



Digital Healthcare Ecosystem Supporting Health And Wellness

Team
FINLAND MARKET OPPORTUNITIES

Future
Watch

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Digital Health's Role in Managing Health and Wellness

2

Mega Trends (social and technological) that Will Drive the Adoption of Digital Tools

3

How Stakeholders are Adapting to this

4

A Peek into the Digital Health Ecosystem in 2025

5

Key Takeaways

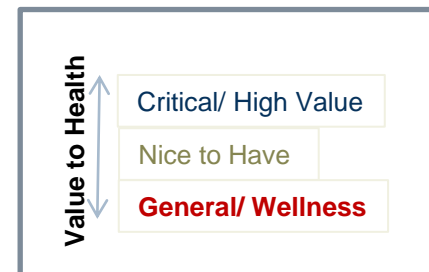
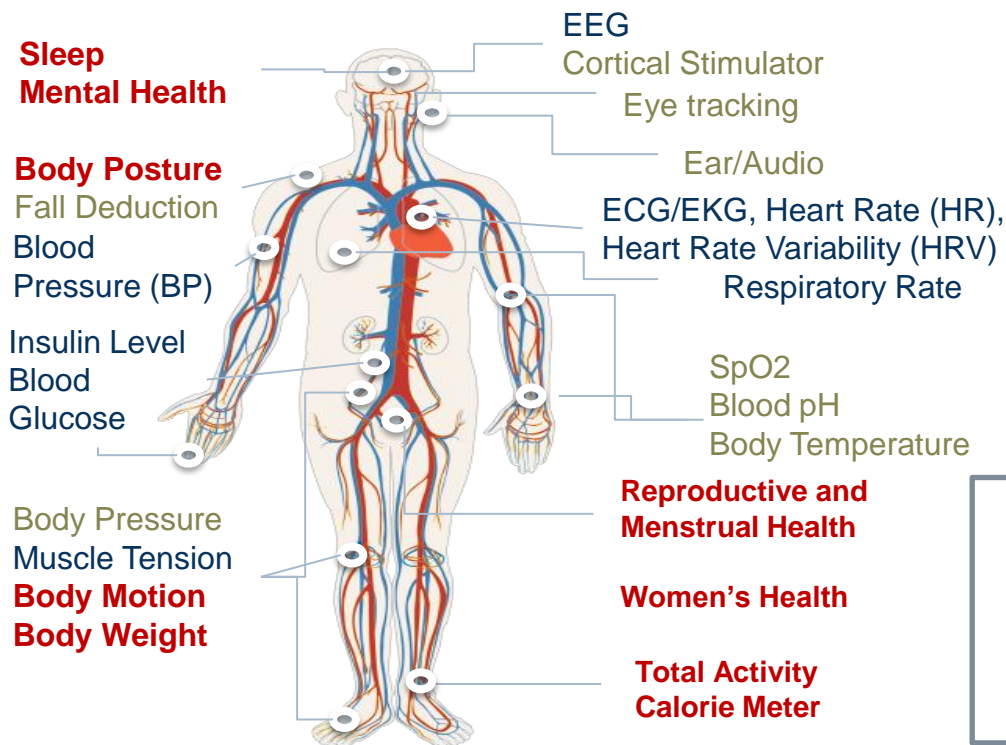


What is Wellness?



Wellness refers to physical and psycho-social well-being of an individual

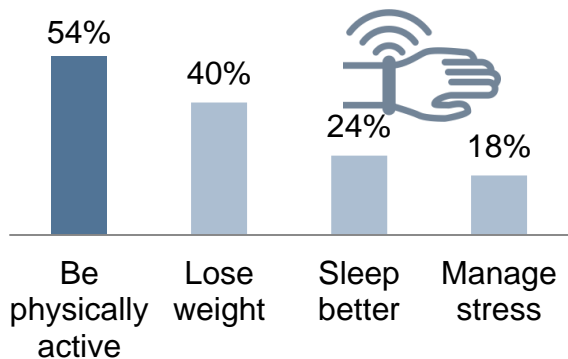
The Human Body is a Treasure Trove of Health and Wellness Information



Source: Frost & Sullivan Analysis

Healthcare consumers have never been more inclined to using digital health to manage their health

Top Reasons for Wearable Use

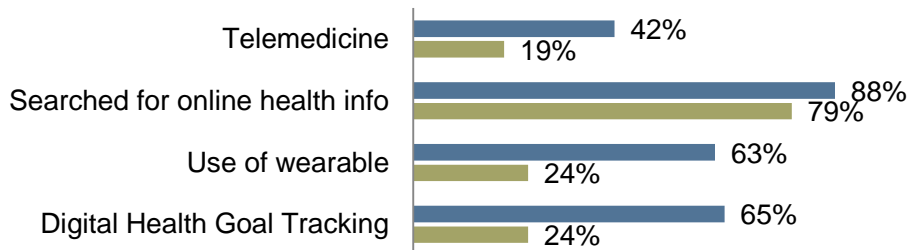


The Upward Trend

87% of consumers saying they have adopted at least one digital health tool, compared to 80% in 2015

79% adoption of digital health tools for **online health information**

Current Largest Users



■ Demographic (18-35, high income) ■ Average

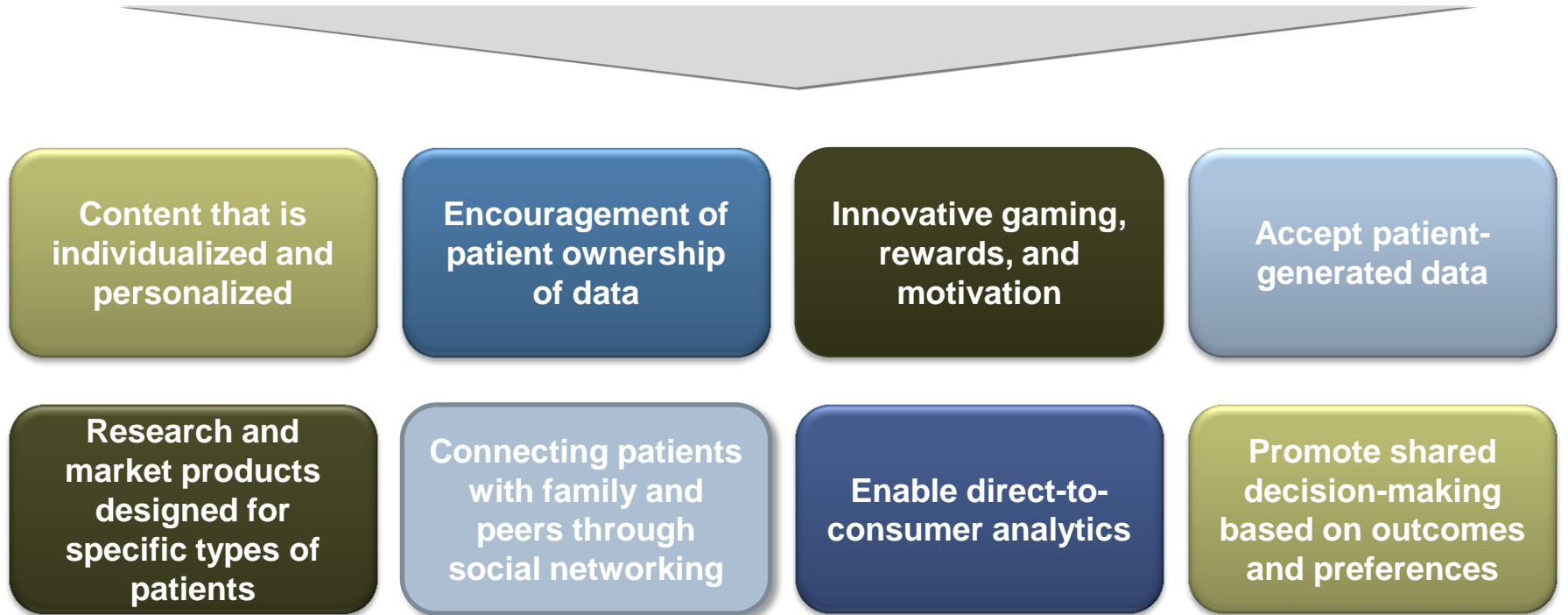
Addressable market – senior, chronically ill patients – 86% visited a doctor at least twice in the past year and **97%** are managing at least one prescription

