

Advances in AI & Implications for Policy Makers

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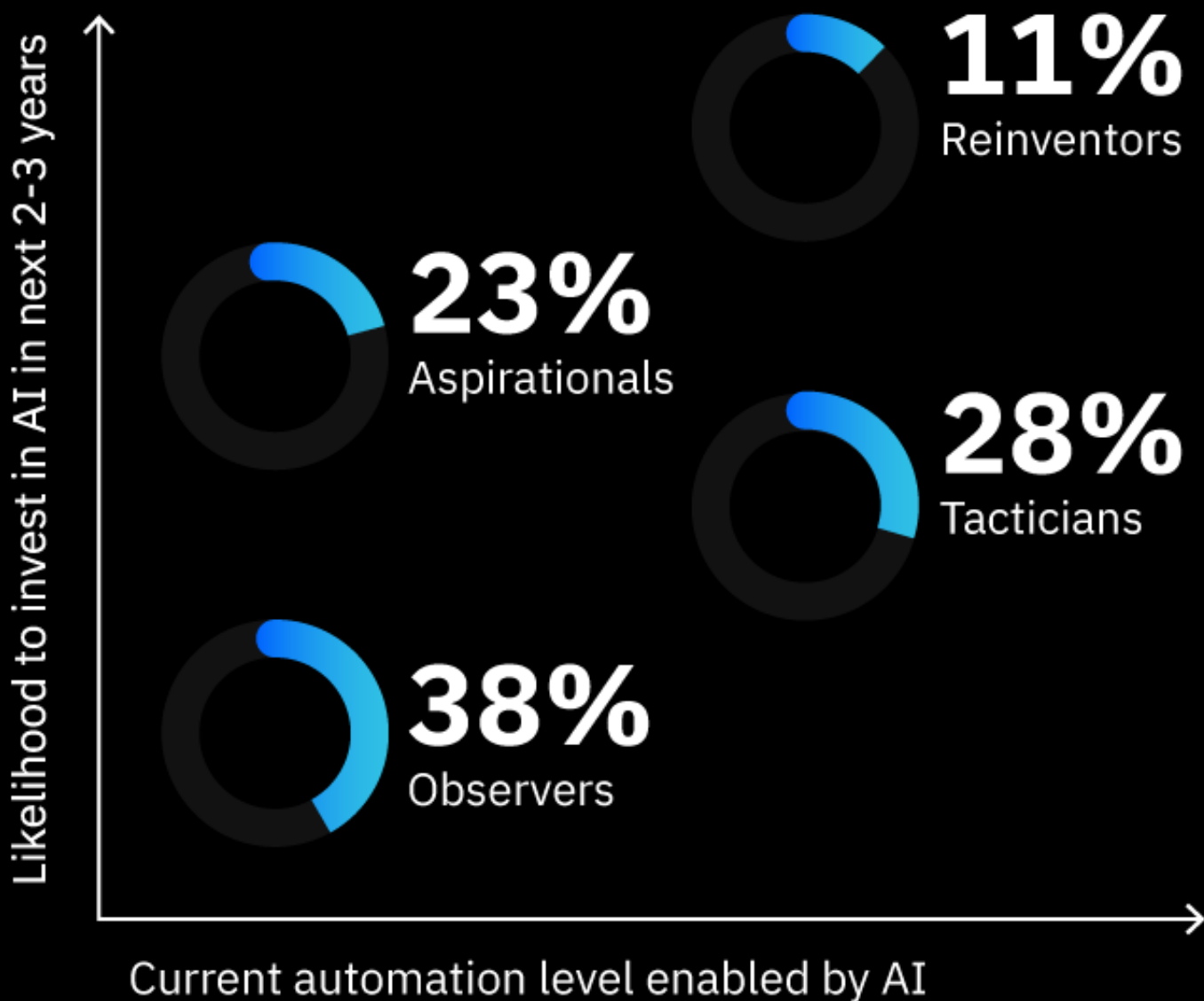
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40% of organizations are pushing ahead with AI

Cognitive Catalysts:
Global C-suite Study
19th Edition



AI systems apply a wide assortment of **cognitive computing techniques**.



- ✓ learn in an interactive manner, from both data and human interactions
- ✓ interact with humans through natural language processing
- ✓ can provide confidence-weighted recommendations (outcomes)

- ✓ are context sensitive
- ✓ are interactive
- ✓ have memory
- ✓ are contextual
- ✓ are adaptive
- ✓ provide confidence-weighted responses

AI systems have come a long way from the days of residing exclusively in science fiction

1997

IBM's Deep Blue4 defeated Garry Kasparov

2011

IBM's Watson defeated two former winners on Jeopardy to win a \$1 million prize

2017

Carnegie Mellon University's AI Libratus13 defeated four of the best poker players in the world

2005

Stanford University's Stanley won DARPA's grand challenge for driverless robotic cars

