DIGITAL CHANGE & BLOCKCHAINS

A disruptive technology turns the world upside down

ARGUS DATA INSIGHTS®

INSIGHTS FOR SUCCESS

PREFACE

BIG DATA

Millions of publicly
available sources daily

▶ Media Data | ▶ Non-Media Data

Real Time

AUTOMATIC INFORMATION EXTRACTION

▶ Topics, issues, people,
stories, businesses, events etc.

Artificial Intelligence

IDENTIFY, STRUCTURE AND SUMMARISE

▶ Relevant information
▶ Personalised preparation

Human Intelligence

The future starts here and now, is unpredictable and subject to constant changes. Whatever will happen tomorrow is uncertain, and can only be described in terms of probability statements and trend observations.

Depending on the topic, many factors play an important role when it comes to assessing the developments that are relevant to you, your industry or your company, and which of those factors you will face in the future.

Using big data analytics, pre-processed information is analysed in near real-time in order to probe for and discover unknown connections and relationships that were previously unimaginable or discernible.

Using algorithms based on automated information extraction and deep learning technologies, intelligent algorithms classify and structure the abundance of digital information available on a daily basis for keywords and topics, organizations, people and events and thereby identify emerging or declining issues and themes.

Researchers and analysts gather, curate, interpret and validate causalities of relevant trends and visualize results in clear structured reports.

The ARGUS DATA INSIGHTS trend reports examine specific topics and, depending on the issue, showcase innovative, trendsetting developments in society, consumer behaviour, technologies, products, services and much more.

This report is going to illustrate the subject of digital transformation – one of the megatrends nowadays which will greatly affect and alter the future to come. Today's digital trends are the cornerstones of the fundamental change we are going to experience in our future way of live.

In particular, this report is dedicated to the topic of "Digital Change and Blockchains – A disruptive technology turns the world upside down."

Let yourself be inspired by the visions and trends already being implemented in today's exciting world. They may not always be easy to grasp but they will nonetheless represent important milestones in the future development of your company and its continued sustainable success.

CONTENT

1

DIGITAL CHANGE

A game changer with profound impact on
society and companies

Digital transformation, the digital revolution, digital disruption have long
ceased to be future scenarios and every new development is a call for
action. It started with affordable computers, digital cameras, smart pho-
nes, social networks and currently culminates in the Internet of Things.

The digitalization of households and the economy is progressing re-
lentlessly, be it in form of online banking, smart homes or autonomous
driving – Offline gives way to Online.

Technological developments are rapid and change the world we live in,
our everyday life, our professional life, our economy and society. Thanks
to digital technology our lives are becoming increasingly connected.
People and machines are learning to communicate with each other.
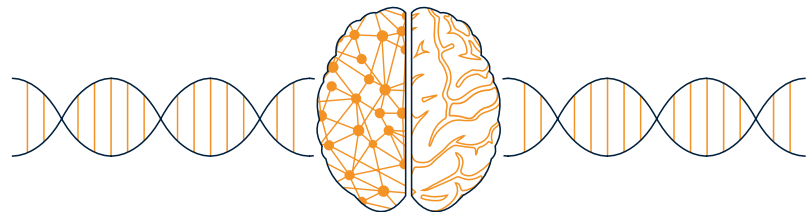
Digital transformation creates smart, information-based, highly
productive and connected worlds.

A life without digital connectivity becomes less and less feasible and
conceivable. But for many, these developments are tantamount to inse-
curity or even perceived as a threat. Then again, changes in our usual
routines entail many challenges, as well as multitudes of opportunities
just waiting to be seized – for individuals and companies alike.

Driven by technological progress and far-reaching transformational pro-
cesses, digitalization is changing the rules of the game for industries
and corporate divisions alike and is a central theme on the corporate
agenda.

In order to be prepared, companies are challenged to merge with the
digital and physical world, to rethink, and to tread new paths.

This implies questioning existing business models, extending the own value chain on a data-driven basis, redefining service offerings in order to meet new tech-savvy market participants.

Digitalization provides a myriad of data waiting to be harnessed. For successful companies, key competencies like data collection, data processing, data linkage and data protection will be indispensable.

