

WHERE TO PLAY:
GAME-CHANGING
TECHNOLOGIES FOR
BANKING & FINANCE



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Introduction

As an industry, banking and finance is acutely attuned to the dynamics of risk versus reward. It is a ratio that guides investors and traders who understand that every prospective reward sought or earned must be weighed against the risk undertaken in the process. It is an exercise familiar to all businesses—profit vs. loss, cost vs. benefit—and one that also guides the topic of innovation in many organizations.

There are inherent risks that come with innovation. But in these times of uncertainty and change, we know that the risks associated with not innovating are far greater. Indeed innovation requires taking bold bets on the future; putting your investments, time, and resources on the line in the hopes of winning some strategic advantage.

As leaders in banking and finance know well, risk mitigation—improving the precision and effectiveness of these bold bets—is best approached systematically. It entails gathering as much pertinent information as possible about the landscape in which these risks and bets could play out.

This information must then be organized, monitored, and analyzed to derive the dependable insights that ultimately inform decision-making: What are the odds of this bet paying off? And what other bets are worth making?

There's no 'sure thing' in banking and finance, nor in innovation. But it is possible to enhance the innovation intelligence needed to instill greater conviction in your decision-making and, crucially, to execute successfully once those decisions are made.

This starts with understanding the forces shaping the future of the banking and finance industry. What trends, technologies, and key players are driving change in the market? And how do we as an organization identify what is important for us to act on?

With regards to technological advancement in banking and finance, what was once a strong undercurrent, is now a groundswell. We're seeing a rapid expansion of digital banking and financial products, rising interest in distributed ledger technology powering financial systems, greater investment into privacy-enhancing technologies, and improved accessibility of financial knowledge and services.

This report aims to provide decision-makers in banking and finance with a view of the technologies that hold the most potential for impactful innovation in the industry. These game-changing technologies range from emerging to evolving and present several innovative use cases. The information contained within this report is interlinked with ITONICS end2end innovation management software to help you better connect the dots between these drivers of change, anticipate the best strategic opportunities for the future, and topple the risk-reward ratio well in your favor.

An Introduction to Technology Scouting

End2end innovation management begins by asking the fundamental question, **Where to Play**. Answering this question relies on several congruent activities and internal capabilities that primarily fall within the discipline of Foresight and Strategy, as advocated by our distinct **ITONICS COFIM** model. Organizations equipped with strong foresight capabilities can align their strategy with future scenarios and build resilience in an increasingly uncertain and competitive landscape.

Essential in **Foresight and Strategy** is an organization's capacity to scan its business environment comprehensively and continuously—environmental scanning. This is the capability to scan the horizon for weak signals that might indicate larger shifts and influence or disrupt the environment. It begins with the collection of vast amounts of data from which patterns are revealed through sensemaking analysis.

Environmental scanning focuses on control objectives that enhance innovation intelligence, thereby enabling the identification of new opportunities for growth, informing strategic priorities, and shaping future goals. These include capability supervision, competitor watch, trend scouting, and technology scouting.

As the focus of this industry report, **technology scouting** is the process of observing technological shifts and developments by collecting pertinent data, contextualizing change to uncover discernable patterns as weak signals, and identifying emerging technologies that hold both impact and relevance.

Actively screening for shifts in technology adoption, R&D, and patents serves as an early-warning system to help organizations anticipate and respond to changes while also minimizing risk.

Applying an industry lens to the process of technology scouting helps organizations direct their focus and resources more optimally.

And by gaining an understanding of the technological developments and adoption trends that may present future opportunities in their industry, they can equip themselves with the innovation intelligence needed to take decisive, strategic action and ultimately gain a competitive advantage.





The Role of Technologies in Innovation

Emerging, evolving, and disruptive technologies serve as solution drivers, helping innovators connect the dots between their current and future states. These are the tools capable of meeting—and sometimes, creating—new needs, desires, and demands.

Technologies enable new business models, products, and services. They have the potential to meaningfully expand an organization's existing portfolio and transform an entire industry.

The Interplay between Technologies and Trends

Technologies and trends are complementary elements that interact with and influence one another. Trends are expressions of new consumer attitudes, expectations, or behaviors—an indication of market pull; whereas technologies are designed either in response to these shifts or as precursors to nascent demands—representing a market push.

Together this push and pull exert force on the market, driving change forward. It is organizations' ability to pre-empt or respond to this change through innovation that determines their success.

Determining Industry Relevance

Environmental scanning is a divergent exercise; too narrow an approach and important opportunities can easily be missed. And while all elements in the ITONICS portfolio hold relevance—the degree of relevance differs depending on the industry in which your organization operates.

To help provide this industry lens, ITONICS analysts have performed relevance analysis to identify the Technologies and other elements that are most relevant and likely to be game changers in each respective industry.

Our team of analysts monitored the frequency with which each Technology appeared in a given industry. Instances of real-world applications, R&D, patents, and startup activities were tagged with relevant industries through a process combining manual and automated data classification.

This initial mapping of the ITONICS portfolio served as hypotheses of industry relevance. These hypotheses were further validated and enriched through additional quantitative and qualitative industry research to arrive at nine industry packages.

Each industry package, available in ITONICS software, displays the Technologies, Trends, and Inspirations that represent the most relevant—that is, impactful, disruptive, and transformative—areas in which to play.



Technology Scouting with ITONICS

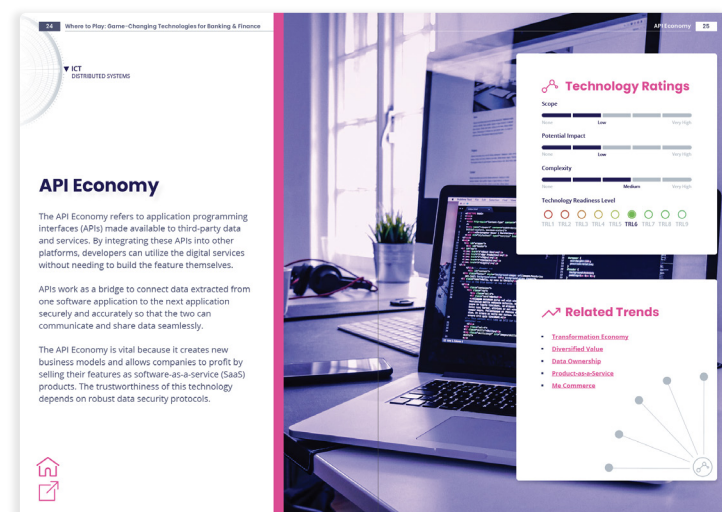
This report provides a starting point from which to embark on your organization's technology scouting. It presents 25 game-changing Technologies for banking and finance. Through a process of relevance analysis, these have been identified as most relevant and impactful to innovation in the industry.

Each can all be explored on the ITONICS [Teaser Technology Radar](#), filtered for banking and finance. Additionally, our pick of the industry's top 5 game-changing Technologies is unpacked in further detail in this report.

How to Read the Technologies

The **Synopsis** gives a brief overview of the Technology, explaining why it is important, what is required to enable it, how it has evolved, and any current limitations and opportunities.

The **Segmentation** of the Technology is indicated corresponding to the relevant categories that appear on the ITONICS Radar: Chemicals & Materials, Energy & Resources, Engineering, Healthcare & Life Sciences, ICT, and Mobility. Listed below, the **Sub-segmentation** provides a more narrow scope as to the area of technological development.