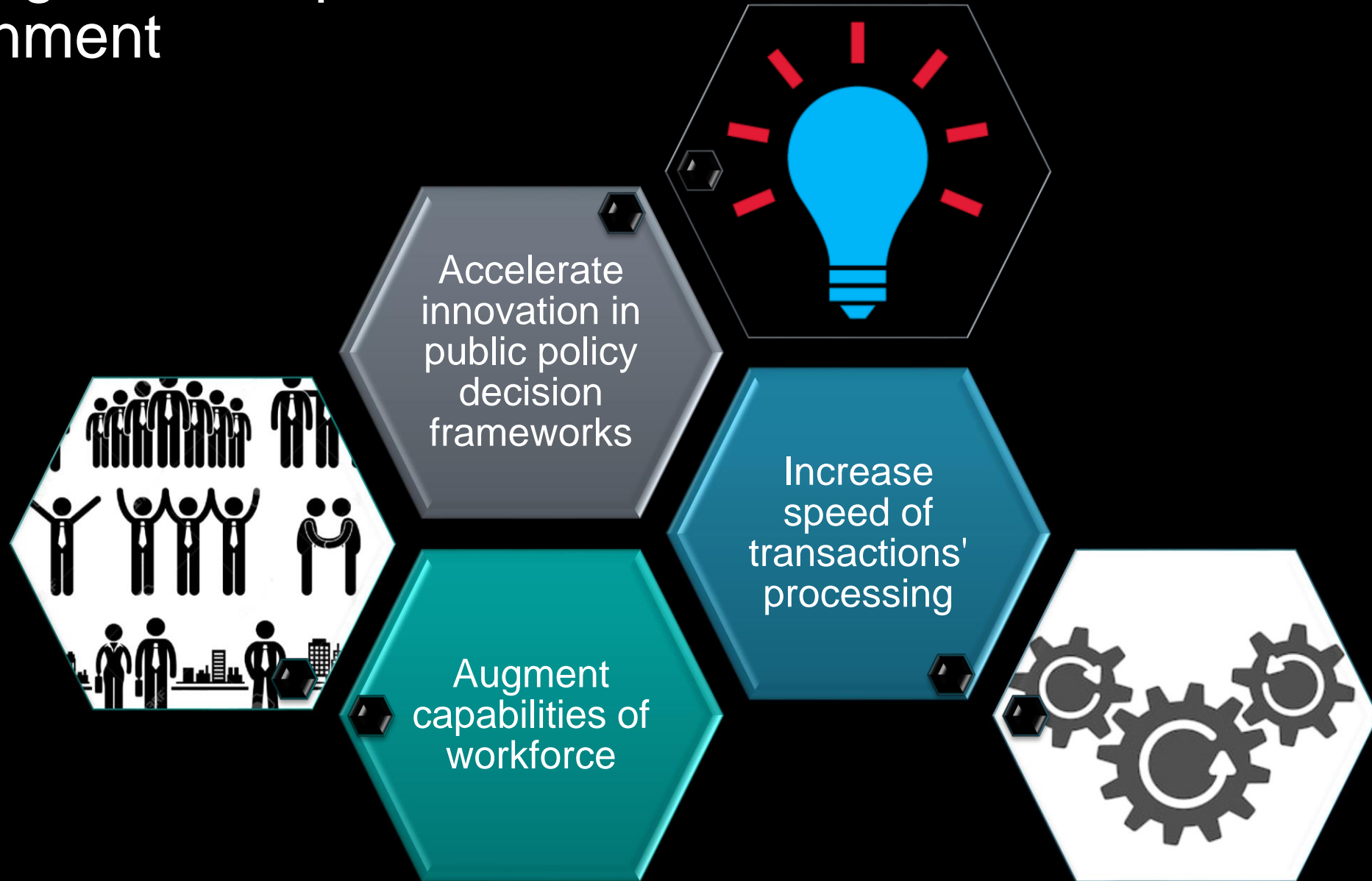
2016

Google's AlphaGo became the first computer to defeat Fan Hui, the European champion in the game of Go