Source: Frost & Sullivan Analysis, Rock Health Consumer Survey 2018

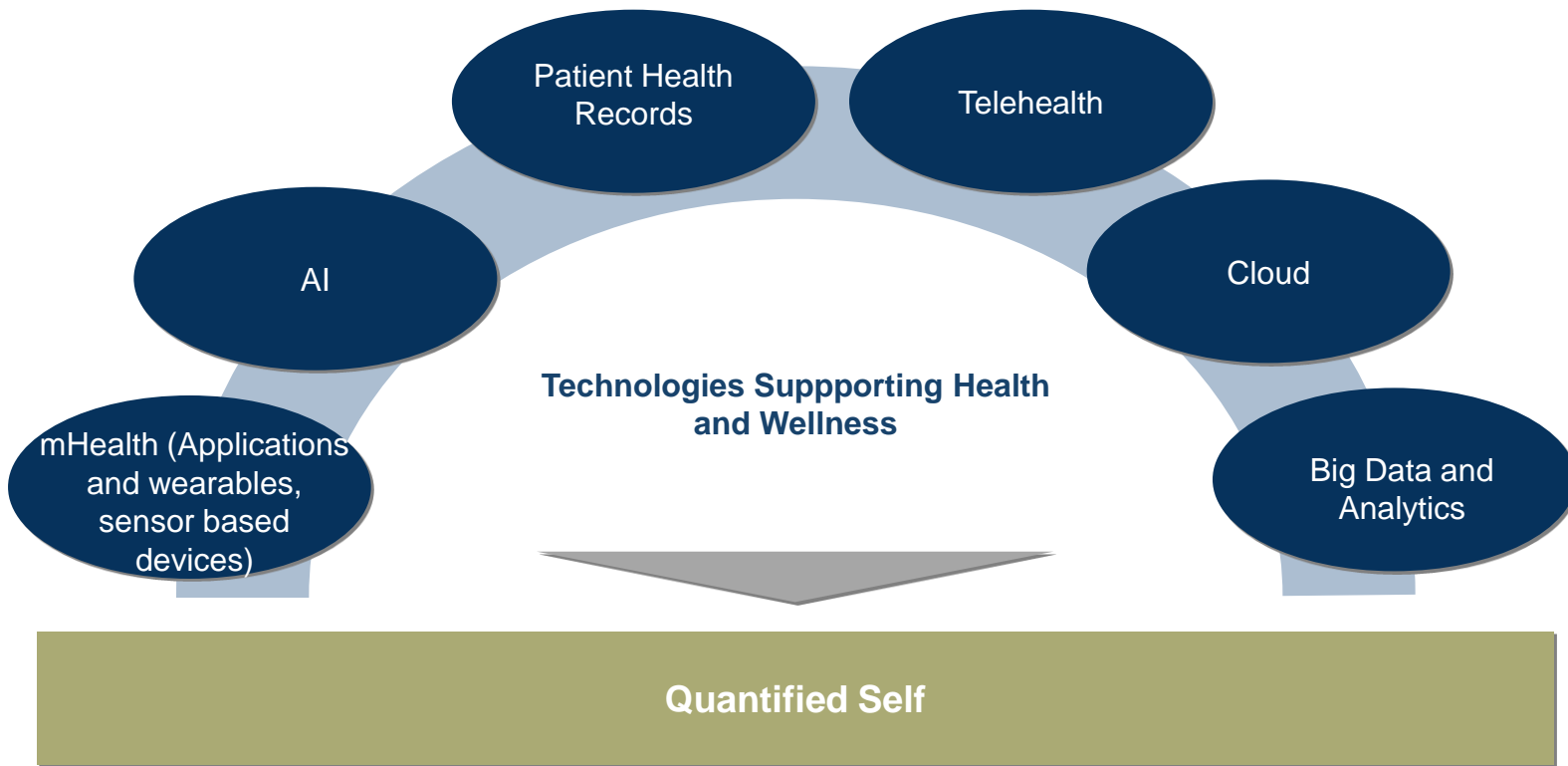
Better management of oneself only comes with a higher level of patient engagement



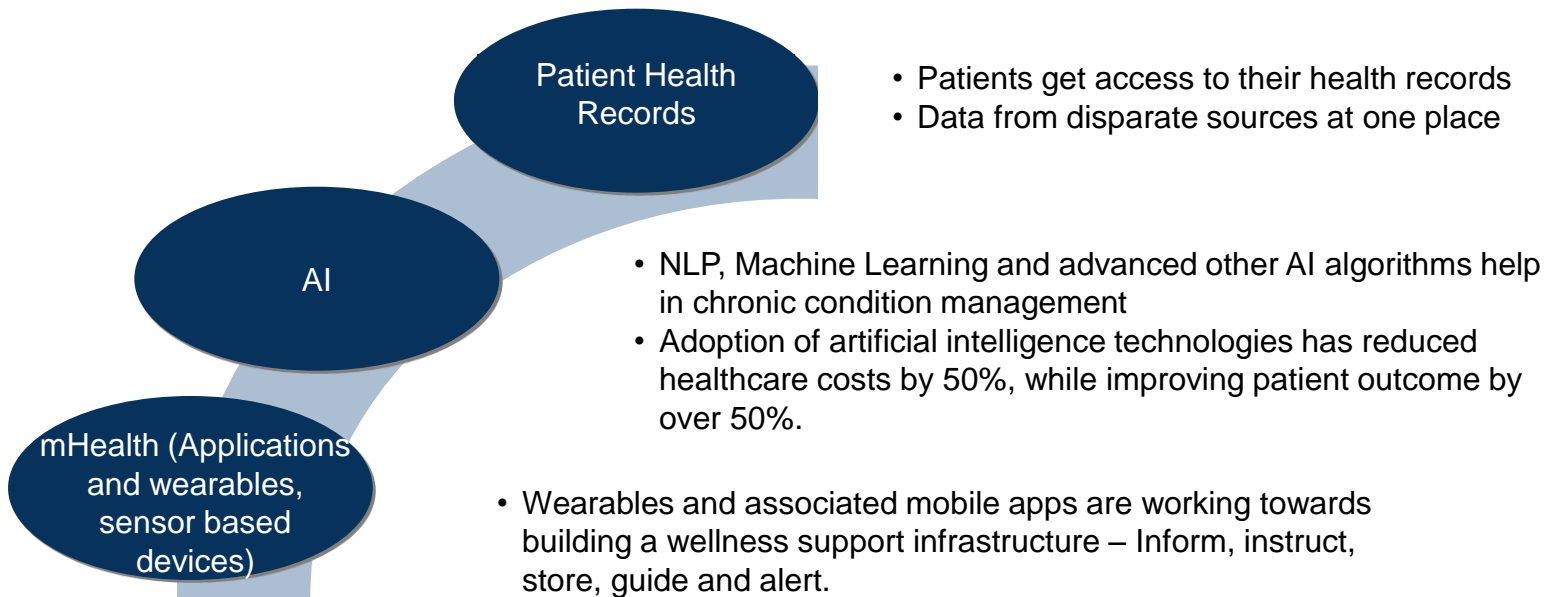
Key Aspects of Robust Patient Engagement Programs for Patient Engagement and Empowerment



Source: Frost & Sullivan Analysis



Digital health tools contributing to better health and wellness



Source: Frost & Sullivan Analysis



- Remote diagnosis and treatment from primary care physicians for long term conditions
- Care at home – intervention when needed. This is coupled with RPM
 - Cloud services allow patients and care providers to access, download, and transfer medical information, test results, prescriptions, medication dosages, doctor appointments etc.
 - Advanced analytic frameworks evaluate 'unstructured data', such as EHRs wearables and mobile applications

