

KNOWLEDGE PLATFORMS  
AND RESEARCH LABS

# RESEARCH REPORT 2023





# THE FUTURE MUST ALWAYS BE IMAGINED AND SOUGHT



The research activity and its continuous dissemination are the destiny and duty of a School of Management. It may seem like a strong statement but this phrase expresses in the most appropriate way the sense of the challenges and times we are experiencing and that allows us to guide to the future with the strength and passion that distinguishes SDA Bocconi.

Higher-education, applied research and the growth of people are closely linked and forward-looking. There is no growth in people's lives if the gaze is not turned to the future and when the gaze is no longer able to grasp the future, growth stops, it no longer affects and it no longer has an impact on the surrounding society. Growth is not a solitary act but a path, which becomes more exciting if done with good travel companions. In this sense, growth, training, applied research, relationships and sharing are closely linked. We must therefore have the desire and ambition to talk about the future every day. This is the ambition of every School of Management, this is definitely the hallmark of our School of Management, SDA Bocconi School of Management.

To understand what it means to speak and plan the future every day, we need to reflect on the two simple words - so simple to seem obvious - that are found immediately after SDA Bocconi, that is "School" and "Management".

The concept of "School" is a concept of community and continuous construction. In a world where research, knowledge and education are seen as an act of consumption, which materializes - and is likely to run out - in the very short moment of a download, the concept of "School" is exactly the opposite in that it is not confused with the learning tool - physical or digital, synchronous or asynchronous - but is clearly above the available tools and offers a meditated synthesis, at the service of the community, and built with the support of diverse interlocutors who interact with each other, from faculty, staff, students, alumni, companies and institutions that meet every day on our campus. The quality and intensity of relations become the quality of the School and the energy to continue on its way.

The concept of "Management" is at its root a concept of responsibility. Management means guiding men and women, resources and organizations. It's an act of responsibility by definition. It is devoid of sectorial affiliation, as it crosses institutions and organizations with profoundly different characteristics: from listed companies to private ones, from small to large, from public to non-profit sector. If responsibility is the deepest nature of management, its attitude today must be that of transversality. Knowledge and therefore management can no longer be placed in predefined areas, in vertical silos that define their own rules and aspire to perfection, which becomes self-referentiality and closure. The marketing silos, the finance silos, the technology silos and so on. Vertical perfection becomes complacency and then only leads to dryness and inability to think about the future every day.

The task of a School of Management is to ensure the highest level of vertical understanding, knowing well that "teaching" or "doing" management actually means destroying vertical silos with the force of creativity, with the courage to always get out of your comfort zone, with the will to always advance those vertical knowledge that are then questioned. But it also means identifying and welcoming new vertical silos, new disciplinary areas that were not even imaginable: from artificial intelligence, to cybersecurity, to the space economy and to what is to come, that today we cannot imagine but that we are certain that it will come. SDA Bocconi in management has always seen the transversality that passes from companies, to public administrations and financial intermediaries. This transversality today is leading the SDA to have a broader spectrum ranging from geopolitics themes to data sciences and AI, because businesses, institutions and financial intermediaries demand this to understand the world and face their challenges.

The knowledge platforms that the School has created go exactly in this direction and are the inexhaustible force that continuously links the drive for innovation, the drive for vertical understanding within the disciplinary field, the push to transversality that is the necessary condition in order to understand the complexity of the scenarios that every business decision-maker must observe. But above all, without research the ability to affect with the activity of higher-education dries up and becomes a ritual. The nature of being a School is to continually strengthen the bridge between the needs of companies and institutions and the ability to always look to the future.

The challenges of the School become the collective challenges, the knowledge that is produced through research is a collective and community act, which then brings initiative, enthusiasm and benefit to individuals but remains a strongly collective act. This is why our School has the task of helping individuals and organizations to think about the future every day. Not to deny the present but to live it more intensely and with greater responsibility. This is the responsibility of the manager and is the hallmark of the leaders, who are formed in our classrooms. It is the perfect link between the School and its community, between the programs that we develop every day with passion and the participants, between the content of our training and the task of the manager. This is why the School does not offer a solution but builds the possible solutions through the extraordinary experience of many colleagues who direct our programs and live every day with those who have or have the ambition to have the responsibility of guiding men and women, resources and organizations.

