

# **Roles to Support Advanced Analytics and AI Initiatives**

Zain Khan

# Rules of Engagement

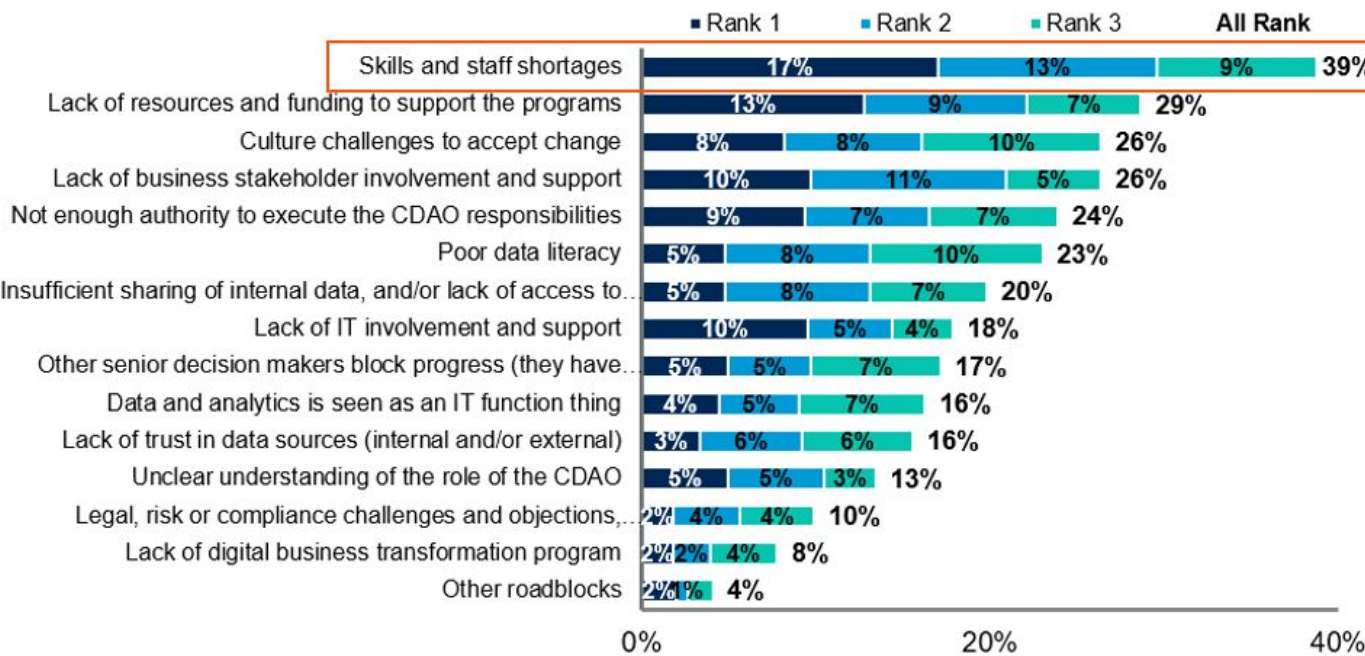
- **YOUR PARTICIPATION** – Your participation in these sessions is governed by the standard terms of our Master Client Agreement. Contact your Gartner representative for details.
- **ANTITRUST COMPLIANCE POLICY STATEMENT** – It is the obligation of all participants in any Gartner peer activity to comply at all times with all applicable antitrust laws, and to refrain from engaging in anticompetitive conduct. For further guidance, please see Gartner’s complete [Antitrust Policy](#) on gartner.com.
- **RECORDING** – Gartner may record this session for training, quality and general research purposes. Recordings may be made available on Gartner.com or otherwise distributed. Closed captioning may be enabled during this session and will be included in the recording.
- **LEGAL & INVESTMENT DISCLAIMER** – While Gartner research may touch upon legal and investment issues, we are not in the business of providing legal or investment advice. For all legal issues, we encourage you to consult with your legal counsel before applying the guidance and recommendations contained in our research.

Why is there a need to identify roles within the advanced analytics space?



