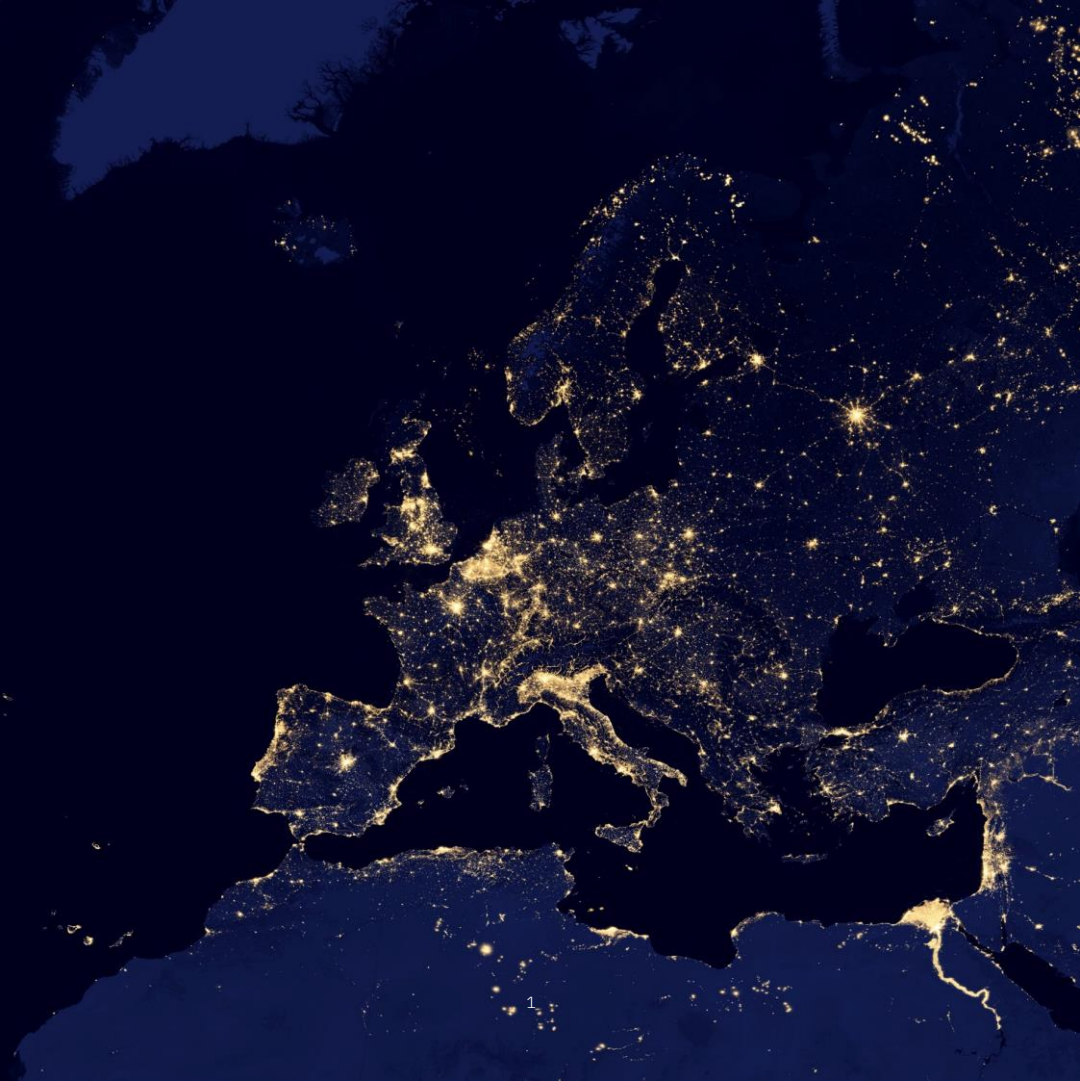


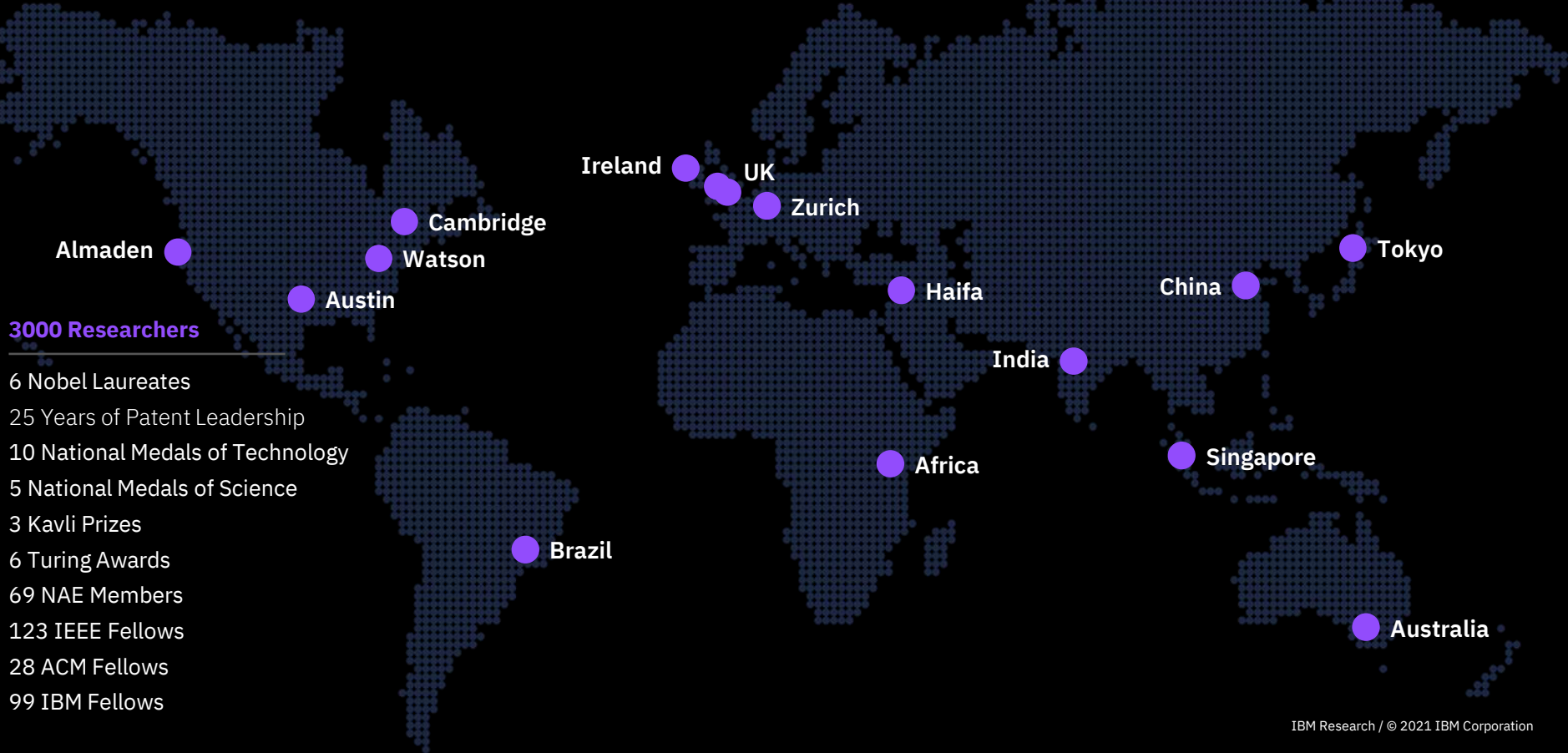
# Innovation for Change and a Sustainable Future

