Workshop: Getting Started With Artificial Intelligence and Machine Learning

Peter Krensky

Strategic Planning Assumptions

By 2020, more than 40% of data science tasks will be automated, resulting in increased productivity and broader usage by citizen data scientists.

By 2022, over half of data and analytics services will be performed by machines instead of human beings.

By 2022, 40% of customer-facing employees and government workers will consult daily an AI virtual support agent for decision or process support.

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Workshop Agenda

1. **AI and ML — Moving Past the Hype and Into Reality :**   (15 Minutes)
   Build, Buy or Outsource and Organizational Principles

2. **Group Exercise:**   (35 Minutes)
   Design a Year One Strategy and Pilot Project for the Organization
   of One Group Member

3. **Report Back:**   (30 Minutes)
   Share Your Decisions

4. **Summary and Next Steps**   (10 Minutes)

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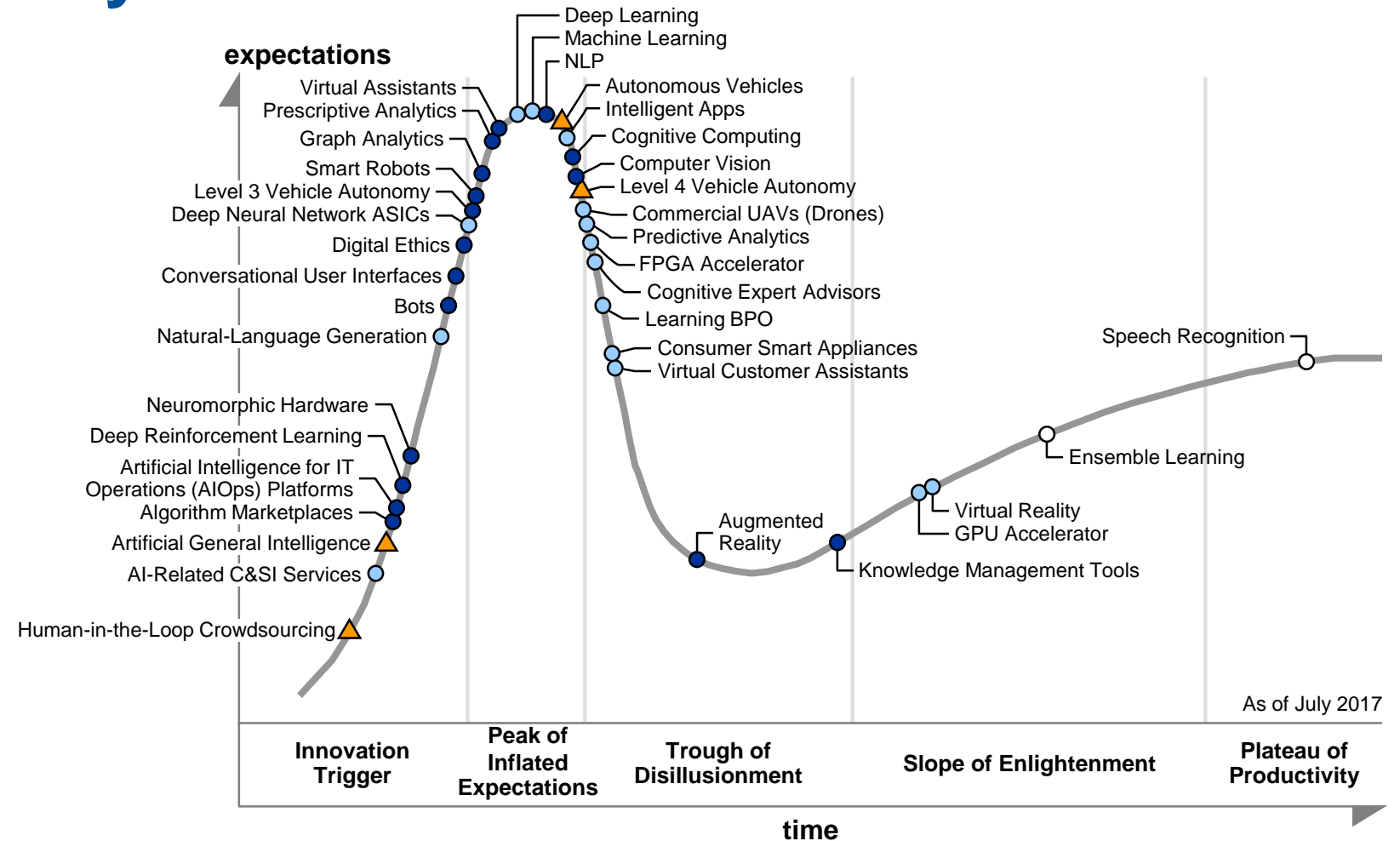   Share Your Decisions