As with the process of convergence of media outlets and channels, PR & Marketing are increasingly converging as well. This paves the way for new disciplines such as content or influencer marketing as well as integrated newsrooms with separated topics and channels.

Technical developments allow for a far more natural communications dialogue beyond the means of classic media (keywords: chatbots and messengers). In the discussions of automation within public relations management, the relevance attribution of big data is increasing.

Especially the research and analytics market is also not going to remain untouched by technological developments, as more and more digital content becomes available rapidly.

This is further reinforced by the shift of conventional means of market and trend research towards more advanced quantitative and qualitative analysis methods such as Social Listening, Topic Detection and Tracking or Market Sensing.

The open and explorative characteristics of technological processes in the field of predictive analytics support the identification of themes, topics, issues, risks and opportunities presenting themselves for one's own positioning.
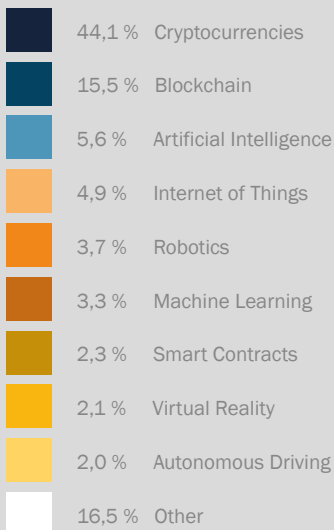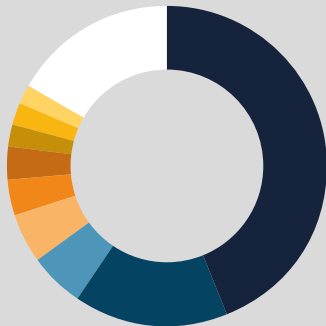
Despite the joys of growing opportunities for analytical approaches, challenges presented by big data and data automation are not getting any smaller by all means. As data volume and data speed are increasing, more compaction power and consulting services are needed and highly sought after.

2

THE DIGITAL LANDSCAPE
—

Which trending topics have direct influence on companies?

The mega trend of digitalization is highly complex and includes diffuse topics characterising the theme. As multifaceted the topic landscape as diverse are potential applications deriving from it.

But what are the main topics in the public agenda for the first third of this year? Hereto, ARGUS DATA INSIGHTS analyzed publicly prevailing opinion in detail. For the analysis, around 6.4 million results from the English- and German-speaking region were evaluated.

The media landscape in the first quarter of 2018 is defined by terms such as: cryptocurrencies, blockchains, the latest developments in the area of artificial technology, the Internet of Things as well as smart contracts (see graph).

There are a variety of reports on these key words. As we become more and more accustomed to the Internet of Things or artificial intelligence, smart contracts, cryptocurrencies and blockchains are still not self-explanatory mass phenomena.

It is not always clear which developments are behind these concepts or how these approaches can be used for innovative business concepts and solutions.

The following sections explore the potential of aforementioned developments, particularly blockchain technology being presented in more detail. Specifically, innovative applications of blockchain technology will be identified, providing stimuli across diverse industry sectors.

FOCAL POINTS IN THE FIELD OF DIGITALIZATION

%	Topic
44,1 %	Cryptocurrencies
15,5 %	Blockchain
5,6 %	Artificial Intelligence
4,9 %	Internet of Things
3,7 %	Robotics
3,3 %	Machine Learning
2,3 %	Smart Contracts
2,1 %	Virtual Reality
2,0 %	Autonomous Driving
16,5 %	Other

Source: 7 Mio Mentions of Digitalization in Online News, Blogs and Forums in America and DACH, January 2018 – March 2018

cryptocurrency markets

investment
virtual currencies

market

future

market capitalization

software solutions

digital
token sale

blockchain

ethereum blockchain

technology

open source

virtual reality

people

software development

bitcoin price

digital currencies

cloud based

industry

ripple xrp

currency

coin trading

coin offerings

artificial intelligence

bitcoin trading

business development

public

bitcoin cryptocurrency

products

financial

price

service providers

bitcoin

services

big data

crypto currencies

bitcoin ethereum

market share

deep learning

global market

bitcoin transactions

cryptocurrency mining

blockchain technology

cryptocurrency

data analytics

bitcoin cash

smart contracts

business

community

data

intelligence

open

product

growth

cutting edge

market cap

cryptocurrency exchange

online

business model

3 BLOCKCHAIN TECHNOLOGY

Still in the experimental phase, but with huge potential

GLOSSARY – THE CRYPTO LANDSCAPE

BLOCKCHAIN is an electronic decentralized database that is available to every user in an identical form.

