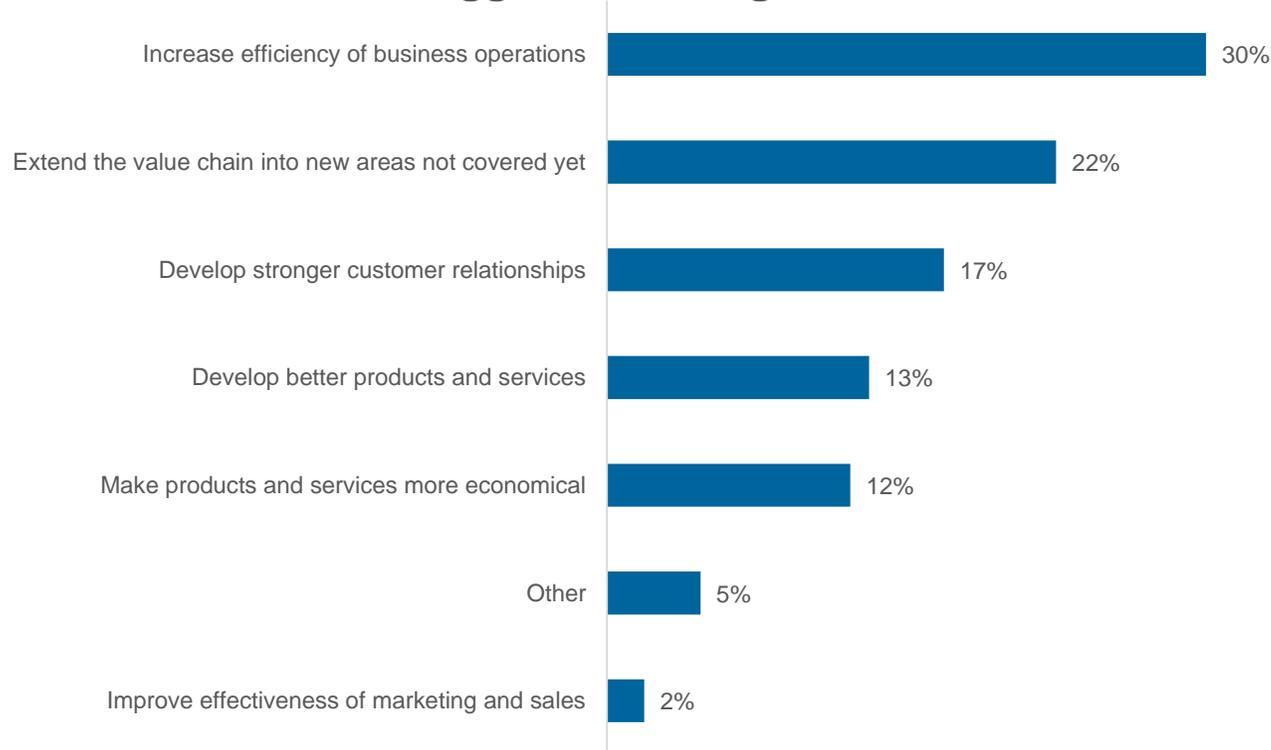
Process efficiency is rated notably higher than product and service efficiency

Extending the value chain and developing stronger customer relationships are the other key advantages of adopting blockchain
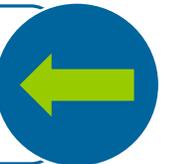
There are no relative weight variances of the advantage areas across sectors except for Public sector respondents who more often foresee blockchain as an opportunity to develop better products and services

Question no. 21: What are some of the areas in which you see the biggest advantages of adopting blockchain?

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Lack of capability, urgency and maturity are key inhibitors to consider blockchain for business model innovation

**Top 3 Inhibitors for Blockchain Innovation**

Inhibitor	Percentage
Lack of maturity	20%
Management team has more pressing issues and priorities	18%
Lack of internal capabilities/resources	18%
Complexity of solution	14%
Lack of established co-operation or alliance partner(s)	8%
Other	7%
Board/Exec Management does not consider as relevant for us	6%
Lack of security	5%
Lack of external capabilities/resources	2%
Lack of scalability	1%

The lack of maturity, day-to-day operational issues and priorities as well as the lack of internal capabilities and knowledge are considered to be key inhibitors
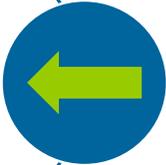
Lack of security and lack of executive management support are not viewed as key inhibitors

