



QUANTORI

BioTechX

Building Data And Technology Foundation To Unlock Innovation

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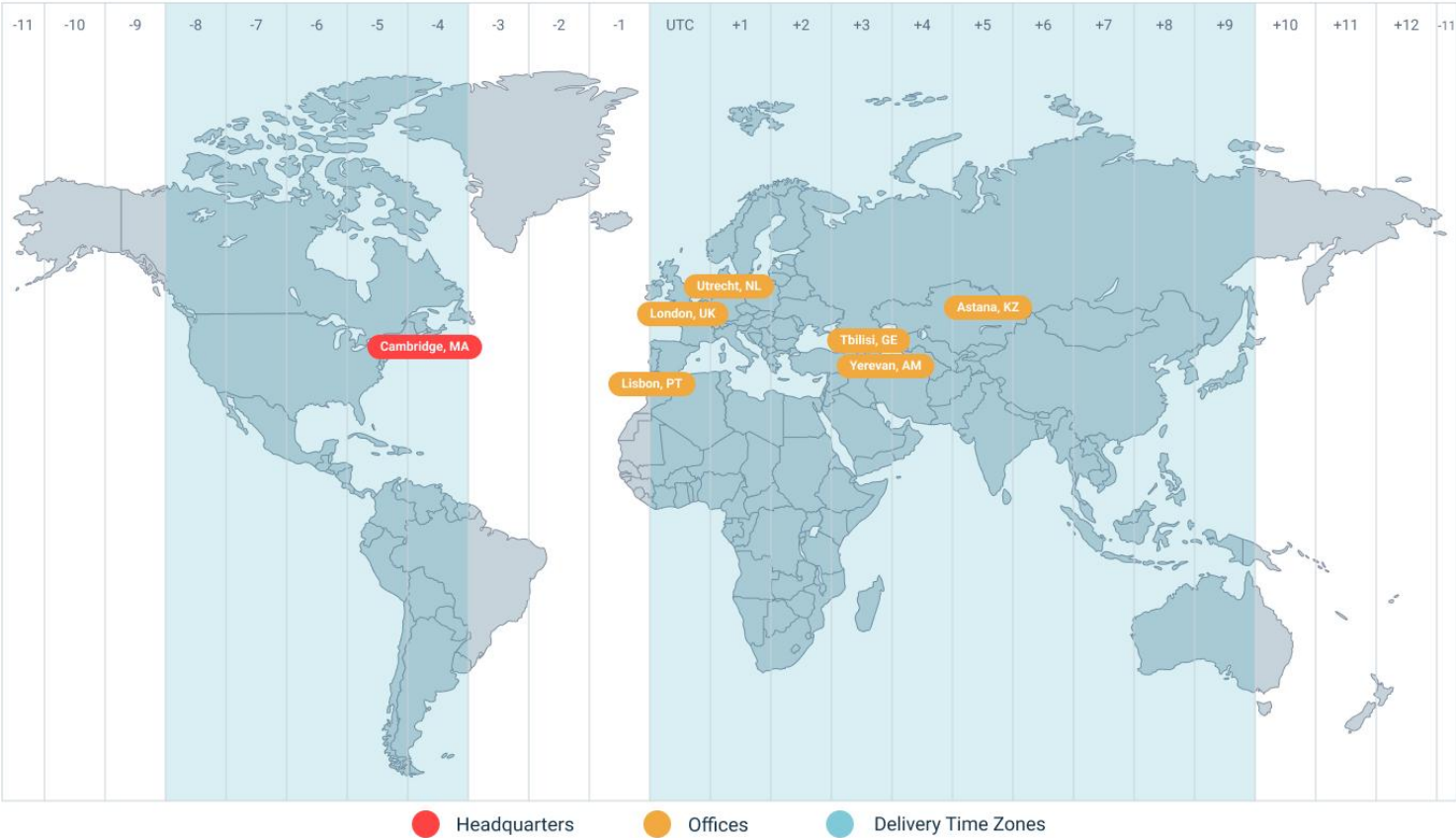
Arun Nayar, Global Head, R&D Informatics, Quantori

Quantori

**is a Scientific Informatics,
Technology and Digital
Solutions Provider for the
Biopharma, Life Sciences
and Healthcare industries.**

Our deep domain-focused approach harnesses the power of data science, machine learning, software engineering, and cloud expertise to support our clients to accelerate their efforts towards speed to market.