BITCOIN is an electronic, digital currency based on blockchain technology.

ETHEREUM and the associated online currency Ether are similar in concept to bitcoins.

ICOS – Initial Coin Offerings is a crowdfunding method. With virtual IPOs, companies can thus generate large amounts of capital for business projects.

CRYPTOCURRENCIES are software-based, digital means of payment. The currently best known currencies are Bitcoins, Ripple and Ethereum.

SMART CONTRACTS automatically trigger transactions as soon as certain conditions are met.

Bitcoin, Ethereum, Initial Coin Offerings (ICOs) and blockchains – these terms have been used in German and international media for the past few months, providing many topics of conversation around themes such as cryptocurrencies, databases, payment and investment opportunities amongst others.

The concept of blockchains was first described by the author, or group of authors named Satoshi Nakamoto in the article "Bitcoin: A Peer-to-Peer Electronic Cash System." Nearly ten years later, there is hardly any technology surounded by a greater hype. In the last year alone, contributions in the media landscape on this topic have multiplied exponentially (see graph).

Blockchain mentions 2017/2018
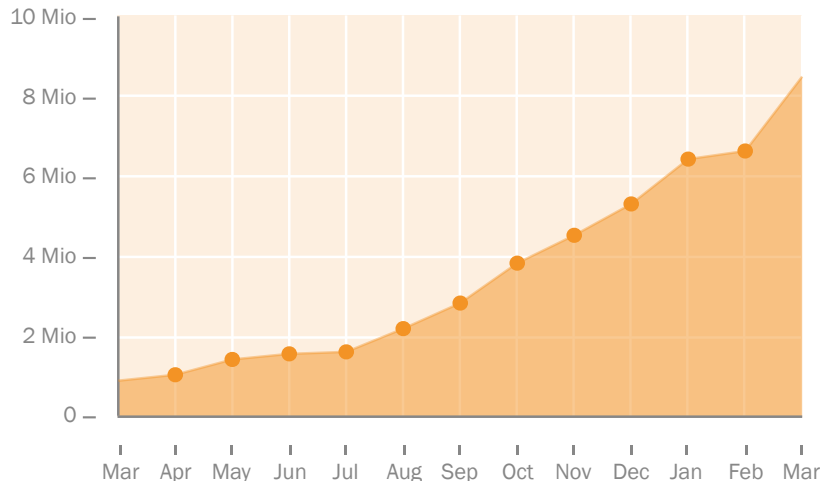
Source: Blockchain – mentions online in News, Blogs, Forums and Social Networks worldwide, March 2017 – March 2018

The backbone of cryptocurrencies

Blockchains are decentralized databases and form the the backbone of many cryptocurrencies. Information within the database is extended chronologically and strung together like a chain. If one block is complete, the next one is created and hence a chain of information is established. Entries cannot be modified in hindsight and are therefore largely protected against data manipulation. The individual links within the chain and thus the entire chain itself is considered indestructible.

Blockchains have the potential to revolutionize many industries. The big idea behind it: Blockchains can replace middlemen, meaning that no additional trustworthy party is needed. For example, all relevant entries necessary for a contract or payment are already stored within the database. A guarantee given from a third party becomes obsolete.

Small programms implemented within the blockchain protocols, so-called smart contracts, can automatically authenticate transactional components such as identity, credit, or document verification, etc. in a fraction of the time it would usually take.

The data architecture of blockchain technology enables parties to exchange information amongst each other without having to use an external intermediary for verification purposes.

In other words, blockchains enable sensitive data within a network to be transmitted efficiently and largely automated. Institutional trust intermediaries are replaced by trust technology.