# Why are roles within AI important?

Roadblocks to the success of D&A initiatives  
Sum of Top 3 Ranks

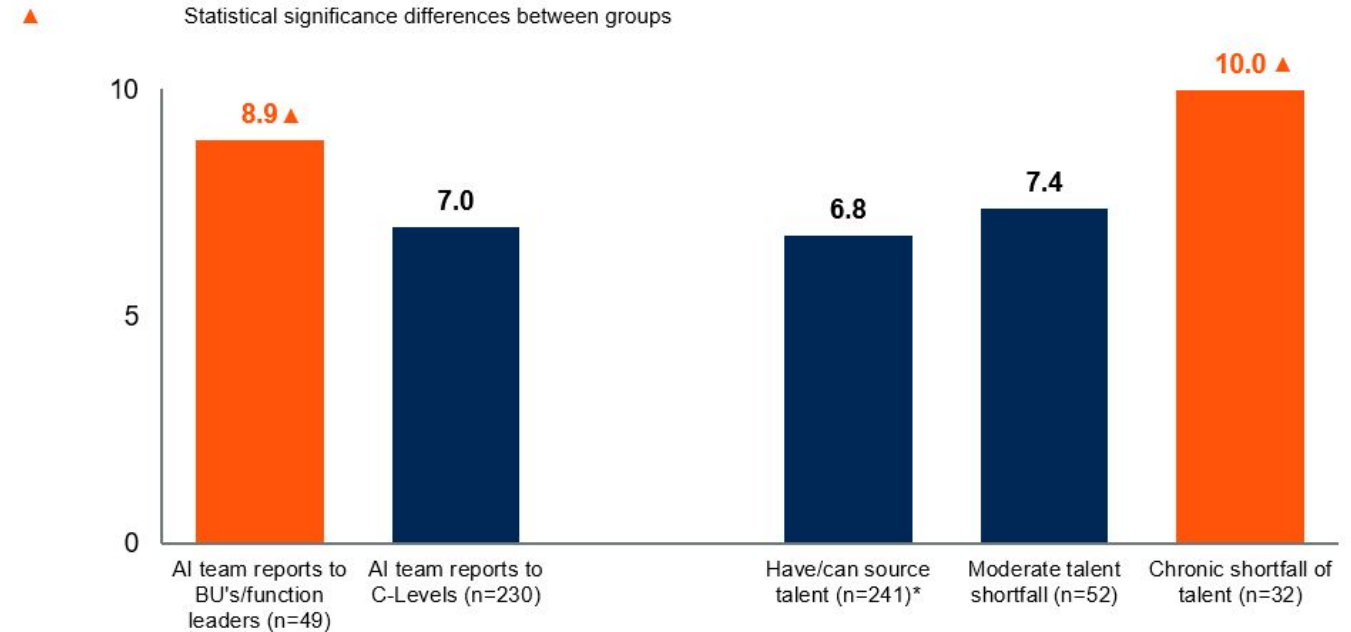


Lack of talent is the biggest roadblock to success for D&A initiatives

n = 565; All Respondents, Excluding No roadblocks  
Q15. Which of the following are the most important roadblocks to the success of your Data and Analytics initiatives?  
Source: Gartner Chief Data and Analytics Officer Agenda Survey for 2023  
ID:

- Organizations with a chronic shortfall of talent take an average of 10 months from prototype to production
- Data Scientists are being asked to do everything – reduces work efficiency of MLDLC and increases burnout risk

**Average Time from Prototype to Production (months)**



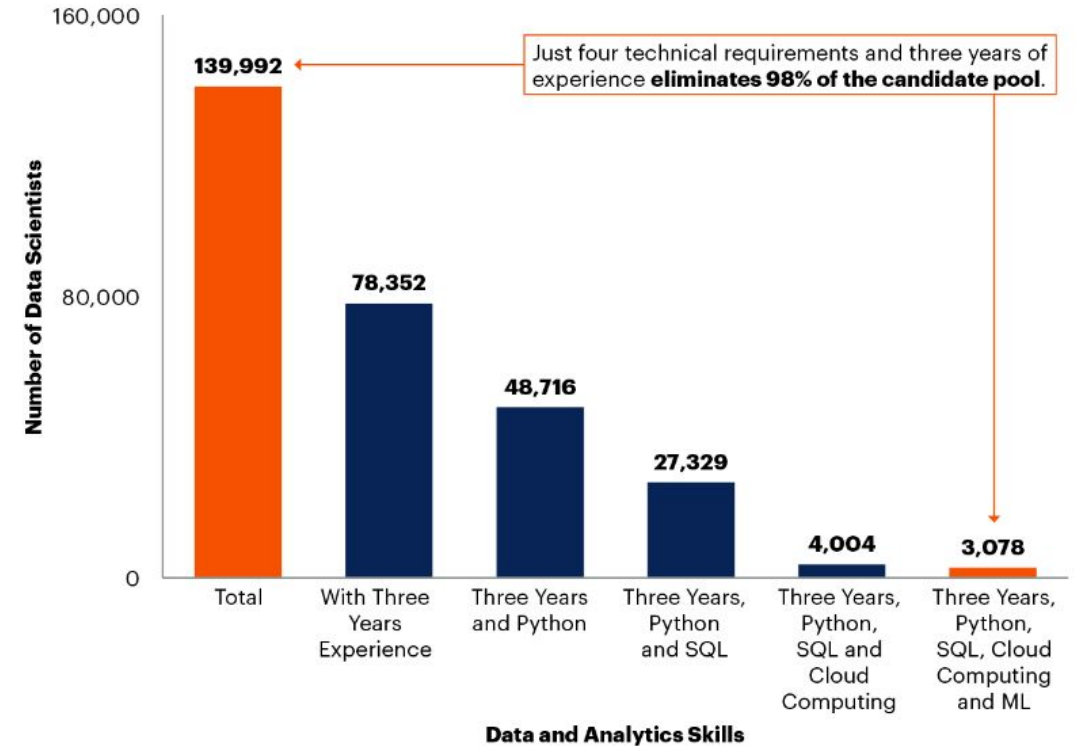
Base: Using AI (S08), Excludes Unsure

Q12. On average, how long does it take for your AI initiatives to develop from a prototype to make it to production?

Source: Gartner P-21023 AI in Organizations Survey 2021

- Challenging to find deeply technical, experienced data scientists – talent pool falls drastically as requirements increase
- Continued issues around model explain ability and fairness need to be addressed