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The Gartner AI Hype Cycle

Very early maturity levels

- **86%** of tech profiles (dots) headed to the bottom of Trough of Disillusionment

- **54%** not expected to plateau and deliver reliable productivity for mainstream buyers until 2022 or later

Huge potential

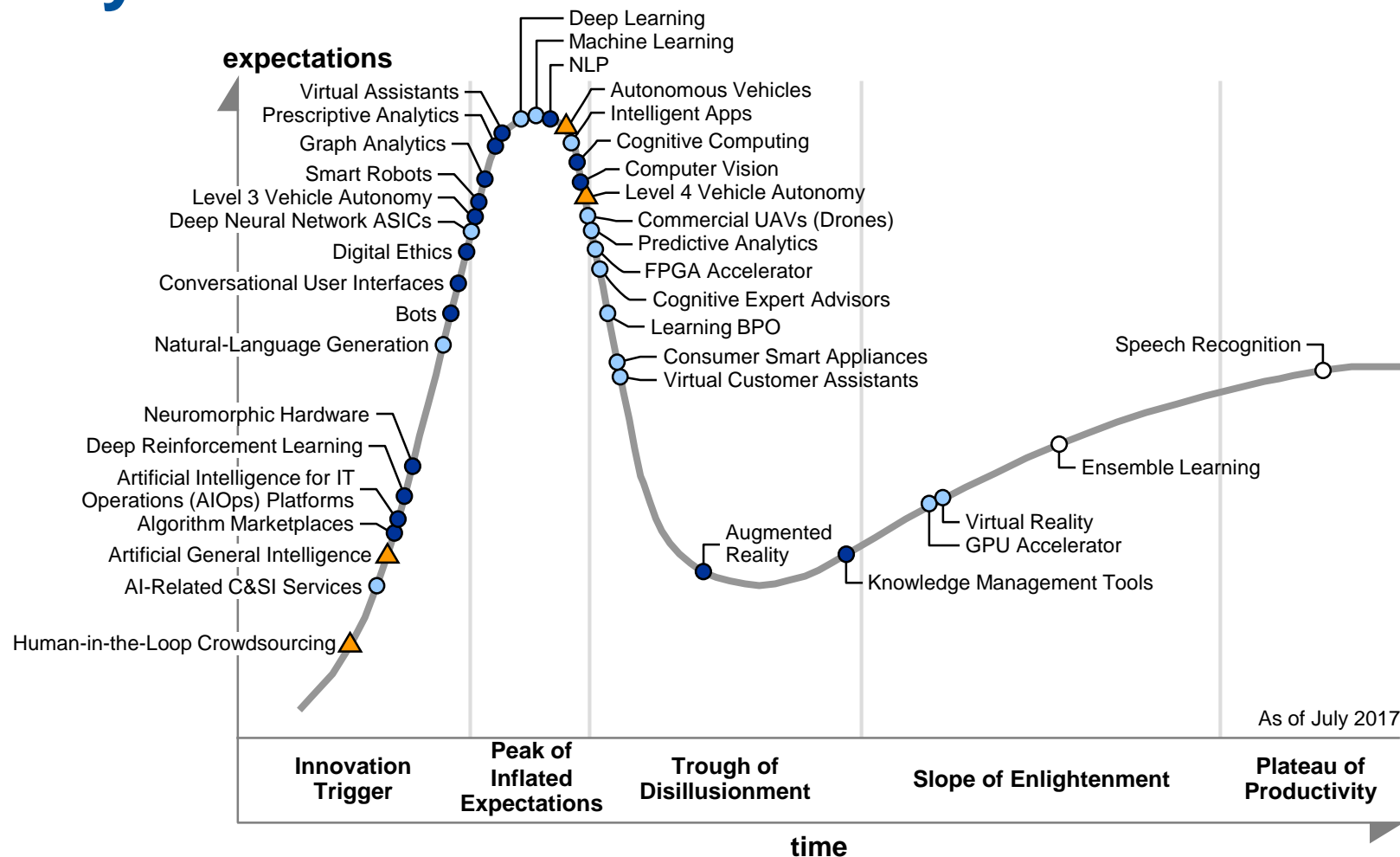- **41%** offer transformational benefits