But the aspects of trust technology and data security are only two assets of blockchain technology. Handling data securely will be of paramount importance in an increasingly digitally connected world, as more and more sensitive consumer data becomes available.

Why are blockchains considered to be so safe? The database itself belongs to, and is controlled by, a large network of users. This not only ensures a high level of security but also a high degree of transparency within the system as a whole.

As soon as consumers start to trust in the ecosystem of the Internet of Things, they will participate in a growing number of opportunities to buy and trade the goods and service that this new world has to offer.

At the moment, blockchain technology is still in its infancy, in its early development phase, and future developments can only be guessed at. However, this technology has the potential to disrupt many industries.

We will present the potentials of blockchain technology on the following pages - let yourself be inspired!

4

POTENTIALS OF
BLOCKCHAIN TECHNOLOGY

STIMULI FROM THE BANKING SECTOR

Efficient, safe and less expense transfers

The financial industry is at the starting point to take advantage of blockchain technology, i.e. Ripple, a system used to transfer money orders and for decentralized processing of payments.

Ripple is already working successfully with banks such as Santander (GBR) and ATB Financial (CAN) and recently announced its cooperation with Japanese banks. This enables customers to clear cash transfers at any time, even outside normal business hours. A service innovation that brings many benefits to consumers.

Blockchains do not need middlemen to conduct transactions between consumers. Thus, personnel who would be otherwise necessary, as well as associated fees to the consumer, can be omitted. Quicker processing allows for real-time transactions, even outside office hours. Fast, cheap and limitless payments are possible for everyone.

Of special interest to

Financial industry	Retail	Insurance sector

Mentions of Ripple (company) and ist cooperation with banks like Santander, ATB Financial and other Japanese financial institutions

Number of mentions	8.4 K
Engagement	219 K

Source: 1.2 M mentions of blockchain related topics in Online News, Blogs and Foren in America and DACH, January 2018 – March 2018

LICENSING AND COPY-RIGHT MANAGEMENT

Smart copyright management for music and the arts
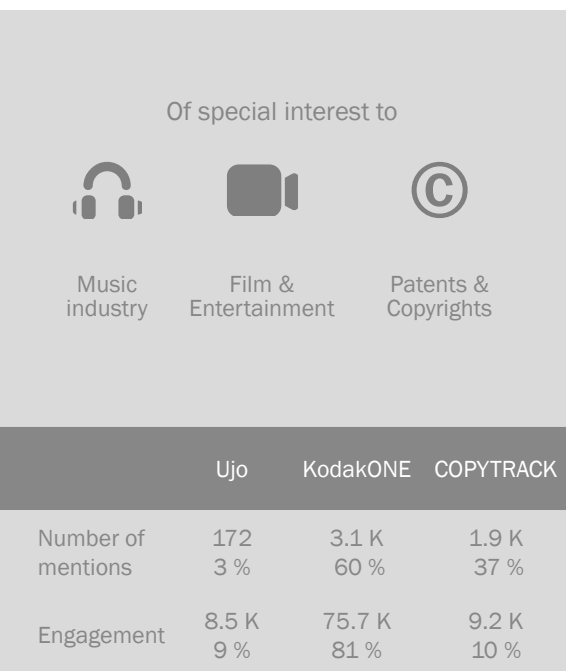
Ujo's open platform uses blockchain technology to create a transparent and decentralized database for content owners, and to automate license payments using smart contracts.

Artists can digitize their rights and other metadata. Payments between fans, artists and labels are made without additional intermediaries.

Kodak is also working on a similar concept. With its **KodakONE Image Rights Management platform,** Kodak offers artists a platform to license and distribute new and old image content.

The Berlin-based team **COPYTRACK** is also dedicated to the goal of automated copyright enforcement. The company uses its proprietary image recognition technology to detect copyright infringement on the Internet, protecting photographers from image theft.