The space to build the future is vast, and the School is always there whenever there is courage and a desire to design innovative solutions. That's where we have to start if we want to give answers to the people and organizations that choose the SDA. History therefore continues and always evolves, with determination and impact.

**STEFANO CASELLI**

*Dean SDA Bocconi School of Management*

Milan, 30 October 2023





# TECHNOLOGY, INNOVATION AND TRANSITION KNOWLEDGE PLATFORM

Technology has always represented the key driver of change for firms, industries, and society at large. Yet, the pace of change we have been facing in the past few years is unprecedented. The digitization and development of Internet of Things, together with a shift in consumer behavior, have favored the production of a huge amount of data. Data are the oil of AI and machine learning, a fundamental technology that is reshaping many of the processes and industries we have known.

Communication, transportation of people and objects, manufacturing, and commercial activities just to mention a few have experienced a deep transformation caused by the changes in technology and in particular by the potential use of data that technology has unleashed.

The Technology, Innovation and Transition Platform of SDA Bocconi aims to provide a common and open ground to study the changing nature of managerial and operational processes in organizations in the light of the above-mentioned opportunities and challenges. By blending theory and practice, cross-sectional and panel data analysis with interviews and observation in companies and institutions, and by integrating the experiences of organizations operating in different industries, both private and public, this platform aims to provide data-based evidence and actionable insights for companies facing relevant challenges brought by the accelerated path of technological change encompassing a diverse set of processes and decisions within firms.

This platform addresses, among others, topics such as:

- Assessing current technologies and estimating their value potential for processes and activities in organizations;
- Investigating and measuring the impact on performance of the adoption of digital tools in the development of new commercial channels;
- Evaluating the impact of specific technologies on the development of sustainable practices across firm in different contexts;
- Understanding the value and organizational impact of machine learning applications on operational activities;
- Identifying the evolutionary trajectories of specific consume needs, such as mobility, housing, and health to name a few, disrupted by digital technology;
- Understanding the economics of space and other alternative resources in shaping the industries of the future.

In order to tackle these relevant issues with a broad perspective and refined analytical keys, the Innovation and Transition Knowledge Platform adopts an interdisciplinary approach, leveraging on the knowledge of top experts in the field of technology and innovation, the evolution of ecosystems, channel/retail and salesforce to commercialize innovation, as well as procurement. The functional expertise is blended with top level competences applied to the world of space economy, mobility, agribusiness, real estate, and to many other contexts, both private and public, where technology is a major driver of change. Through extended collaborations with partners from public and private institutions, by means of open discussions and workshops, and through projects co-designed by academics and research users, we aim to address pressing issues stemming from real-world problems, as well as to advance the current understanding of a complex and interconnected world, like the one we live in.



**Paola Cillo**

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# DEVO Lab

## Digital Enterprise Value and Organization

All the activities of the DEVO Lab are inspired by a Post-Digital Mindset based on a Manifesto composed of five key pillars:

1. Respect technologies.
2. Acknowledge that technological competencies are scarce and expensive.
3. Remember the fundamental economic rules.
4. Be a savvy adopter.
5. Make innovation a systemic attitude.

## 1. DEVO Lab mission and key figures

Digitization is an undeniable and irreversible trend in the business landscape. Often, companies find themselves deciding whether to undergo the effects of digitization, adapting to some “mythical” best practices, or to lead the process by leveraging digital technologies in a way consistent with company objectives and strategy, empowering their business evolution.

The Digital Enterprise Value and Organization (DEVO) Lab is SDA Bocconi’s research laboratory focused on studying digital transformation, digital technologies, and their impact on businesses. The Lab focuses on providing answers to questions like: how can we «cut» through the hype and exploit the actual value of a given digital technology? Which are the most impactful digital technologies for the world of business? How can we evaluate them to understand their benefits and main points of attention?

The DEVO Lab offers all the skills and capabilities needed to produce research and support managers in the process of evolving their business through digital technologies. This goal is achieved thanks to a multidisciplinary approach and leveraging business-oriented research initiatives and in-depth studies focused on the most advanced digital topics.

### 1.1

#### DEVO Lab in figures

The DEVO Lab was founded in 2015. Below are some key figures about the impacts produced by the DEVO Lab in these seven years in the areas of companies’ engagement, dissemination activities, practice-oriented research, publications, and education.