**Data Science Job Candidates by Skills Requirement**



n = 139,392 data scientist candidates in the market

Source: Gartner TalentNeuron

749128\_C

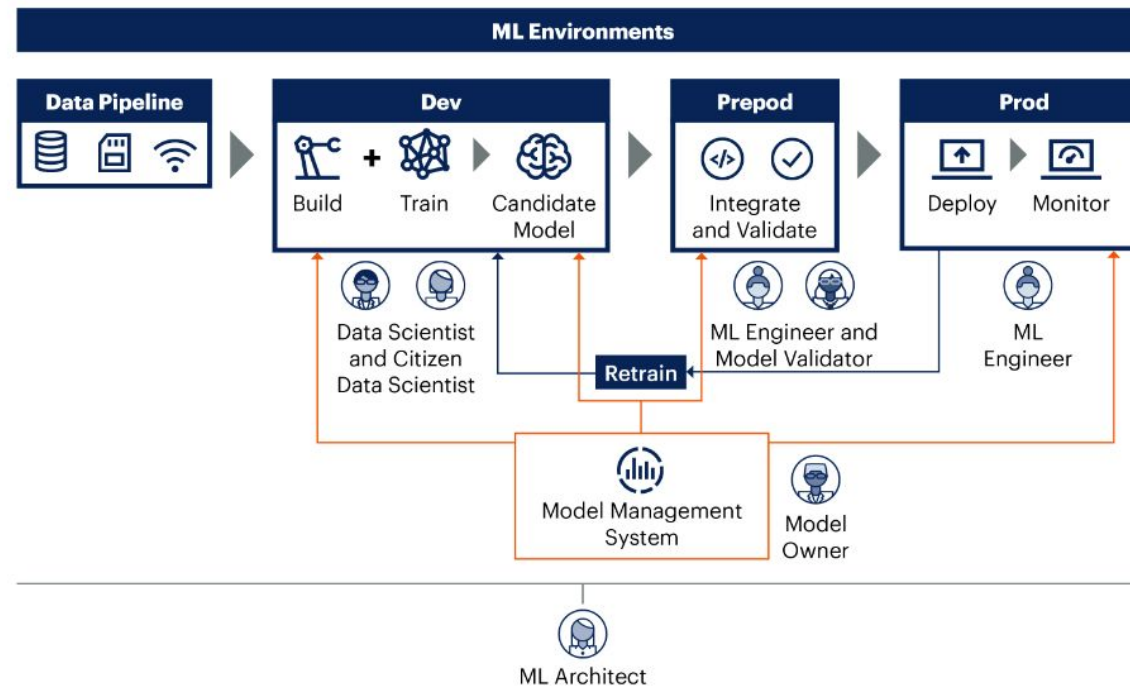
Gartner

Gartner®

# Roles to support advanced analytics initiatives

Tasks should be divided among professionals best suited for the task

**ML Pipeline And Roles**



Source: Gartner  
770015\_C

Gartner

Gartner®

# Data Scientist

## Anatomy of a Data Scientist



Data Scientist

### Skills

- Background in mathematics, statistics, physics, economics etc.
- ML algorithm application knowledge
- Cloud and on-premises ML platforms and libraries
- ML development lifecycle
- Strong presentation, teamwork and communication skills
- Strong business and domain knowledge around KPIs and metrics

### Example Tools, Programming Languages and Platforms

- Business intelligence, reporting and visualization tools
- Cloud and nonpremises ML and AI platforms and tools
- On-premises and cloud data warehouses, data lakes and lakehouse platforms
- Programming languages, SQL and open-source libraries

### Responsibilities

- Identifying and researching AI use cases
- Hypothesis generation
- Data selection and preparation
- Feature engineering
- Model training, evaluation and inferencing
- Spreading data literacy and education

Source: Gartner  
770015\_C

Gartner

**Data Scientists** should focus on core ML model building and identifying business use cases

There should be a focus on acquiring high quality data – need for more teamwork with data engineers



# Citizen Data Scientist

## Anatomy of a Citizen Data Scientist



Citizen Data Scientist

Skills	Example Tools, Programming Languages and Platforms	Responsibilities
<ul style="list-style-type: none"><li>• Strong business and domain knowledge around KPIs and metrics</li><li>• Understanding of ML algorithms and use cases</li><li>• Self-serve no-code/low-code platform knowledge</li><li>• ML life cycle knowledge</li><li>• BI reporting, dashboarding and visualization</li><li>• Strong communication and presentation skills</li></ul>	<ul style="list-style-type: none"><li>• AutoML-enabled and Augmented-AI SaaS platforms</li><li>• Business intelligence, reporting and visualization tools</li><li>• Self-serve low-code, no-code ELT and ETL tools</li></ul>	<ul style="list-style-type: none"><li>• SMEs playing a hybrid role</li><li>• Explain benefits and use cases for ML/AI</li><li>• ML model building using self-serve tools</li><li>• Spread data literacy within their functional units</li><li>• Often BI specialists with data visualization skills</li></ul>

Source: Gartner  
770015\_C

Gartner

**Citizen data scientists** can help bridge the gap for technical talent shortfall

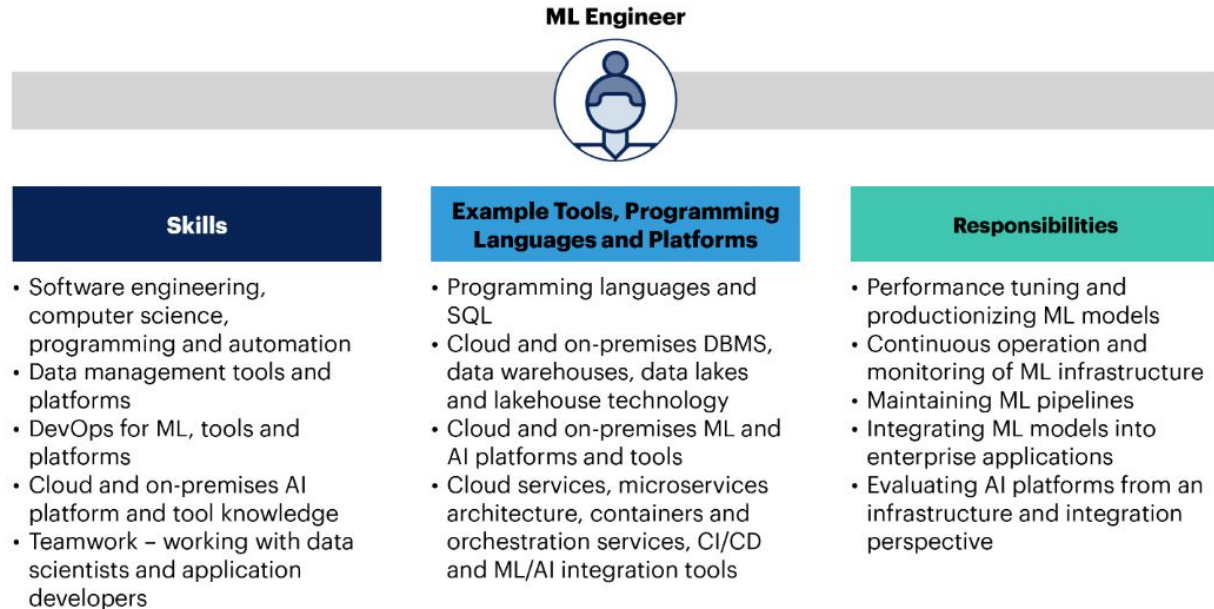
They can also conduct POCs which can further be developed by data scientists

Can also provide opportunities to spread data literacy and build trust of ML within business units

Gartner®

# ML Engineer

## Anatomy of an ML Engineer



Source: Gartner  
770015\_C

Gartner.