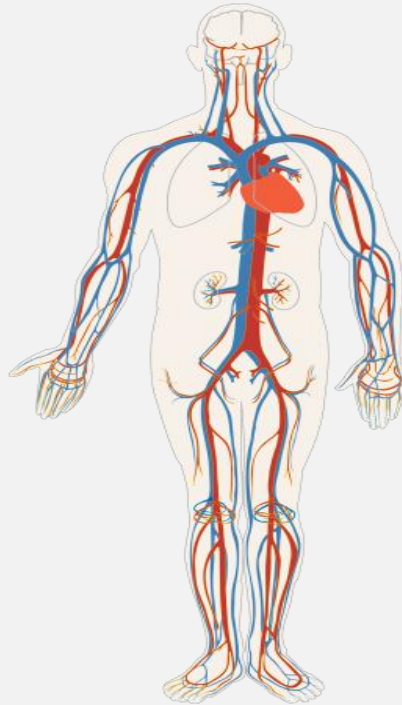
Telehealth/Tele
medicine

Cloud

Big Data and
Advanced Analytics

Consumer-grade applications are acting as tools to let patients manage their own health – contributing to outcomes based medicine approach

Technology is supporting the measurement and analysis of wellness-related vital parameters



Sleep
Mental Health

Blood Pressure (BP)

Heart Rate

Respiratory Rate

Body Posture

Reproductive and Menstrual Health

Women's Health

Total Activity
Calorie Meter

Body Weight

Evolving Digital Health Concepts

Sleep Technology

Fitness Trackers/Smart Watches

Femtech

Patient Engagement

Source: Frost & Sullivan Analysis

The Smart home is where health and wellness begins



Common Healthcare Services in a Smart Home



**Wearables/Contactless
Vitals Monitoring**

**Activity, Exercise, Rest &
Sleep Monitoring**

Diet & Nutrition Monitoring







**Smart Toilets for Waste
Monitoring**

**Vaccination and Medication
Management**

Virtual Home Assistants

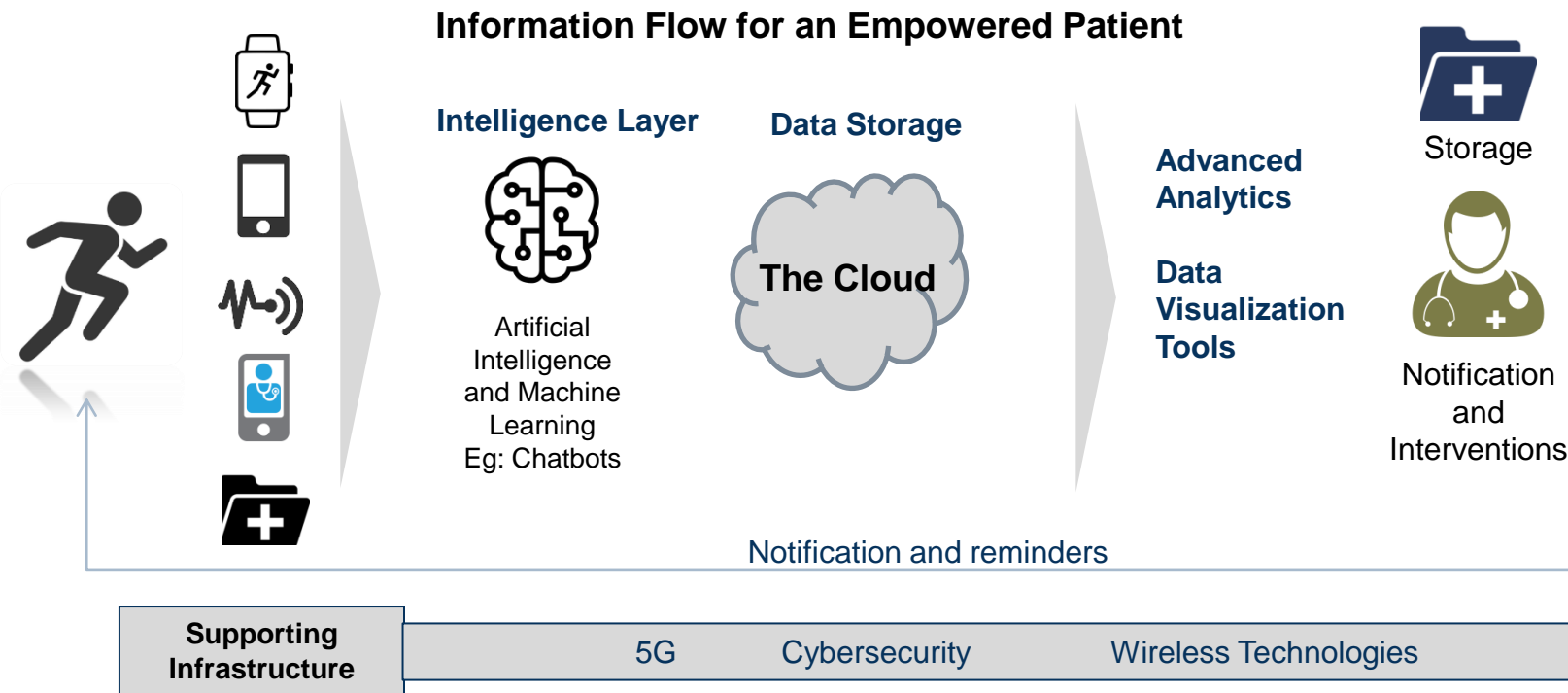
Diagnostic Devices

Telehealth Services

 **Analytics/
Informatics**  **Storage**  **Machine
Learning**  **Cybersecurity**  **Interoperability**  **Decision Support**

Source: Frost & Sullivan Analysis

These technologies are already enabling the shift from the clinic to the home



Source: Frost & Sullivan Analysis



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- 5 Key Takeaways



The global burden of disease is only going upward



CHRONIC DISEASES

\$1160 Bn
Cancer

\$863 Bn
CVD

2/3rds of all deaths

\$167 Bn
Respiratory (COPD)

\$727 Bn
Diabetes

AGEING POPULATION

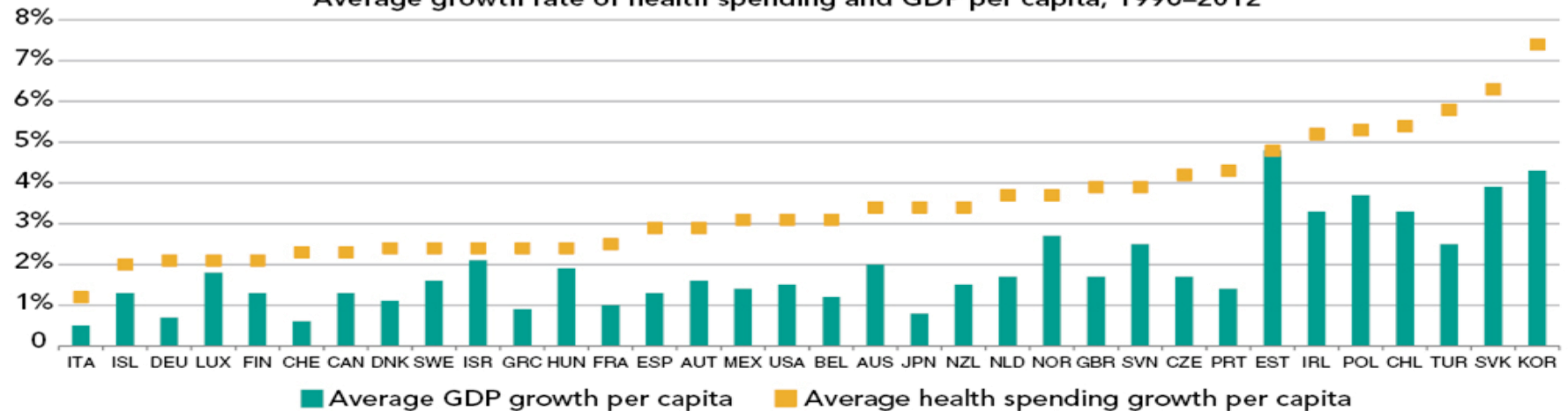
7 Bn people living above **80 years** of age in many parts of the world.

