T-Shaped Teams: Organizing to Adopt AI and Big Data at Investment Firms

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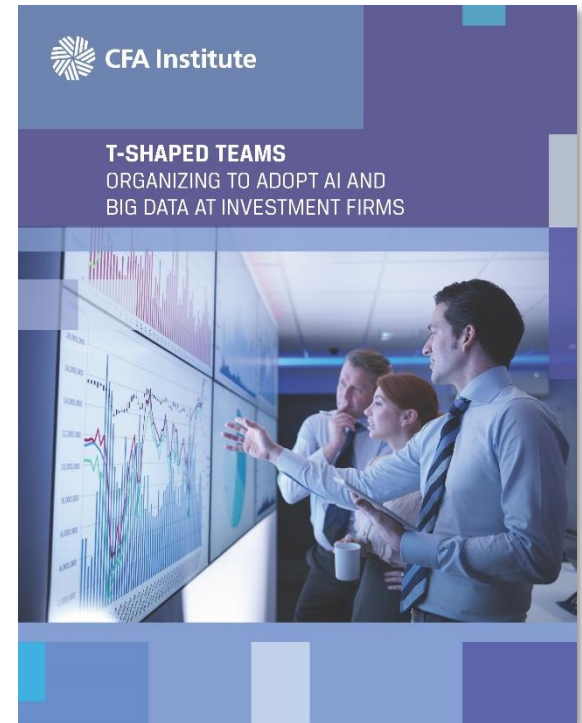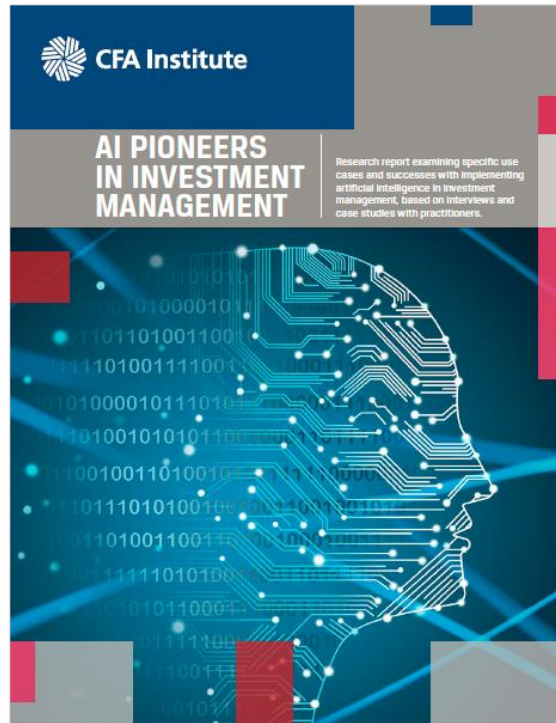
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OVERVIEW