Question no. 13: Rank the top three inhibitors to consider blockchain for business model innovation.
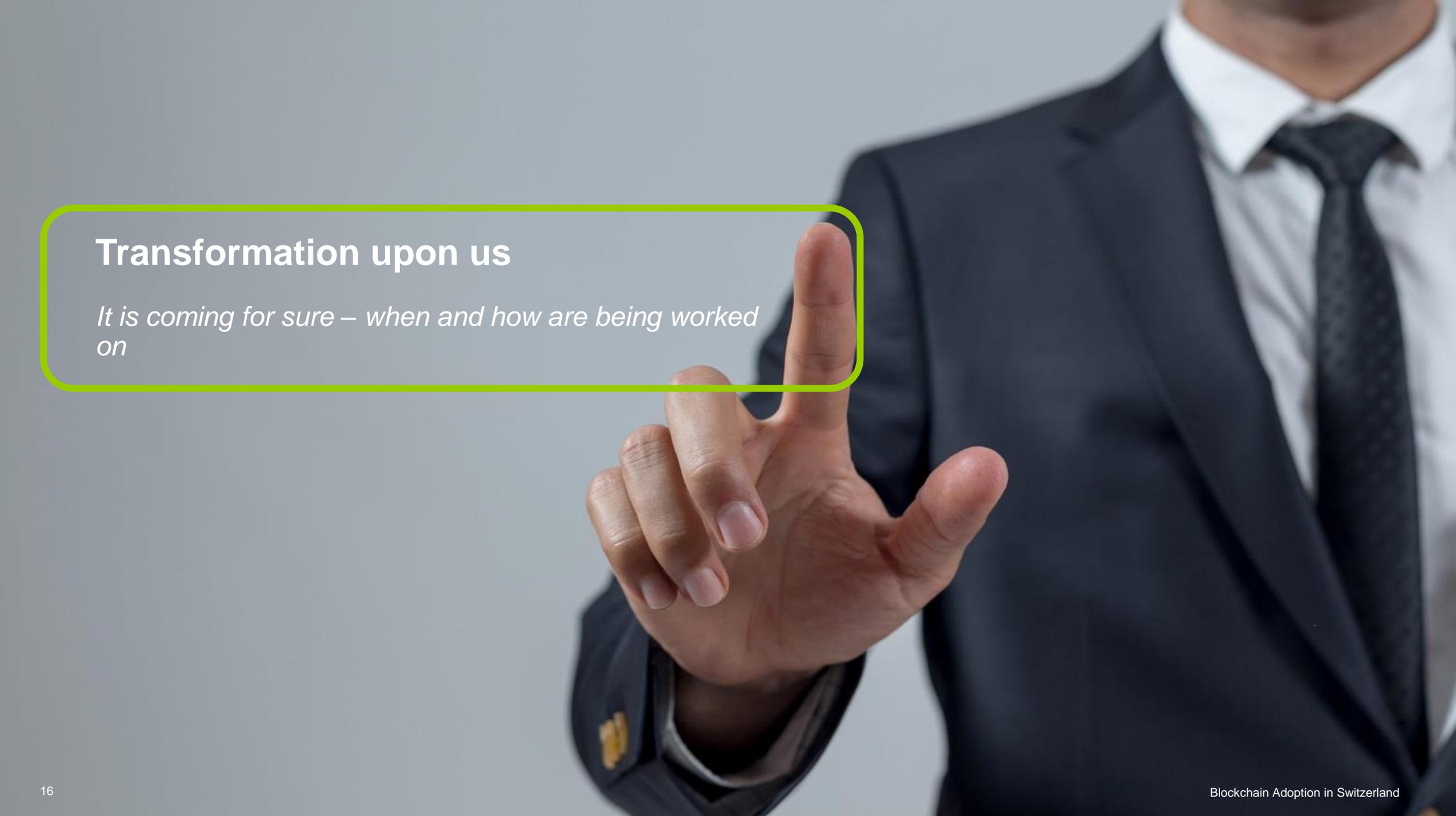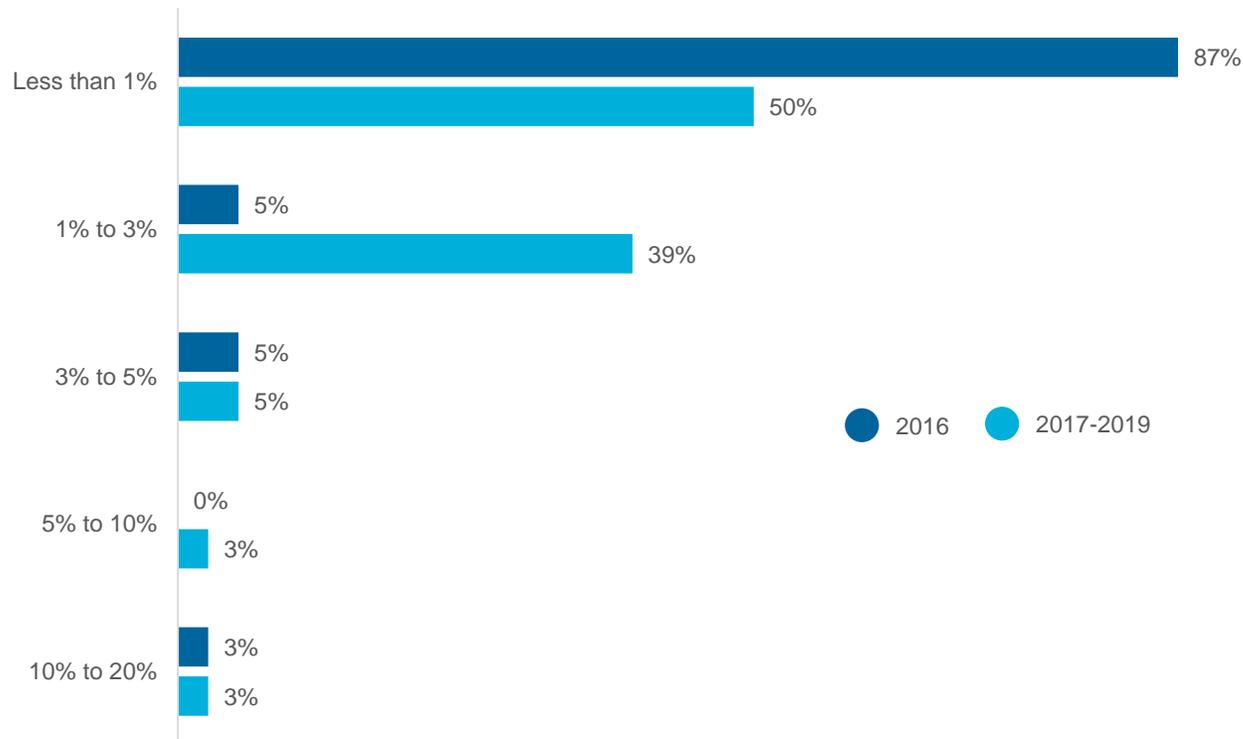
Transformation upon us

It is coming for sure – when and how are being worked on

2017 to 2019 project spend is expected to increase significantly compared to 2016
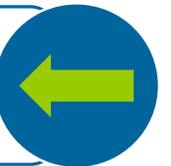
Project Spend 2016 vs. Project Spend 2017-2019

Less than 1%	87% (2016)	50% (2017-2019)
1% to 3%	5% (2016)	39% (2017-2019)
3% to 5%	5% (2016)	5% (2017-2019)
5% to 10%	0% (2016)	3% (2017-2019)
10% to 20%	3% (2016)	3% (2017-2019)

● 2016   ● 2017-2019

87% of respondents spent less than 1% in 2016 on blockchain, which is an indication that they are in the initial idea stage
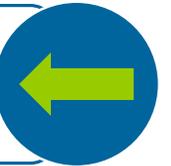
Project spend is expected to grow by 680% in the range of 1% to 3% of the respondents company's budget

Question no. 14: How much of your company's 2016 project spend is allocated to blockchain?
Question no. 15: How much of your company's 2017-2019 project spend will be allocated to blockchain?

Blockchain Adoption in Switzerland

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Blockchain impact is undebated – the question is when and to what degree it will make a difference in the market