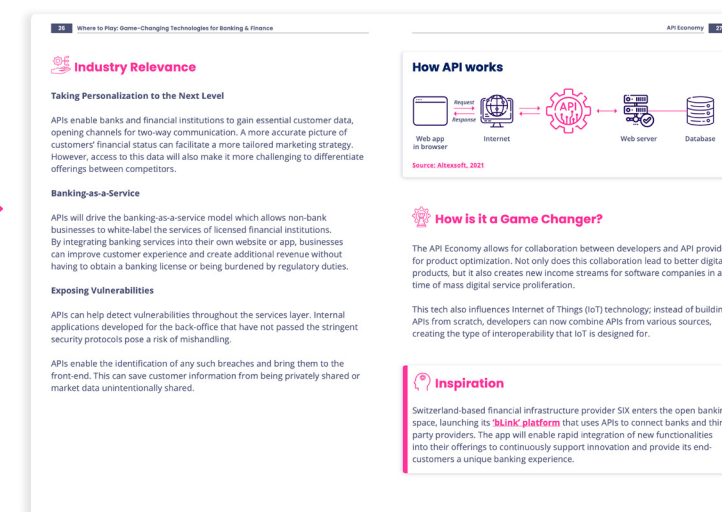
In the **navigation bar**, the  icon will bring you back to the Technology Navigation page. The  button will open up the element in the ITONICS **Teaser Technology Radar**. Here you can deep dive into the Implications for Innovation associated with the Technology and view the interconnected elements that influence and impact it, including related Trends, Inspirations, and other Technologies.

The **Technology Ratings** look at the parameters of Scope, Potential Impact, Complexity, and Technology Readiness Level (TRL).

Related Trends show the elements that are influenced by and have an influence on the Technology, its development, and adoption. This network provides greater context as to the interplay between elements and points to possible opportunities.

Industry Relevance unpacks the industry-specific applications and potential use-cases that are most prominent with regard to the Technology. Each point looks at the strategic advantage gained through adoption of the Technology and the considerations for its future development.

How is this a Game Changer? elaborates on how the Technology may contribute to or influence possible future scenarios. The relationship between the Technology and nascent demands is explored through a future-oriented lens.

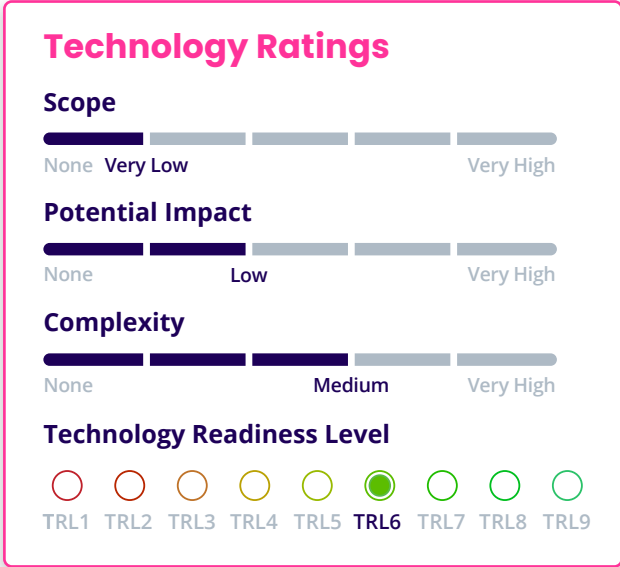


Inspirations provide evidence of how organizations are applying the Technology in the real world. They serve as springboards for ideation, helping innovators look beyond their category, connect information in new ways, and nurture fresh thinking.

ITONICS Ratings

The evaluation of trends or technologies is one of the most important activities in innovation management. The goal is to predict future changes in your industry and whether they are relevant to your organization.

ITONICS Trends and Technologies are presented with ratings that help foresight teams focus their attention and identify relevance based on their unique set of strategic objectives.



Scope: *How far-reaching is the potential influence of this element on this market?*

ITONICS Insights tool uses keywords to retrieve data across three dimensions and derive an aggregated mean value to indicate the market reach of each Technology.

Signals generated (i.e., news, patents, publications, and other unstructured web reports)

Regions covered in World Map Visualization

Industries impacted

Market Reach

Potential Impact: *How high is the potential impact of this element on the market?*

Market growth data for each Technology is collected from a minimum of 5 verifiable sources, aggregated and extrapolated to 2025.

Market Value 2021

2025

Scale: Projected market value in 2025 (USD billion):

- Very Low: >10 bil.
- Low: 10-50 bil.
- Medium: 50-500 bil.
- High: 500-1,000 bil.
- Very High: >1,000 bil.

Our team of analysts uses advanced query and **ITONICS Insights** to garner the relevant information alongside our research and statistically derive the ratings from quantifiable historical and present data.

Each Technology is rated on Scope, Potential Impact, Complexity, and Technology Readiness Level (TRL) to provide targeted and tailored analysis at your fingertips.

Complexity: *How high is the complexity of this element?*

A complexity score is derived based on the number of connections each Technology forms with other elements.

The greater number of connections

the greater the complexity

Technology Readiness Level (TRL): *How mature is this element in the market?*

Each Technology is mapped by its Technology Readiness Level (TRL) to determine its relative maturity.

PHASE	TRL	DEFINITION
RESEARCH	1	Basic principles observed
	2	Concept formulated
	3	Experimental proof of concept
DEVELOPMENT	4	Validated in lab
	5	Validated in relevant environment
	6	Demonstrated in relevant environment
DEPLOYMENT	7	System prototype demonstrated in operational environment
	8	System complete and qualified
	9	Actual system proven in operational environment

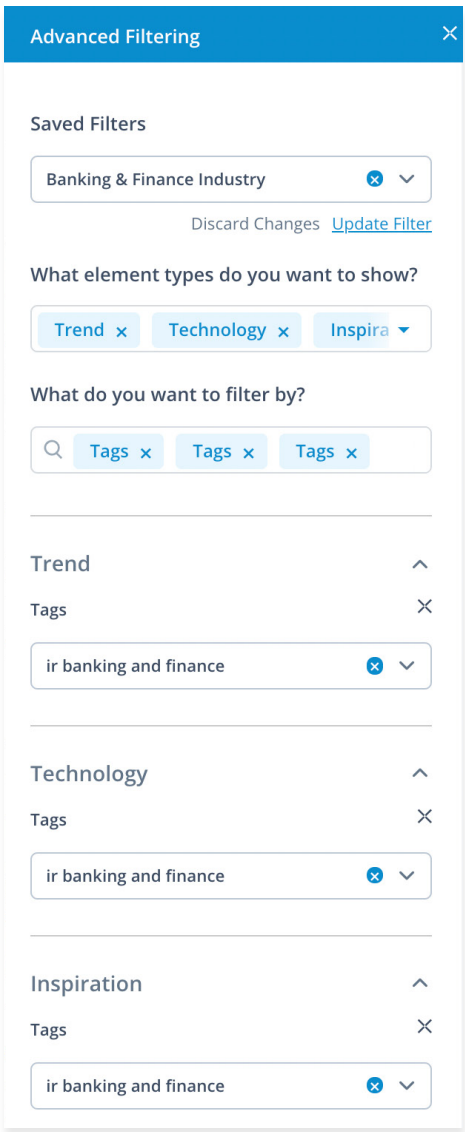
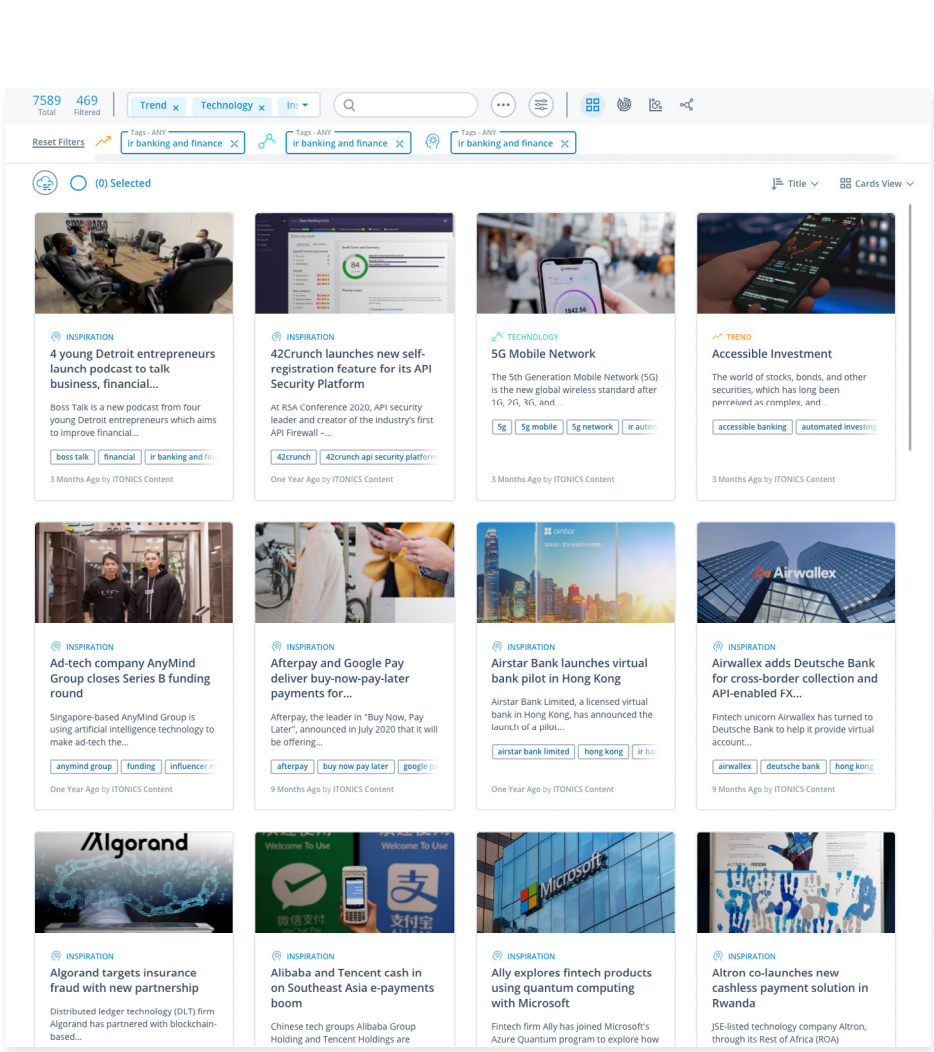
Exploring the ITONICS Radar