1. From T-Shaped Skills to T-Shaped Teams

2. The T-Shaped Teams and Accompanying Processes

3. The Three Stages of AI and Big Data Adoption
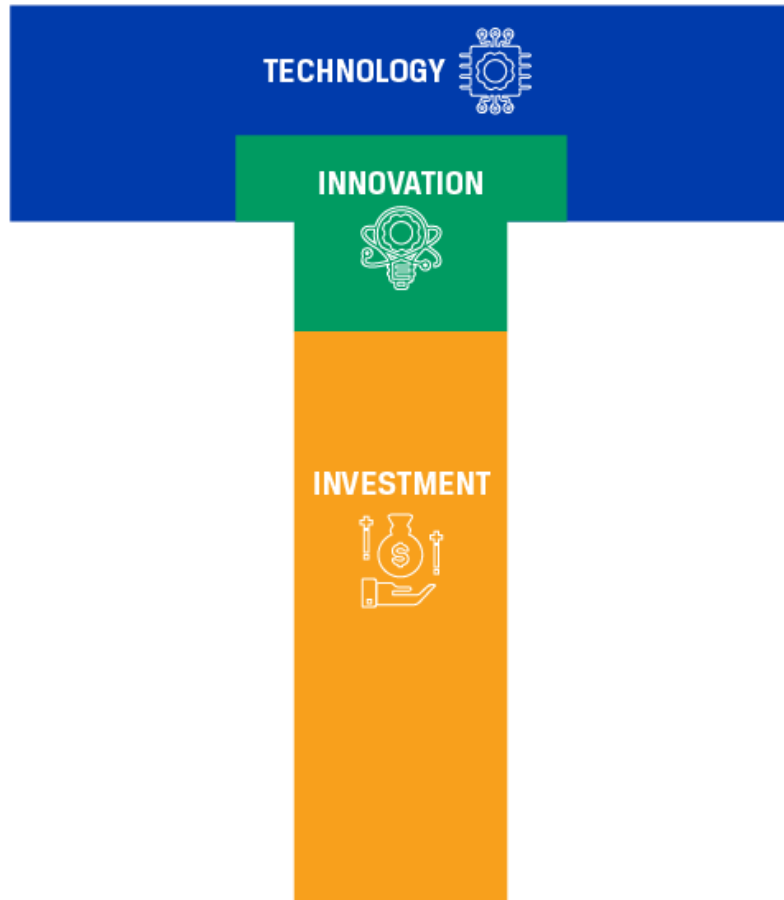
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1

FROM T-SHAPED SKILLS TO T-SHAPED TEAMS

BUILDING T-SHAPED TEAM

SIGNIFICANT TYPES OF ROLES AT INVESTMENT FIRMS OF THE FUTURE

TECHNOLOGY

- Data scientist
- Application engineer

INNOVATION

- Investment thinking and process innovator
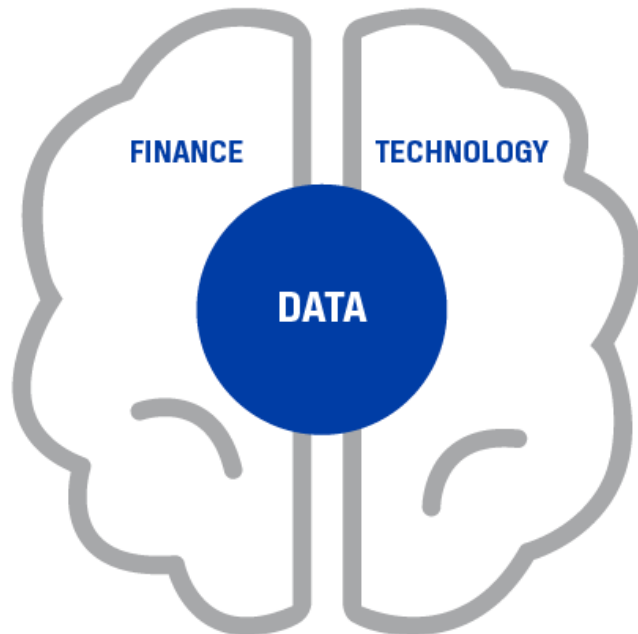- Knowledge engineer
- Innovation facilitator