Dr Peter Waggett  
UK Director of Research  
IBM Research Europe

November 23rd, 2021



# IBM Research: A global research capability



## 3000 Researchers

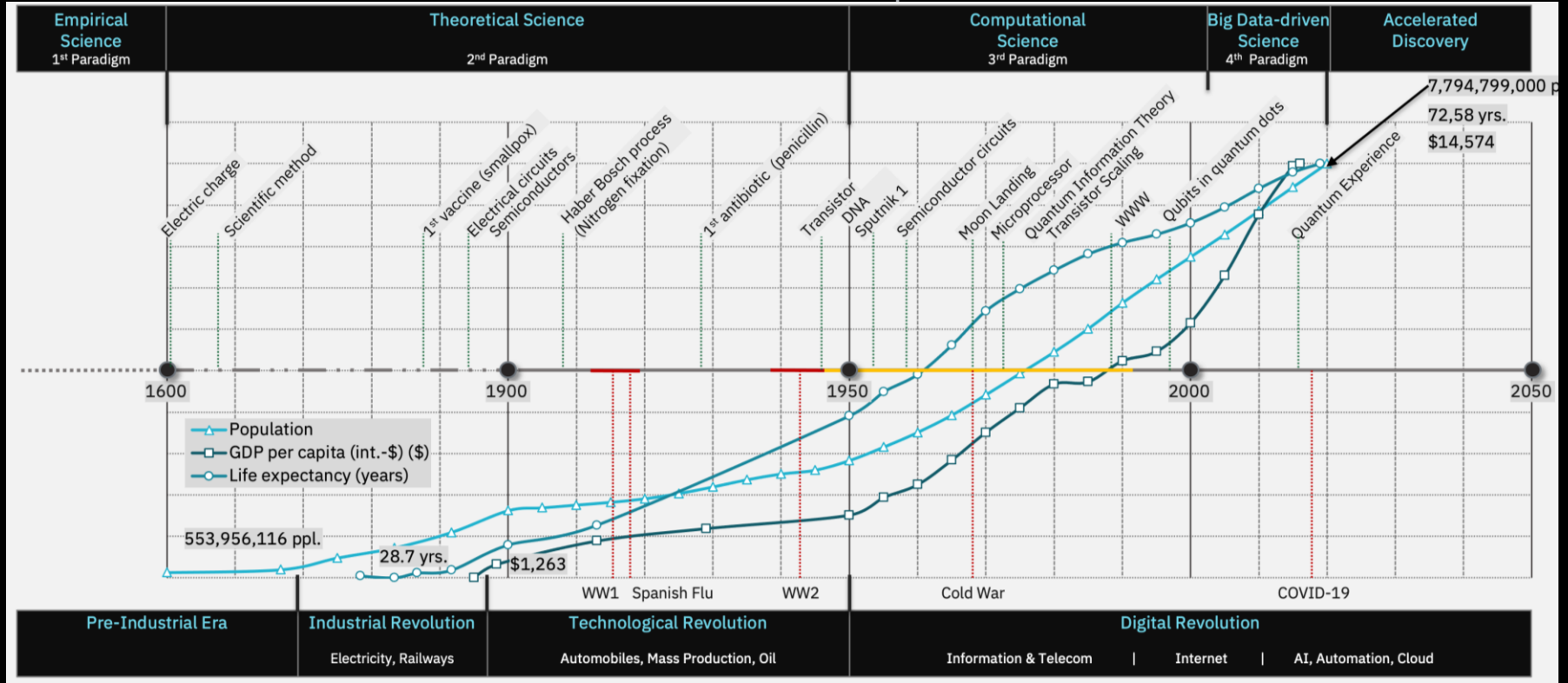
- 6 Nobel Laureates
- 25 Years of Patent Leadership
- 10 National Medals of Technology
- 5 National Medals of Science
- 3 Kavli Prizes
- 6 Turing Awards
- 69 NAE Members
- 123 IEEE Fellows
- 28 ACM Fellows
- 99 IBM Fellows

The urgency  
of science  
has never  
been stronger  
than it is now.