Having the right tools to manage innovations, technologies, projects, and opportunities is vital to act on your organization’s innovation strategy in an increasingly uncertain and dynamic world. After all, what you can’t manage, you cannot change.

Get started by exploring the ITONICS [Teaser Technology Radar](#) and [Teaser Trend Radar](#) displaying the

elements that are most relevant to your industry. Here you will find a read-only overview of each Technology and Trend.

Beyond what’s available in the Teaser, the full content on ITONICS software provides deeper insight into each Technology. It allows users to interact with and configure different elements to derive greater meaning and prompt informed decision-making.



ITONICS software provides access to:

- The full portfolio of **175+ Trends and Technologies**, each with detailed explanations of how they have developed, where they are currently having an impact, and how they could evolve into the future.
- **7,000+ Inspirations**, continually updated to illustrate how Trends and Technologies are being activated and brought to life by innovators, businesses, and consumers.
- The ability to set **Internal Ratings** such as Business Relevance, Strategic Fit, Internal Know-How, and Need for Action. Undertaken as a collaborative evaluation exercise within your organization, these ratings help build the consensus and commitment needed in the innovation journey.

- Interactive **Network Graph** visualizations that display first- and second-level relations for a selected element. New relations that hold strategic relevance to your organization can also be added to any network graph.
- Various **Tags** attributed to each element to help users focus their searches. A **Tag Filter** function allows advanced searching by tags and gives suggestions for related tags. To view the Trends, Technologies, and Inspirations selected as most relevant to banking and finance, use the saved filter pre-set: **Banking & Finance Industry**.

For full access to this content and functionality, register an account on ITONICS software for free today.

REGISTER

Forces Shaping the Future of Banking & Finance

Context of Change

Defining the objectives and scope of environmental scanning activities like technology scouting requires a clear understanding of the context of change in your industry. Context provides a foundation for identifying and assessing the driving forces shaping the future. It points to evidence of where we see change happening in social, technological, economic, environmental, and political spheres and where the change will expand to next. It is the landscape upon which trends and technologies play out; the ability to navigate this landscape is the ability to adequately prepare for possible futures.

Forces Shaping the Future

Around the globe, several driving forces are changing the socio-economic landscape and impacting banking and finance. Moreover, the financial uncertainty fueled by the pandemic will shape investments, businesses, and consumers for years to come. The fallout has meant acceleration on some fronts—with an increased focus on fintech and digitalization—as well as the rethinking of conventional systems to better address mounting social and environmental imperatives.

Here we'll discuss some of the forces shaping the future of the banking and finance industry.

DISTRIBUTED SYSTEMS

will democratize and disrupt financial markets.

Distributed systems like decentralized finance (DeFi) continue to build momentum, with massive growth in cryptocurrencies and more affordable and automated investing solutions. Together, DeFi and the availability of financial knowledge and resources are gradually redistributing the global balance of power. It is shifting from traditional banks and institutions to a new cohort of fintech startups alongside more tech-savvy, financially literate individuals seeking agency over their financial health. However, this promise of a more inclusive and accessible financial future hinges crucially on emerging governance structures and regulations.

DIGITAL ACCELERATION

will continue to shape the landscape of competition.

While digital transformation in the banking and finance industry has long been underway, the pandemic quickened the pace tremendously, pressed by necessity rather than convenience. With customers unable or unwilling to visit branches and as competition from neobanks increases, many financial service providers expanded their online and contactless services, calling into question the role and future of brick-and-mortar branches. In the race to provide an omnichannel presence and enhanced customer experience, traditional financial institutions are innovating through fintech collaboration.



OPEN FINANCE

will empower people to take control of their financial health.

Open finance—the sharing of one’s financial data with trusted third parties—is on the rise as more consumers and businesses discover the benefits. Open finance allows for access to a wider range of financial products and services, including more tailored and affordable offerings. Using API integrations, open finance can provide personalized financial dashboards. Here, all pertinent customer data, such as cash flow, savings, insurance coverage, and investments, is centralized and displayed alongside product features and prices. This transparent solution makes it easy to understand and improve one’s financial position.



SECURITY & PRIVACY

will be key differentiators for financial service providers.

With increased digitalization comes the need for enhanced security in financial systems to protect users against cyber-attacks which are escalating in frequency, reach, and sophistication. Satisfying users’ expectations and emerging data protection regulations around the globe requires security to be embedded into a brand’s DNA. Central to this is the need for transparent data privacy policies, improved software architecture frameworks, and data obfuscation technologies such as encryption and tokenization. As a result, there is a growing demand for security expertise and upskilling across the industry.



RESPONSIBLE INVESTING

will influence future corporate success metrics.

Environmental, social, and governance (ESG) criteria are increasingly important considerations for investors and financial services providers. There is growing evidence that integrating ESG goals into capital markets not only leads to more sustainable markets and better societal outcomes but also makes sound business sense from a financial perspective. Institutional investors are increasingly establishing ESG mutual funds and exchange-traded funds to appeal to younger investors who place greater importance on issues of sustainability and good corporate governance.



ALGORITHMIC FINANCE

will power the future of financial services.

Banking and finance are getting “smarter” with the widespread adoption of artificial intelligence. AI technologies such as Natural Language Processing (NLP) and predictive analytics are enhancing customer engagement and workforce productivity for financial service providers. Financial institutions are building AI solutions that detect anomalies in transactions or communications that point to potential threats, assisting in regulatory reporting and compliance. Meanwhile, algorithmic trading systems are becoming both more sophisticated in their ability to anticipate emerging market trends as well as more accessible to private investors.



Use this context to help better understand the strategic importance and innovation opportunities associated with the game-changing technologies identified for the banking and finance industry.

Game-Changing Technologies for Banking & Finance

Technology Navigation

Through a process of qualitative and quantitative industry research, our team of analysts conducted relevance analysis in order to identify the Technologies within our portfolio that are **most relevant and influential in the banking and finance industry**.