INVESTMENT

- Investment decision maker
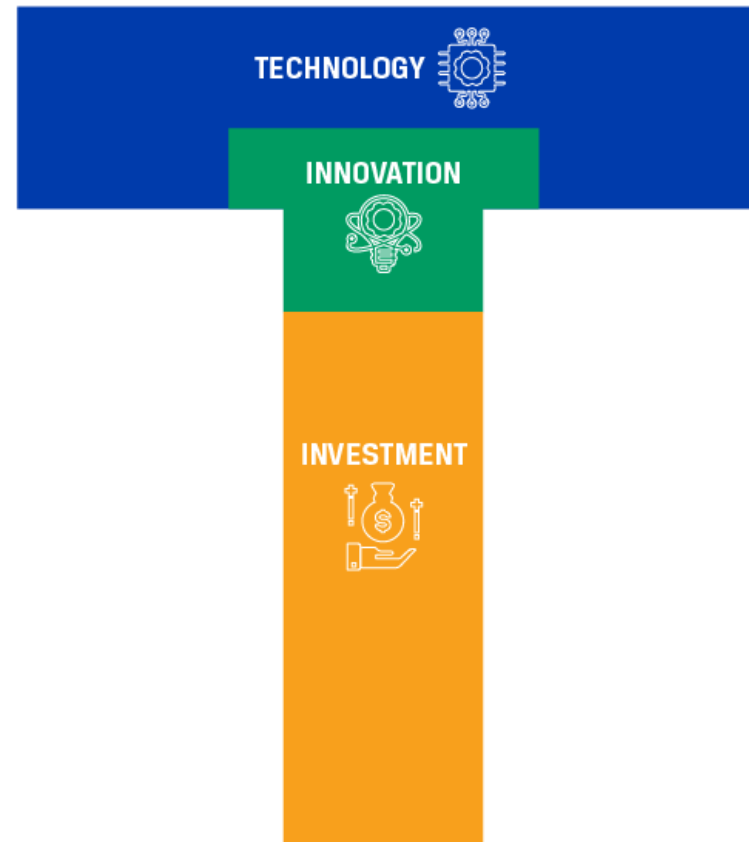- Investment researcher
- Private wealth manager

Source: CFA Institute *AI Pioneers in Investment Management*

FROM T-SHAPED SKILLS TO T-SHAPED TEAMS

Single subject matter expert with a wide understanding of and ability to connect other domains.

Multiple subject matter experts working as one team.

THE RISK OF RELYING ON T-SHAPED SKILLS

AI in investments is a serious commitment and not something that one professional with T-shaped skills in investment and data science can handle.

We have come across many cases where such professionals failed to pull off an AI adoption project.

WHEN THEY "SUCCEED"…	WHEN THEY FAIL…
• Peer review and cross-functional testing? • Doing model development part time?	• Organizational support? • Backup resources to develop an alternative model or organizational will to continue pursuing such projects?

Source: Hupfer 2020, pp. 7-8; Fountaine, McCarthy, and Saleh 2019

THE INNOVATION FUNCTION

Mission critical collaboration between the investment/business and data science functions

Setting of the team's tempo and accountability for project success by the innovation function

Communications Facilitator/Translator Between
- Investment and technology functions
- The T-team and the C-suite project sponsors

Strategic Planning/Project Management
- Team goals and firm AI and big data adoption strategies
- Collaboration focus areas and projects prioritization