Timing of Blockchain Impact by Sectors
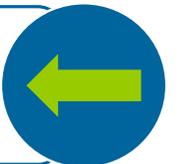

- Financial Services
- Industrial
- Distribution
- Communications
- Public
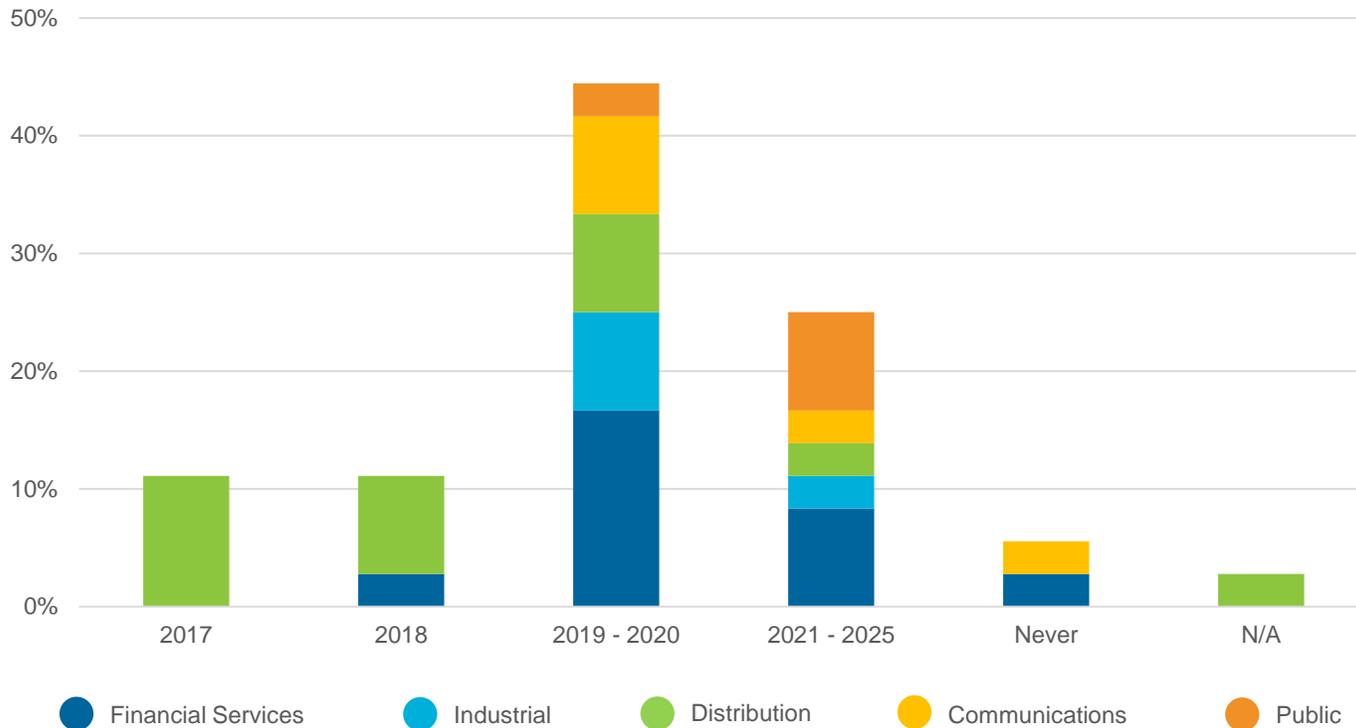
In the next two years, 22% foresee blockchain to make a difference. Mainly the Distribution sector anticipates an early effect
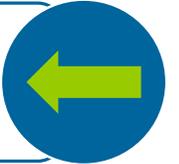
The majority foresees a difference in 2019 or beyond, especially Financial Services companies expect an impact after 2018
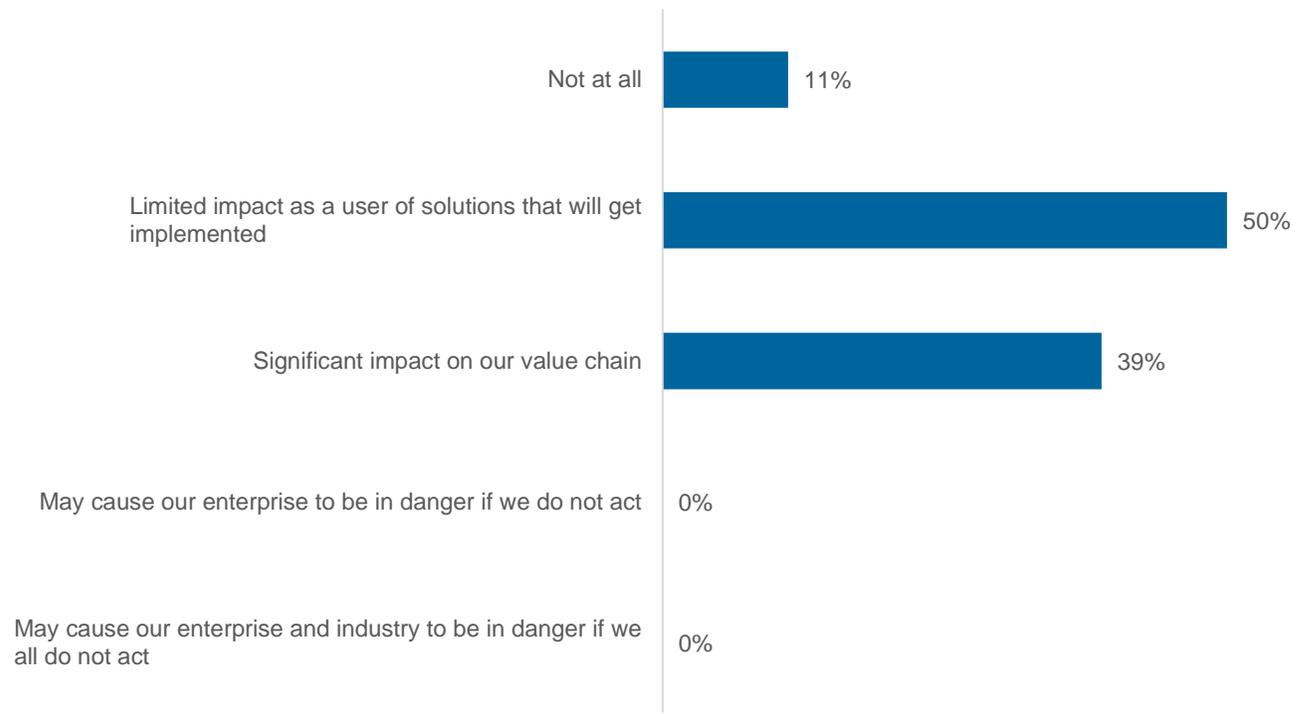
Only 6% of respondents have the opinion that blockchain will not make a difference in their market
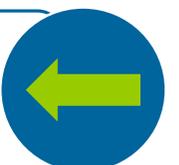
Question no. 22: When do you foresee blockchain will make a difference for your enterprise and the market it operates in?