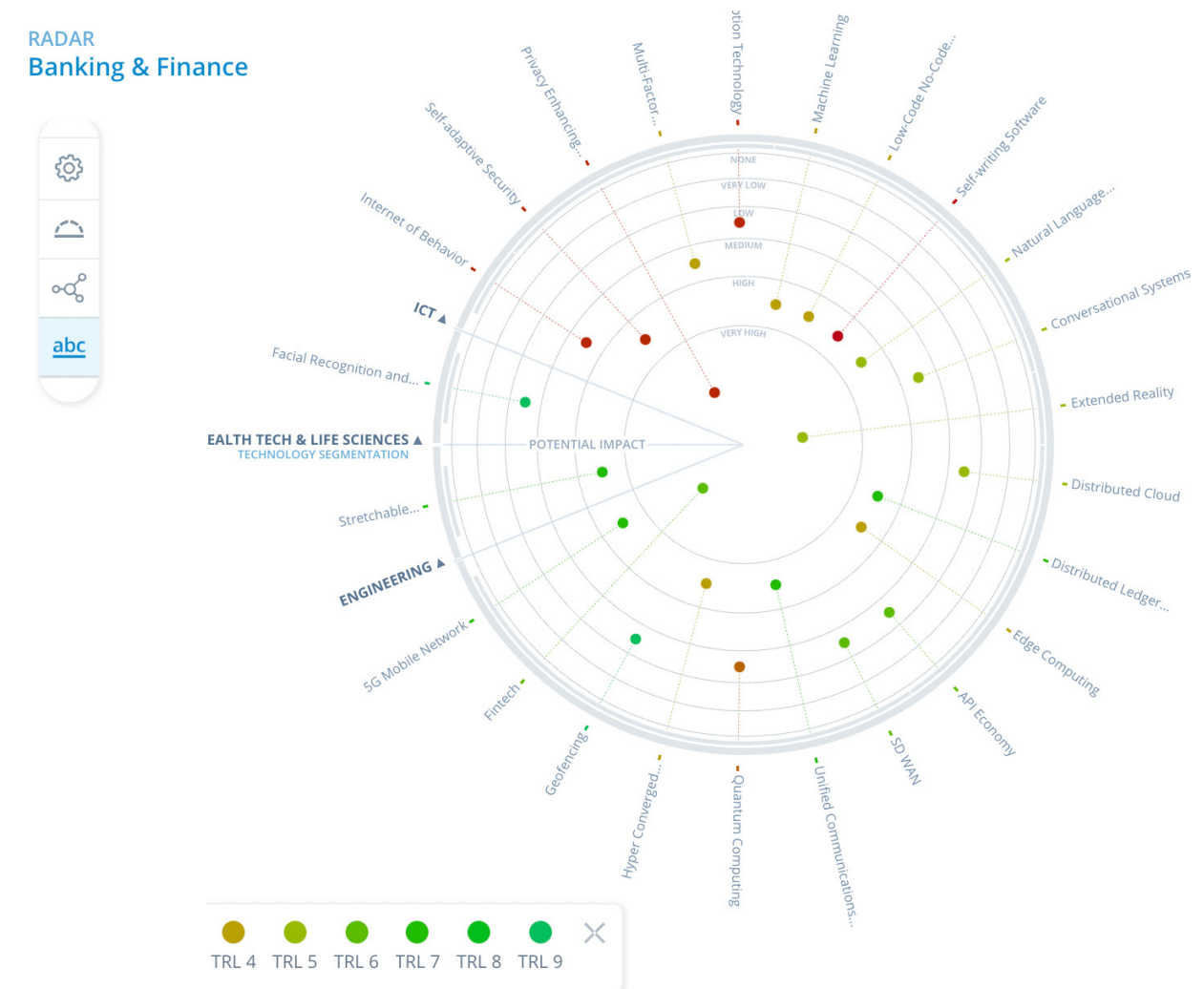
Game-Changing Technologies for Banking and Finance

Explore the selection of Technologies at play in the banking and finance industry. Click on the Technology below to view it in the ITONICS [Teaser Technology Radar](#):

- [5G Mobile Network](#)
- [API Economy*](#)
- [Conversational Systems](#)
- [Deception Technology](#)
- [Distributed Cloud](#)
- [Distributed Ledger Technology*](#)
- [Edge Computing](#)
- [Extended Reality](#)
- [Facial Recognition and Biometrics](#)
- [Fintech*](#)
- [Geofencing](#)
- [Hyper Converged Infrastructure](#)
- [Internet of Behavior](#)
- [Low-Code No-Code Platforms](#)
- [Machine Learning](#)
- [Multi-Factor Authentication](#)
- [Natural Language Processing](#)
- [No-touch Payments*](#)
- [Privacy Enhancing Technologies*](#)
- [Quantum Computing](#)
- [SD WAN](#)
- [Self-adaptive Security](#)
- [Self-writing Software](#)
- [Stretchable Electronics](#)
- [Unified Communications Services](#)

*These Technologies make up ITONICS' pick of the banking and finance industry's top 5 game-changing Technologies. These are unpacked in further detail in this report.

RADAR
Banking & Finance



ITONICS Top 5 Game-Changing Technologies for Banking and Finance

Click below to read more about the industry potential of these Technologies and examples of how organizations are applying them as solutions:

1. [API Economy](#)
2. [Distributed Ledger Technology](#)
3. [Fintech](#)
4. [No-touch Payments](#)
5. [Privacy Enhancing Technologies](#)

ICT DISTRIBUTED SYSTEMS

API Economy

The API Economy refers to application programming interfaces (APIs) made available to third-party data and services. By integrating these APIs into other platforms, developers can utilize the digital services without needing to build the feature themselves.

APIs work as a bridge to connect data extracted from one software application to the next application securely and accurately so that the two can communicate and share data seamlessly.

The API Economy is vital because it creates new business models and allows companies to profit by selling their features as software-as-a-service (SaaS) products. The trustworthiness of this technology depends on robust data security protocols.



Technology Ratings

Scope



Potential Impact



Complexity

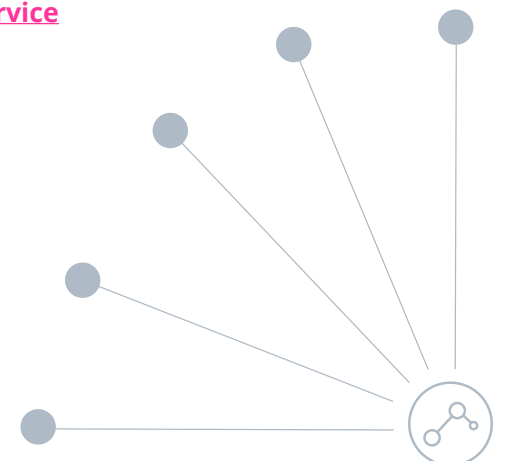


Technology Readiness Level



Related Trends

- Transformation Economy
- Diversified Value
- Data Ownership
- Product-as-a-Service
- Me Commerce



Industry Relevance

Taking Personalization to the Next Level

APIs enable banks and financial institutions to gain essential customer data, opening channels for two-way communication. A more accurate picture of customers' financial status can facilitate a more tailored marketing strategy. However, access to this data will also make it more challenging to differentiate offerings between competitors.