# The scientific method has been humanity's best model for discovery.

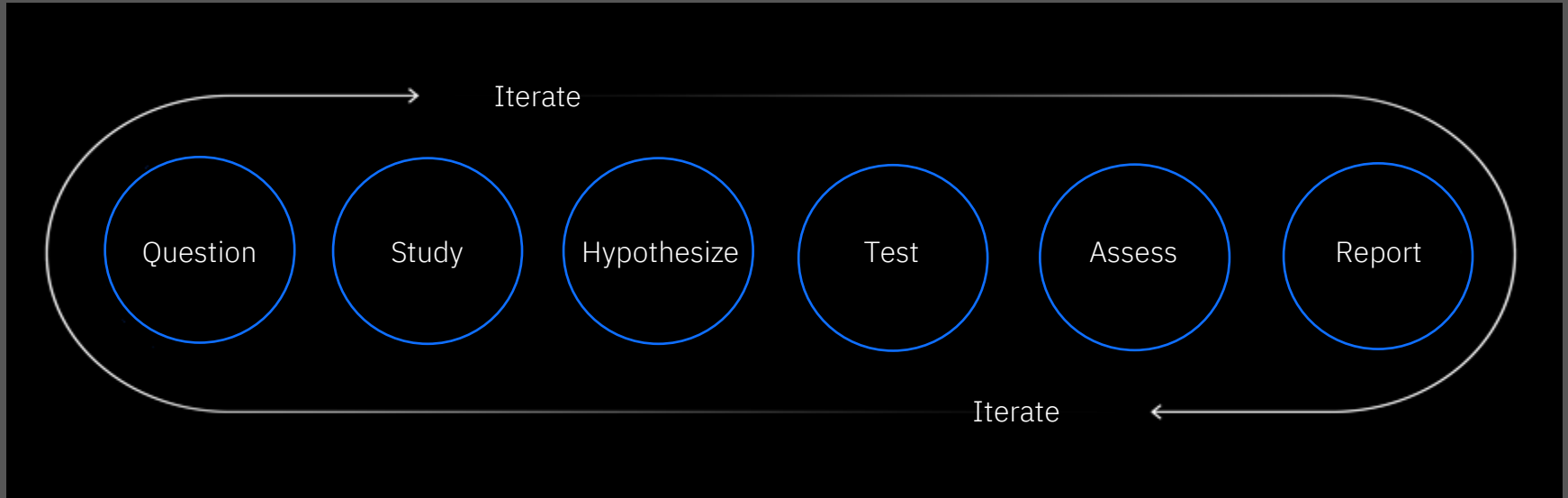
Science has solved some of the world's most difficult problems



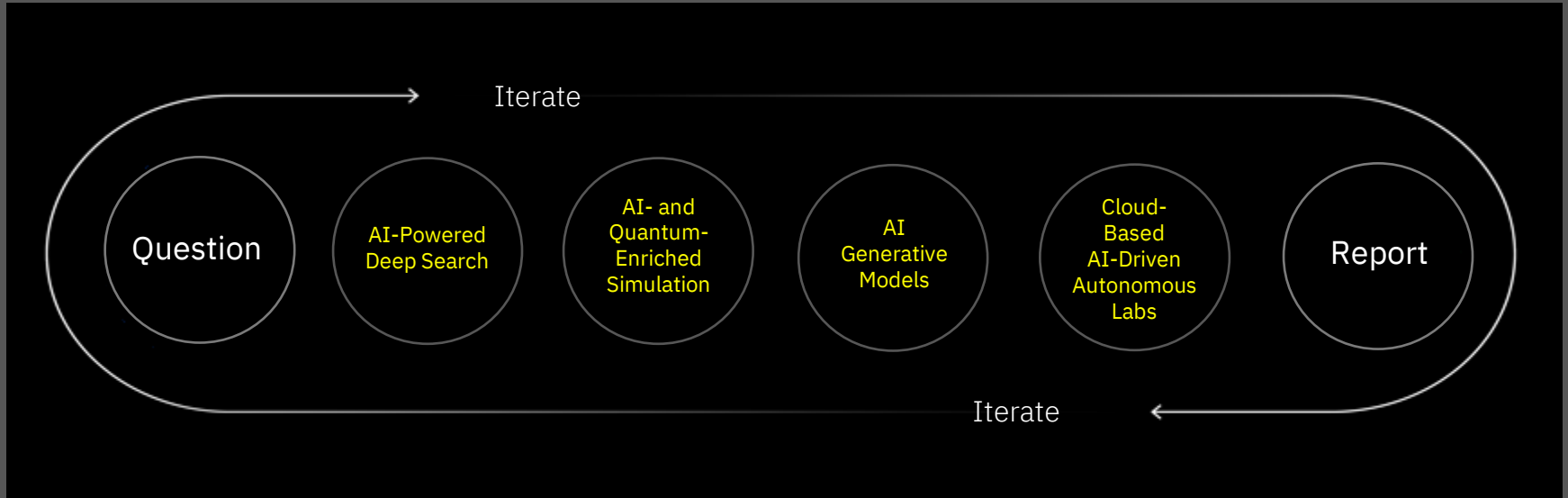
... and it has evolved over time and we are now entering a new paradigm of discovery.