SKILL SET FOR THE INNOVATION FUNCTION

Strategic Planning and Project Management Skills

Investment

50–50 split between investment and technology

Technology

Good Communication Skills
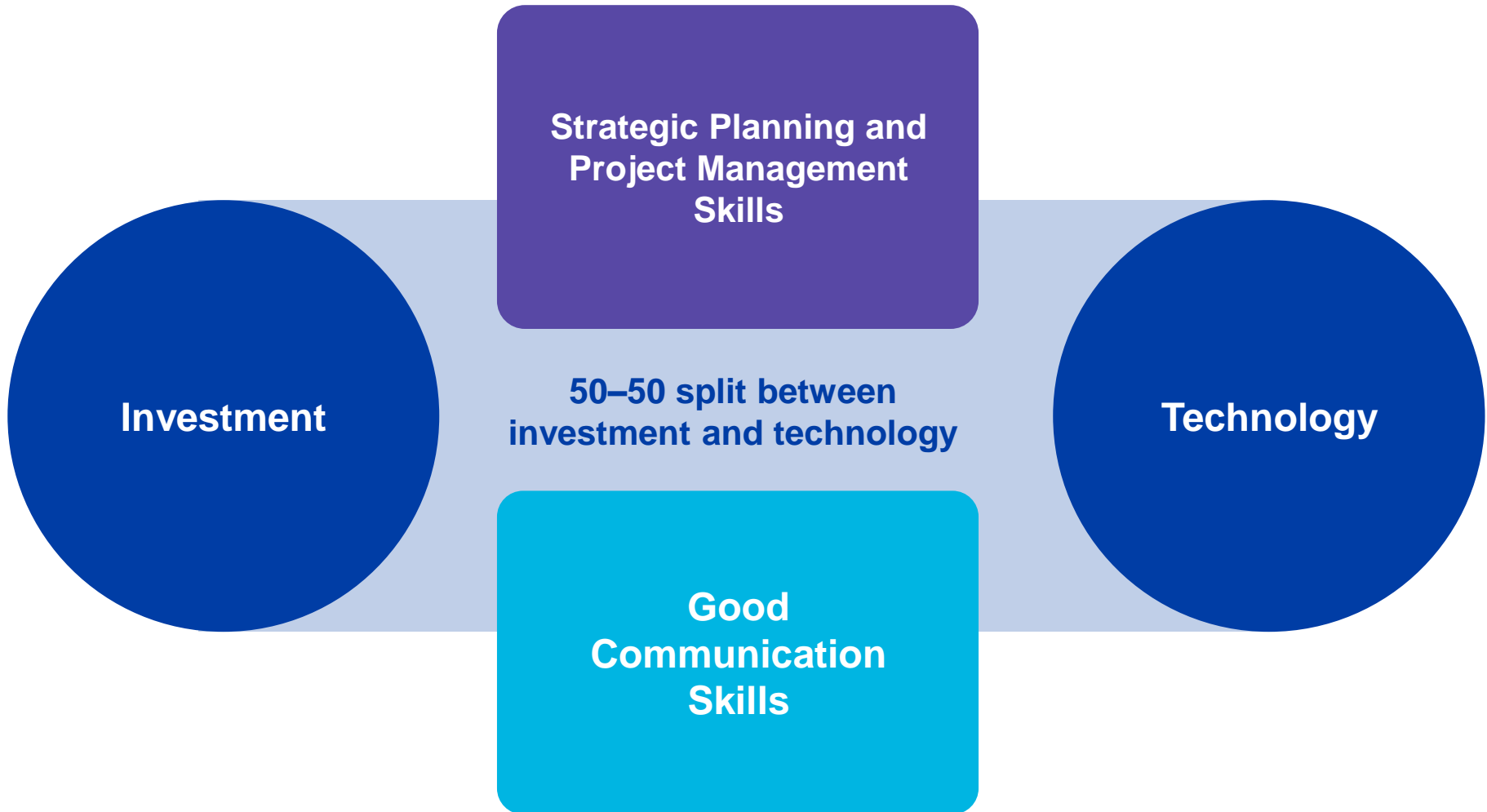
THE INDUSTRY IS CATCHING UP TO THIS NEED

Early adopters

Professionals, without specific training or degrees, found by serendipity

More firms are moving in the right direction

In addition to AI builders, executives of early adopters are also seeking "AI translators," including business leaders, "who bridge the divide between the business and technical staff" - Deloitte, 2020

"A relatively new class of expert, analytics translators," are expected to "play a role in identifying roadblocks" and to "bridge the data engineers and scientists from the technical realm with the people from the business realm" - McKinsey, 2020

Industry will continue to mature in the coming years

The executives' hiring priorities shift from AI builders in the early stage of AI adoption to, as the organization gains more AI experience, business leaders who can "[figure] out what results from AI systems mean, and how those results should factor into business decisions and actions" - Deloitte, 2020

Source: Hupfer 2020, pp. 7-8; Fountaine, McCarthy, and Saleh 2019

THE INVESTMENT FUNCTION IN THE AGE OF AI

Data science has evolved to become a major discipline of scientific investigation, not something that someone from a completely different background can easily pick up without a formal education and, more importantly, on-the-job training to gain the relevant experience.