Banking-as-a-Service

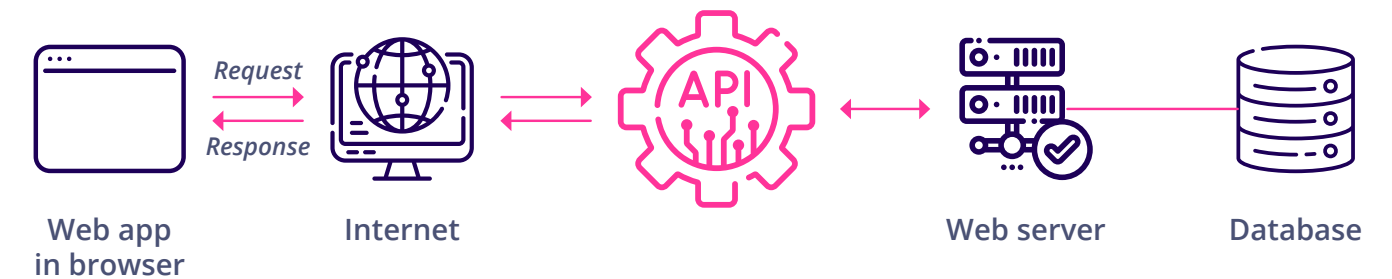
APIs will drive the banking-as-a-service model which allows non-bank businesses to white-label the services of licensed financial institutions. By integrating banking services into their own website or app, businesses can improve customer experience and create additional revenue without having to obtain a banking license or being burdened by regulatory duties.

Exposing Vulnerabilities

APIs can help detect vulnerabilities throughout the services layer. Internal applications developed for the back-office that have not passed the stringent security protocols pose a risk of mishandling.

APIs enable the identification of any such breaches and bring them to the front-end. This can save customer information from being privately shared or market data unintentionally shared.

How API works



Source: Altexsoft, 2021



How is it a Game Changer?

The API Economy allows for collaboration between developers and API providers for product optimization. Not only does this collaboration lead to better digital products, but it also creates new income streams for software companies in a time of mass digital service proliferation.

This tech also influences Internet of Things (IoT) technology; instead of building APIs from scratch, developers can now combine APIs from various sources, creating the type of interoperability that IoT is designed for.



Inspiration

Switzerland-based financial infrastructure provider SIX enters the open banking space, launching its **'bLink' platform** that uses APIs to connect banks and third-party providers. The app will enable rapid integration of new functionalities into their offerings to continuously support innovation and provide its end-customers a unique banking experience.

Distributed Ledger Technology

Distributed Ledger Technology (DLT) refers to the storage of data in multiple ledgers through the use of a distributed network of computer servers (nodes), with each ledger bearing the same records.

DLT provides the technological infrastructure and cryptographic protocols required to facilitate the simultaneous access, validation, and updating of records, creating a secure, decentralized, and immutable digital database.

DLT is being used extensively in the finance industry and has seen its applications extend to supply chain management, education, farming, mining, entertainment, and even government operations.



Technology Ratings

Scope



Potential Impact



Complexity

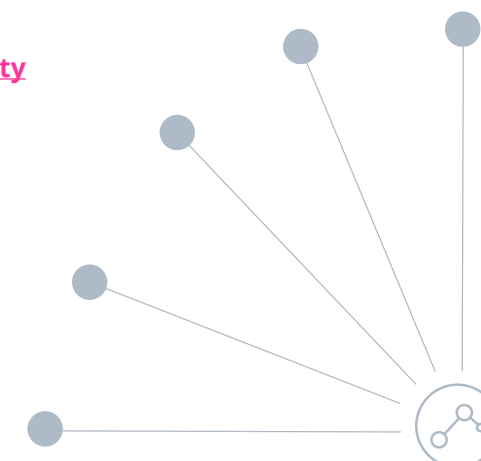


Technology Readiness Level



Related Trends

- [Green and Lean](#)
- [Data Ownership](#)
- [Radical Transparency](#)
- [ESG Investing](#)
- [Cash Free Society](#)
- [Digital Assets](#)



Industry Relevance

Threat to Payment Servicing

Encrypted DLT can process and verify transactions in real-time, eliminating the need for intermediaries like banks or other clearing agents. This may pose a significant revenue threat as payment services, especially cross-border transactions, are considered highly profitable for banks.

Easy Loans and Credit

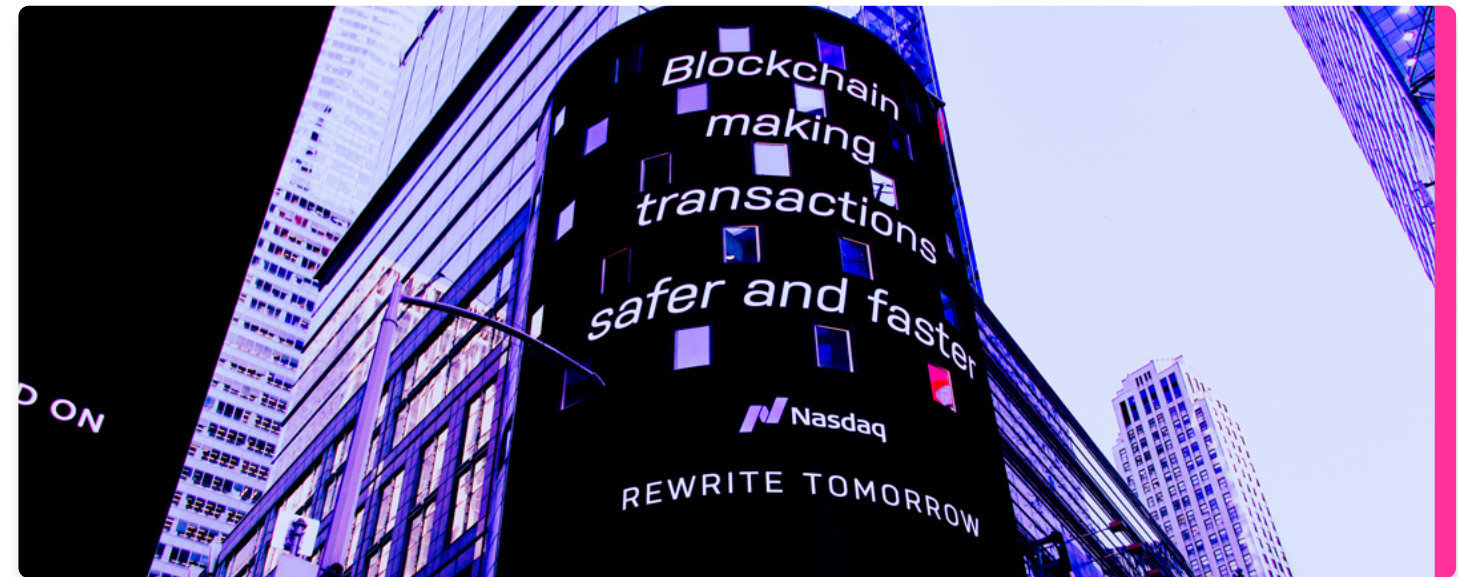
DLT simplifies digital lending and provides a practical approach to secure peer-to-peer lending. The technology also eliminates the need for third-party credit scorers, as in the case of traditional lending.

This makes the entire process less time-consuming for borrowers who are in urgent need of funds. However, regulatory challenges persist in terms of transparency, cybersecurity, and financial stability of the loan-seekers.

Access to International Commerce

An automated trade finance system built on DLT will disrupt the paper-intensive and time-consuming process of traditional trade finance. The technology enhances transaction transparency and promotes supply chain traceability with high security and low fees.

While it will enable banks to make trade finance more accessible to global consumers, each country has regulatory considerations.



How is it a Game Changer?

Due to the removal of a central authority, DLT helps increase the speed of transactions and reduce costs. It is a secure and tamper-free record-keeping technology. With the wider adoption of DLT, the financial sector is likely to see significant disruption as even central banks are investigating the use of blockchain technology to implement reforms to facilitate highly secure transactions at lower costs. Cybersecurity could increase drastically with the use of DLT as the technology would take massive computing power to hack.



Inspiration

Singapore fintech firm Hashstacs Pte Ltd (STACS), which focuses on ESG finance and high-quality carbon credits, has joined Mastercard's new global startup engagement program **Start Path**. Through the program, STACS will aim to make blockchain and digital asset technology for ESG safer and more accessible to adopt.

ICT DIGITALIZATION AND INFRASTRUCTURE

Fintech

Fintech products use technology to ease financial transactions in regards to tracking, managing, and transacting. Fintechs are especially beneficial for people without traditional accounts with brick-and-mortar banks as it gives them direct access to financial services online.