1 <sup>st</sup> Paradigm	2 <sup>nd</sup> Paradigm	3 <sup>rd</sup> Paradigm	4 <sup>th</sup> Paradigm	
<b>Empirical Science</b>	<b>Theoretical Science</b>	<b>Computational Science</b>	<b>Big data-driven Science</b>	<b>Accelerated Discovery</b>
Observations Experimentation	Scientific laws Physics Biology Chemistry	Simulations Molecular dynamics Mechanistic models	Big data Machine learning Patterns Anomalies Visualization	Scientific knowledge at scale AI generated hypotheses Autonomous testing
Pre-Renaissance	~1600s	~1950	~2000	2020

# We Need to Supercharge the Scientific Method ...



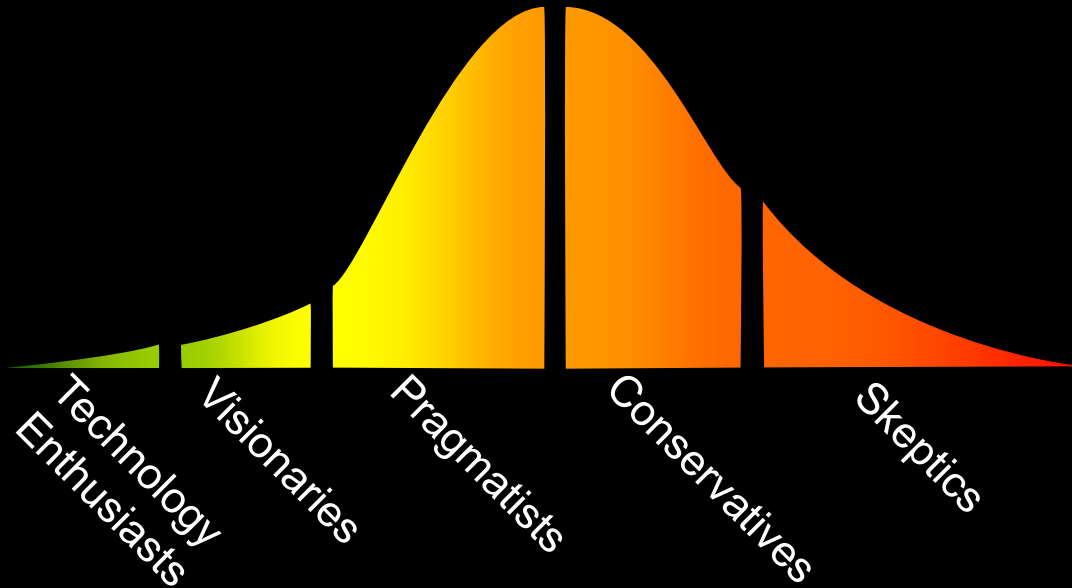
... to Create the Components of an Accelerated Discovery Workflow.