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Blockchain Adoption in Switzerland

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Every second respondent foresees limited impact in their own industry in the next 3-5 years

Degree of Blockchain Impact in the next 3-5 years

Not at all — 11%

Limited impact as a user of solutions that will get implemented — 50%

Significant impact on our value chain — 39%

May cause our enterprise to be in danger if we do not act — 0%

May cause our enterprise and industry to be in danger if we all do not act — 0%

Half of the respondents anticipate only a limited impact

39% of respondents expect a significant impact on their value chain

No respondent foresees their company and industry to be in danger

Question no. 18: To what degree will blockchain impact your industry and your enterprise in the next 3-5 years?
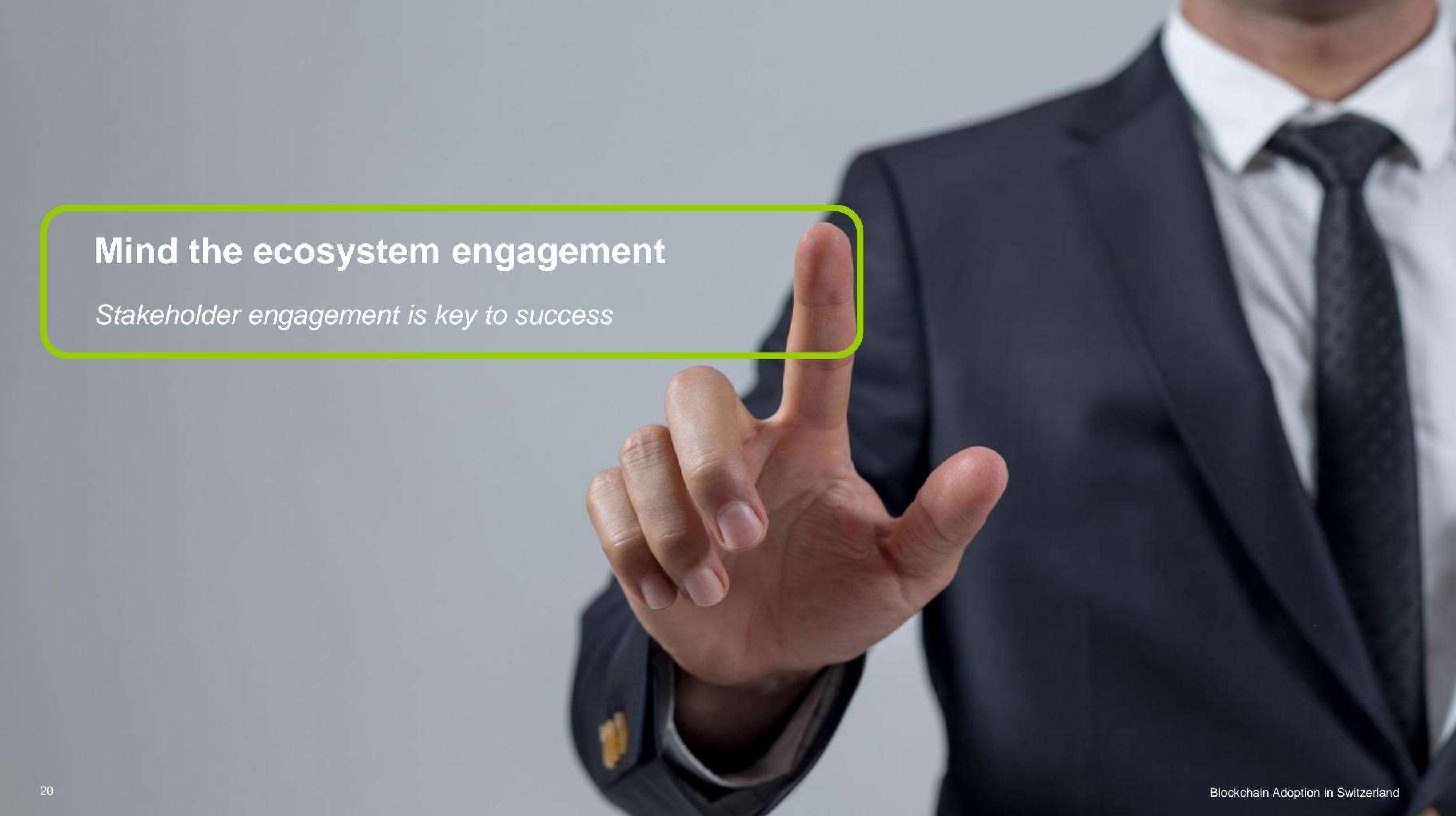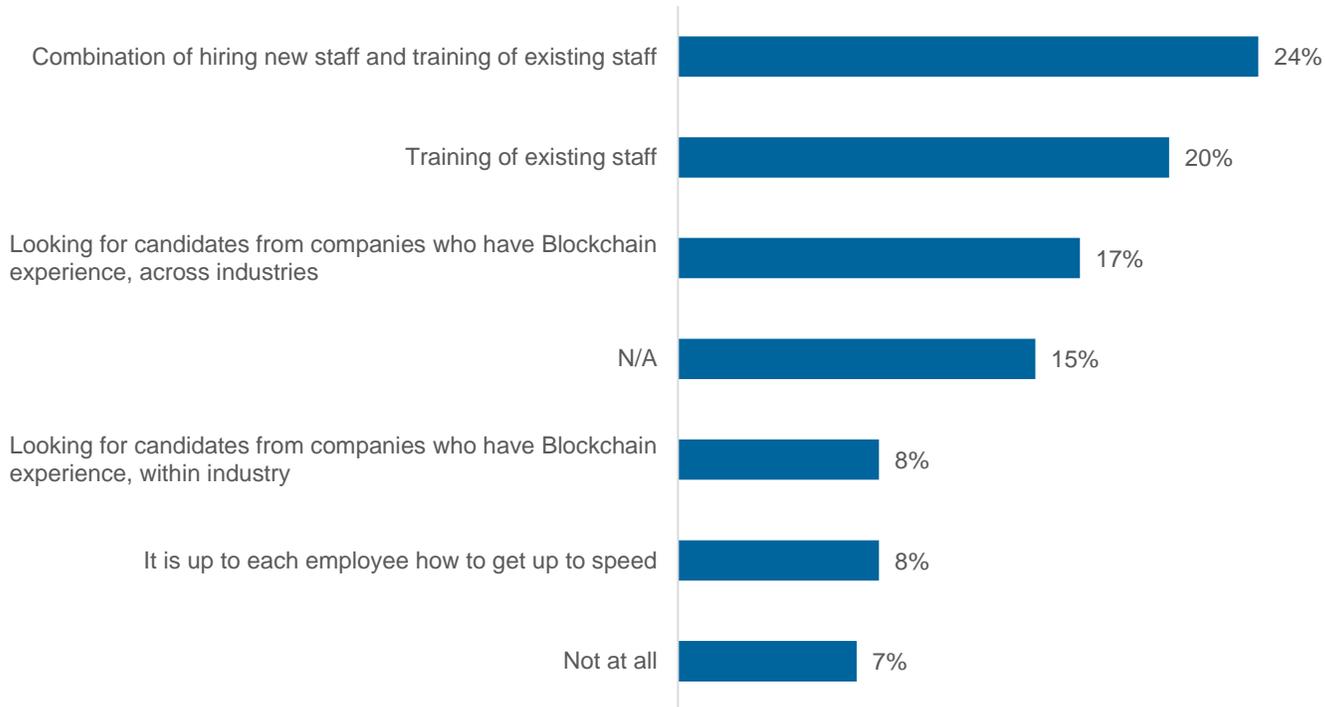
Mind the ecosystem engagement