**ML Engineers** focus on productizing the ML models developed by data scientists

They should work on optimizing the ML pipelines and ensure continuous operation and maintenance of the pipelines

They can work with application developers to integrate the ML/AI application into enterprise applications

# ML Architect

## Anatomy of an ML Architect

### ML Architect



#### Skills

- Expertise in software development, systems design, data science and AI
- Cloud computing and data engineering
- Infrastructure, security and compliance
- ML and AI frameworks, platforms and tools
- Vision setting, communication and direction

#### Example Tools, Programming Languages and Platforms

- Programming languages and SQL
- Cloud and on-premises DBMS, data warehouses, data lakes and lakehouse technology
- Cloud and on-premises ML, AI and business intelligence platforms and tools
- Microservices and software architecture, container orchestration, data orchestration, ML/AI integration, ML/AI explainability and governance tools

#### Responsibilities

- Design ML and AI solutions
- Define processes, tools, standards and best practices
- Ensure cross-functional team collaboration
- Incorporate ethics, fairness and AI explainability
- Ensure adherence to security, regulatory and compliance frameworks

Source: Gartner  
770015\_C

Gartner

**ML Architects** design the overall blueprint and architecture of the ML solution

They select the platform, tools and processes to ensure the solution is scalable, reliable and can be built using tools available

Ensure adherence to security, proper data availability and enable cross-functional collaboration

# ML Model Validator

## Anatomy of a Model Validator

### Model Validator



#### Skills

- Business domain expertise
- Understanding of ML development lifecycle
- AI and ML use case understanding
- Strong time management
- Communication and teamwork
- Translating technical concepts to business

#### Example Tools, Programming Languages and Platforms

- Open source AI/ML explainability frameworks, libraries and tools
- Programming languages and SQL
- Cloud and on-premises ML/AI platforms, monitoring and observability tools
- Business intelligence, reporting and visualization tools and libraries

#### Responsibilities

- Data scientists focused on quality assurance and validation
- Review and challenge ML model assumptions
- ML use case verification
- ML Model testing
- Validate data selection
- Model documentation and reproducibility

Source: Gartner  
770015\_C

Gartner

**Model Validators** help explain the black-box nature of ML models to the business users

They review and challenge ML model assumptions on data selection and use cases

Can work as independent data scientists to ensure quality assurance and validation of the overall ML development

RESTRICTED DISTRIBUTION

# ML Model Owner

## Anatomy of a Model Owner



Model Owner

### Skills

- Business domain expertise
- Understanding of ML development life cycle
- AI and ML use case understanding
- ML/AI observability platforms
- Organizational awareness
- Translate technical lingo to business leadership

### Example Tools, Programming Languages and Platforms

- Augmented-AI and AutoML and ML observability platforms and tools
- Business intelligence, reporting and visualization tools

### Responsibilities

- Work as SMEs or leaders within business domains
- ML ownership from business perspective
- Day-to-day monitoring of ML models and KPIs
- Address model access and governance
- Provide sign-off on ML models

Source: Gartner

770015\_C

Gartner.

**Model Owners** are business SMEs or executives that own the ML model from the business perspective

They provide sign-off on the ML models and are involved in the day-to-day monitoring of ML models and KPIs

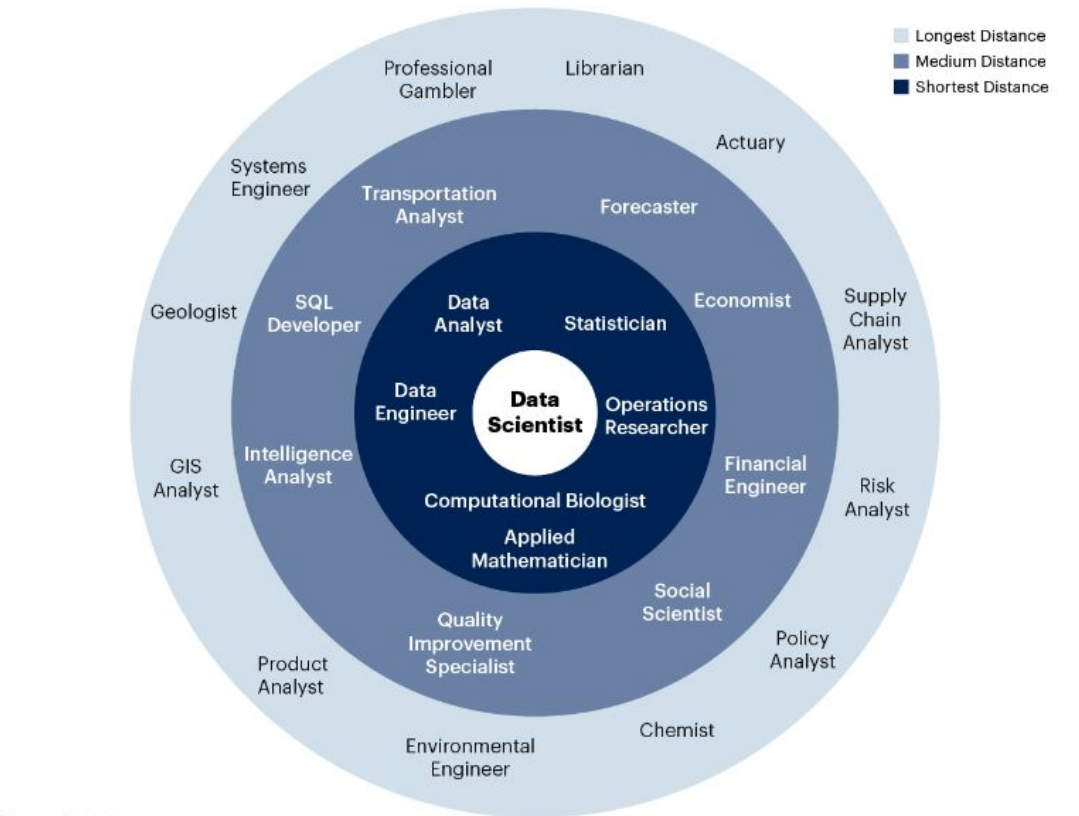
They should also address model access and governance