- **44%** offer high benefits

expectations

Deep Learning
Machine Learning
NLP
Virtual Assistants
Prescriptive Analytics
Autonomous Vehicles
Intelligent Apps
Graph Analytics
Cognitive Computing
Smart Robots
Computer Vision
Level 3 Vehicle Autonomy
Level 4 Vehicle Autonomy
Deep Neural Network ASICs
Commercial UAVs (Drones)
Digital Ethics
Predictive Analytics
Conversational User Interfaces
FPGA Accelerator
Cognitive Expert Advisors
Bots
Learning BPO
Natural-Language Generation
Consumer Smart Appliances
Virtual Customer Assistants
Speech Recognition
Neuromorphic Hardware
Deep Reinforcement Learning
Ensemble Learning
Artificial Intelligence for IT
Operations (AIOps) Platforms
Algorithm Marketplaces
Virtual Reality
Artificial General Intelligence
GPU Accelerator
AI-Related C&SI Services
Augmented Reality
Knowledge Management Tools
Human-in-the-Loop Crowdsourcing

As of July 2017

Innovation Trigger | **Peak of Inflated Expectations** | **Trough of Disillusionment** | **Slope of Enlightenment** | **Plateau of Productivity**

time

Years to mainstream adoption:

○ less than 2 years   ◔ 2 to 5 years   ● 5 to 10 years   △ more than 10 years   ⊗ obsolete before plateau

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The Gartner AI Hype Cycle

Though the lens of D&A

- **>50%** of hype has nothing do with data and analytics

- Marketers stick the AI moniker on anything remotely algorithmic

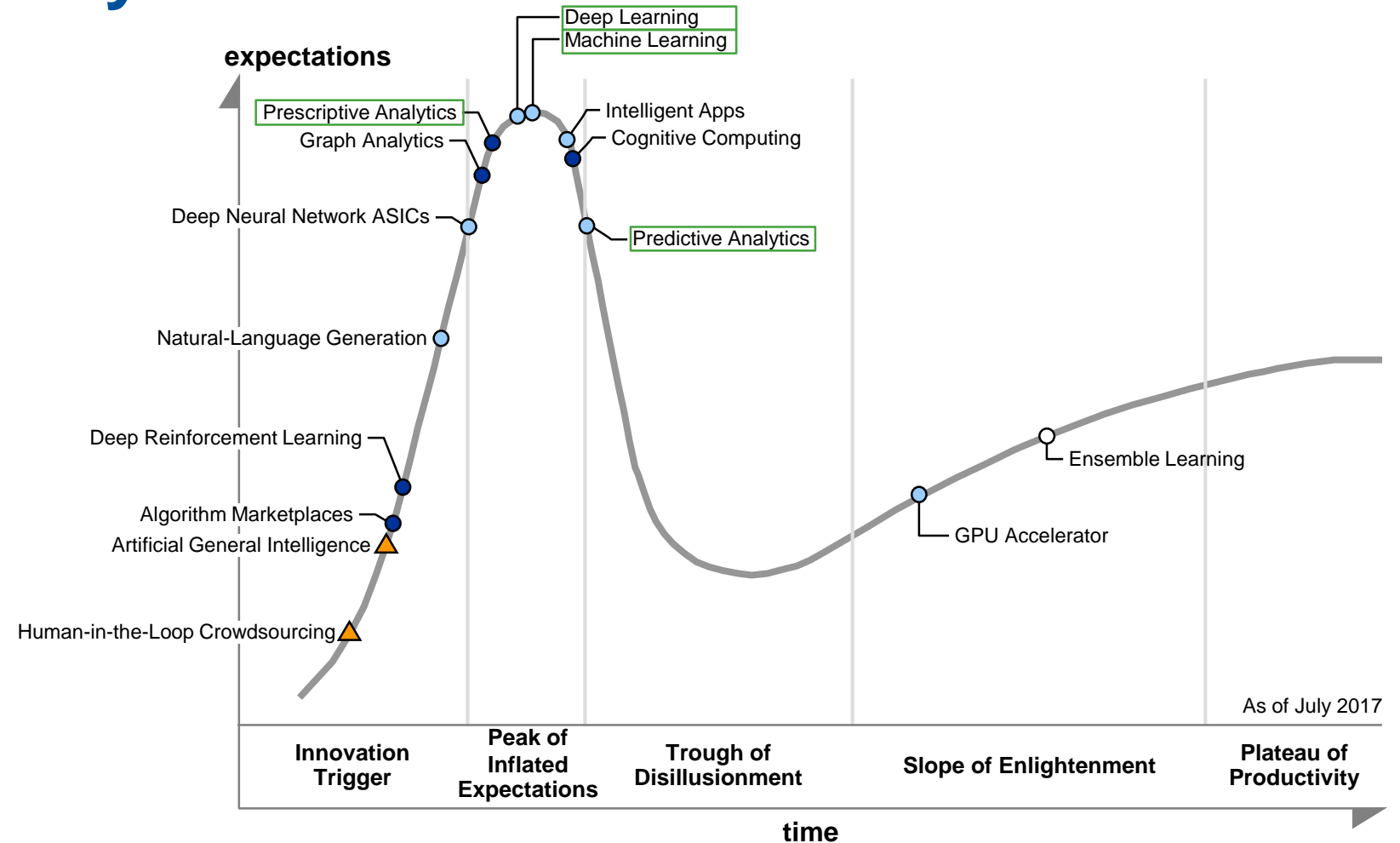- Key data science concepts are crowded around the peak