With the integration of technologies like AI, blockchain, and data science, Fintech companies are revolutionizing almost all areas of finance, ranging from payments and insurance to stock trading.

Limitations to Fintech growth include strict government regulations, concerns about data security, and lingering consumer preference for high-touch financial services.

However, governments are gradually changing their stance to accommodate digital finance and consumer preferences are changing



Technology Ratings

Scope



Potential Impact



Complexity



Technology Readiness Level



Related Trends

- [Digital Equality](#)
- [Accessible Investment](#)
- [Inclusive Finance](#)
- [Low Touch Living](#)
- [Cash Free Society](#)
- [Income Reform](#)
- [Financial Literacy](#)





Industry Relevance

Open Doors for Financial Inclusion

Fintech offerings will increase financial inclusion for less developed countries and small- and medium-sized enterprises that banks currently do not serve. There are immense opportunities for investors and tech companies to partner and gain a foothold in emerging economies. However, operating with low financial requirements can be subject to risk and losses.

Gen Z Appeal

Fintech will replace institutions with obsolete technologies that rely on rigid mainframes and overstretched branch networks as younger generations prefer to bank digitally and have greater control over their finances.

This includes easy payments and transfers as well as credit and investment advice. However, the sector faces oversaturation and steep competition in low-interest rates and profitability.

Mortgage Lending Made Easy

Fintech can offer targeted price discrimination as they rely on rate-setting models for mortgages. Low-risk borrowers are less sensitive to price, attracted by digital convenience, and likely to pay higher interest rates.

Also, refinances on mortgages are 7-10% more likely to originate from Fintech than traditional banks. However, information security remains a concern, and non-bank financial institutions are not tightly regulated.



"Fintech has shown its potential to close gaps in the delivery of financial services to households and firms in emerging markets and developing economies."

—Caroline Freund, World Bank Global Director for Finance, Competitiveness, and Innovation

Source: The World Bank, 2020



How is it a Game Changer?

Over the years, fintech companies have evolved in many ways into leading brands to become more customer-centric. Through "platformification" and open APIs, infrastructure-based technology is reshaping the future of the financial services industry. Robotic process automation, chatbots, and distributed ledger technology support operational advances, enabling enhanced agility, efficiency, and accuracy. If Fintech can overcome current obstacles, it can help remove the barriers to financial inclusion and create a completely digital and transparent banking and financial services ecosystem.



Inspiration

India-based fintech firm Finivis Pvt. Ltd has launched a white-label micro-ATM to cater to the needs of rural communities. As part of an initiative by the Reserve Bank of India to promote financial inclusion, the easy-to-install **Mego ATM** is half the cost of bank ATMs with zero maintenance costs.

▼ ICT
DIGITALIZATION AND INFRASTRUCTURE

No-touch Payments

No-touch Payments refers to payments made by transferring money electronically through debit/credit cards and is expanding to include virtual payment methods such as online and mobile transfers.

Artificial intelligence, machine learning, and blockchain are advancing the field of no-touch payments by enabling more secure and faster transactions.

Digital solutions like No-touch Payments are rapidly gaining adoption, particularly in the wake of COVID-19.

However, the risk of fraudulent activity and cybercrime, especially when dealing with high-value transactions, poses questions about the resilience of digital infrastructure if cash were to become obsolete in the future.



Technology Ratings

Scope



Potential Impact



Complexity

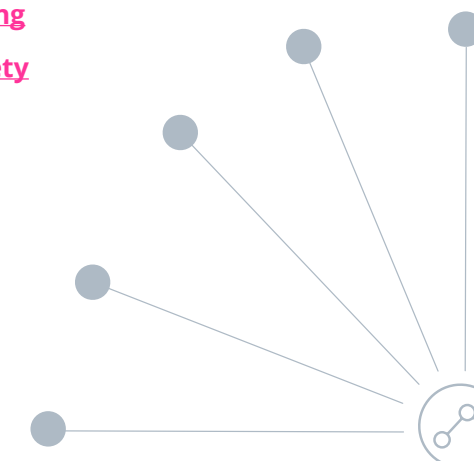


Technology Readiness Level



Related Trends

- [Transformation Economy](#)
- [Packaged Convenience](#)
- [Me Commerce](#)
- [Low Touch Living](#)
- [Cash Free Society](#)





Industry Relevance

Rise of Fintech Pioneers

As No-touch Payments drive real-time payments, data derived from these transactions will enable the development of customized products and services, giving rise to the next wave of fintech pioneers. In addition, the technology will boost working capital for businesses reducing uncertainty from delayed payments. However, the irrevocability of payments is still a hiccup with customers.

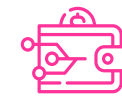
Growth and Acquisition

No-touch Payments are an opportunity for growth and collaboration. With the pandemic fundamentally changing customer behavior, banks and financial institutions are seeing a significant increase in digital transaction volumes. Collaboration through acquisition will result in easy deployment of contactless payment technology, allowing firms to address consumers' emotional needs around safety, cleanliness, and convenience.

Decline of the Bank Card

New generation (point of sale) POS terminals will emerge, enabling a host of applications and value-added services based primarily on mobile operating systems. Consumers will no longer need to carry physical cards while making a transaction, eliminating the need for banks to manufacture unique tap-to-pay cards. But with a centralized service to store payment data, security issues abound.

Types of No-touch Payments



Mobile Wallet



QR Code



Smart Watch



Mobile Payment



NFC Credit Card



Online Payment



How is it a Game Changer?

Rapid digitalization will be a standard to meet the demands of today's highly mobile consumers. AI, machine learning, and blockchain have been disrupting financial services for some time, and this trend will only accelerate. In the future, AI may enable a neural network capable of intuitively detecting when and where a consumer wants to spend money. Geofencing technology will make payments seamless when a consumer enters a specific store using auto-payment, eliminating the need for checkout. Likewise, the IoT will make it possible for smart home appliances and wearables to make payments, creating a truly contactless world.



Inspiration

The National Payments Corporation of India has launched a prepaid, no-touch digital payment system called **e-RUPI**. The system allows government agencies and corporations to make one-time payments to beneficiaries via SMS or QR code, removing the need for internet or bank accounts to access funds.

Privacy Enhancing Technologies

Privacy Enhancing Technologies (PET) are measures that assist users in protecting their privacy. The need for PETs is becoming self-evident, with a growing number of recent cyber attacks and data breaches involving blue-chip tech companies such as Facebook and Microsoft placing consumer data privacy in the spotlight.

Examples of PETs include advanced encryption, data masking, secure multiparty computation, and differential privacy.

The exponential growth of sensitive online data and services are among the biggest challenges to effectively implementing scalable PETs. Additionally, the cost of maintaining data privacy is considerable, from an organization's perspective.



Technology Ratings

Scope



Potential Impact



Complexity

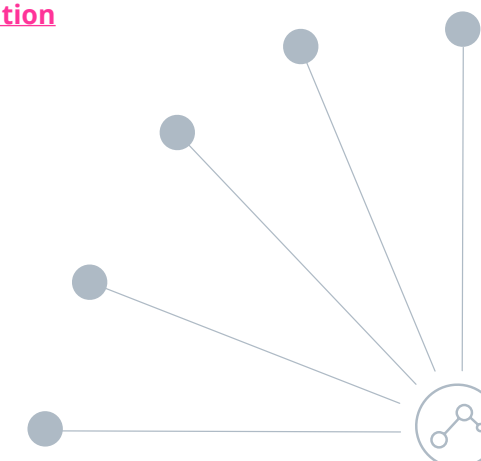


Technology Readiness Level



Related Trends

- [Data Ethics](#)
- [Data Ownership](#)
- [Data Secure by Design](#)
- [Big Tech Regulation](#)





Industry Relevance

Beyond Traditional Compliance

Laws like the EU's General Data Protection Regulation (GDPR) that require financial institutions to maintain the privacy of their customers are catalysts for PET deployment.