80%

Suffer from at least **One Chronic Disease**








HEALTHCARE SPENDING HAS OUTPACED ECONOMIC GROWTH

Average growth rate of health spending and GDP per capita, 1990–2012



A transformation care delivery paradigms is already seen



<i>Driving Factors</i>	<i>From Today As-is-State</i>	to 	<i>Future To-be-State</i>
Focus	Process/Provider Centric		Patient Centric and Participatory
Objective	Symptomatic, Curative		Predictive and Preventive
Access/ Location	Limited in-hospital Care (Centralized)		Anytime, Anyplace Homecare (Decentralized)
Technology	Isolated Systems		Integrated Systems (Digital Medicine)
Treatment Methods	Episodic Care (Invasive)		Holistic Care (Less Invasive)
Medication	Blockbuster Medicine		Personalized/Precision Medicine

Source: Frost & Sullivan

Wearables are enabling decentralization & preventive care

Benefits to Different Stakeholders



Hospital

Reduces readmission, patient process time, and test duplication



Physician

Can access comprehensive patient data and history for improved decision making and diagnosis



Patient

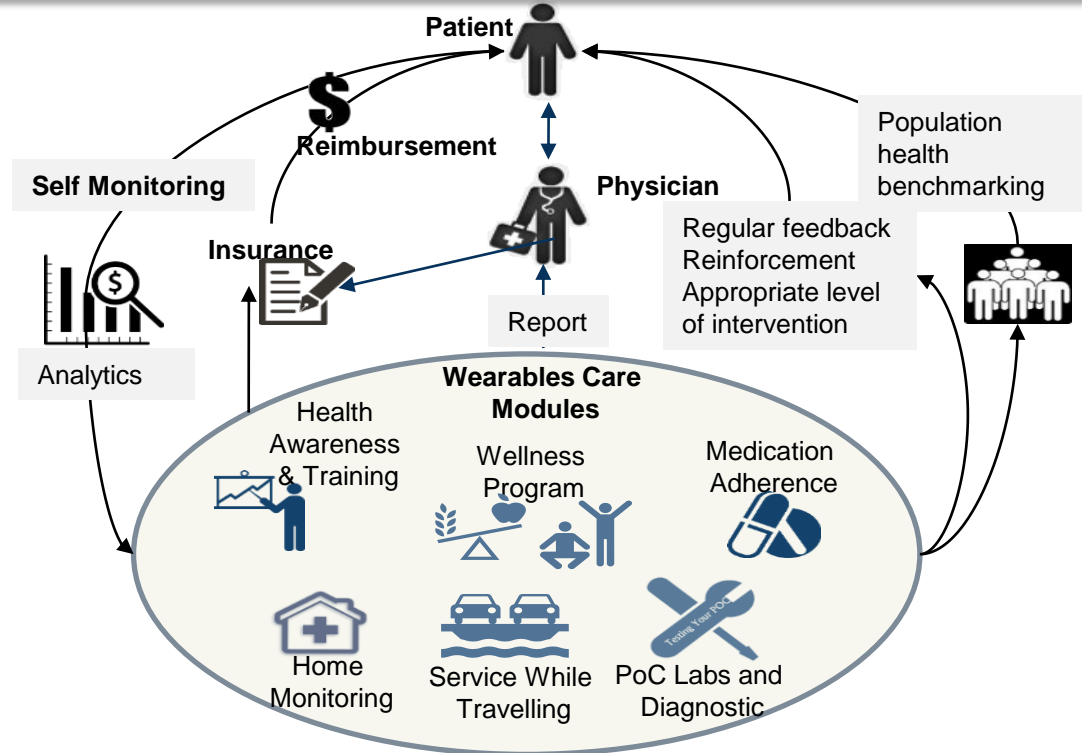
Can stay more informed about personal health and wellness, and benefit from reduced treatment time



Payer

Reduced treatment cost, hospital length of stay, and overall process efficiency

Wearable-Enabled Decentralized Care Model

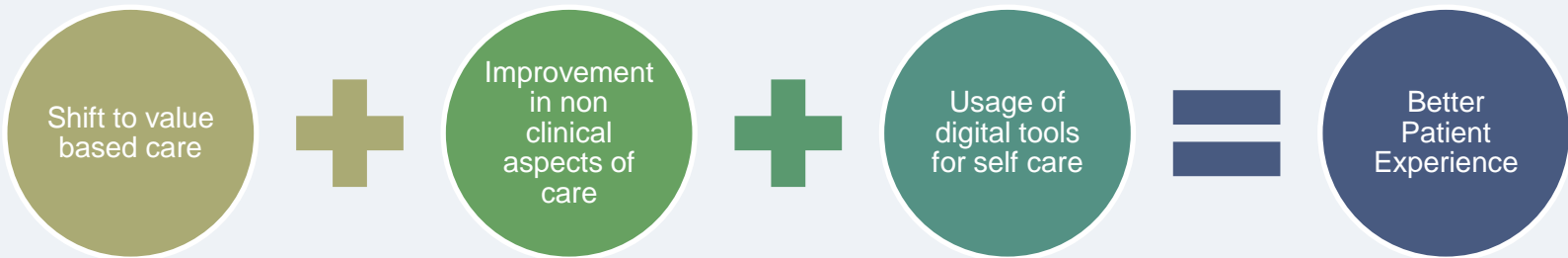


Sources: AJM; Frost & Sullivan

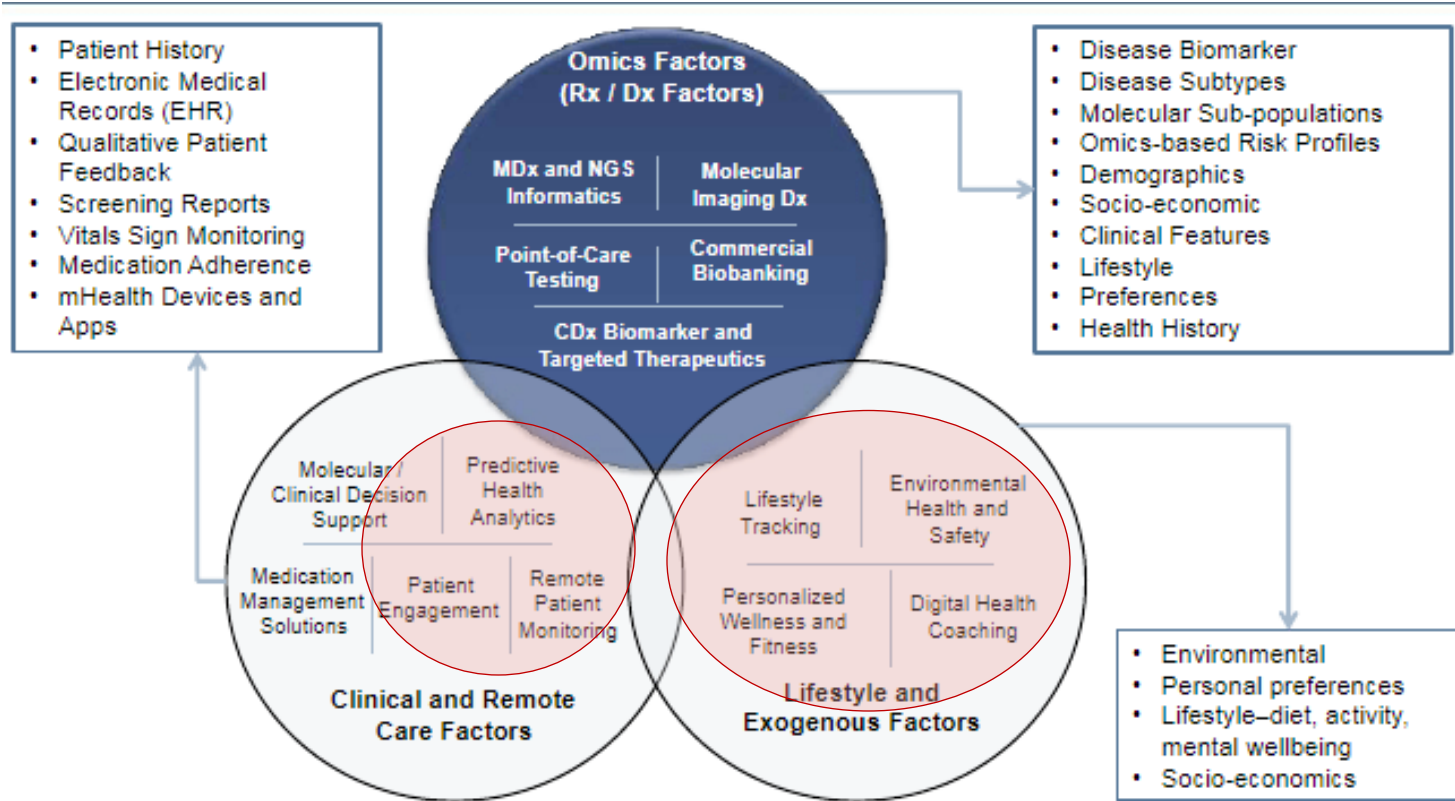
Patient experience will become the cornerstone of digital health strategy for all stakeholders