Our Geographic Footprint



Expertise, Experience, and Scale

With over two decades serving the Pharmaceutical & Life Sciences industry, Quantori provides end-to-end drug discovery, development, and commercialization services with domain and technical experts



Laboratory Informatics

Alignment within laboratory informatics brings our clients closer to their patients through improved diagnosis, treatment methods, and drug development.



Data Science & Engineering

We create the architecture, layout, workflows, and initial data systems to make sure that the right data stays current and that new data can easily be added or removed.



AI & Machine Learning

We design and deliver innovative AI and ML solutions to create deep learning models that recognize and predict data patterns with more accuracy and precision.



Real World Informatics

We have strong expertise in Managing Disparate Data Sources for Clinical Trials and Real World Data Sources.



Scientific Informatics

Our customized scientific informatics solutions allow our clients to better understand their data through relevant processes and workflows.



Cloud Operations

We help clients migrate their data, optimize cloud presence, and provide support and maintenance for their systems



Registry Science

We are empowering precision medicine and complex clinical decision-making by constructing and executing high-quality registry programs for Life Science Companies and Medical Research Foundations.



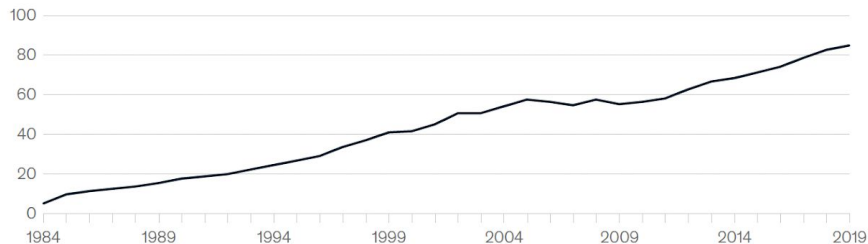
High Performance Computing

Our HPC capabilities and accelerators allow pharma companies to scale and biotech innovators to kick-start research computations in one click.

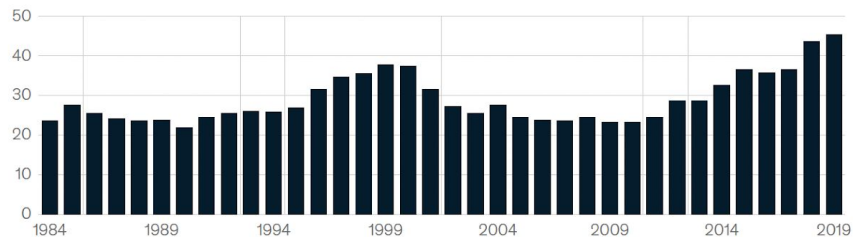
R&D Productivity Remains a Challenge

US R&D spending more than doubled from 2001 to 2019, but the number of newly developed drugs has increased only marginally.

Annual R&D spending by PhRMA¹ member firms, \$ billion



Approvals of new drugs (5-year moving average),² number of NME³ approvals



¹Pharmaceutical Research and Manufacturers of America.

²A 5-year moving average replaces the value for each year in an annual data series with an average over 5 consecutive years. (Here the arithmetic mean of each annual value and the preceding 4 is used.) A moving average is smoother than the underlying data series and is useful for reducing year-to-year changes unrelated to overall trends in the data.

³New molecular entity.

Source: "Research and development in the pharmaceutical industry," Congressional Budget Office, April 2021

It is an Exciting Time to Be in Life Sciences and Technology



Pace of science



Biopharma companies and regulators are open to new ways of working to exploit potential of emerging technologies



Rapidly evolving technology landscape



Paradigm shift from “*Find and Fix*” → “*Predict and Prevent*”

AI-driven Innovation Across the Research Value Chain

	Target identification	Target validation	Hit identification	Lead generation / optimization	Preclinical
Examples of AI-driven acceleration	<p>Insights from data sources (internal and from vendors) to generate novel target hypothesis</p> <p>Gene network, biochemical pathway, and cellular-response data integration in target identification</p>	<p><i>In silico</i>, phenotypic, cellular models validate targets/ identify biomarkers</p> <p>Disease causality determined within patient groups with significant unmet medical need</p>	<p>Automated image analysis for cellular assays through computer vision technology</p> <p>Molecular property prediction (virtual screening)</p>	<p>Molecular structure and property prediction (eg, protein binding, logP, toxicity) for novel target proteins</p> <p>Rapid design iteration, across small and large molecules, using eg, Generative Adversarial Networks</p>	<p>Safety issue and DMPK* prediction using internal and public data</p> <p>Hypothesis-driven dosages for adaptive trials and targeted populations</p>
Examples from industry and observed impact	<p>Biopharma unlocked all-inclusive view of complex indication by attributing disease causality through linkages between genomic data and patient electronic medical records (EMRs)</p>	<p>Biopharma internalized AlphaFold2 and ColabFold to generate 3-D models of almost any known, synthesized protein and protein-protein interactions, reducing access to 3-D structures from 6 months to a few hours</p>	<p>Biotech saw significant acceleration of high-throughput screening (HTS) phase (time to 75% hits detected reduced by 50%) with platform-based "compound prioritization" algorithm</p>	<p>Biopharma leveraged generative machine learning model to expand library/ optimize promising compounds and predict compound efficacy, significantly increasing efficiency of library expansion, with >60,000 new compounds generated</p>	<p>Biopharma utilized predictive algorithms to maximize probability of successful PK** predictions with 83% of drug development projects progressing to clinic with no PK issues</p>