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Deep Learning
Machine Learning
NLP
Virtual Assistants
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Level 3 Vehicle Autonomy
Deep Neural Network ASICs
Digital Ethics
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Natural-Language Generation

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Learning BPO
Consumer Smart Appliances
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Neuromorphic Hardware
Deep Reinforcement Learning
Artificial Intelligence for IT
Operations (AIOps) Platforms
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AI-Related C&SI Services

Human-in-the-Loop Crowdsourcing

Augmented Reality
Knowledge Management Tools
Virtual Reality
GPU Accelerator
Ensemble Learning
Speech Recognition

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Hierarchy of Terms From a D&A Perspective

Artificial intelligence can be defined as a general approach to the simulation of cognitive processes by means of computer programs.

Data science and machine learning at its most basic is the practice of using algorithms to parse data, capture knowledge, learn from it, make a deterministic or predictive model and deploy that output into a business decision.

Deep learning is a subset of ML algorithms that creates knowledge from multiple layers of information processing.

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Build, Buy or Outsource?

	A) Generic Data Science Platforms	B) Packaged Analytics Applications	C1) Global IT Service Provider	C2) Global DS Service Provider	C3) Special DS Service Provider	C4) Crowdsourcing Platforms
Ease of Use	🟥	🟩	🟧	🟧	🟧	🟥
Time to Solution	🟥	🟩	🟧	🟧	🟧	🟧
Solution Quality	🟩	🟧	🟧	🟧	🟩	🟩
Cost-Effectiveness	🟥	🟩	🟥	🟧	🟧	🟩
Learning Experience	🟩	🟥	🟧	🟧	🟧	🟧
Agility/Granularity of Control	🟩	🟥	🟧	🟩	🟩	🟩

