The Era of Exponential Improvement in Healthcare?

CONV2X

October 2019

1 Technology advances affecting profit pools today
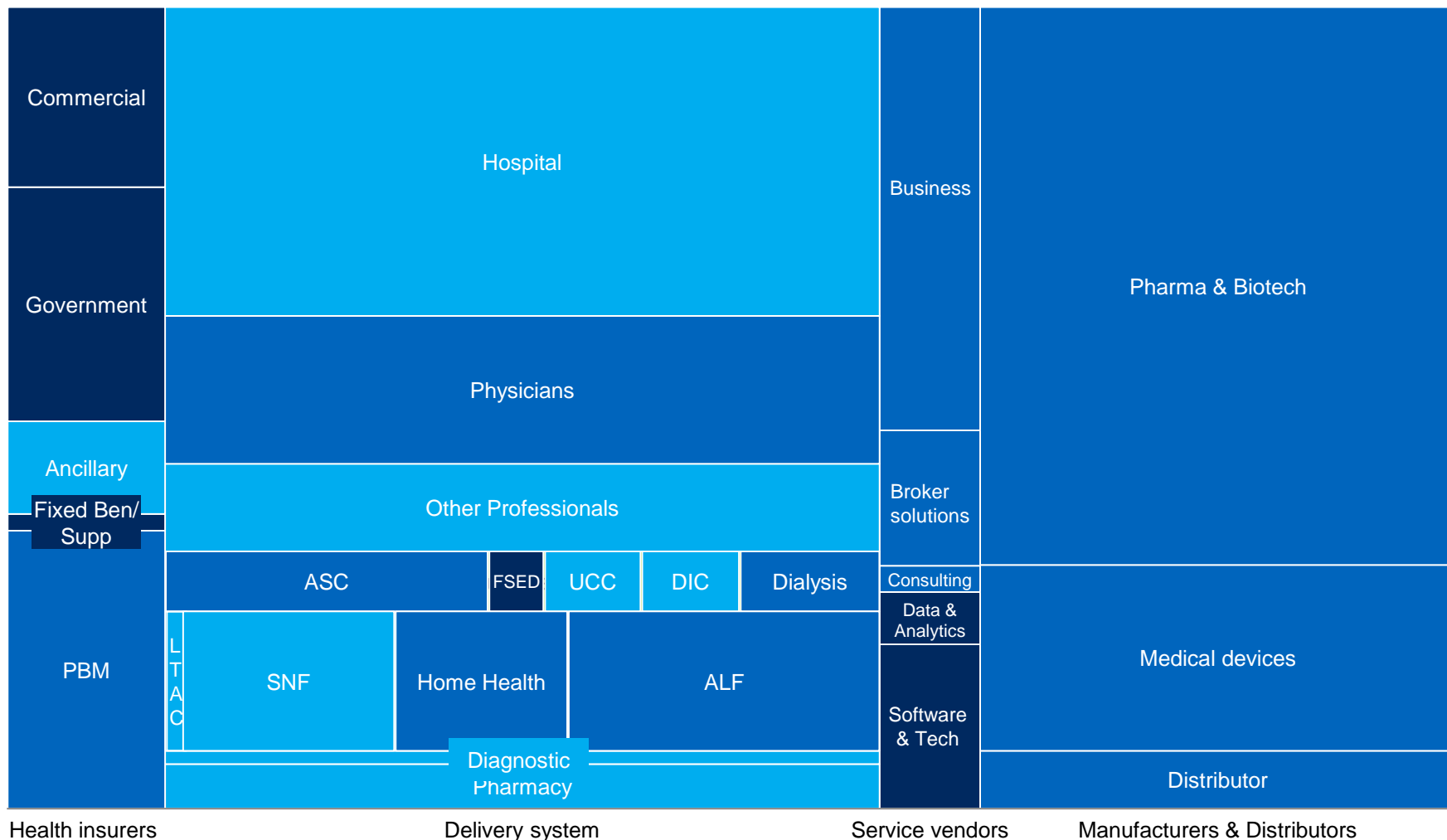
2 Healthcare focus of the "big three" tech giants

3 Strategic implications for incumbents

1 | Profit pools are shifting across the US healthcare industry, with varying growth rates by sector