Competition drives strong growth opportunities for digital solutions that enable patient satisfaction with all aspects of healthcare encounters.

- The rapid pace of change is placing **increasing competitive pressure on healthcare organizations**. In particular, hospitals face new challenges and threats in the form of more consumer-focused care settings, such as **retail pharmacies and telehealth providers**.



Internet of medical things enabling patient stratification and lifestyle tracking for precision medicine practice



Source: Frost & Sullivan Analysis



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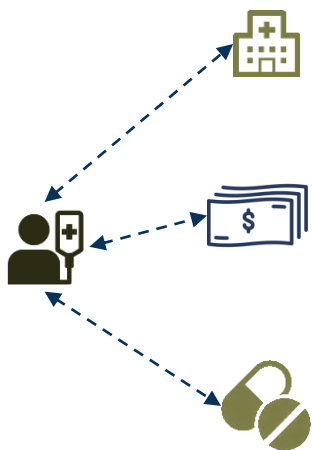
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Key Takeaways



Key healthcare stakeholders will need to keep pace with the on-demand economy



Stakeholder	Commonly Used Digital Health Tools and Current Usage	Steps taken to embrace digitization
Healthcare Provider	<ul style="list-style-type: none"> • Portals • mHealth apps • RPM, Telemedicine 	<ul style="list-style-type: none"> • Set aside budget for innovation • Support care from alternative locations
Payer/ Insurance	<ul style="list-style-type: none"> • Portals • mHealth apps • Data analytics 	<ul style="list-style-type: none"> • Plans designed based on consumer preferences • Reimbursement of select digital services
Pharmaceutical Company	<ul style="list-style-type: none"> • Portals • mHealth apps • Wearables • Data analytics • Other medication adherence tools 	<ul style="list-style-type: none"> • Provide mobile app free of cost along with medication • This serves as info tool as well as a method to track adherence • The collected info is vital for design of new drugs

Source: Frost & Sullivan Analysis



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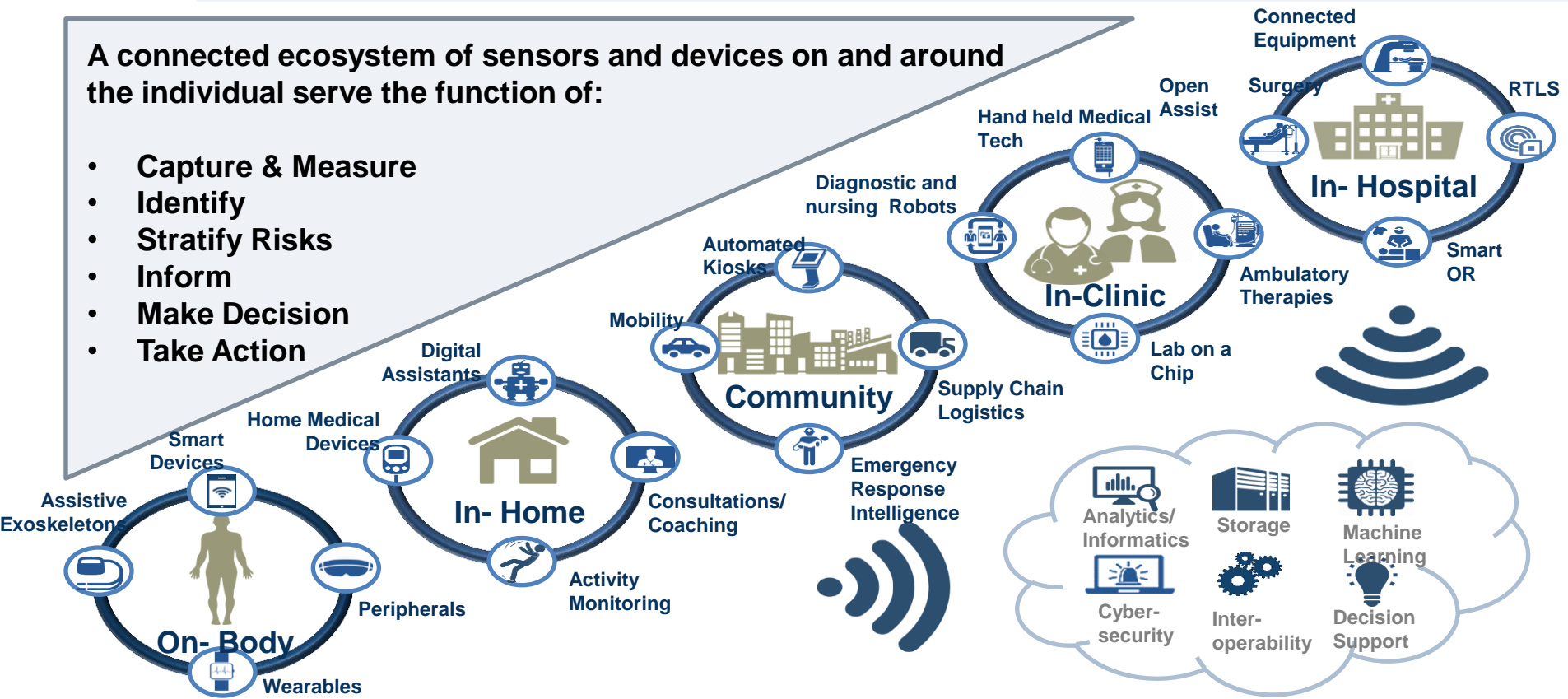
Key Takeaways



Digital health will encompass solutions across the care continuum

A connected ecosystem of sensors and devices on and around the individual serve the function of:

- Capture & Measure
- Identify
- Stratify Risks
- Inform
- Make Decision
- Take Action