We suspect the majority of investment professionals cannot operate at the level of a good data scientist or engineer even if they choose to devote a significant amount of time to it.

A stellar staff of the investment function should understand the AI + HI philosophy and as such be interested in participating in AI adoption projects.

They would also ideally have a strong sense of curiosity, both about how to improve their own investment process and how AI can help. Learning Python can certainly help them communicate with the data science team or at least appreciate the hard work that the team does.

THE TECHNOLOGY FUNCTION: WHO & WHERE

Hiring data scientists is often the first step when investment firms embark on the AI journey.

Firms with mostly a fundamental investment function just starting out on the AI journey may care more about the data scientists' understanding of the investment process and be less picky about the science pedigree.

Firms more experienced in this area tend to have a larger number of PhDs in STEM (science, technology, engineering, and mathematics) from top universities. What matters more than their degrees, though, is their experience working on data projects.

On-the-Job Training
Even these experienced data science professionals may take a few years after joining investment firms to become productive at a higher level, as they still need to learn the peculiarities of financial data as well as integrate into the firm.

Hiring Externally
These applications are so new that they are usually not in textbooks or taught at even the best universities. The cutting-edge work in data science is often carried out at tech giants and top firms in their respective industries.

2
HOW T-SHAPED TEAMS OPERATE

# TWO STRATEGIES OF KNOWLEDGE MANAGEMENT

CODIFICATION	PERSONALIZATION
• Example: Firms such as Ernst & Young provide "information system implementation by codifying knowledge"	• Example: Firms such as McKinsey provide "creative, analytically-rigorous advice on high-end strategic problems by channeling individual expertise

Source: Hansen et al (1999)