*Drug metabolism and pharmacokinetics.

**Pharmacokinetic.

Are You Able to Realize Full Value of Your Data?



Is data considered a corporate asset?



Is the primary focus on tools and technologies or data?



Do you have data strategy?



Do you have data/technology savvy workforce?

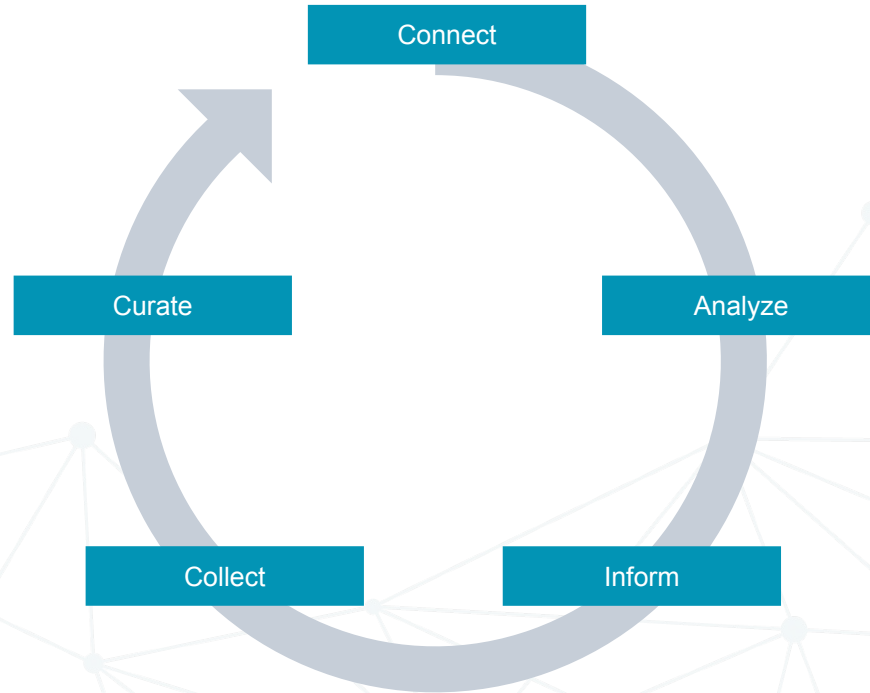


Is digitalization an IT or company initiative?



Is company culture an issue?

Are You Able to Realize Full Value of Your Data?



Data Strategy: How Quickly Can You Pivot?

Customer Needs	Organization Needs	Operational Needs	Regulatory Needs	Infrastructure Needs
<ul style="list-style-type: none">• Changing Preferences• Changing Needs• Changing Behaviors	<ul style="list-style-type: none">• New Modalities• New Disease Areas• Global expansion	<ul style="list-style-type: none">• New Business Models• Reduce Operational Risk• New Imperatives	<ul style="list-style-type: none">• Respond to changing regulations• GDPR/CCPA• GMP/GCP	<ul style="list-style-type: none">• Save or Scale on-demand• No fear of under or over spend• Leverage evolving technology eco-system

Key Data Architecture Principles



Manage data storage systems carefully, despite the reduced cost of storage devices.



Deploy data repositories and analytics applications efficiently, without unneeded platforms.



A modern data architecture likely will include multiple cloud platforms and environments.



Data governance and compliance with privacy laws are separate but related processes.



Data architectures should be optimized for analytics initiatives to generate business value.

Source: TechTarget

Considerations For Building a Robust Data And Technology Foundation



Culture of data-driven decision making



Change management



Make data FAIR



Focus on building and deploying data products



Use micro services architecture for rapid delivery of innovative solutions



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