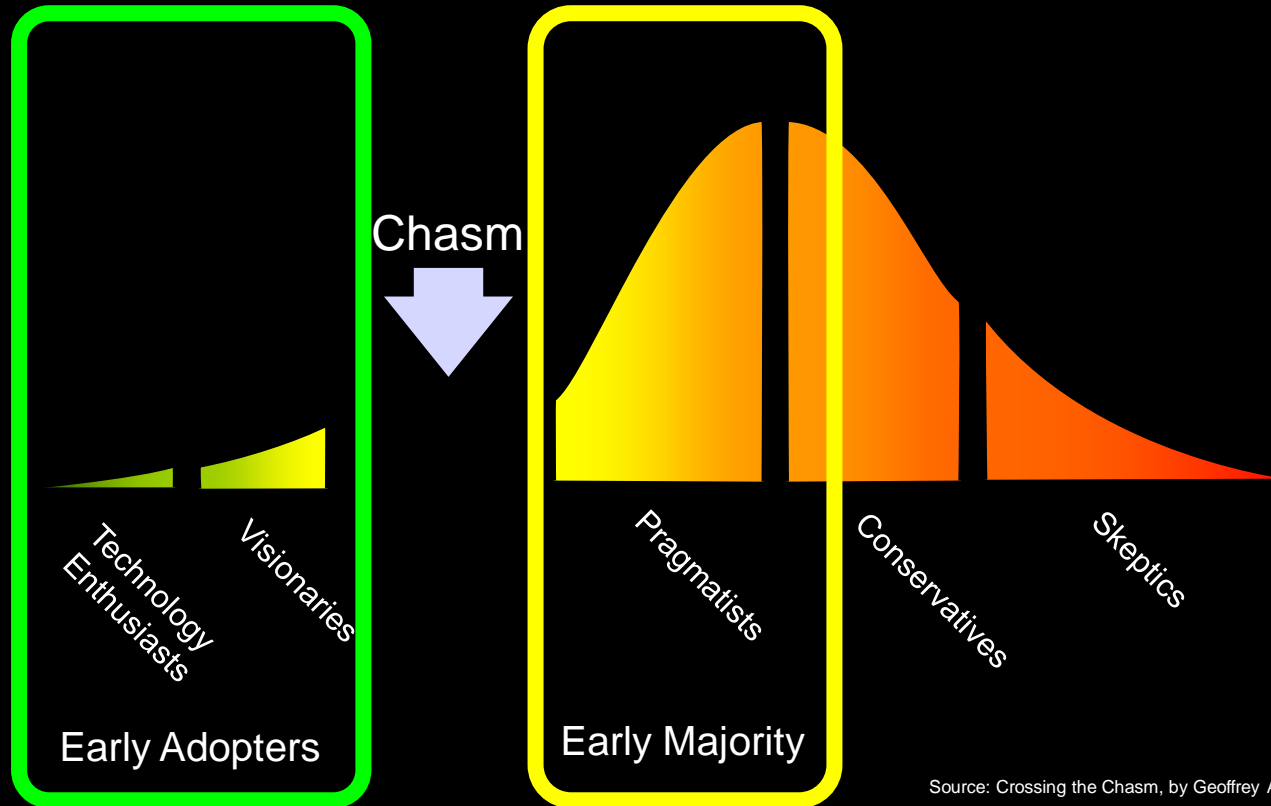
# Emerging Technology Challenges

- Understanding and Insight
- Skills
- Integration Standards
- Infrastructure

# Marketing 101



# Crossing the Chasm



Source: Crossing the Chasm, by Geoffrey A Moore



# HARTREE NATIONAL CENTRE FOR DIGITAL INNOVATION



Science and  
Technology  
Facilities Council

Hartree Centre



# Hartree National Centre for Digital Innovation (HNCDI)

- New collaborative partnership between IBM Research and STFC
- Enabling businesses and public sector organisations to adopt AI and quantum computing
- A dynamic and supportive expert environment for **UK organisations of all sizes** to explore the latest technologies, develop proofs-of-concept and apply them to industry and public sector challenges for **productivity, innovation** and **economic growth**.
- Helping navigate the possibilities, de-risk investment into new technologies and discover the next step



# Tackling Industry and Societal Challenges

## Skills

Tackling gaps within your organisation and widening the talent pool



**EXPLAIN**

## Technical Capability

Exploring and evaluating data-driven AI technologies to help enhance productivity



**EXPLORE**

## Application

Developing and implementing practical solutions within your business



**EXCELERATE**

## Resilience

Knowing how to prepare for and when to invest in the right emerging technologies (e.g. quantum computing)



**EMERGING  
TECHNOLOGY**