NN INVESTMENT PARTNERS BEEHIVE MAP
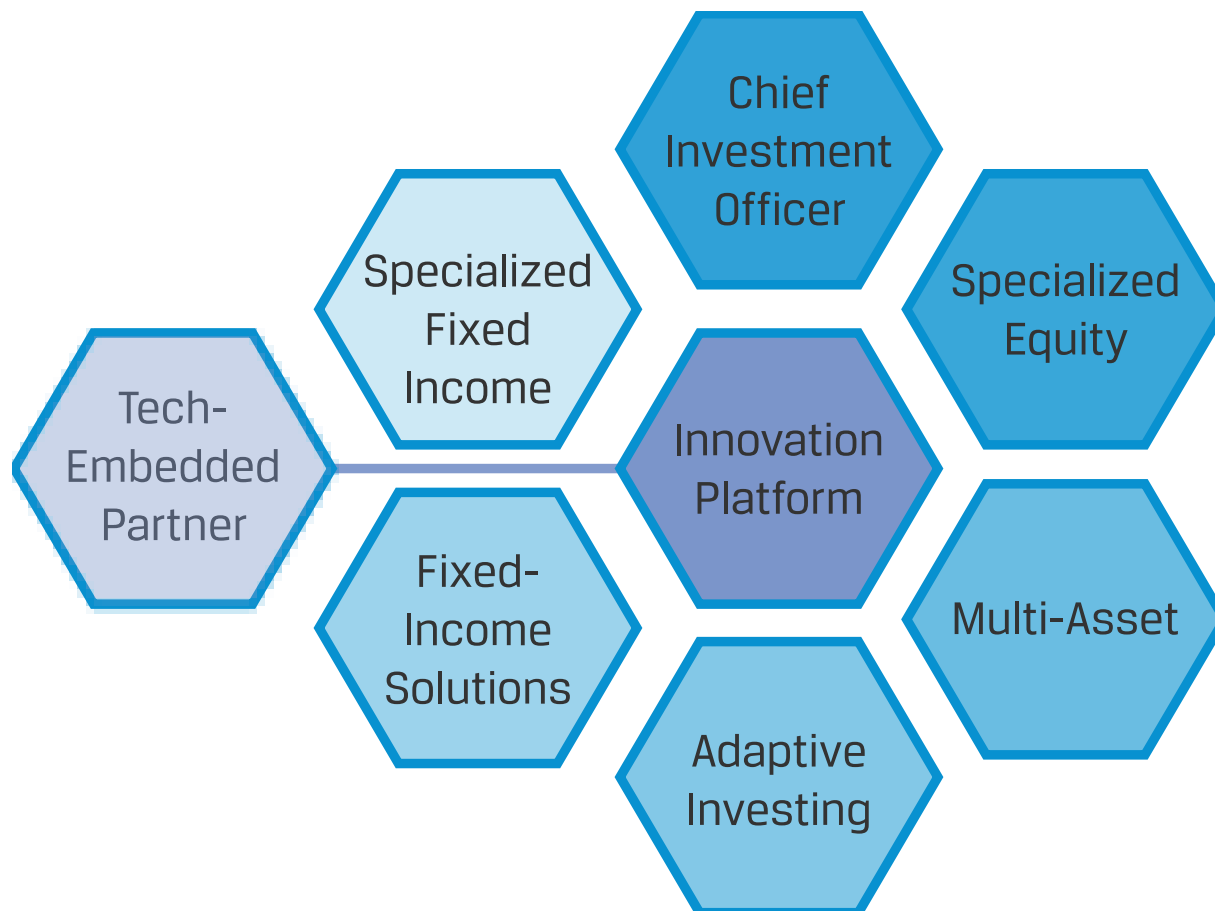
"ITERATIONS" AND REGULAR REVIEWS

The technology function should schedule project deliverables on monthly intervals ("iterations") and meet end users from the investment function to go over latest additions to the system. This keeps everyone's eyes on the ball:

- the technology function checks that the deliverable meets the investment function's needs

- the investment function vets the tool before it is formally delivered and provides timely feedback

TEAM VS FUNCTION

The functional structure can be less effective than the team construct because:

- Professionals in the investment and technology functions share little in common

- Getting them to work together on a shared project with a common goal (i.e., foster collaboration, inspire each other for project ideas, discuss the value and priority of a proposed project, etc.) is key

BREAK DOWN SILOS AND ALIGN INCENTIVES

To build T-shaped teams and integrate AI and big data into the investment process, the firm's strategic objectives should be translated into strategic initiatives. This includes:

- Suitable changes to the budgeting process

- Setting up of an incentive structure aligned with shared goals

EVALUATING THE SUCCESS OF AI PROJECTS

OUR HYPOTHESIS
majority of these projects at major financial institutions are adding value if portfolio managers continue to use them.

- **Performance measurement is easier said than done**

  - applications are more often steps in the overall investment process that contribute to the final decision

- **Good practice is to measure and document the added value of each incremental project in terms of**

  - portfolio risk and return or

  - how it has improved the accuracy of analysis

3

THE THREE STAGES OF AI AND BIG DATA ADOPTION

WHAT DEFINES EARLY-STAGE FINANCIAL INSTITUTIONS?

SENIOR MANAGEMENT SUPPORT

- Secure long-term commitments in both financial and human resources

WHOLISTIC STRATEGY

- Ensure long-term business success
- Ensure relevance of the AI and big data projects

ORGANIZATIONAL STRUCTURE

- Transition from relying on professionals with T-shaped skills to T-shaped teams

WHAT SHOULD EARLY-STAGE FIRMS FOCUS ON?

BUILD A T-SHAPED TEAM

The head of innovation function should
- have credibility with the investment and technology functions
- identify areas of the investment business that need the most help from data science
- develop the technology roadmap for the AI and big data applications that deliver on those objectives

DEVELOP SUPPORTING PROCESSES

The new structure needs new processes to work
- create effective processes that help both functions engage
- give an "equal" say in these processes to both functions
- allow for many rounds of trial and error in early-stage firms before finding a suitable set of processes

FIND AND SCORE QUICK WINS

When selecting the first projects
- balance the impact on the investment process, the technical feasibility, and related time/resource commitment
- the early wins and failures have far reaching consequences for the strategy