Projected changes in EBITDA across US healthcare industry
2020, $B

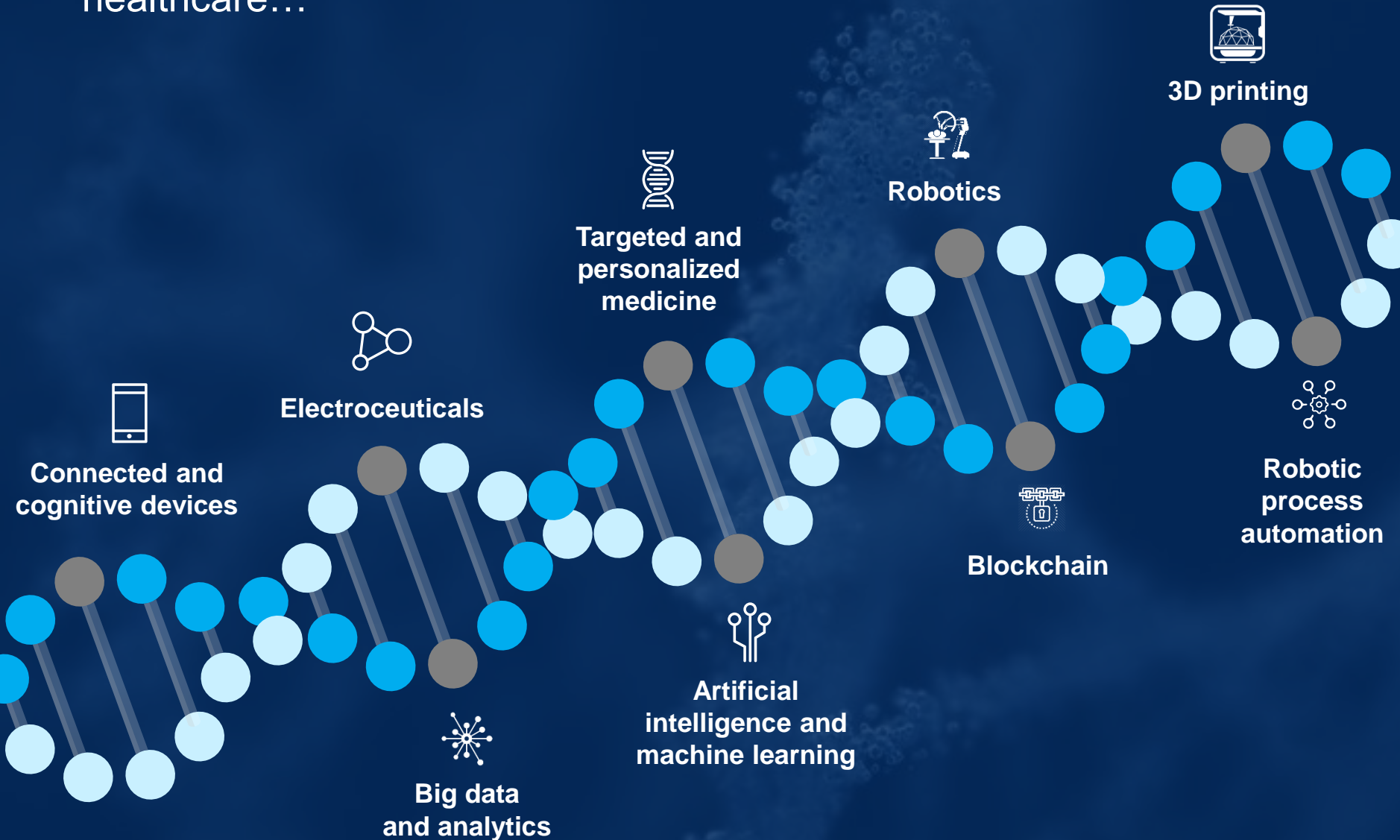**2016-2020 Growth rates**
Percentage of EBITDA growth: ▢ <5% ▢ 5-10% ▢ >10%

| Health insurers | Delivery system | Service vendors | Manufacturers & Distributors |

Commercial · Government · Ancillary · Fixed Ben/Supp · PBM

Hospital · Physicians · Other Professionals · ASC · FSED · UCC · DIC · Dialysis · LTAC · SNF · Home Health · ALF · Diagnostic · Pharmacy