Of special interest to

Music industry	Film & Entertainment	Patents & Copyrights

	Ujo	KodakONE	COPYTRACK
Number of mentions	172 3 %	3.1 K 60 %	1.9 K 37 %
Engagement	8.5 K 9 %	75.7 K 81 %	9.2 K 10 %

Source: 1.2 M mentions of blockchain related topics in Online News, Blogs and Foren in America and DACH, January 2018 – March 2018

SMART GRIDS AND RESOURCE MANAGEMENT

Blockchains in the environmental sector

The Lithuanian-based startup **WePower** offers a blockchain-based green energy trading platform.

Generated energy is registered, assigned a price and transmitted within the network, and incoming payments for purchased energy are recorded. Thus transparent energy accounting and digital service provisions are made possible.

The very young American startup **Aquagenuity** has also turned its attention to natural resources. Aquagenuity uses a blockchain-based information platform to provide users with up-to-date data on local water quality via app. The launch of the service is scheduled for 2018.

Of special interest to

	Agriculture	Energy & Environment	Material vendors

	WePower	Aquagenuity
Number of mentions	4.5 K 100 %	3 < 1 %
Engagement	19.8 K 99 %	146 1 %

Source: 1.2 M mentions of blockchain related topics in Online News, Blogs and Foren in America and DACH, January 2018 – March 2018

E-SERVICES: HEALTHCARE MANAGEMENT

Sensitive data management for authorized recipients
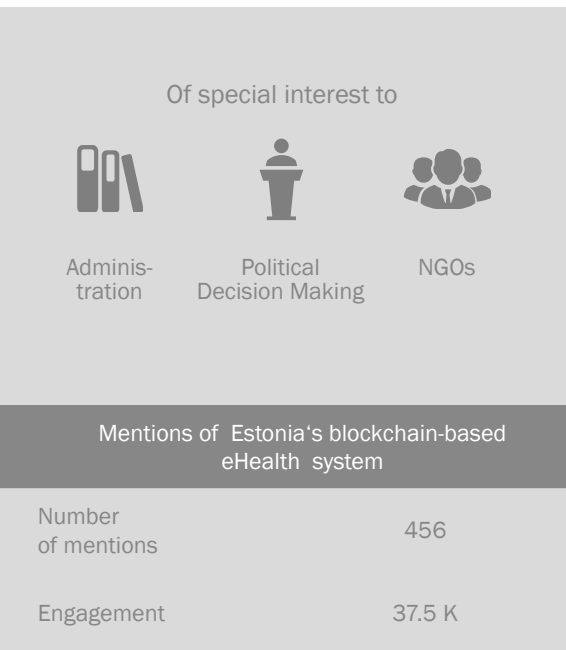
Blockchain technology facilitates the healthcare network. Patient data can be saved, updated and put into the hands of patients.

Estonia is the first country in the world to offer 99% of all its services 24/7 online.

Thanks to a sophisticated digital ecosystem, residents can almost do everything online, be it taking part in elections, filling out tax returns, or establishing a company. Only for getting married, getting divorced, or buying real estate do citizens still need to see officials in person.

Estonia's healthcare system also relies on blockchain technology. The technology forms the basis for **Estonia's e-Health Record.** Medical results and examinations are collected centrally and are thus available at any time to authorized personnel such as doctors, patients, hospitals and, in an anonymized form, to ministries so that health trends can be detected and monitored.

Of special interest to

Adminis-tration	Political Decision Making	NGOs

Mentions of Estonia's blockchain-based eHealth system	
Number of mentions	456
Engagement	37.5 K

Source: 1.2 M mentions of blockchain related topics in Online News, Blogs and Foren in America and DACH, January 2018 – March 2018

TRACEABILITY

Consumer protection through transparent information chains

Whether horsemeat, salmonella or E-Coli in food or Fipronil contaminated eggs -- transparency in grocery stores is becoming more and more important to consumers. **TE-FOOD** promises exactly that.

Users are able find out detailed information with regards to the use of pesticides or medicines, participating traders and much more associated with the product in their hands. The process of recalling entire batches of potentially contaminated products will be simplified.