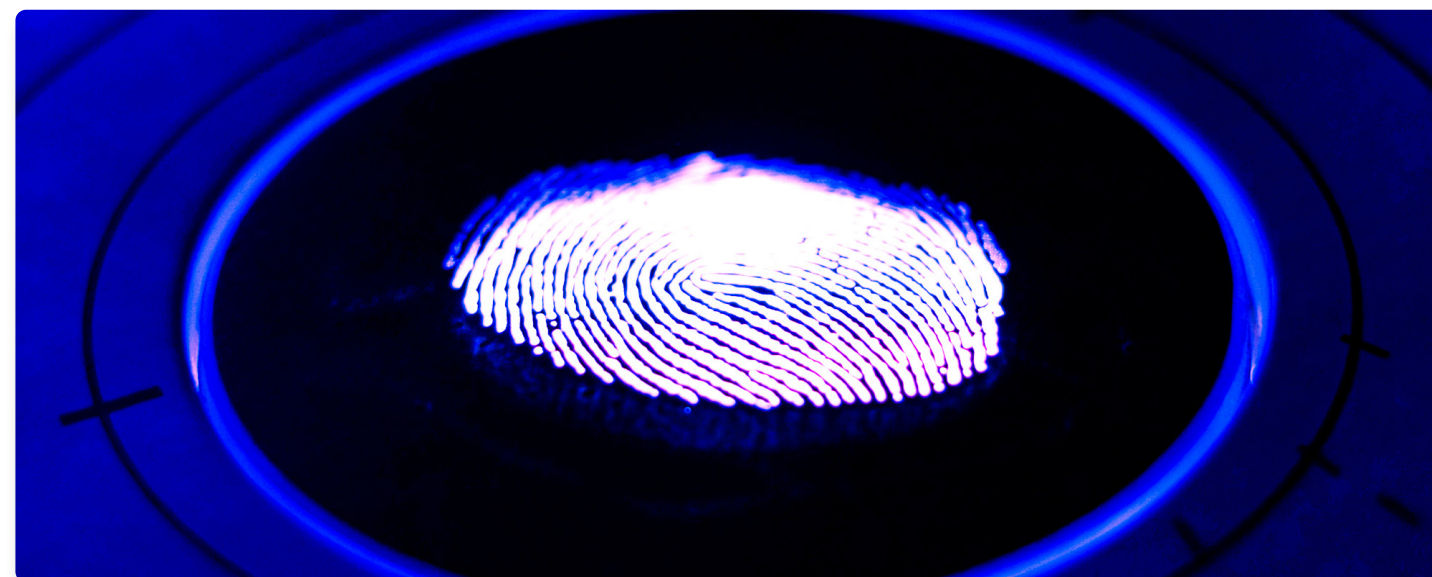
They are an important measure in complying with forthcoming regulations and can support organizations that wish to go beyond compliance and offer increased privacy protection, differentiating themselves from competitors.

Open Data for AI

PETs play a vital role in the banking and finance industry's successful adoption of AI-driven processes, products, and services that rely on open data to train AI systems. With PETs, it is no longer a trade-off between data liquidity—i.e., the ability to access, process, and manipulate data—and data security and privacy.

Collaborative Financial Crime Prevention

PETs can help prevent financial crime by enabling financial supervisory agencies and institutions to pool customer data globally across banks while keeping sensitive data fully encrypted. This improved intelligence makes it easier to detect, investigate and prevent financial crimes with privacy and security standards upheld.



How is it a Game Changer?

PETs and their related technologies will allow companies and regulatory bodies to share data effectively without compromising the identity of individuals. Methods such as federated analysis and homomorphic encryption enable insight generation while protecting the source data.

This creates new pathways to solve society's most pressing issues through ethical data usage. Expect this technology to enable trends such as Data Ethics and Data Ownership, putting pressure on large technology companies to prioritize PETs in their working models.



Inspiration

Ireland-based security startup Evervault provides encryption through API integration. Primarily targeting developers at companies that deal with sensitive personal data and intellectual property, Evervault's **encryption-as-a-service** solution allows developers to embed security into their apps and platforms as they are designed.

Conclusion

Closing Remarks

There are many forces at play in the banking and finance industry—some complementary and others opposing. We’re seeing systems, services, and knowledge become more distributed—from decentralized finance, accessible investment, and rising financial literacy. Meanwhile, individual users seek centralized solutions that aggregate all their financial information, providing even greater potential for personalization and agency.

How and where we invest is also changing. Tokenized assets and blockchain technology are reshaping how we attribute value and authenticate transactions. And in other spheres, the sustainability imperative is driving businesses, governments, and consumers to prioritize ESG criteria. Enmeshed in this shift towards good corporate governance and social responsibility is the move to make financial knowledge and services more inclusive, removing past social or algorithmic biases and empowering demographics who have long been economically marginalized.

With the pandemic proving once and for all that digital transformation is vital to doing business today, the banking and finance industry has leaned into online and contactless service delivery, going as far as employing artificial intelligence to advise and interface with customers. While this could spell the death knell for many brick-and-mortar branches, there is space to reexamine the value offering of these spaces and adapt to what is proving to be an increasingly digital-first, experiential, and, simultaneously, low-touch economy.

Within this context of change, we provide a set of questions for organizations in banking and finance to consider in the hope of nurturing fresh thinking about the future they wish to be a part of and play an active role in helping to create.

- What if people are empowered with the information and agency to manage every aspect of their financial health?
- What if brick-and-mortar branches leverage smart technology innovations to transform the in-store experience?
- What if almost all tradable assets become tokenized for use on a distributed ledger?
- What if the barriers to entry are lessened to allow non-bank businesses to augment their offerings with comprehensive financial services?
- What if AI and predictive analytics enable the complete customization of financial services?
- What if all companies begin including consistent and comparable ESG reporting in their annual reports?

There are countless questions to be asked about what the future holds for banking and finance. Finding possible answers to these questions requires a systematic approach and a structured innovation strategy.

The Way Forward

Create a future competitive advantage tomorrow by defining your strategic direction today.

Making better decisions for tomorrow relies on an organization's ability to collect, understand, and act on innovation intelligence—the multitude of building blocks that make up an organization's innovation process.

Scouting the trends, technologies, startups, and other forces of change that are shaping your industry is a crucial first step in this process. But turning this information into innovation intelligence, and subsequently into action, requires additional steps and capabilities that fall within Foresight and Strategy.

Taking Trends & Technologies to Opportunities



1. Discover ITONICS Trends



2. Build Internal Consensus



3. Develop Pictures of the Future

Discover ITONICS Trends

Supplement the insights gained in this industry-relevant technology report with an immersion into the trend landscape.

Get started by exploring the ITONICS [Teaser Trend Radar](#) displaying the elements that are most relevant to your industry.

For a full view of the trend landscape, our [Where to Play 2021+ Trend Report](#) contains the complete ITONICS Trend portfolio, presenting 90+ Trends with real-life inspirations and rich analysis.



DOWNLOAD NOW

Build Internal Consensus

In establishing **Where to Play**, it is essential to gain consensus and raise alignment within your organization. This can be achieved through a process of collaborative evaluation. Invite internal stakeholders and experts to participate in rating elements—trends, technologies, scenarios, opportunities, etc.—based on unique industry- and company-specific parameters.

When undertaken in the environmental scanning stage, an internal rating exercise helps empower teams with the consensus needed to ensure strategic relevance, strengthen buy-in, and act decisively.

ITONICS has provided the following internal rating criteria for organizations to consider for trends and technologies:

Technologies

- Technology Attractiveness: How high is the potential value of the technology?
- Internal Know-How: How much internal know-how does your business possess with regard to this element?
- Need for Action: How important is it that your organization take action with regard to this element?

Trends

- Business Relevance: How relevant is this element to your business?
- Strategic Fit: How well does this element fit into your organization's overall strategy?
- Need for Action: How important is it that your organization take action with regard to this element?

The ratings above are pre-set in the ITONICS Showroom. However, organizations can tailor rating criteria to align with their own set of needs and workflows.