Stakeholder engagement is key to success

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# Most companies consider a mix of hiring new staff and training of existing staff to grow blockchain skills

Acquiring New Skills for Blockchain

Category	Value
Combination of hiring new staff and training of existing staff	24%
Training of existing staff	20%
Looking for candidates from companies who have Blockchain experience, across industries	17%
N/A	15%
Looking for candidates from companies who have Blockchain experience, within industry	8%
It is up to each employee how to get up to speed	8%
Not at all	7%

It appears that looking for candidates across industry is more relevant than looking within the industry only
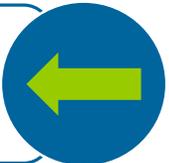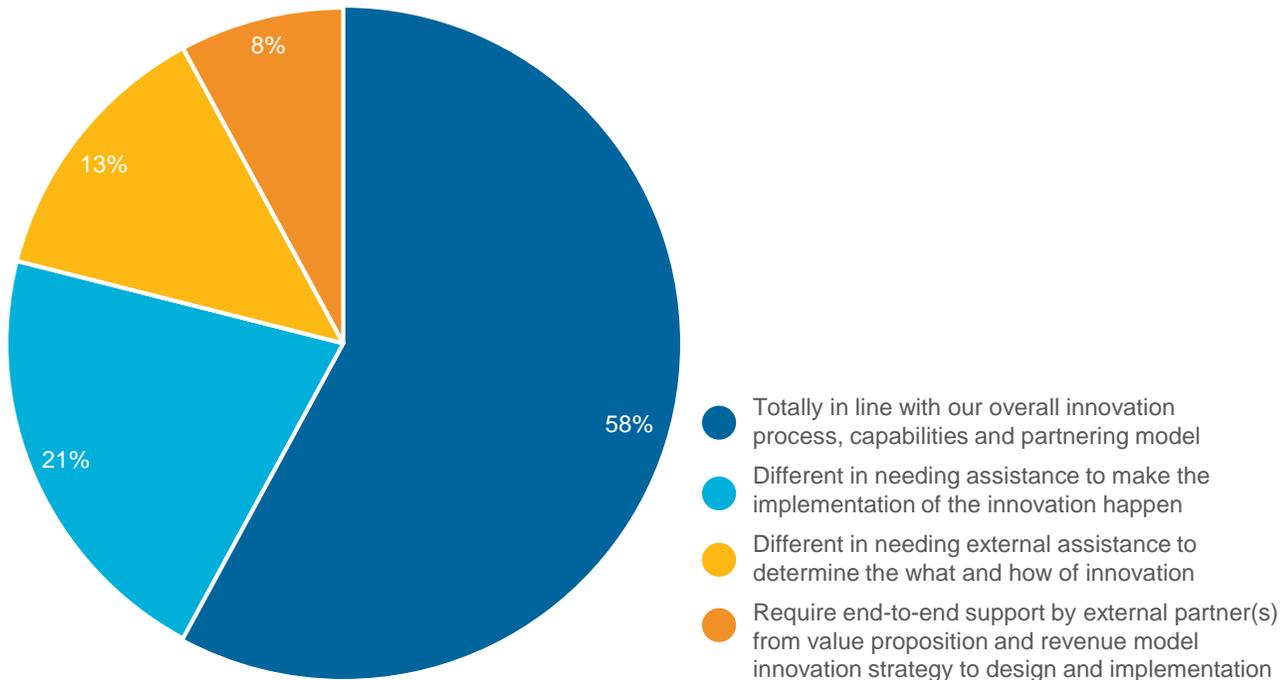
Some companies consider a pure training approach without hiring externally
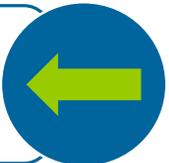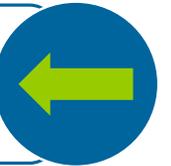
Question no. 24: How will you acquire new skills to adopt blockchain?

60% of respondents include blockchain in their regular innovation process
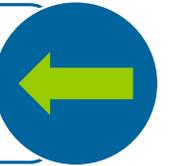
Blockchain Innovation Process

58%

21%

13%

8%

- ● Totally in line with our overall innovation process, capabilities and partnering model
- ● Different in needing assistance to make the implementation of the innovation happen
- ● Different in needing external assistance to determine the what and how of innovation
- ● Require end-to-end support by external partner(s) from value proposition and revenue model innovation strategy to design and implementation

60% of the participants consider blockchain in line with the overall innovation process

1 out of 3 respondents consider blockchain to be different from the regular innovation process

Question no. 16: Compared to the overall innovation opportunity management in your enterprise, is blockchain considered a special case or will it follow the regular innovation process?

IT, Strategy and Business Development are the key internal drivers of the blockchain agenda

Drivers of Blockchain by Functions and Sectors

Chart x-axis: 0% 2% 4% 6% 8% 10% 12% 14% 16% 18% 20%

Functions (top to bottom):
- IT
- Strategy
- Business Development & Joint-Venture Team
- Product Development
- Operations
- Not clear yet - working it out
- Other
- Sales and Marketing
- Legal and Compliance
- Finance
- N/A