Business · Broker solutions · Consulting · Data & Analytics · Software & Tech

Pharma & Biotech · Medical devices · Distributor

1 | Emerging information and medical technologies are reshaping healthcare…

3D printing

Robotics

Targeted and personalized medicine

Electroceuticals

Connected and cognitive devices

Big data and analytics

Artificial intelligence and machine learning
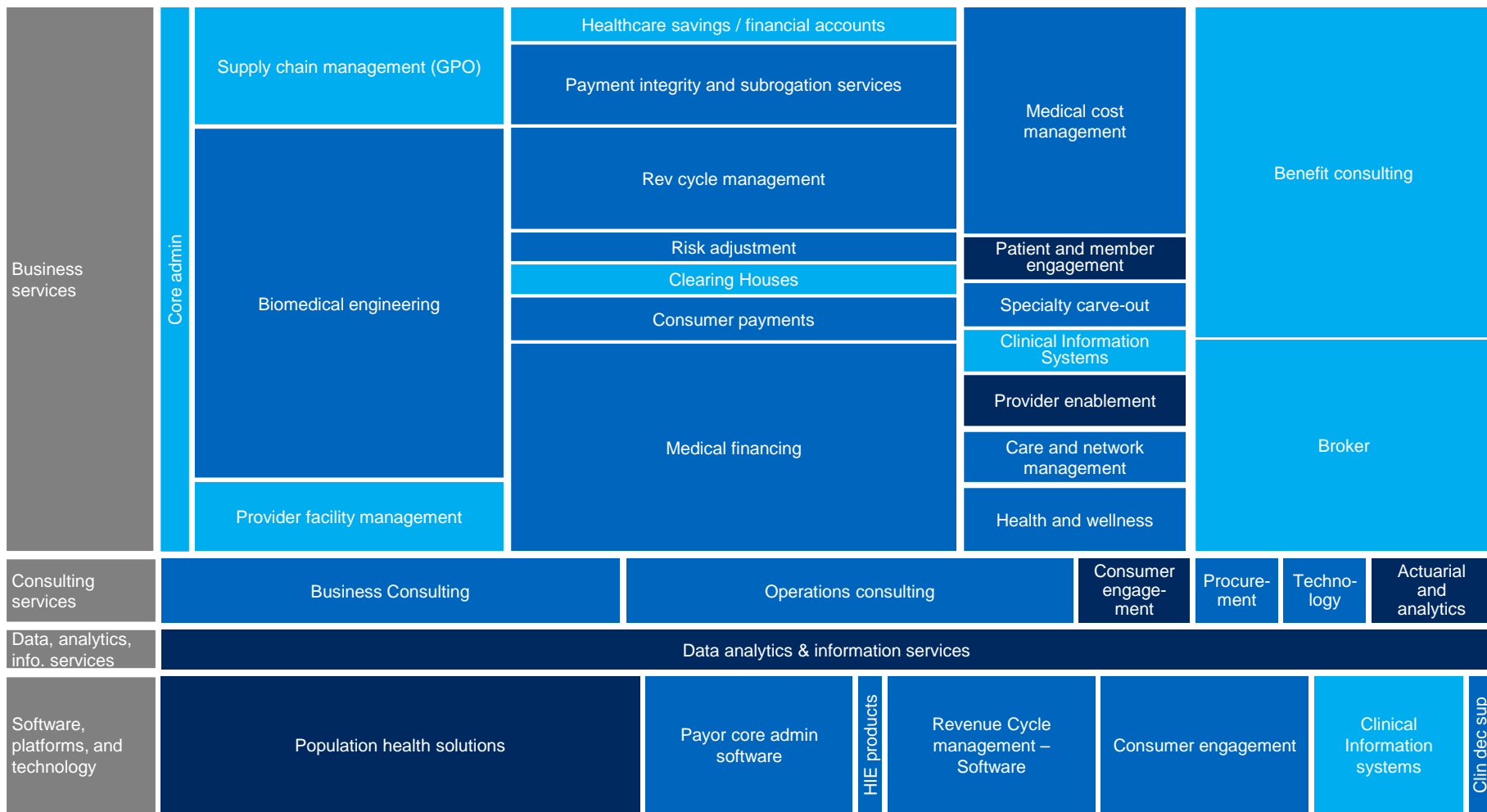
Blockchain

Robotic process automation

Tech profit pools are growing >10% around analytics and consumer engagement, suggesting the greater importance of these capabilities

Projected changes in EBITDA across US healthcare industry for tech and services 2021, $B

EBITDA CAGR (2016-2021)