Develop Pictures of the Future

It's not enough to identify the trends, technologies, disruptive startups, and other drivers of change that are relevant to your industry and organization. To develop an innovation strategy that remains effective beyond the time horizon of key drivers, organizations need to develop realistic and plausible pictures of the future in which these various drivers will unfold. This is done through a process of **scenario planning** and is the basis for discovering future opportunities upon which to act.

Scenario planning is a strategic tool commonly used by key decision-makers, innovation leads, and strategists to find focused foresight, grounded in dependable analysis. This equips them to anticipate exposures appropriately, evaluate innovation opportunities, and inform proactive responses.

What is a scenario?

In the context of business planning and strategy, a scenario is a postulated sequence or combination of events projected to take place that could hold relevance to an organization's future state.

Developing plausible, actionable scenarios requires a systematic approach and organizational participation. It builds on the internal rating exercise, which serves to identify those trends and technologies that hold the greatest strategic relevance and potential. From here, your organization must derive the underlying drivers that are influencing its business environment and extrapolate the different trajectories each driver could take.

Plotting these trajectories against one another and engaging your team's collective and creative input reveals multiple scenario narratives. While each narrative represents a possible future for which your organization may need to prepare, internal consistency and strategic objectives point to those scenarios that should be prioritized.

Your team should prioritize the scenarios they feel hold the most strategic relevance by asking the following two questions:

- Is this a future we hope to play an integral role in creating and shaping?
- Is this a future we hope to mitigate and avoid through thoughtful tactics?

The selected scenarios form a foundational springboard from which your organization can best derive and define clear opportunities—i.e., possible solutions or responses to the various scenario narratives. Use the **ITONICS Roadmap** to plot critical scenario events and develop a timeline of innovation activities required to explore the various opportunities ahead of the horizon in which they are set to occur.

In this way, scenario planning provides organizations with the information required to act on opportunities timeously—as well as the evidence needed to develop appropriate capabilities and assets, actively shape our world, and influence outcomes as they steer towards the future.

To further your innovation journey, all the Trends, Technologies, and Inspirations selected as most relevant to banking and finance can be found on the ITONICS software using the saved filter pre-set: **Banking & Finance Industry**.

The ITONICS solution supports end2end innovation management, from environmental scanning and trend and technology management to building internal consensus and roadmapping.

REGISTER



About Us

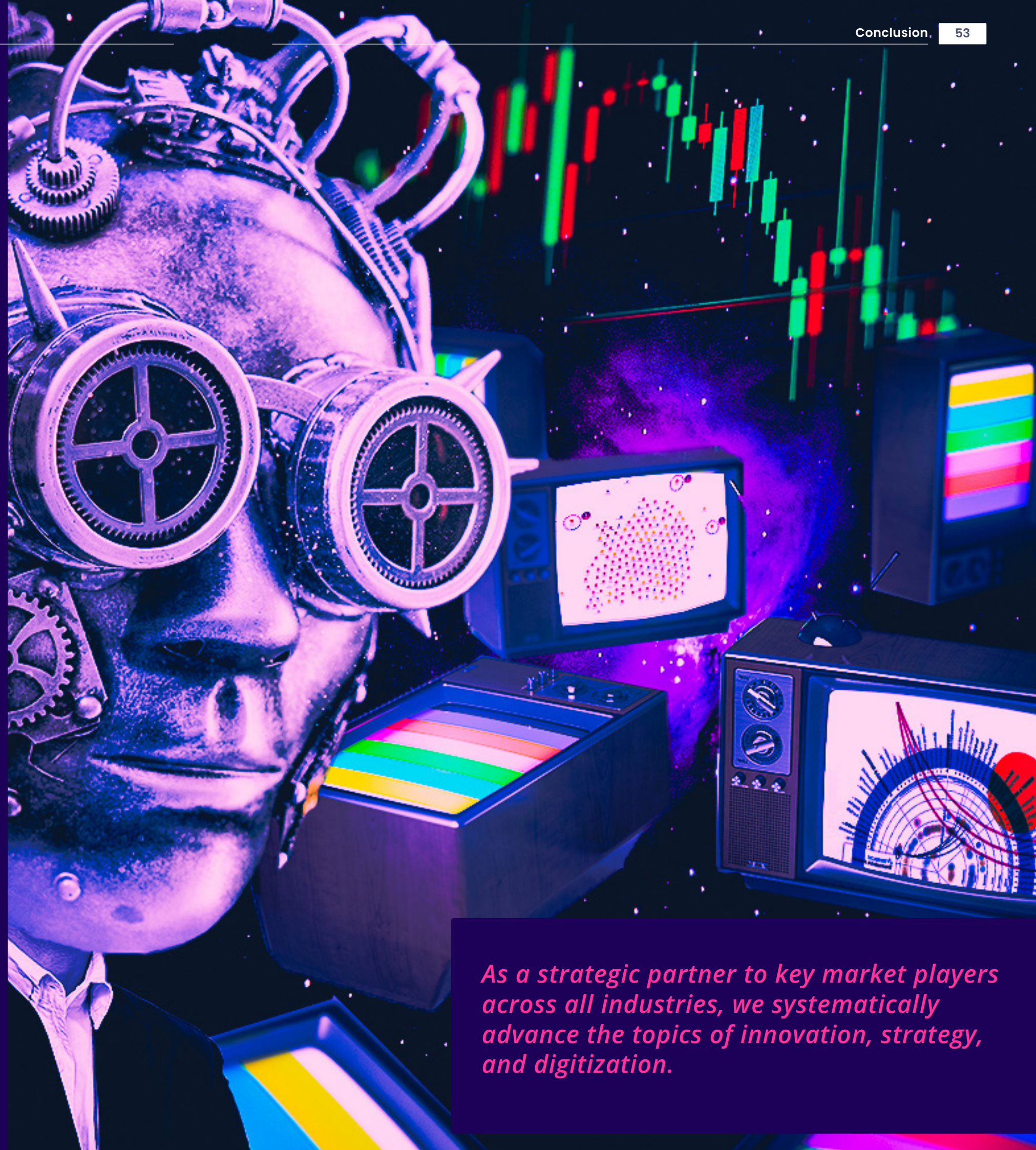
We build AI-powered SaaS to innovate, grow, and disrupt.

Our data-driven software platform helps organizations around the globe to identify emerging technologies, trends, and market potentials and translate them into powerful growth strategies.

Supported by artificial intelligence, companies can manage their entire innovation process in a modular software suite to efficiently achieve their business goals and remain future-proof.

Working with global teams to innovate new products, services, and business models, ITONICS professional services inspire, guide, and accompany organizations on their innovation journey. With more than 115 experts on four continents, we support innovation leaders such as adidas, AUDI, CISCO, Intel, Johnson & Johnson, and SAP.

As a strategic partner to key market players across all industries, we systematically advance the topics of innovation, strategy, and digitalization.



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What’s Next

Turn Innovation Intelligence into Action

Your digital toolbox for game-changing innovation ▪ Industry-specific Trend and Emerging Technology Radars ▪ Strategic Roadmaps that guide you into the future ▪ Lean Portfolios to manage ideas, technologies, projects, and opportunities	Free access to inspiring insights & content updates ▪ Access to 6 million+ signals to uncover insights at large scale ▪ 90+ Trends, 85+ Emerging Technologies updated annually ▪ 7,000+ freshly curated inspirations maintained	Dependable thought leadership & advisory services ▪ Free innovation maturity assessment ▪ Exclusive access to COFIM Masterclass content ▪ Access to our international innovation community
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You can find us around the globe



ITONICS is a leading SaaS provider of systematic innovation management. The ITONICS Innovation OS combined with a systematic framework to steer innovation efforts helps companies to identify emerging technologies, trends, and market potential and to translate them into customized growth strategies.

With more than 150 experts worldwide, we support innovation leaders such as adidas, AUDI, BMW, CISCO, Intel, Johnson & Johnson, and KPMG.

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EMPOWER EVERYBODY TO INNOVATE



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