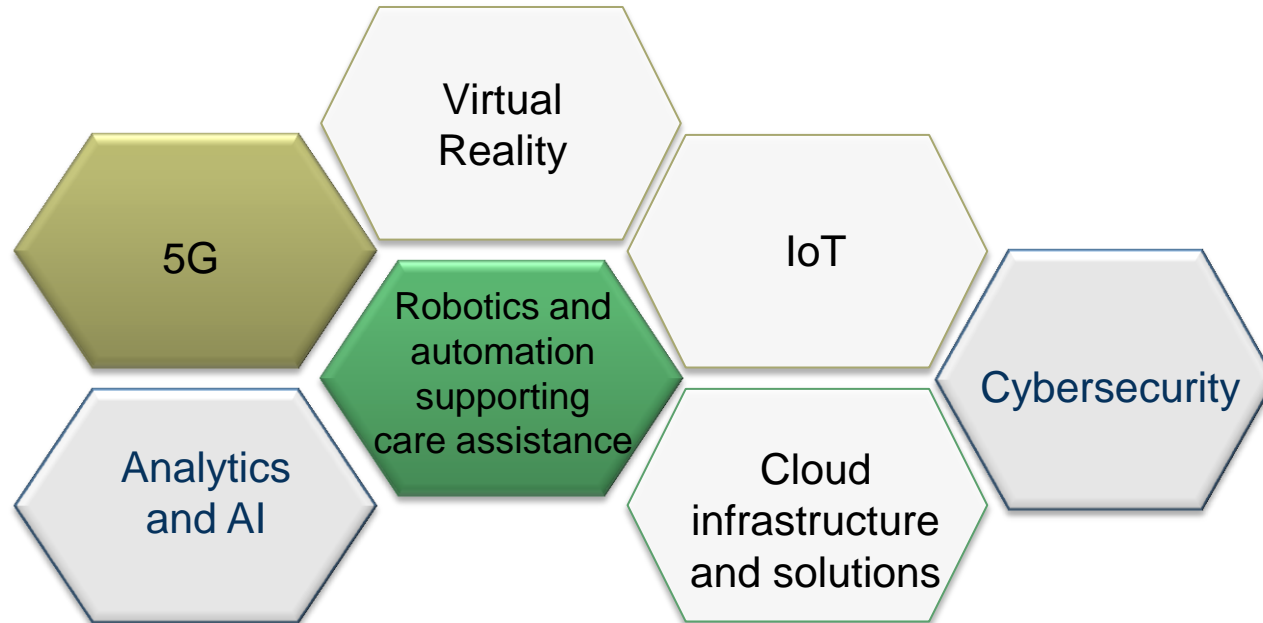


Source: Frost & Sullivan

KEY ENABLING DIGITAL SOLUTIONS SUPPORTING INDIVIDUAL CENTRIC HEALTH & WELLBEING THROUGH 2025



Technology enablers will support the paradigm shift to care delivery models in the future



Decentralized Care Delivery

Patient Experience and Customer Focus

Preventive and Wellness Focused

Cost Containment

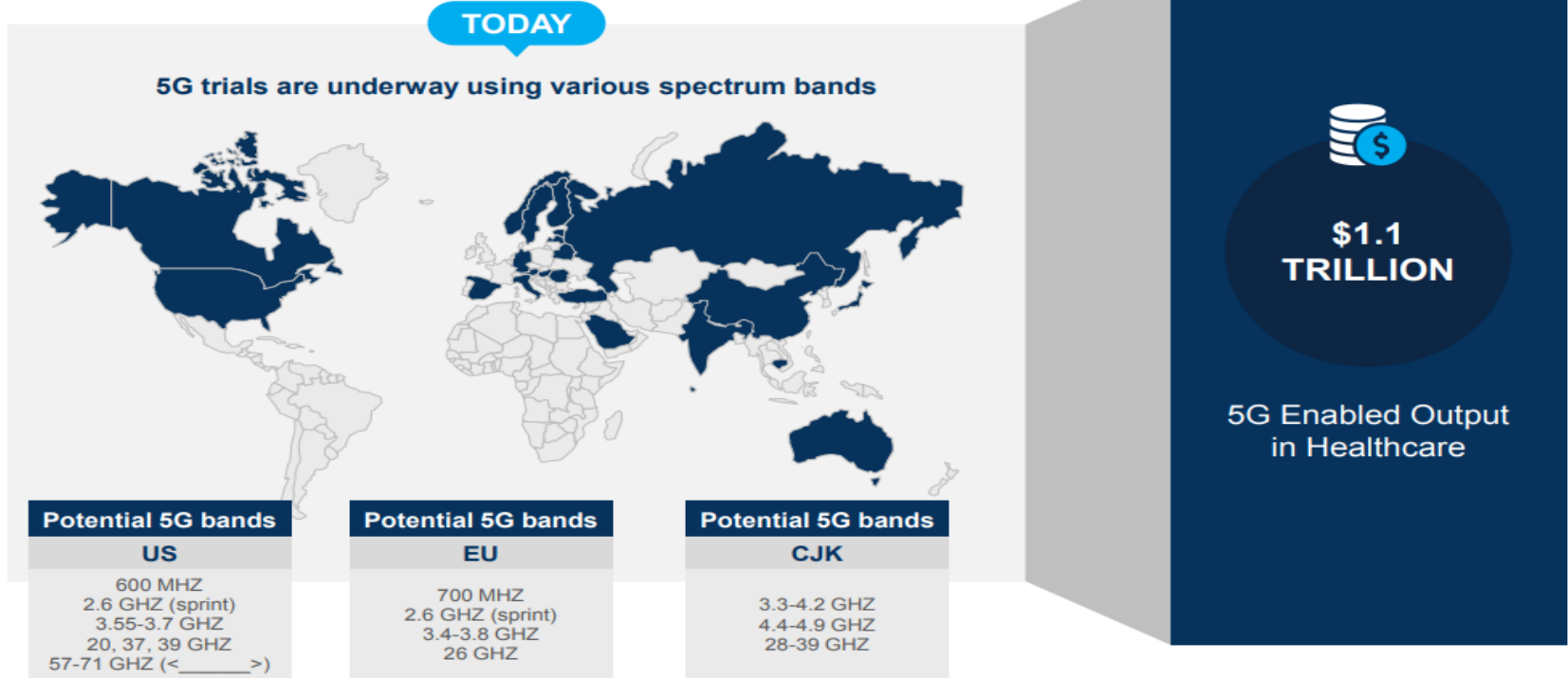
Source: Frost & Sullivan Analysis

A hand holding a tablet displaying a medical report interface. The screen shows a 'MEDICAL REPORT' header, a 'Health Data' section with a clipboard icon, and a list of medical terms including 'lab test', 'clinical test', 'blood pressure', and 'surgery'. A human silhouette with a heart and pulse line is visible. A dark blue horizontal band with the text '5G' is overlaid across the center of the tablet.

5G

5G technology to enable IoT and Continuous Monitoring in Healthcare

By 2025, faster and stable 5G internet will promote data exchange between patients and providers, significantly accelerating telemedicine



Source: Global Mobile Suppliers Association; Qualcomm, Frost & Sullivan

A hand is holding a tablet computer. The screen displays a medical report interface with a blue overlay. The interface includes the text "MEDICAL REPORT" at the top, a clipboard icon with a pulse line, and "Health Data" below it. There are also icons for "lab test" and "genetic test". The background shows a person in a white lab coat. A dark blue horizontal bar is overlaid across the middle of the image, containing the text "ANALYTICS AND AI".