30

- Member companies

70

- in-house presentations

4

- research initiatives

30

- Think Tank meetings & open sessions

9

- books published

9

- HIT Radar Report editions

5

- Excellence Awards

7

- Annual Events

5

- DEVO Lab Bootcamps  
(annual dissemination activity)

400+

- Education sessions (2022/2023)  
where DEVO Lab materials were presented

800+

- Executive participants (2022/2023)  
exposed to DEVO Lab contents

## 2. Membership model and engagement in Lab’s activities



The DEVO Lab is a membership- based research laboratory. Each Member company has a contractual commitment of at least three years and most of DEVO Lab Members have been part of the Lab for several years.

Each Member is entitled to have a representative in the “DEVO Lab Think Tank”. The DEVO Lab Think Tank meets periodically and actively contributes to define the activities carried out by the Lab’s research team.

In particular, the Lab promotes a voting system to allow its Members to contribute in defining the research focus of the Lab over time. This ensures that research activities are always fully aligned with the interests of DEVO Members.

Category	Benefits	Description
CONTENTS	Research reports and outputs	Full access to research reports and materials developed by the DEVO Lab and outputs produced for the Lab by partner universities (e.g., Disruptive Technologies and Clusters report by MIT).
	Members-only online platform and restricted access to contents	Access to the DEVO Lab Members-only online platform that collects all the main outputs produced by the Lab. Member companies enjoy exclusive access to all contents for an agreed period.
	Think Tank membership	Members’ participation in the Lab Think Tanks determines the DEVO Lab research focus every year (e.g., through structured voting procedures).
MEETINGS AND EVENTS	DEVO Lab Annual Event	15 seats at the DEVO Lab Annual Event for employees and/or external guests.
	DEVO Lab Annual Executive Dinner	One invite to the Annual DEVO Lab Executive Dinner with access restricted to Member companies.
	DEVO Bootcamp	3 reserved seats at the annual DEVO Lab Bootcamp. The DEVO Bootcamp is a 3-day initiative held every September for Member companies. Its goal is the dissemination of research contents produced by the Lab.
CUSTOM SERVICES	Customized sessions	2 half-day sessions dedicated to every Member company at SDA Bocconi campus or company's office. The sessions can involve the presentation of DEVO Lab research and potential applications/implications for the specific company environment.
	Vertical research projects	Right to activate custom vertical research projects on specific topics individually or with other Member companies. Such vertical research streams will need to be agreed upon and evaluated separately with the DEVO Lab.
VISIBILITY	Logos on institutional communications	Company logo as “DEVO Lab Member” in all institutional communications (e.g., website, periodic email communications, annual event brochure).
	Logos on research outputs	Company logo as “DEVO Lab Member” on all DEVO Lab research outputs (e.g., reports, cases, whitepapers).
OTHER BENEFITS	SDA Bocconi discounts	20% discount on selected SDA Bocconi education initiatives of our “Open Programs” catalogue.

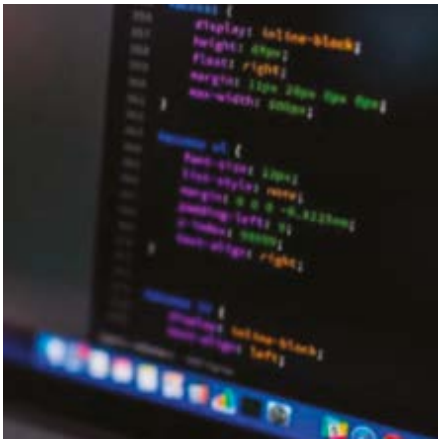
Within the Lab’s partnership model, Member companies enjoy several benefits, detailed in the table below. Overall, benefits can be clustered into five main areas:

- 1. CONTENTS
- 2. MEETINGS AND EVENTS
- 3. CUSTOM SERVICES
- 4. VISIBILITY
- 5. OTHER BENEFITS

Further details about the characteristics of the benefits named in this table (ex. reports, events, meetings) are provided in the following sections of this report.

In addition to its membership-based model, the DEVO Lab holds relationships with several other parties.