Similar applications can also be found in the retail sector. Walmart's blockchain-based tool **"Smart Package"** allows information to be retrieved about packaging content, constraints, suppliers, locations, and other details. This way, goods management becomes more transparent.
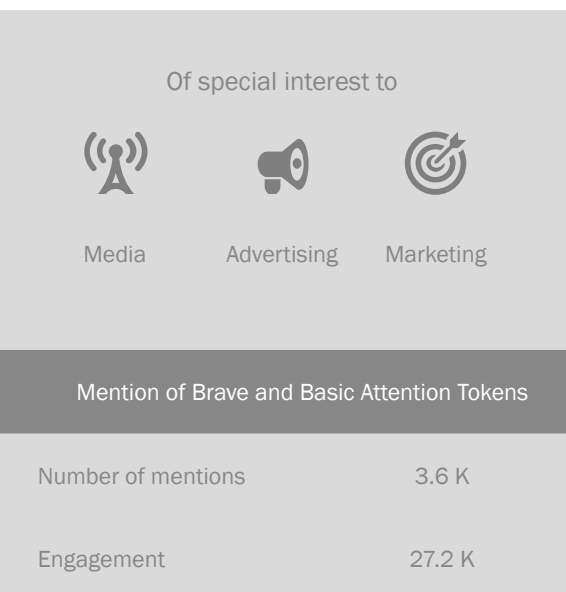
These types of development are particularly suitable for sourcing information on product origins, production conditions, certificates and much more, whether for groceries, clothing, FMCGs, medicines, electronics, etc. Safeguarding quality assurance can also benefit from blockchain developments.

Of special interest to

| Retail | FMCG | Supply Chains |

	TE-FOOD	Walmarts Smart Package
Number of mentions	344 29 %	85 71 %
Engagement	2.7 K 47 %	3.1 K 53 %

Source: 1.2 M mentions of blockchain related topics in Online News, Blogs and Foren in America and DACH, January 2018 – March 2018

ADVERTISING

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Tailored advertising content for companies and target groups

Advertising is becoming more appealing to advertisers, content creators, and users – according to Brendan Eich, creator of Java-Script and co-founder of Mozilla and Firefox.
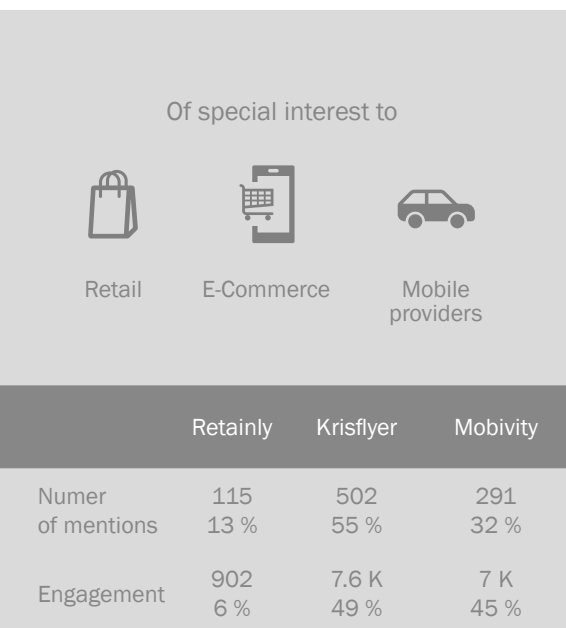
The **Brave Browser** is an online platform created using blockchain technology. Users can decide which forms of advertisements are to be implemented and at the same time they earn **Basic Attention Tokens** as a reward for their viewing time.

In return, advertisers receive anonymous, accurate data to better distribute the content to their target audience and thus benefit from an improved conversion rate.

Of special interest to

Media	Advertising	Marketing

Mention of Brave and Basic Attention Tokens	
Number of mentions	3.6 K
Engagement	27.2 K

Source: 1.2 M mentions of blockchain related topics in Online News, Blogs and Foren in America and DACH, January 2018 – March 2018

INCENTIVES & LOYALTY

———

Long-term customer loyalty through digital payback programs

Of special interest to		
Retail	E-Commerce	Mobile providers

	Retainly	Krisflyer	Mobivity
Numer of mentions	115 13 %	502 55 %	291 32 %
Engagement	902 6 %	7.6 K 49 %	7 K 45 %

Source: 1.2 M mentions of blockchain related topics in Online News, Blogs and Foren in America and DACH, January 2018 – March 2018

In order to foster customer engagement, **Retainly** has designed a block-chain-based distributed app (DApp) as well as a loyalty and rewards currency (RETN).