ANALYTICS AND AI

Cognitive solutions that support personalized medical decision making, at scale, will be prioritized to improve ongoing struggles of patients, payers, providers and pharma



Market Drivers:

- 1. Demonstrated cost savings
- 2. Efficiency through automation



Technology Drivers:

- 1. Critical decision support tool
- 2. Analyse large data volumes
- 3. Complementing care delivery protocols for improved outcomes

APPLICATION AREAS

Providers

Will adopt clinical grade AI applications that identify chronic comorbidities, responsible for readmission and poor post operative outcomes



Pharmaceutical Companies

Will use AI and analytics for applications for drug discovery



Healthcare Payers

Will deploy consumer facing AI applications that encourage cross continuum member engagement, medication adherence and wellness




Diagnostic Centers

Will use AI and analytics for general diagnosis, diagnostic imaging, blood transfusion

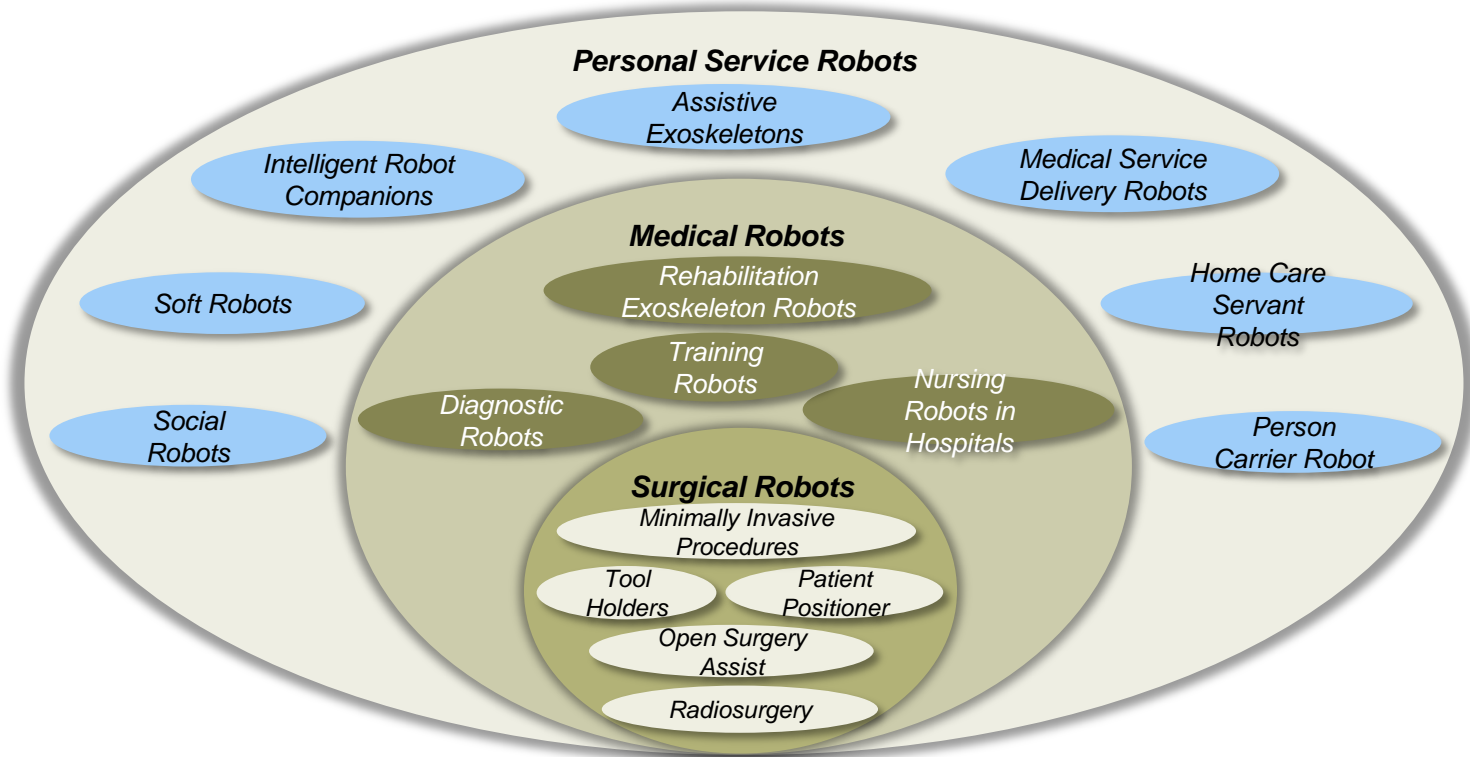


Source: Frost & Sullivan Analysis

A hand in a white lab coat holds a tablet. The screen shows a medical report interface with a clipboard icon, 'MEDICAL REPORT' text, 'Health Data' text, and a human figure with red lines indicating vital signs. A blue banner is overlaid across the center of the image.

ROBOTICS AND AUTOMATION SUPPORTING CARE ASSISTANCE

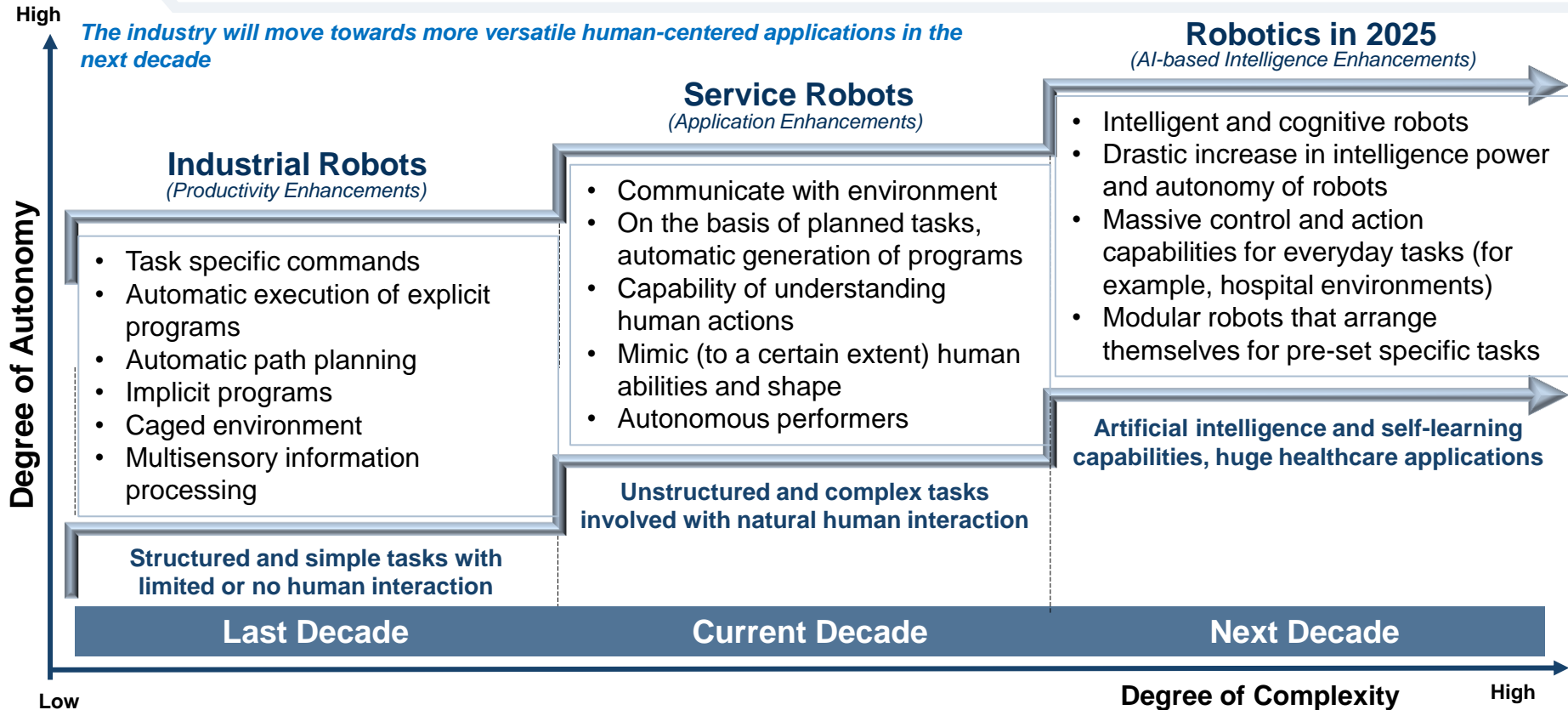
Categorization of robots used in healthcare