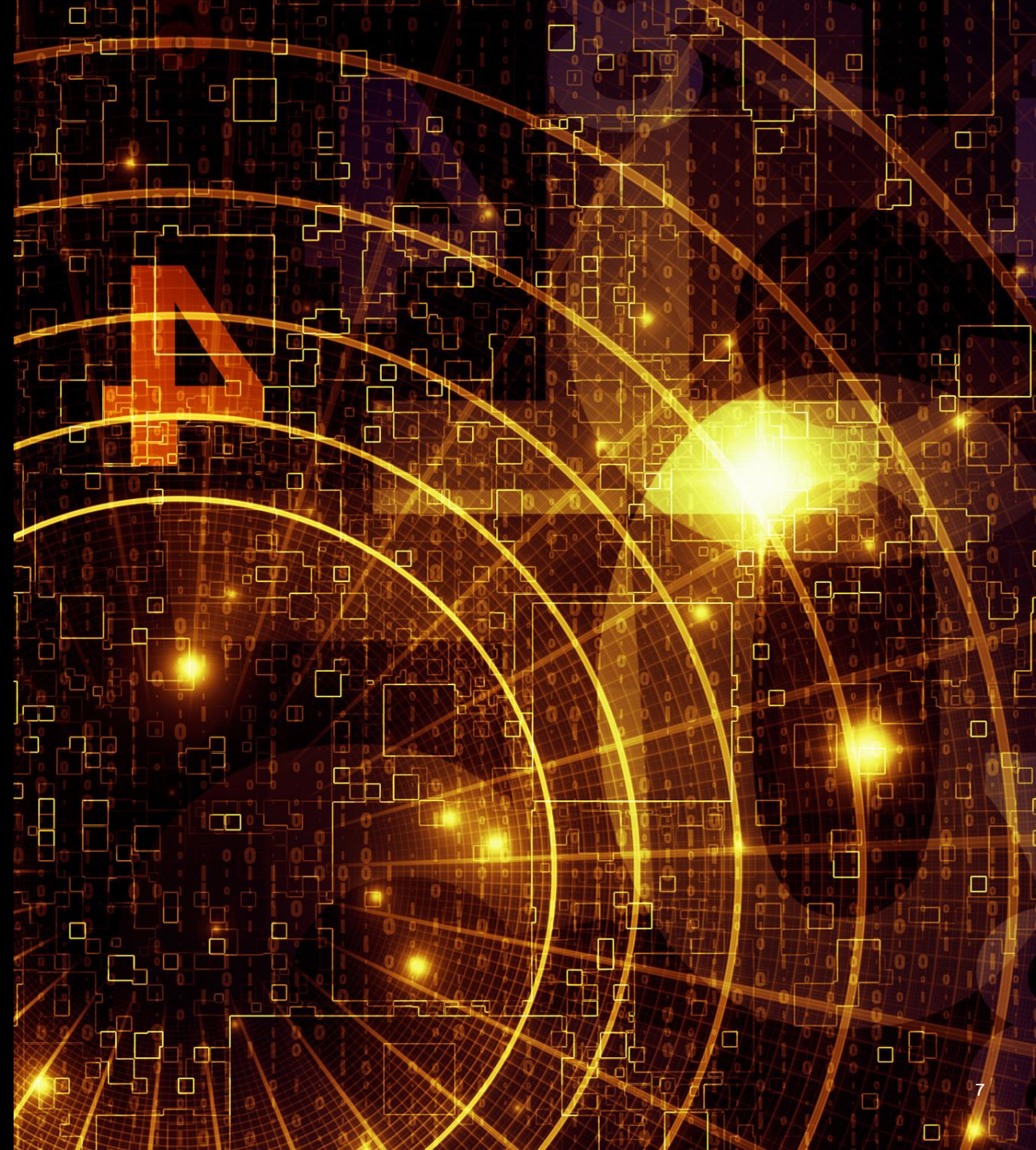
2017

Open AI's bot defeated professional Dota 2 player Danil Ishutin

Applying AI to Help Government



With the
Challenges
come the
Opportunities



Technology & Data



Legacy IT Infrastructure

- ✓ Invest in Upgrading and Modernizing the IT Infrastructure

Limited IT Interoperability

- ✓ Look at Cloud Computing and Open Source as Options to Get Started

IT Project Management Capabilities

- ✓ Use Agile Governance and Acquisition Practices for IT

Lack of Prioritization for Data-driven Solutions

- ✓ Identify Data Intensive Problems that Can Take Advantage of
- ✓ Machine Learning and Cognitive Capabilities
- ✓ Invest in Data Governance
- ✓ Deploy to Improve Service Delivery

Workforce



Public Workforce Management Practices

- Take Steps to Transform the Public Workforce to Take Advantage of AI Capabilities
- Engage Human Experts in Designing, Testing, and Evaluating AI

Culture of IT Ownership

- Develop Collaborative Partnerships with Academia to Initiate AI Projects
- Initiate Public-Private Partnerships to Design, Deploy, and Evaluate AI on Mission-Critical Priorities

Limited Capacity for System-level Redesign

- Redesign Work Processes to Increase Effectiveness and Efficiency
- Employ AI to Augment Human Decision Making

Risk Management



Securing Systems

- Develop Cybersecurity Capacity

Risk Aversion

- Promote Innovation through Crowdsourcing Platforms
- Increase Awareness of AI Potential Through Exploratory Projects
- Develop Collaborative Partnerships across Entities on Cross-Cutting Issues

Ethical and Social Considerations

- Prioritize Value-Sensitive Design
- Focus on Protecting Public Values and Common Good

Governance

- Proactively Monitor Systems to Track Unexpected Outcomes
- Develop Robust Audit and Inspection Mechanisms

Intent

Human
augmentation
versus
Replacement

Skills

Training and
Education

Data

Algorithmic
transparency
and data
governance

Data Responsibility @IBM

Data
Ownership
and Privacy



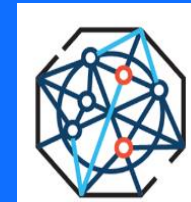
Data Flows
and Access



Data
Security
and Trust



Data and
Artificial
Intelligence



Data Skills
and New
Collar Jobs



“AI systems will amplify human capability, not replace it.

We call it “**augmented intelligence**” with humans and machines working side-by-side and in a complementary manner.”

Ginni Rometty