Legend:
- Financial Services
- Industrial
- Distribution
- Communications
- Public
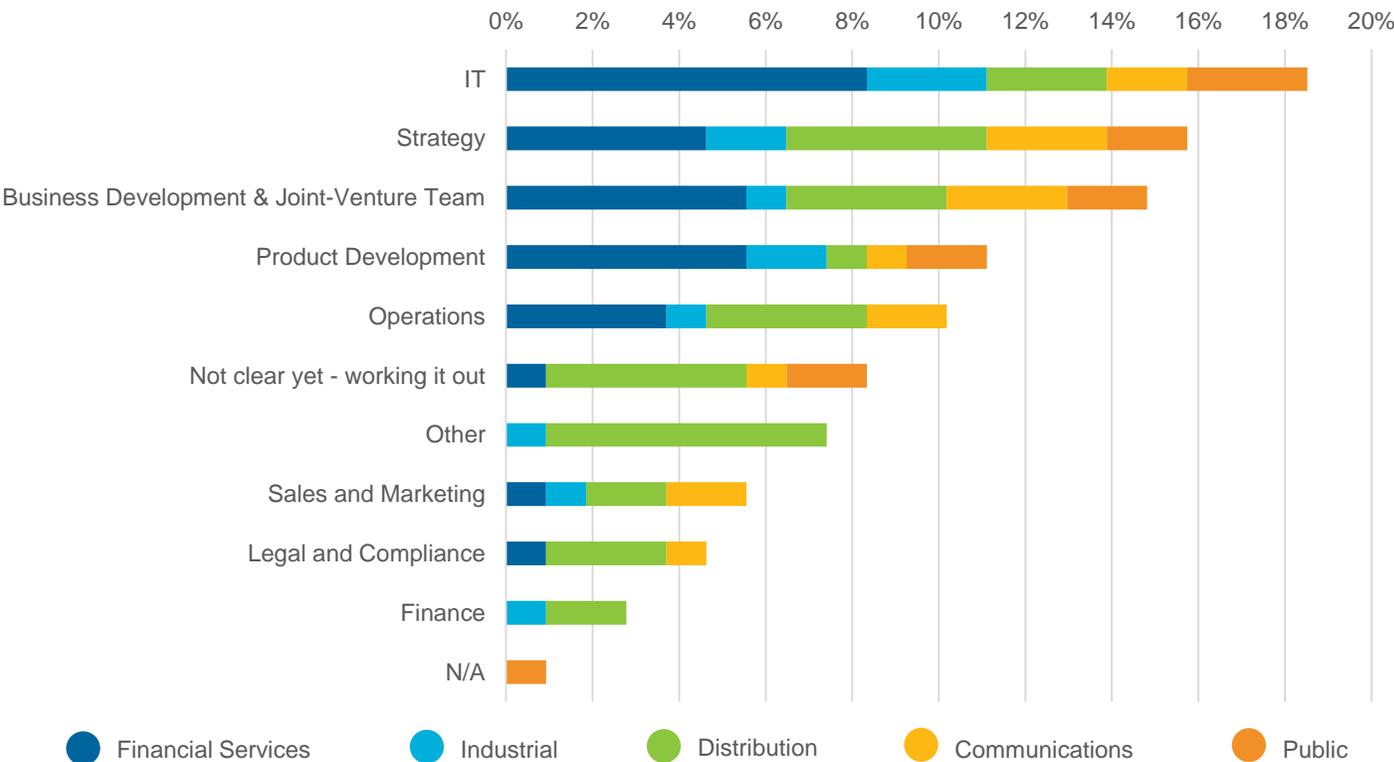
In addition to IT, Strategy and Business Development - Operations and Product Development complement the top three drivers to make up the top five

This aligns well with the finding that most of the respondents view business and product efficiency gains as the biggest advantage of blockchain

Blockchain is a topic that is driven by almost any function in Financial Services and Distribution companies

Question no. 23: Which '"departments" or "functions" within your enterprise are driving your enterprise's blockchain agenda?

Blockchain Adoption in Switzerland

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Nearly 75% of respondents see the need to engage with partners to realize business innovation with blockchain

Leverage of Alliances & Partnerships

- 3%
- 18%
- 8%
- 53%
- 18%

- ● Joint-venture with an ecosystem partner
- ● Significant partnering and alliances
- ● Limited engagement with ecosystem alliances or partners
- ● Not at all – we do it ourselves
- ● Other
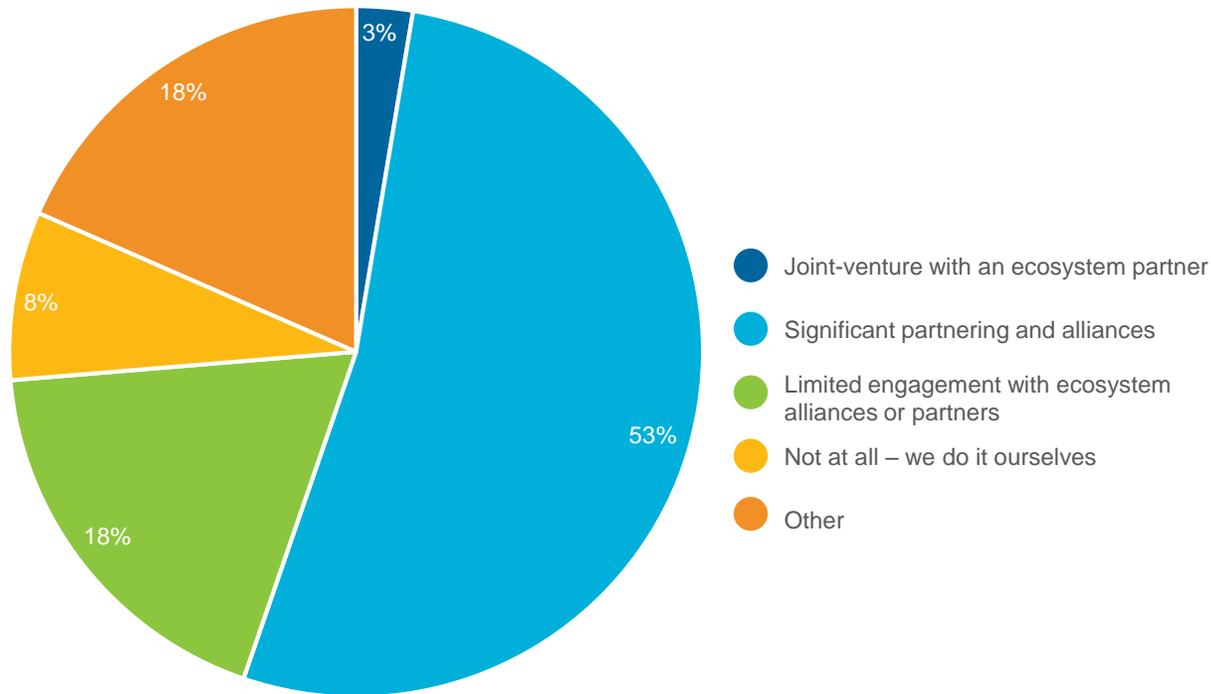
71% see the need for limited or significant partnering and cooperation with alliances

Only few foresee Joint Ventures as a model of success for making business innovation with blockchain happen

Question no. 17: In case you already started to work on a business innovation using blockchain or you plan to do so in the near future: To what degree do you leverage co-operations and/or partners to make it happen?

Adoption patterns and conclusions

Putting blockchains to work for you – disrupting the disruptor

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Summary of blockchain study findings

Our point of view ...

How fast should I move?
First movers and early adopters can position themselves for quicker returns and sharper competitiveness by leveraging blockchain efficiencies

How can I realize the business potential?
Although implementing new technologies may be daunting, understanding how they can help your business profit is paramount and then start to scale

Can we achieve network-wide accepted standards?
Success in blockchain adoption will depend not on who has the best technology or app, but who can build the strongest network

... and what respondents tell us

1/3 are engaged with blockchain in concrete ways. 2/3 are getting up to speed on blockchain or are not interested in the topic. Distribution industry respondents and some financial services respondents are moving faster compared to other industries

Respondents view efficiency gains, either internally in business processes or externally related to products and services, as the key advantage of blockchain

Although technology and its potential is the main interest factor to get started with blockchain, participants recognize that the lack of a a clear value proposition is the missing link to success

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Blockchain adoption pattern considerations

Our point of view ...