At the core of the operating model is the direct cooperation with a partner lab at a major



global tech-oriented university. This ensures that the DEVO Lab remains continuously updated on the most advanced research in the world of digital technologies and offers the most updated contents to Member companies. In the past seven years, the DEVO Lab has collaborated with the Design Lab of the Massachusetts Institute of

Technology for this purpose. Within the broader SDA Bocconi community, the DEVO Lab acts as a matching platform that aims to connect and align the interests of several players:

- Managers and executives interested in starting or accelerating the path towards digital transformation in their organizations.
- Professionals working at consulting firms, system integrators and technology providers interested in finding reference point for discussions and research on digital topics.
- Young practitioners, senior managers and experienced executives taking part in both open and custom education initiatives, as well as participants involved in SDA Bocconi’s Master Programs.

## 3. DEVO Lab activities: research, meetings and dissemination, annual events

The DEVO Lab’s activities are focused on three main areas, as detailed in the table below:

- Research** (details are provided in section 4).
- Meetings and Dissemination** (details are provided in section 3.1).
- Annual events** (details are provided in section 3.2).

Research	Meetings and Dissemination	Annual events
<ul style="list-style-type: none"><li>• High Impact Technologies Radar (HIT Radar).</li><li>• Annual and quarterly research projects.</li><li>• Vertical research projects.</li></ul>	<ul style="list-style-type: none"><li>• Periodic Think Tank meetings.</li><li>• DEVO Bootcamp.</li><li>• On demand participation to Members’ events/conferences.</li><li>• Special talks with guest speakers.</li></ul>	<ul style="list-style-type: none"><li>• Annual event on a chosen digital topic held every year with exclusive access for Member companies and their guests.</li></ul>







3.1 Meetings & dissemination

- **Think Tanks:** periodic meetings exclusively held for DEVO Lab's Members to present updates about research progresses and outputs. This also offers the opportunity to discuss relevant technological highlights and recent digital trends.
- **DEVO Bootcamp:** three-day dissemination initiative aimed to spread operational concepts, methodologies, and tools to support digital transformation developed by the DEVO Lab in the last 7 years. The event is exclusively held for DEVO Lab's Members. Each Member has 3 reserved seats.
- **On-demand events and conferences:** DEVO presentations carried out by request directly on-site at Members' preferred locations.
- **Talks:** talks featuring prominent guest speakers in the digital and management fields proposed by the DEVO Lab or its Member companies.

3.2 Annual Events

The DEVO Lab organizes and hosts an annual event every year accessible only to Member companies and their selected guests. These events are all theme-focused and deep dive into a specific topic relevant to the world of digital. Events typically involve both internal speakers from DEVO Lab and Bocconi community as well as external renowned international guest speakers from both industry and academia.

Below you can find selection of the themes of the last three DEVO Lab annual events.

The Digital Mirror (2022)

Digital reality, encompassing virtual reality, augmented reality, and digital simulations, can mirror many aspects of physical reality, but these realities are not identical. The fundamental distinction, although it may seem trivial, is that digital reality is created using technology, while physical reality is the tangible world we inhabit. There are numerous examples of this digital mirror of physical reality, they have multiplied over the years, and their number is constantly growing. This annual meeting has focused on the downsides of digital-enabled realities: from cyber risks, to virtual Identities, from digital twins to Central Banks Digital Currencies (CBDC).



Digital Serendipity (2021)

Unintentional but particularly fortunate discoveries "Serendipities" have marked important scientific evolutions. This concept well applies to the context of the digital and it is often behind the emergence of some of the biggest players in the "Tech" world.

This annual meeting addressed these issues, with experts from academia, business and management.

How to prosper into an AI enhanced World (2023)

In an era where Artificial Intelligence accelerates its presence in every aspect of human activities, we are experiencing an unprecedented transformation. We live in a transformed world, enriched at times, "infested" by the power of AI. This is an evolution that is shaping a complex landscape full of opportunities, but also challenges that require new approaches and perspectives for analysis, synthesized in the dual title of the Annual Event of the DEVO Lab at SDA Bocconi School of Management: *How to thrive in a world shaped by AI? How to survive in a world infested by.*

4. Research reports, papers, business cases: a selection across the past 3 years

In the research domain, the DEVO Lab performs several types of activities. There are two main types of periodic research initiatives:

- **High Impact Technology Radar (HIT Radar).**  
*Details in section 4.1.*
- **Annual and quarterly research projects.**  
*Details in section 4.2.*

In addition, the DEVO Lab develops custom vertical research projects sponsored by one or more Member companies. Details about this type of research output are provided in section 5.