RESTRICTED DISTRIBUTION



# Use Role Adjacencies to find talent

Role Adjacency Map for the Data Scientist Role

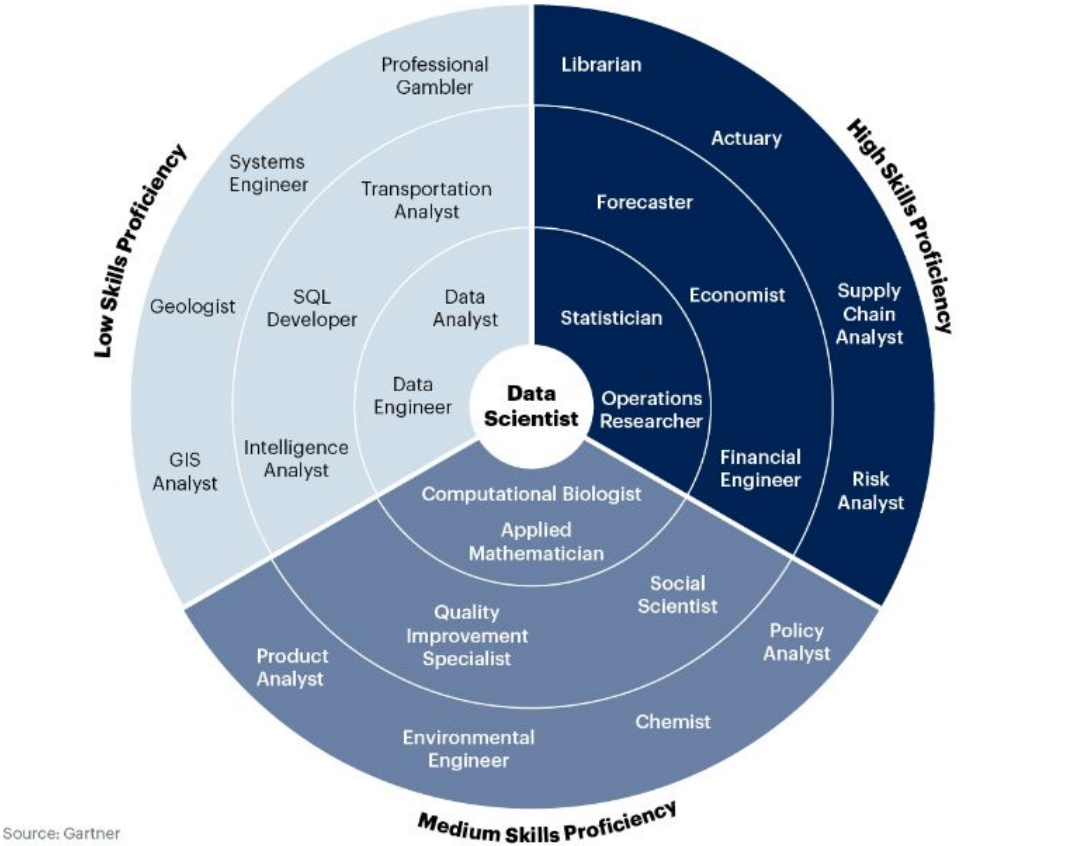


Source: Gartner

720428\_C

Gartner

Segmentation of Adjacent Roles by Their Level of Skills Proficiency



Source: Gartner

720428\_C

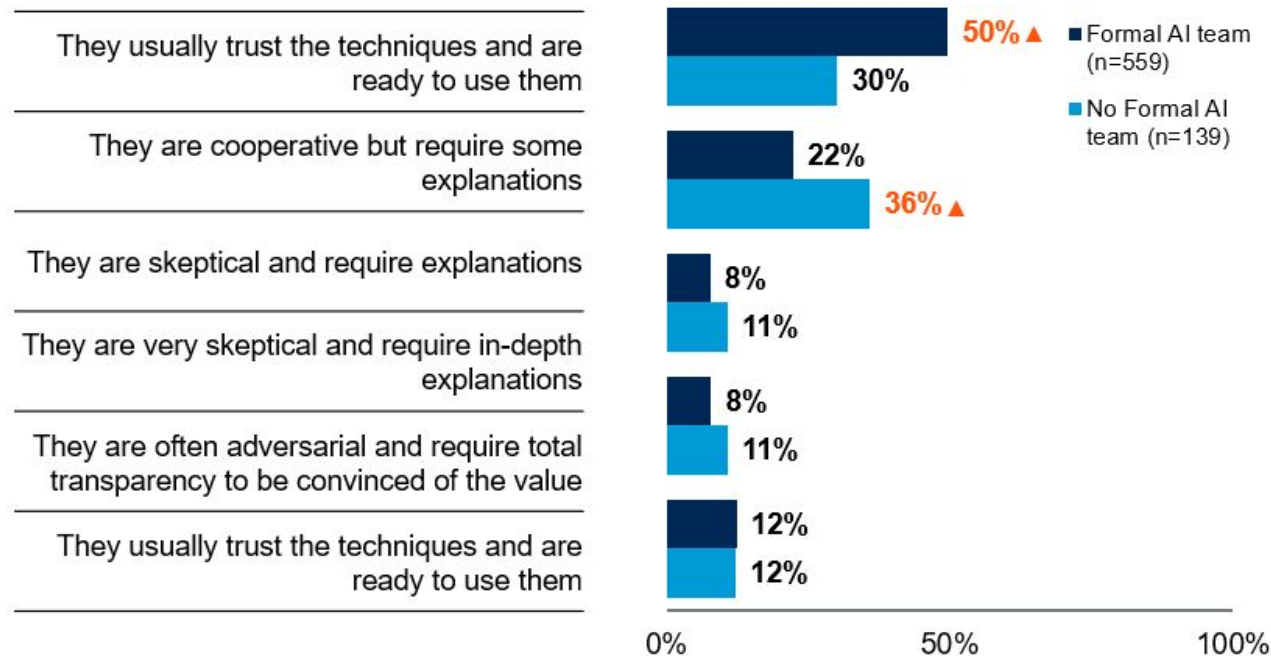
Gartner

# Greater benefits when AI professionals work together as a team

## Business trusts the AI solutions more when developed by a formal AI team

### Business Receptiveness to AI Techniques

▲ Statistical significance differences between groups