... and what respondents tell us
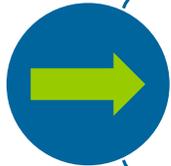
Value is limited within the boundaries of one organization

The value proposition is often not clear because use cases are either too narrow and, therefore, do not demonstrate the full potential or may be solved with existing technology solutions
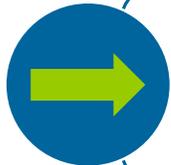
Ecosystem participants have to agree on a standard

Distributed ledger standards are emerging, will help to clarify the potential of permissioned blockchains and facilitate the enablement of disruptive use cases. The confusion between blockchain concepts, e.g. permissioned distributed ledger vs. crypto currency is wide-spread and needs further awareness

Risk of overregulation exists without coordinated control

Besides some exceptions, financial services companies in Switzerland appear to view blockchain as «a nuisance» instead of a blessing to disrupt the disruptor

Efforts may require large scale re-engineering

Respondents recognize the efficiency gains blockchain can help to realize; to a lesser degree they view it as an enabler for large-scale transformation and re-generating the business value proposition

Survey methodology

A primary empirical study was conducted in 2016

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The study team wanted to better understand blockchain adoption in Switzerland and contacted enterprises across industries

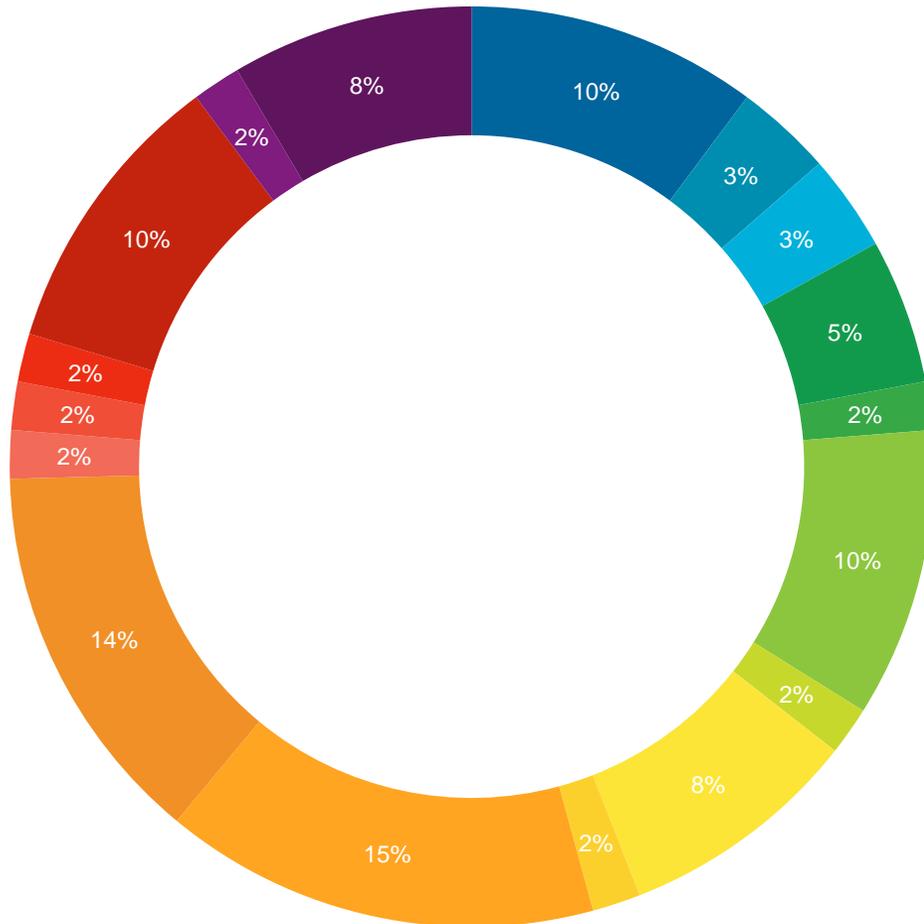**50+** *Enterprises from various sectors participated*

The questionnaire was administered mostly via face-to-face interviews

The objective was to get more insights regarding the adoption of blockchain in Switzerland

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Enterprises from all sectors responded

COMMUNICATIONS SECTOR

- Energy and Utilities
- Media and Entertainment
- Telecommunications

DISTRIBUTION SECTOR

- Consumer Products
- Life Sciences and Pharma
- Professional and Computer Services
- Retail
- Transportation
- Travel

FINANCIAL SERVICES SECTOR

- Banking and Financial Markets
- Insurance

INDUSTRIAL SECTOR

- Aerospace and Defense
- Chemicals and Petroleum
- Electronics
- Industrial Products

PUBLIC SECTOR

- Healthcare
- Government

Question no. 3: Which industry do you represent?

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A mix of domestic, international and global enterprises participated

Geographical Scope

- Domestic
- Global, HQ in CH
- International, HQ in CH
- Global Subsidiary

44%

36%

12%

8%
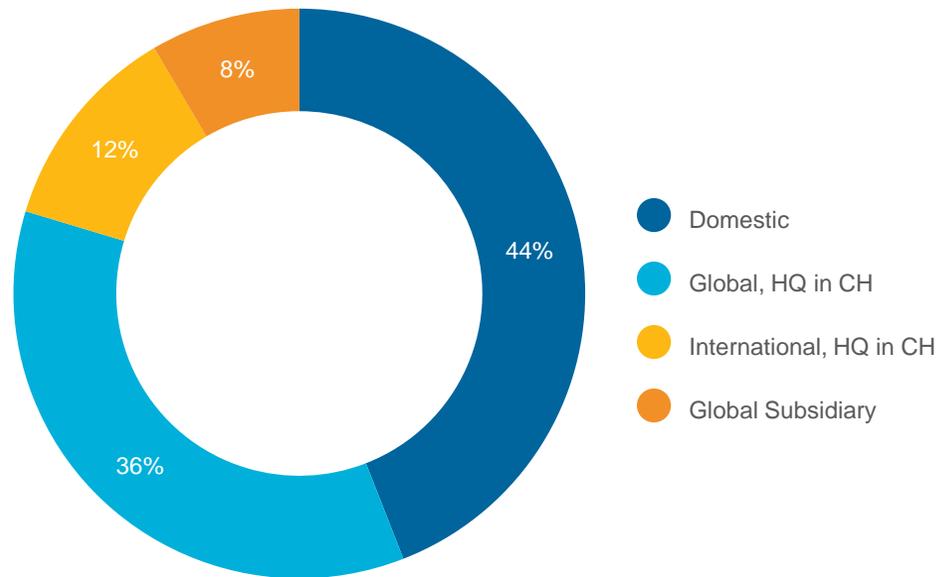
92% of the participants are headquartered in Switzerland
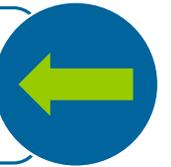
Half of the participants have a global scope
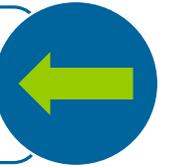
Question no. 6: What is your geographical scope?