4.1 HIT Radar

The HIT (High Impact Technology) Radar is a tool to evaluate the impact, ecosystem, and dynamics of digital technology solutions for mid-to-large-size enterprises. It is aimed at supporting top executives in the company's decision-making processes.

The HIT Radar is the final output of a 4-phase methodological process, in collaboration with the Design Lab of the Massachusetts Institute of Technology (MIT) and a dedicated team of legal experts.

It ensures:

- Full awareness of the state of the art of technology trends for the national economic context.
- An updated view of emerging technologies across all industries.
- Clear taxonomy of the technological landscape.

- An objective and scientific approach to technology assessment.
- The HIT Radar provides a reference framework to rationalize the much-hyped world of digital technologies. Each technology is positioned based on the score of all assessment dimensions and their qualitative explanations, each presented in a detailed card.
- The HIT Radar general edition is released every 12 months. New releases are exclusively accessible to the DEVO Lab Members for the first 6 months. The 9<sup>th</sup> edition will be released in September 2022.

4.2 Annual and quarterly research projects

The DEVO Lab carries out various

annual research streams on the hottest tech trends affecting the business world. Every year, the DEVO Lab proposes its Members a research catalogue, comprehensive of several research proposals, which are voted and then developed throughout the following year.

These research initiatives may be either:

- An in-depth focus on a specific cluster or technology and its business applications.
- A cross-technology study of economic and managerial impacts related to selected trends and phenomena.

Below, you can find brief description of three annual research projects produced by the DEVO Lab.

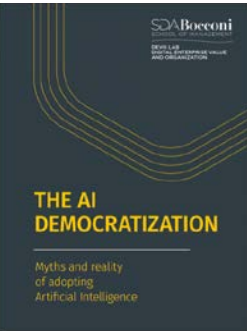




Digital and Sustainability 2022

In the Digital & Sustainability (D&S) research, DEVO Lab's purpose is to analyze how some emerging digital applications are influencing or could influence the fulfillment of companies' ESG criteria, without forgetting about their business implications. The D&S research aims to do so by applying:

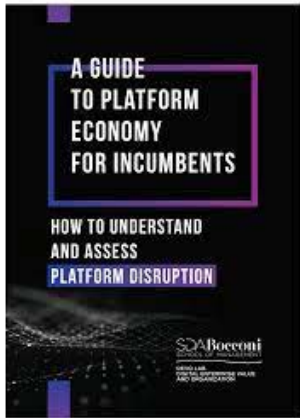
- a technological perspective, which would allow to examine the applications from a business point of view;
- a sustainability perspective, based on the contribution of these digital applications to the ESG criteria.



The AI Democratization 2021

Over the last few years, the AI market landscape started to be wat the center of a claimed wave of “AI democratization”. Several tools promoted themselves as being “democratizing” AI for everyone, making it faster, cheaper, and easier to build and deploy new AI solutions. This race also includes several of the largest global tech providers that claim to be designing their services and products to empower companies to adopt AI seamlessly, taking it from the ivory tower and making it easy and democratic for everyone. This research investigates what AI components can be democratized and what other components

cannot. To do this, we take the lenses of the “AI lifecycle” to understand how companies adopt and combine the AI solutions currently available in the market and assess whether and how they are making this technology more democratic for companies. We find that AI can be implemented according to three broad approaches and six archetypes that vary in their levels of democratization.



A Guide to Platform Economy for Incumbents 2020

The DEVO Lab Platform Economy Report aims to provide a solid understanding of digital multisided platforms and business ecosystems with particular attention to the perspective of incumbent companies, without falling into the traps of easy generalizations or hype effects. The Report is developed to ensure:

- A solid understanding of the key concepts to define multisided platforms and business ecosystems.
- A taxonomy to classify different categories of platforms based on their characteristics and market impacts.
- An overview of the critical factors that can lead to higher impact of new platform entrants in an industry.

- A structured way to assess the different types of business effects produced by platforms in various industries.

4.3 Papers and academic publications

Research reports by the DEVO Lab have the main objective of creating actionable tools that can clearly impact the Lab's Member companies. However, such projects can also become the input to develop academic research published in leading conferences and journals.