Q02. How receptive are the business units in your organization when it comes to AI techniques?

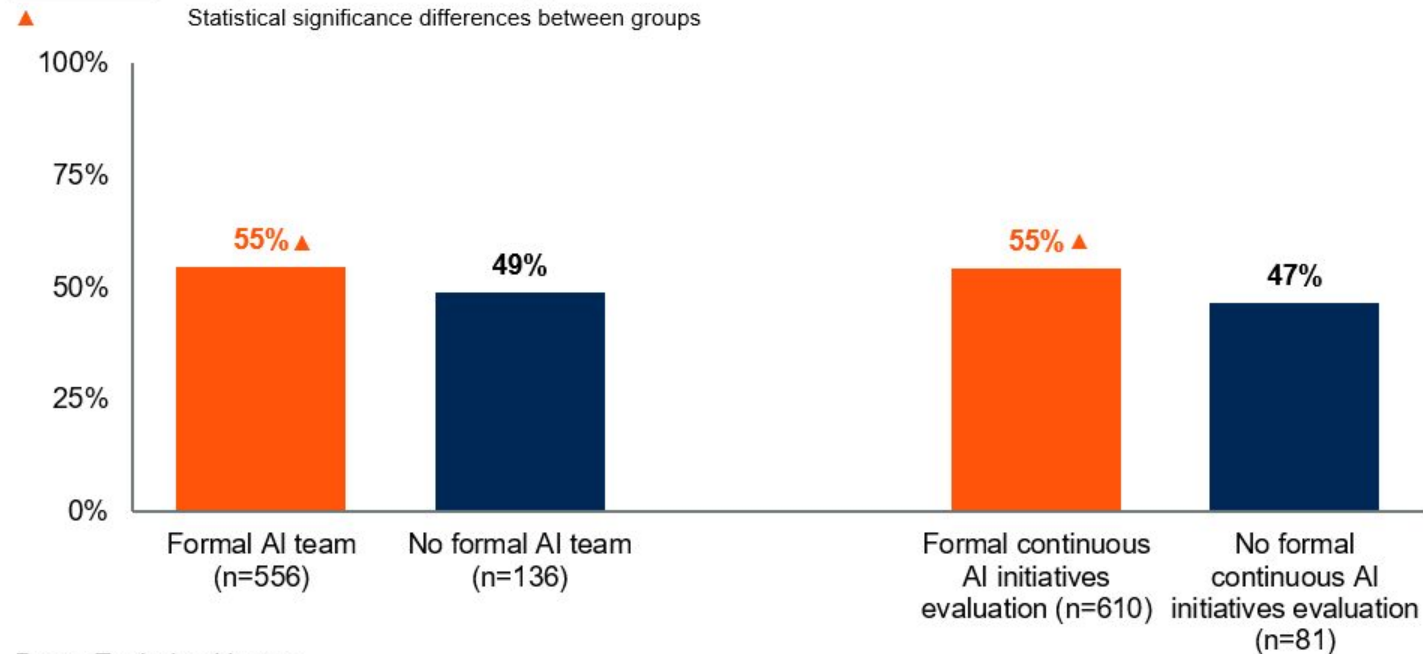
Q00A. Does your organization have a formal AI team?

Q00C. To whom does the formal AI team primarily report to?

Source: Gartner P-21023 AI in Organizations Survey 2021

# Ability to get POCs into Production is higher when there is a formal AI team

## Average Proportion of Prototypes in Production



Base: Excludes Unsure

Q13. What is your best guess of the proportion of AI prototypes that make it or will make it to production?

Q00A. Does your organization have a formal AI team?