IBM

# Mid – sized and large enterprises participated in the survey

Number of employees

Legend:
- ● < 500
- ● 501 – 1'000
- ● 1'001 – 5'000
- ● 5'001 – 10'000
- ● 10'001 – 50'000
- ● 50'001 – 100'000
- ● > 100'000

Chart values: 7%, 14%, 34%, 12%, 22%, 5%, 7%
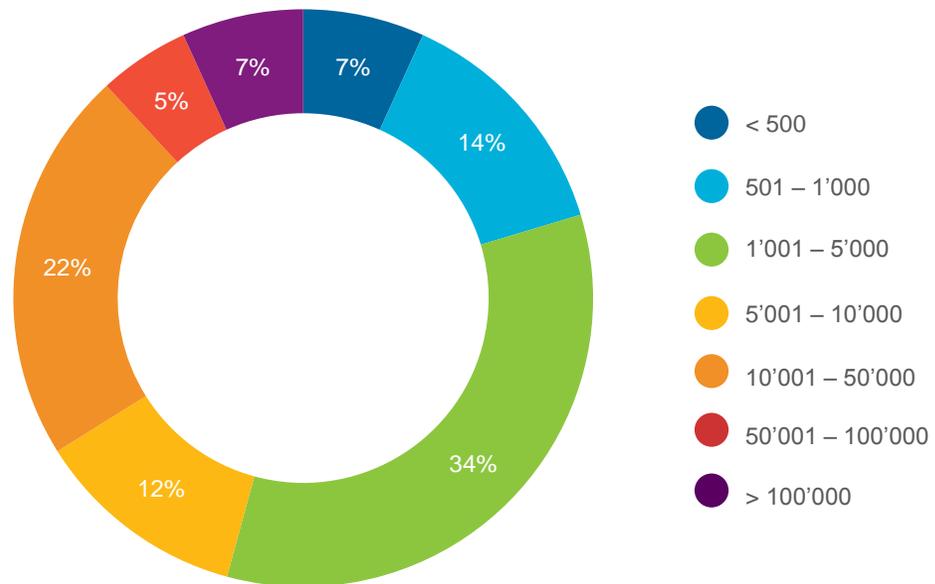
A third of the companies, which participated, have between 1,001 and 5,000 employees

Almost half of participants have more than 5'000 employees

Question no. 4: About how many employees work at your organization?
Remark: Fintechs were excluded
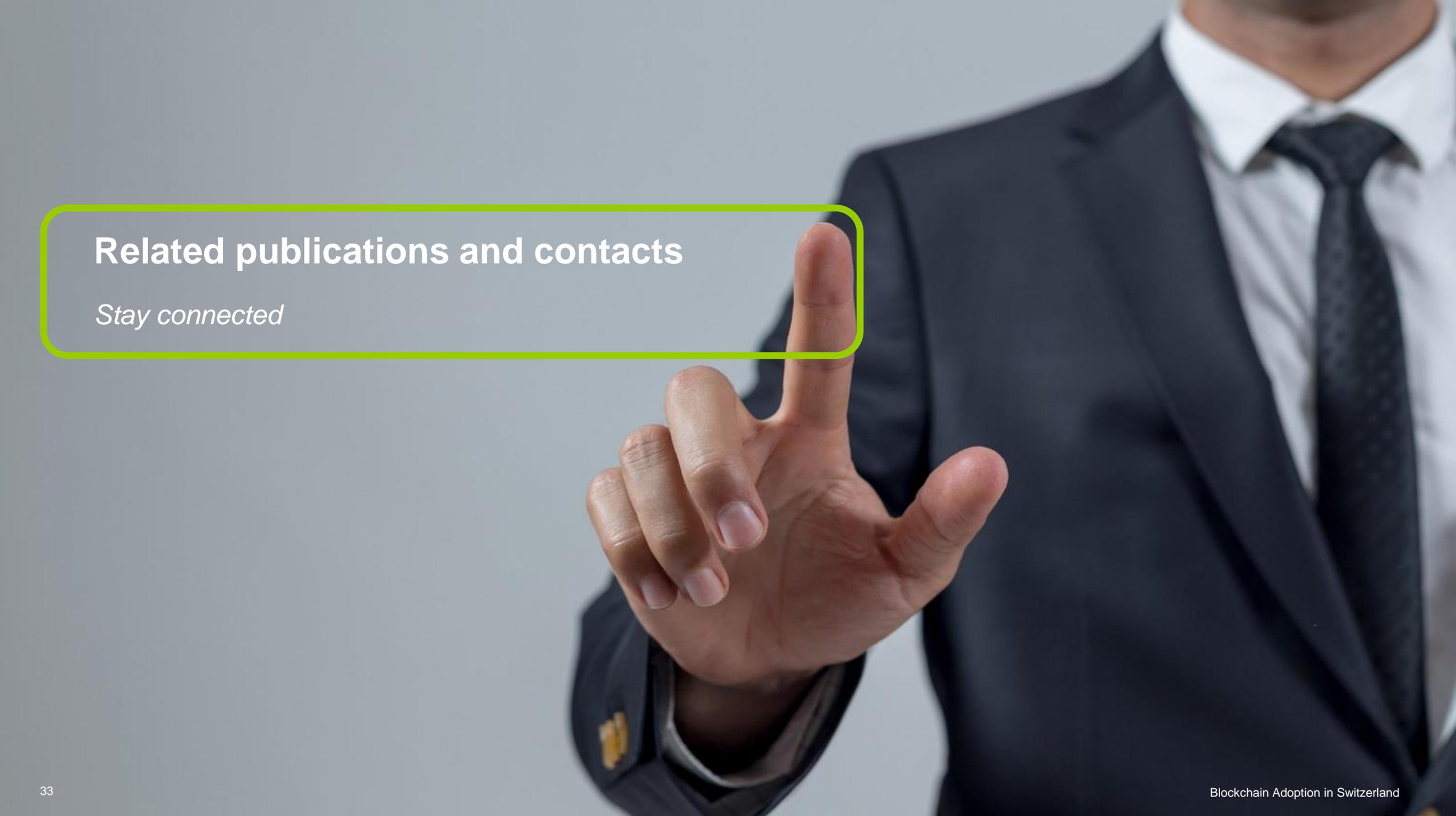
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