THE DEFINITION AND FOCUS OF INTERMEDIATE-STAGE FINANCIAL INSTITUTIONS

Senior Management

Head of Innovation Function

Build Out the **Team**

Hone the **Process**

Juggle Multiple Projects and **Scale**

- More defined roles
- Higher caliber staff

- Greater demand on the efficacy and efficiency of processes

- Increased organizational buy-in
- More leeway to take on higher-impact and higher-commitment projects

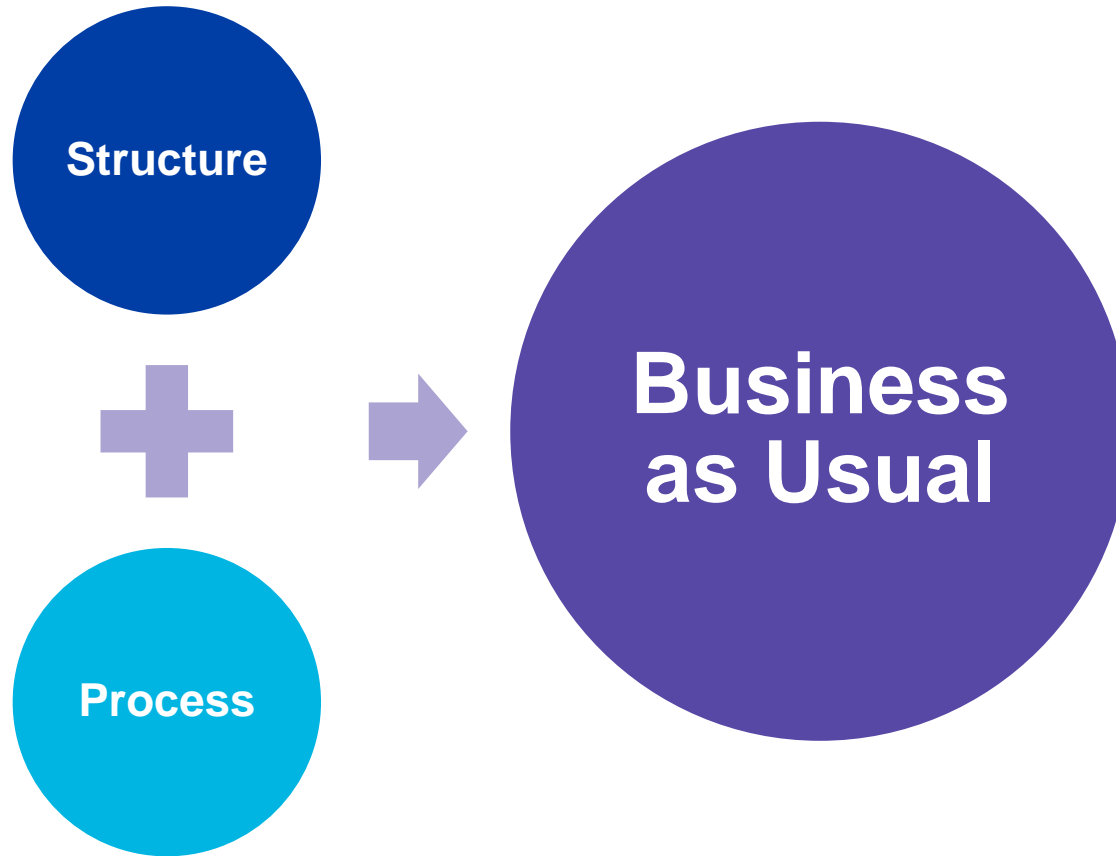# WHAT DEFINES ADVANCED-STAGE FINANCIAL INSTITUTIONS?

AI and Big Data Penetration

Technology Sophistication

WHAT DEFINES ADVANCED-STAGE FINANCIAL INSTITUTIONS?

Structure + Process → Business as Usual

Read the report at
https://cfainst.is/tshaped

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