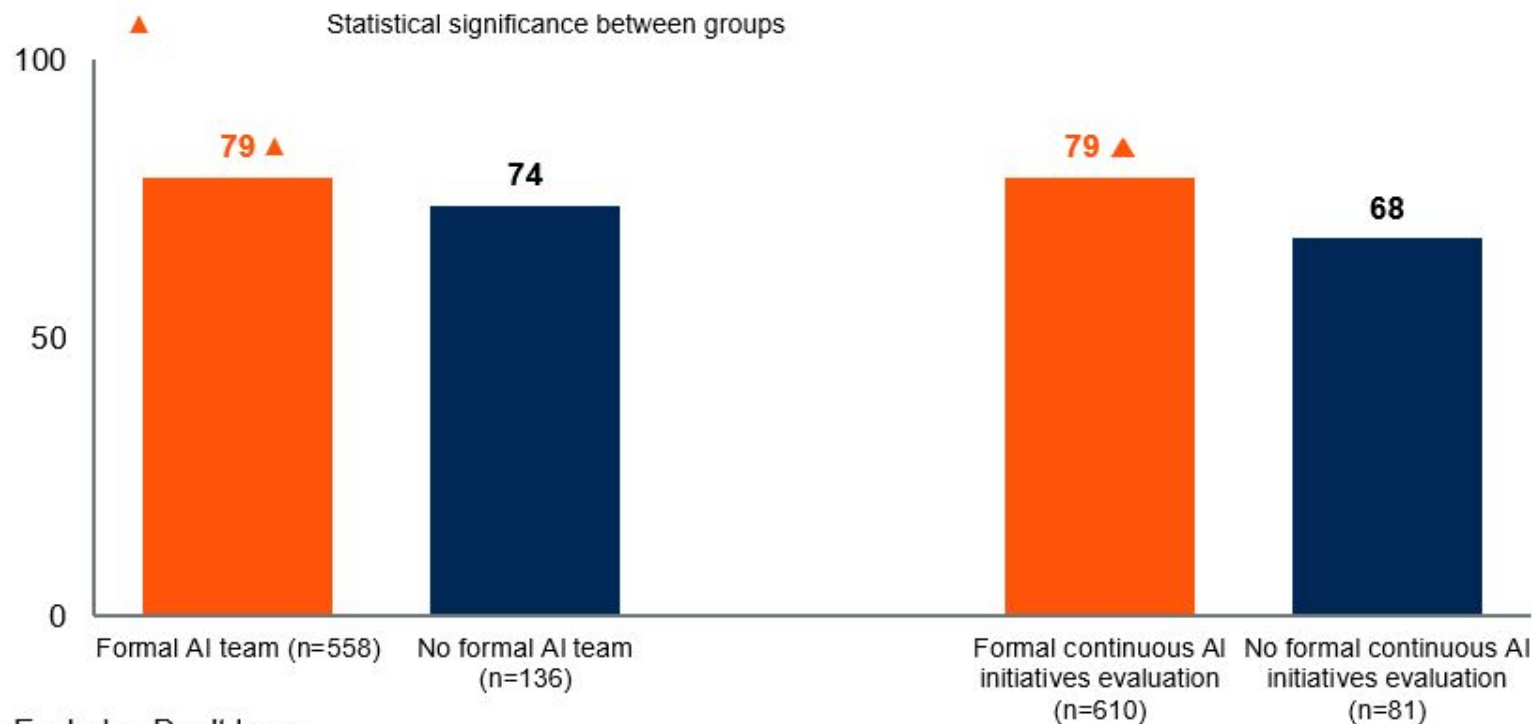
Q11C. Does your organization have a formal process to continuously evaluate the success of AI initiatives?

Source: Gartner P-21023 AI in Organizations Survey 2021



# Organizations that have an AI team and do continuous evaluation of AI initiatives are more effective making AI part of business strategy and planning

Effectiveness making AI part of Business Strategy and Planning  
Average effectiveness



Base: Excludes Don't know

Q08. How effective is or will be your organization at making AI an integral part of its business strategy and planning? (0=Very Ineffective; 100=Very Effective)

Q00A. Does your organization have a formal AI team?

Q11C. Does your organization have a formal process to continuously evaluate the success of AI initiatives?

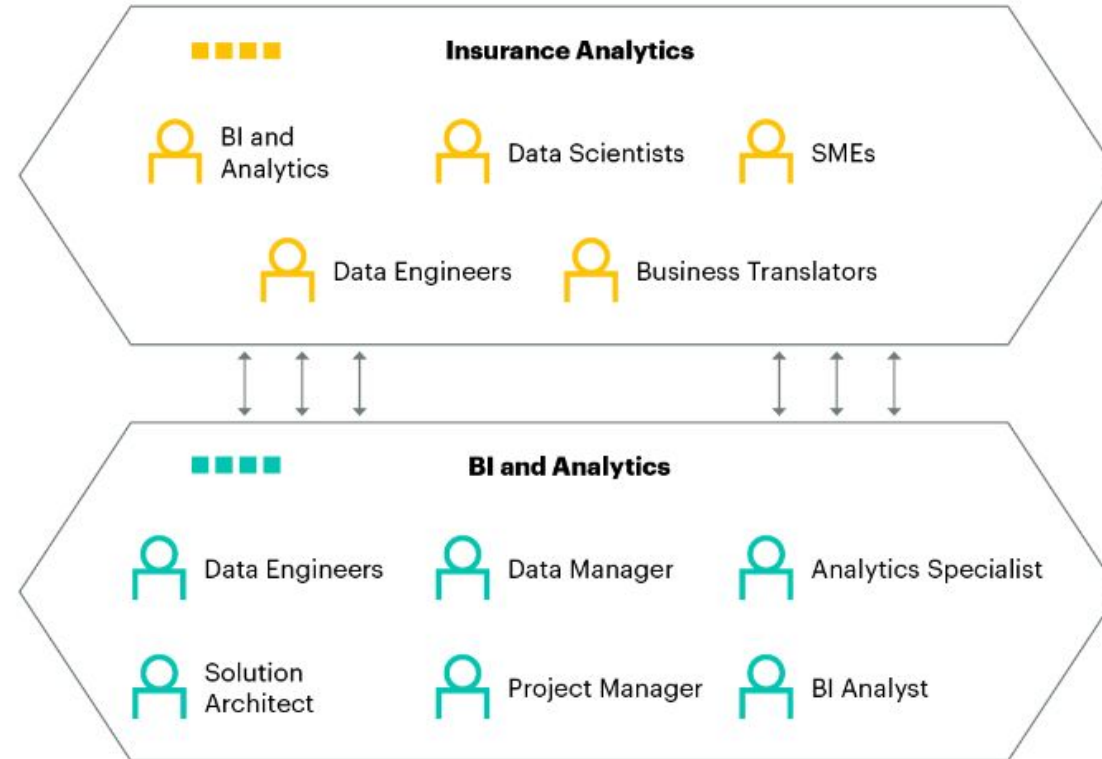
Source: Gartner P-21023 AI in Organizations Survey 2021