Percentage of EBITDA growth: <5% | 5-10% | >10%

SOURCE: The evolving healthcare technology and services market – and why it matters; McKinsey & Co;
https://healthcare.mckinsey.com/evolving-healthcare-technology-and-services-market%E2%80%94and-why-it-matters

Leading tech players have increasingly distinctive value propositions to offer healthcare stakeholders

	Amazon	Apple	Google
	Distribution ecosystem	**Smart devices ecosystem**	**AI-facilitated clinical ecosystem**
Core value proposition	▪ Offers customer-centric, premier **logistics** where consumers can "*find and discover anything they might want to buy online*"	▪ Creates sleek and intuitive **devices** that may provide healthcare consumers with increased autonomy, informed by fully-integrated and longitudinal data sets	▪ "**Organizes the world's information**" to better understand the health consumer and their environment
Example partnerships	▪ Pill Pack ▪ Berkshire Hathaway ▪ JPMorgan Chase ▪ Fred Hutchinson Cancer Research Center	▪ Duke ▪ Stanford ▪ Cerner ▪ AliveCor ▪ Gliimpse	▪ Verily ▪ DeepMind ▪ Galvani bioelectronics
Example developing capabilities	▪ Pharmacy, prescription management, and delivery infrastructure (PillPack) ▪ Joint venture and resources to improve employee healthcare (JPMorgan and Berkshire Hathaway) ▪ Clinical partner to support cancer-focused machine learning research (Fred Hutchinson Cancer Center)	▪ Longitudinal health record system through partnerships with EHR vendors (e.g., Cerner) and hospital organizations (e.g., Duke, Stanford) ▪ FDA-approved medical accessories to wearable products (AliveCor's EKG reader) ▪ Platform to enable user collection and personalization of data (Gliimpse)	▪ New partners for AI-healthcare applications (Verily) ▪ Artificial intelligence research expertise and partnership with healthcare systems (DeepMind) ▪ Bioelectric medicine expertise to treat chronic disease using miniature electronic implants (Galvani)

We see four major disruptions possible in healthcare – today, we will focus the potential for new healthcare ecosystems

■ Details follow

1 **New healthcare ecosystems**

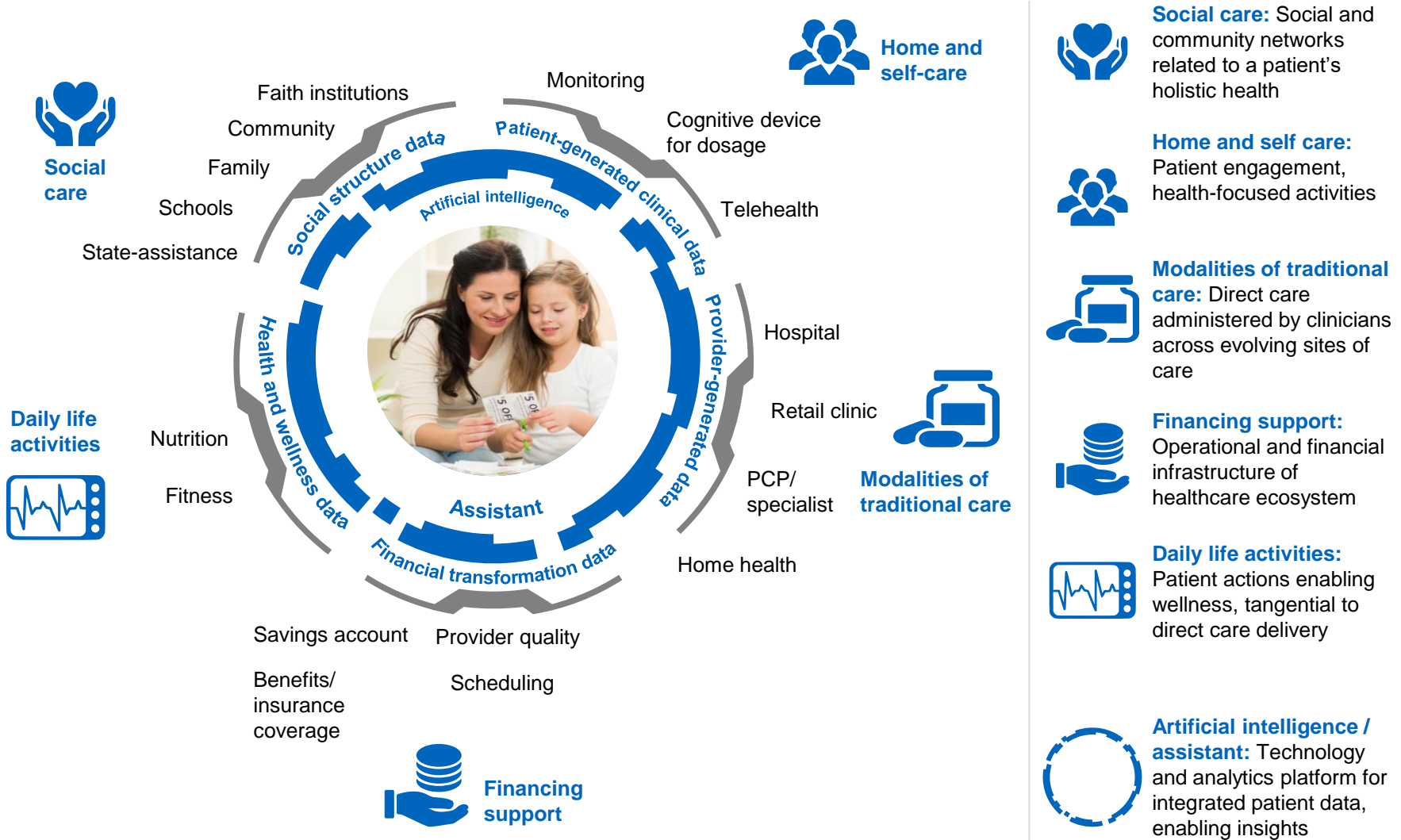**2** **Radically more efficient medical supply chain**