This allows companies to allocate so-called tokens for every activity carried out by a customer within their app, thus stimulating renewed interactions. Points can then be paid in **RETN** or converted into analogue currency.

Another example of this method in use is the **Krisflyer** programme, a blockchain-based app for frequent flyers. This is an app that is due to be released in August 2018 by Singapore Airlines. Krisflyer tokens can then be used to buy goods and services at terminals.
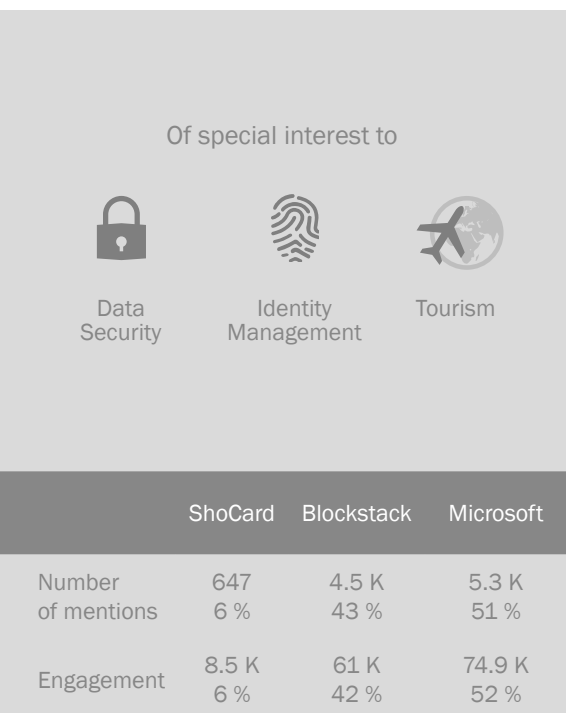
Similarly, **Chanticleer Holdings,** owner of several fast-food franchises, together with **Mobivity,** is using blockchain technology for its loyalty program and rewards customers with digital currencies.

IDENTITY MANAGEMENT

Protect and control digital identities

Of special interest to

Data Security	Identity Management	Tourism

	ShoCard	Blockstack	Microsoft
Number of mentions	647 6 %	4.5 K 43 %	5.3 K 51 %
Engagement	8.5 K 6 %	61 K 42 %	74.9 K 52 %

Source: 1.2 M mentions of blockchain related topics
in Online News, Blogs and Foren in America and DACH,
January 2018 – March 2018

Web services and platforms store and collect a variety of data to identify users. Digital security and privacy are becoming increasingly important. Identity management and authentication are critical issues for multiple industries, such as financial institutions, the tourism industry as well as mobile operators, health care systems and governments.

ShoCard provides a blockchain-based authentication management tool for corporate identities and single sign-on solutions.

Blockstack and its functioning identity management works in a similar way. The organization implements a decentralized identity and authentication database and provides a platform to create decentralized apps of any kind, be it payments, instant messaging services or health data.

Microsoft is also focusing on digital security and is developing applications that allow owners to have full control over their personal information.

BLOCKCHAINS ARE
POWERFUL TOOLS ...

... however, processing requires an extremely large amount of energy resources and the technology is not (yet) necessarily environmentally friendly.

...that have the potential to be used in countless industries.

... but due to fast-paced developments, it might be difficult to stay up to date.

... to create honest and trustworthy systems that correct themselves without needing third parties as mediators. Logging and inventory management becomes more transparent and efficient.

... which, in the spirit of trust technology, can support a more open and equitable society.

... which may contain sensitive data. Under certain circumstances, sensitive information and privacy-related information can be viewed and hence needs to be carefully protected.

... yet logged information is unchangeable, irrevocable. The right to be forgotten is difficult to enforce.

... and there is high probability that blockchains and other digital trends will affect your business.

THE QUESTION IS WHEN AND WHICH TREND WILL AFFECT YOUR BUSINESS?
Use ARGUS PREDICT TrendScan to stay informed.

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