BUILD   BUY   OUTSOURCE

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Open Source Is Here to Stay — Technologies Adopted by Data Science Teams
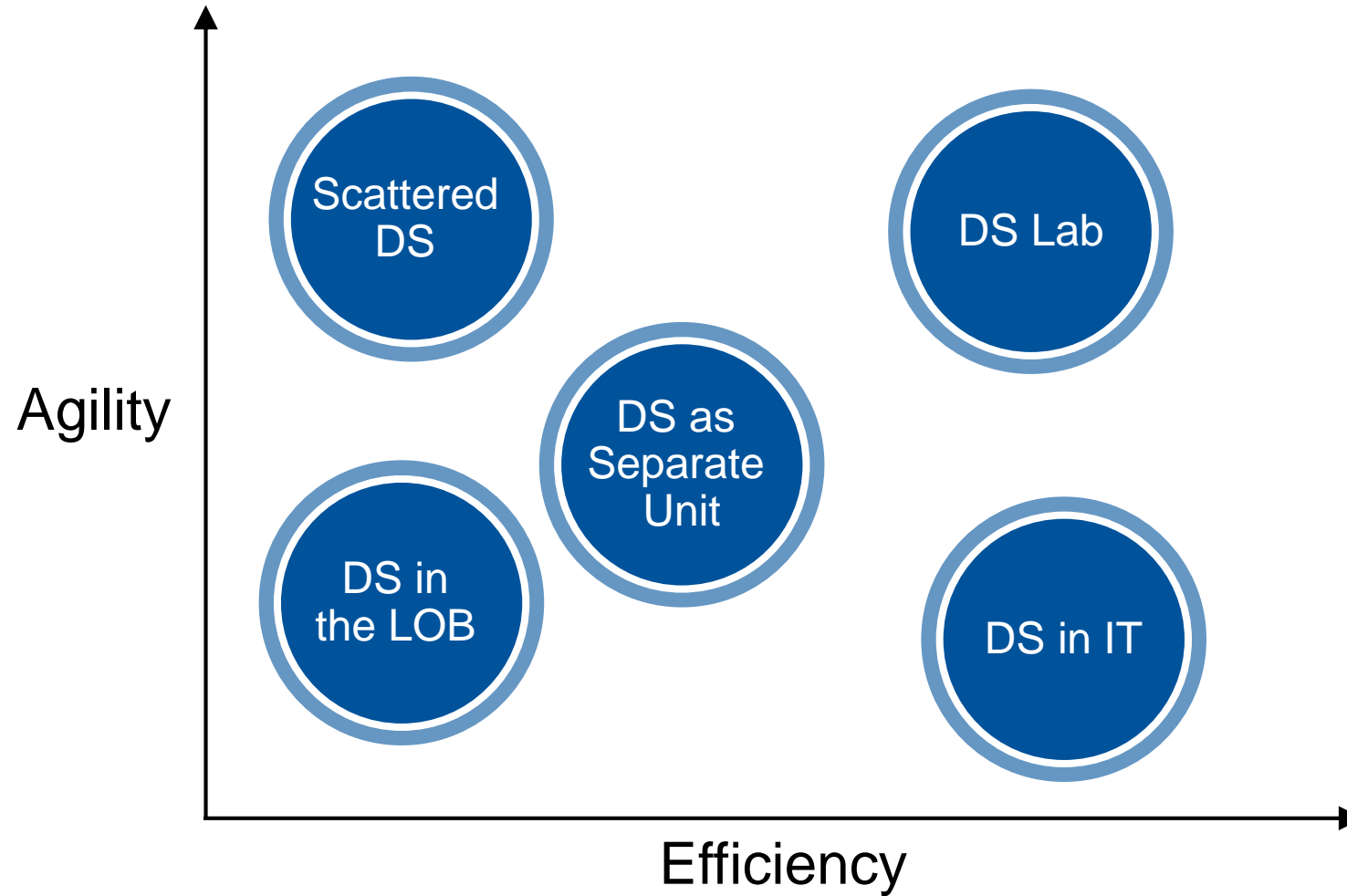
2018: n = 451
2017: n = 619
Multiple responses allowed

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Organizational Principles

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   (10 Minutes)

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The Group Exercise (35 Minutes)

1. Form into groups of four or five people

2. Group member with earliest birthday in the year introduces organization and current state of analytics

3. Design a year one strategy and pilot project including:

   – All four pillars of data, people, process and technology

   – 6-12 month timeline for pilot project completion

4. Document your rationale and considerations

5. Prepare to present your discussion and conclusions

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AI and ML Year One

	Data	People	Process	Technology	Other
Data					
Insight					
Action					
Impact					
Other					

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Ground Rules

- Respect the speakers:

  - All ideas/comments are valid.

  - Please stay engaged.

- Speak up and request clarification.

- Make your point first — then explain it.

- Learn something new!

- Have some fun!

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Report Back

- Each team reports back to the whole group on their pilot project and year one strategy:

  - BBO, open source, organizational principles.

  - Considerations, challenges, approach, priorities and rationale.

- Share your "aha" moments; how to apply this learning back to future AI/ML initiatives.

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Summary and Next Steps

1. Thank you for participating!
2. Complete your feedback forms.
3. Keep in touch.

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Recommended Gartner Research

▶ **How to Start a Machine-Learning Initiative With Less Anxiety**
Svetlana Sicular (G00331893)

▶ **Leading Upskilling Initiatives in Data Science and Machine Learning**
Peter Krensky, Shubhangi Vashisth and Douglas Laney (G00334219)

▶ **Innovation Insight for Deep Learning**
Alexander Linden, Tom Austin and Svetlana Sicular (G00319191)

▶ **Machine Learning: FAQ From Clients**
Shubhangi Vashisth, Alexander Linden and Others (G00327948)

▶ **Hype Hurts: Steering Clear of Dangerous AI Myths**
Tom Austin, Alexander Linden and Mike Rollings (G00324274)

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