3 **Modernized transaction and data infrastructure**

4 **Faster, more effective therapy development**

3 | What has not yet been created is an end-to-end, fully-integrated data infrastructure, delivering new ecosystems of care via artificial intelligence


Social care

Faith institutions
Community
Family
Schools
State-assistance

Daily life activities

Nutrition
Fitness

Social structure data
Patient-generated clinical data
Artificial intelligence
Health and wellness data
Provider-generated data
Assistant
Financial transformation data

Monitoring
Cognitive device for dosage
Telehealth
Hospital
Retail clinic
PCP/ specialist
Home health

Home and self-care

Modalities of traditional care

Savings account
Benefits/ insurance coverage
Provider quality
Scheduling

Financing support

Social care: Social and community networks related to a patient's holistic health

Home and self care: Patient engagement, health-focused activities

Modalities of traditional care: Direct care administered by clinicians across evolving sites of care

Financing support: Operational and financial infrastructure of healthcare ecosystem

Daily life activities: Patient actions enabling wellness, tangential to direct care delivery

Artificial intelligence / assistant: Technology and analytics platform for integrated patient data, enabling insights

3 | Tech giants – or healthcare incumbents – could design new ecosystems of care tailored to unique populations

A. Healthy or well-managed chronic

B. High needs and multiple comorbidities

C. Specialty chronic conditions (e.g., cancer)
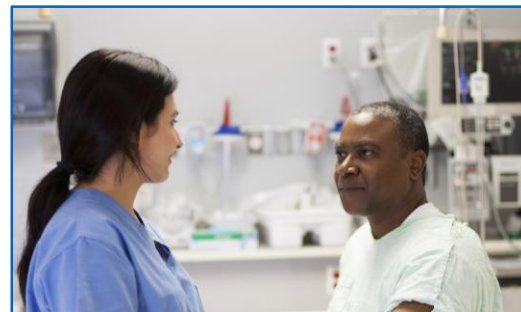
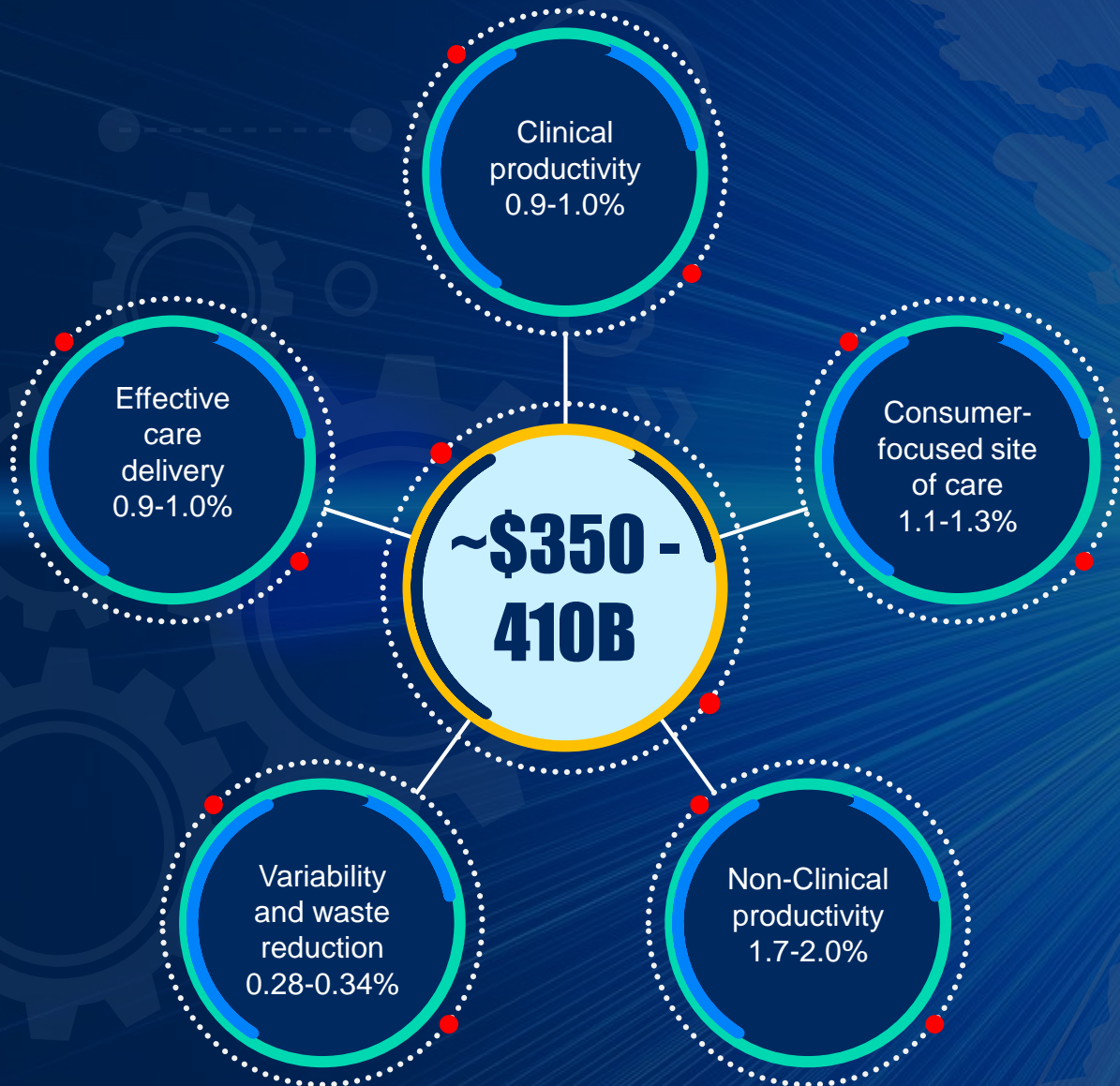|	A. Healthy or well-managed chronic	B. High needs and multiple comorbidities	C. Specialty chronic conditions (e.g., cancer)
Estimated lives By 2025	~200-250M	~50-60M	~25-35M
Estimated spend By 2025	~$250-350B	~$800-900B[1]	~$700-900B

1 Does not include spending on areas that may take more time for technology to develop value-creating solutions, such as unplanned acute medical episodes, certain planned acute procedures, severe disabilities care, long-term care spend, or end-of-life care

SOURCE: Medical Expenditure Panel Survey; National Health Expenditure Accounts estimates, CMS

Technology-driven value is based upon a set of potential use cases

Clinical productivity
0.9-1.0%

Consumer-focused site of care
1.1-1.3%

~$350 - 410B

Effective care delivery
0.9-1.0%

Variability and waste reduction
0.28-0.34%

Non-Clinical productivity
1.7-2.0%

3 | Key questions for incumbents

Level of urgency

Are changes evolutionary or revolutionary?

Engagement with tech companies

Are they friends to partner with or foes to compete with?

Leveraging strengths

How can incumbents make themselves indispensable (e.g., via local market density or brand)?