In the past years, the DEVO Lab has published several papers based on the contents created through its research. Among these:

- **Diaferia L., Blohm I., De Rossi I.M., Salviotti G.,** (2022), When Standard Is Not Enough: a Conceptualization of AI Systems' Customization and its Antecedents, In Proceedings of ICIS Conference
- **Cennamo, C., Diaferia, L., Gaur, A., Salviotti, G.** (2022). Assessing Incumbents' Risk of Digital Platform Disruption. MIS Quarterly Executive.
- **Abbatemarco, N., Meregalli, S., Gaur, A.** (2022). Stuck in Pilot Purgatory: Understanding and Addressing the Current Challenges of Industrial IoT in Manufacturing. In Proceedings of the 55<sup>th</sup> Hawaii International Conference on System Sciences.



- **Abbatemarco, N., De Rossi, L. M., Gaur, A., & Salviotti, G.** (2020). Beyond a Blockchain Paradox: How Intermediaries Can Leverage a Disintermediation Technology. In Proceedings of the 53rd Hawaii International Conference on System Sciences.
- **De Rossi, L. M., Abbatemarco, N., & Salviotti, G.** (2019). Towards a Comprehensive Blockchain Architecture Continuum. In

Proceedings of the 52nd Hawaii International Conference on System Sciences.

- **Salviotti, G., De Rossi, L. M., & Abbatemarco, N.** (2019). The Blockchain Journey: A guide to practical business applications. EGEA Spa.
- **Abbatemarco, N., De Rossi, L. M., & Salviotti, G.** (2018). An econometric model to

estimate the value of a cryptocurrency network. The bitcoin case. Research Papers 164.

- **Salviotti, G., De Rossi, L. M., & Abbatemarco, N.** (2018). A structured framework to assess the business application landscape of blockchain technologies. In Proceedings of the 51<sup>st</sup> Hawaii International Conference on System Sciences.



5. Vertical custom initiatives

As mentioned, part of the DEVO Lab's activities includes vertical custom research projects that Member companies (individually or in groups) can activate to further explore specific topics of interest.

- Such research initiatives are activated on-demand and can either focus on a single technology or broader cross-technology perspectives. They can include, for instance:
- **Case Studies.**
  - **Decisional frameworks.**
  - **Economic impact analysis.**
  - **Case-based validated research.**
  - **Call for ideas.**

Below you can find selection of three vertical custom research projects developed in the last years:

**La Fabbrica Contemporanea**  
(sponsored by Brunello Cucinelli)  
This research initiative aimed to study potential applications of digital technologies in a critical industry: luxury. In this setting, digital must bring its benefits without being a disruptive presence and without undermining the traditional sources of value creation of the sector. In short, digital should be the backbone of what Brunello Cucinelli defines “Fabbrica Contemporanea”. The research project, a joint initiative

with other parties, involved the identification and analysis of the value creation potential of digital technologies in Brunello Cucinelli's value chain and an evaluation of the potential technologies for every step. The project also led to the creation of a digitally powered tailor's table created by the MIT.

**Gli ecosistemi Blockchain per il Notariato**  
(sponsored by Notartel)  
This research initiative aimed to identify and assess the possibilities that blockchain can offer to Italian Notaries. The project involved an in-depth desk analysis of blockchain applications, which led to the identification of three main application areas where notaries could offer services to support existing blockchains (instead of building their own). To bring such application areas to life, a hackathon with over 30 blockchain developers was organized at SDA Bocconi. Developers created Proof of Concept designs that where then evaluated by the DEVO Lab research team through a framework composed of technical, business, and legal elements.

This led to the creation of a final custom Blockchain Radar report created ad hoc for the Italian Notaries.

**Digital-enabled Finance Evolution**  
(sponsored by NTT DATA)  
This research initiative involved the participation of 18 CFOs from major Italian companies and aimed to investigate on how digital technologies can foster evolution paths in the Finance function. Specifically, it clearly emerged how all projects aimed at evolving the Finance function are commonly associated with the concept of “transformation”. The evidence from this research showed how “transformation” of their functions is only one of the possibilities among which CFOs can now choose, consistently with the internal and external factors that guide the broader digital evolution of the business. This research project led to the development of a structured reference framework to map the current state of the art of the digital-enabled Finance evolution based on two key dimensions: scope of change.



Cutting edge scientific partners.