# Case Study of Cattolica's Insurance analytics team – Hybrid SWAT team

## Cattolica's Insurance Analytics and BI and Analytics Teams

■ Business Technologists

■ BI and Analytics Staff Within IT



Source: Adapted From Cattolica Assicurazioni  
756828\_C

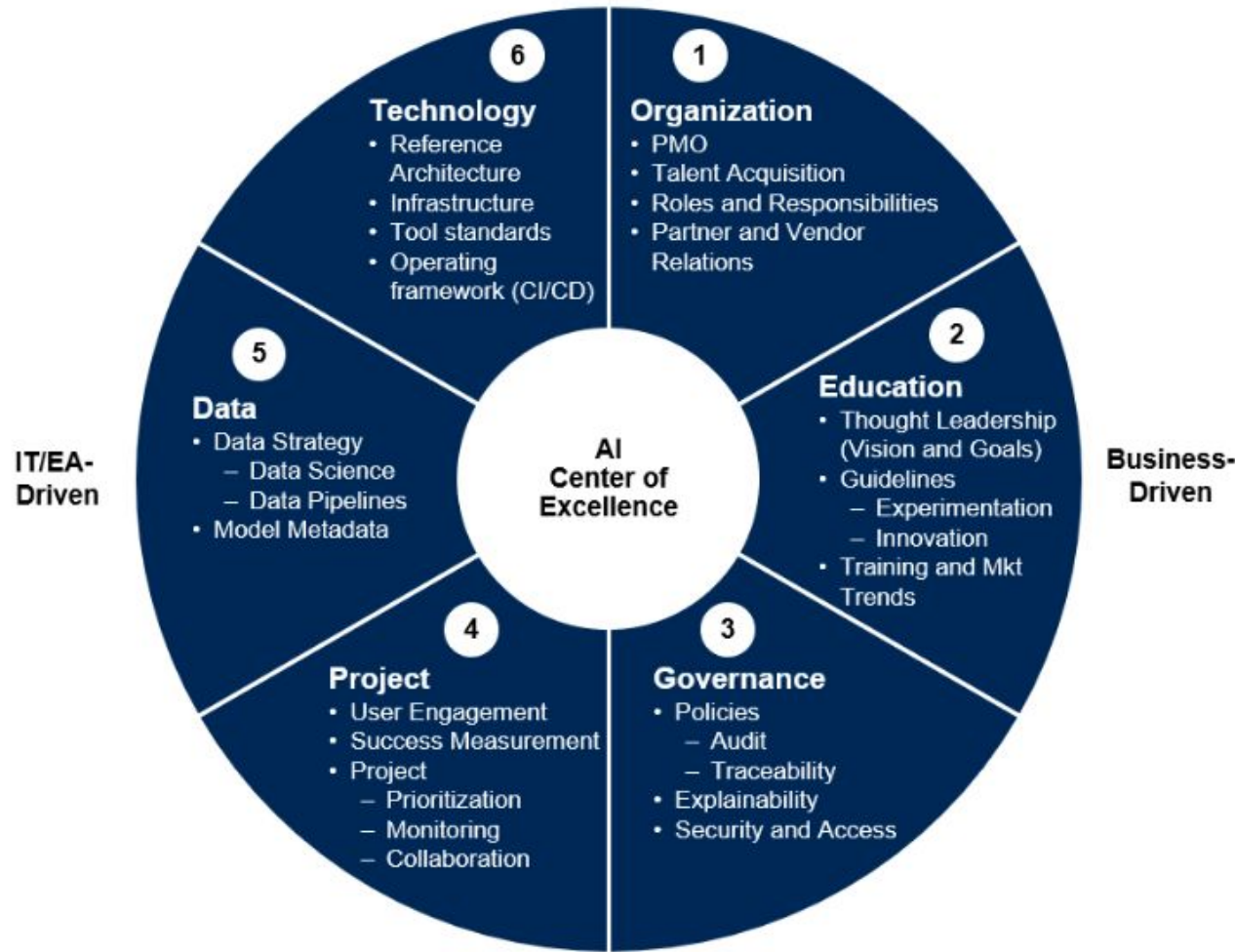
Gartner

Gartner®

RESTRICTED DISTRIBUTION

# Technical professionals have an important role to play within AI centers of excellence

Function of the AI COE



Source: Gartner  
ID: 387677

# Summary

- Align the right talent to the roles and responsibilities within the ML development lifecycle
- Greater need for data scientists and ML engineers to acquire knowledge on the data management front
- Utilize low-code data science platforms to empower citizen data science thereby reducing the need for technical talent and to spread data literacy
- Establish the roles of Model Validator and Model Owner to help increase adoption of ML within organizations
- Organizations that develop formal AI teams implement the ML solutions faster with greater acceptance in the business groups

# Resources

- Roles and Skills to Support Advanced Analytics and AI Initiatives – Zain Khan
- Machine Learning Playbook for Data and Analytics Professionals - Sumit Agarwal
- Maximize the Value of Your Data Science Efforts by Empowering Citizen Data Scientists - David Pidsley, Carlie Idoine
- Use Role Adjacencies to Find and Develop Data Science Talent
- Case Study: An Approach to Build a D&A Core for Innovation
- 2021 Gartner AI in Organizations Survey: This study was conducted to understand the keys to successful AI implementations and the barriers to the operationalization of AI.
- Gartner Chief Data Officer Agenda Study for 2023: This study was conducted to explore the business impact of the CDAO\* role and/or the Office of the CDAO and understand the leadership traits of the most successful CDAOs that distinguish them from their peers. The research was conducted online from September through November 2022 among 566 respondents from across the world.