Source: Care Assistance and Pharma Automation Robots,, Frost & Sullivan

Source: Frost & Sullivan Analysis

Evolution of robotics – from industrial to service robots to future robots



Source: Care Assistance and Pharma Automation Robots,, Frost & Sullivan

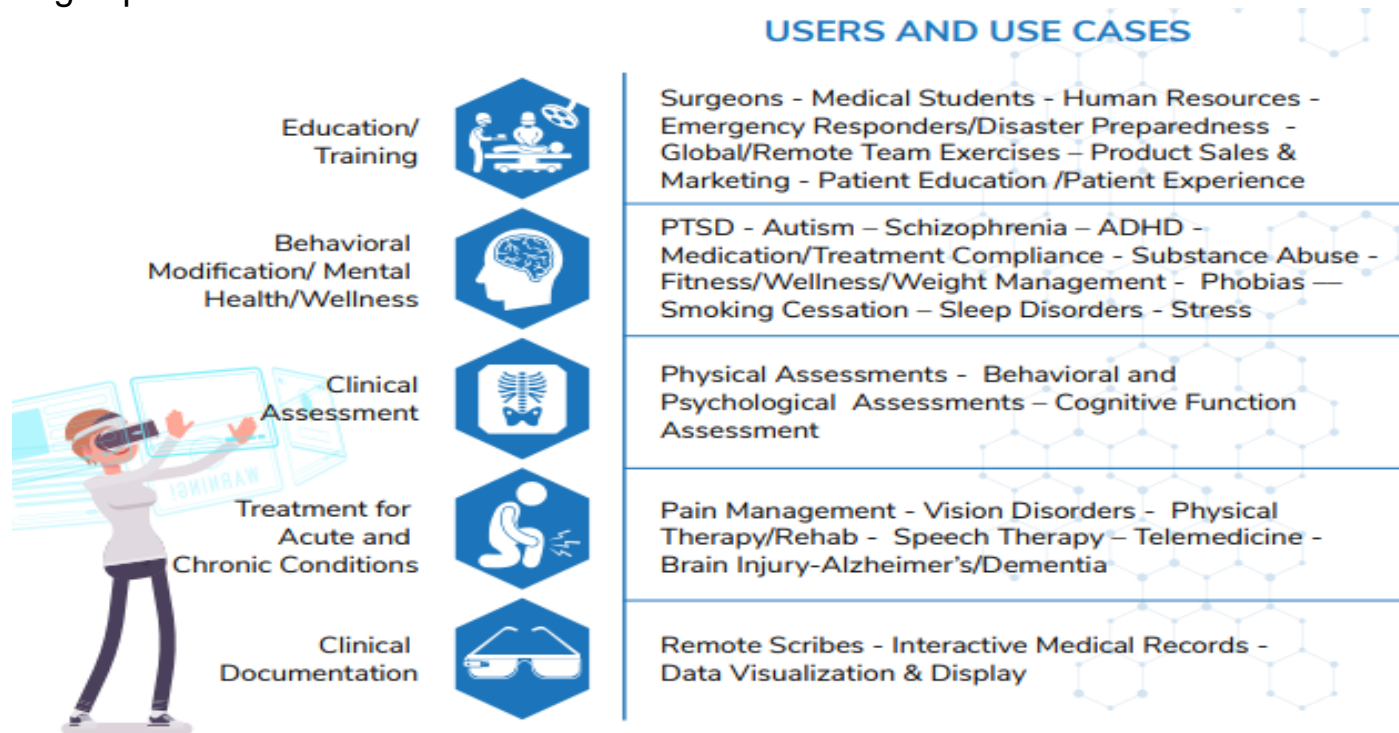


The image shows a hand holding a tablet computer. The screen displays a medical report interface with the text 'MEDICAL REPORT' at the top, a clipboard icon with a pulse line, and 'Health Data' below it. There are also faint icons for 'lab test' and 'surgery'. A blue horizontal banner is overlaid across the middle of the tablet, containing the text 'VIRTUAL REALITY' in white, bold, capital letters.

VIRTUAL REALITY

The technology is at its nascent stage; is expected to pick-up pace by 2025 due to its numerous applications in medical sciences

Reality technologies are on the cusp of disrupting the human-machine interface, giving rise to an entirely new computing experience.



Source: Frost & Sullivan Analysis

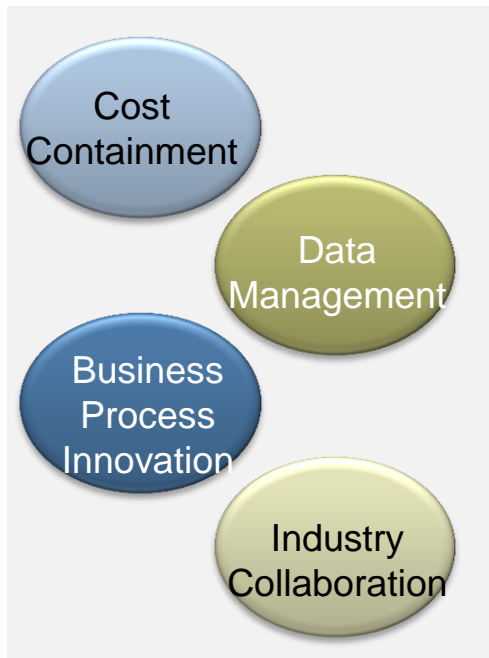


CLOUD INFRASTRUCTURE AND SOLUTIONS

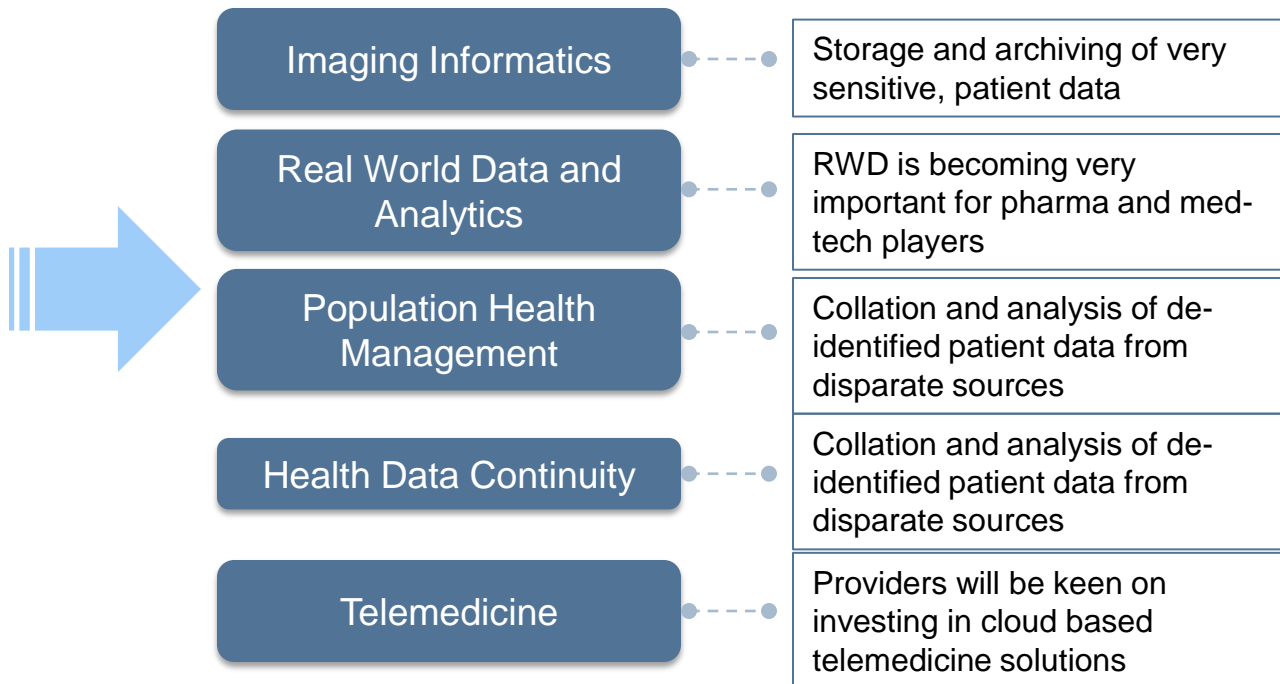
In 2025, cloud platforms will have a high demand and critical functions will depend on them for scale-ups



Current Drivers



Applications in 2025

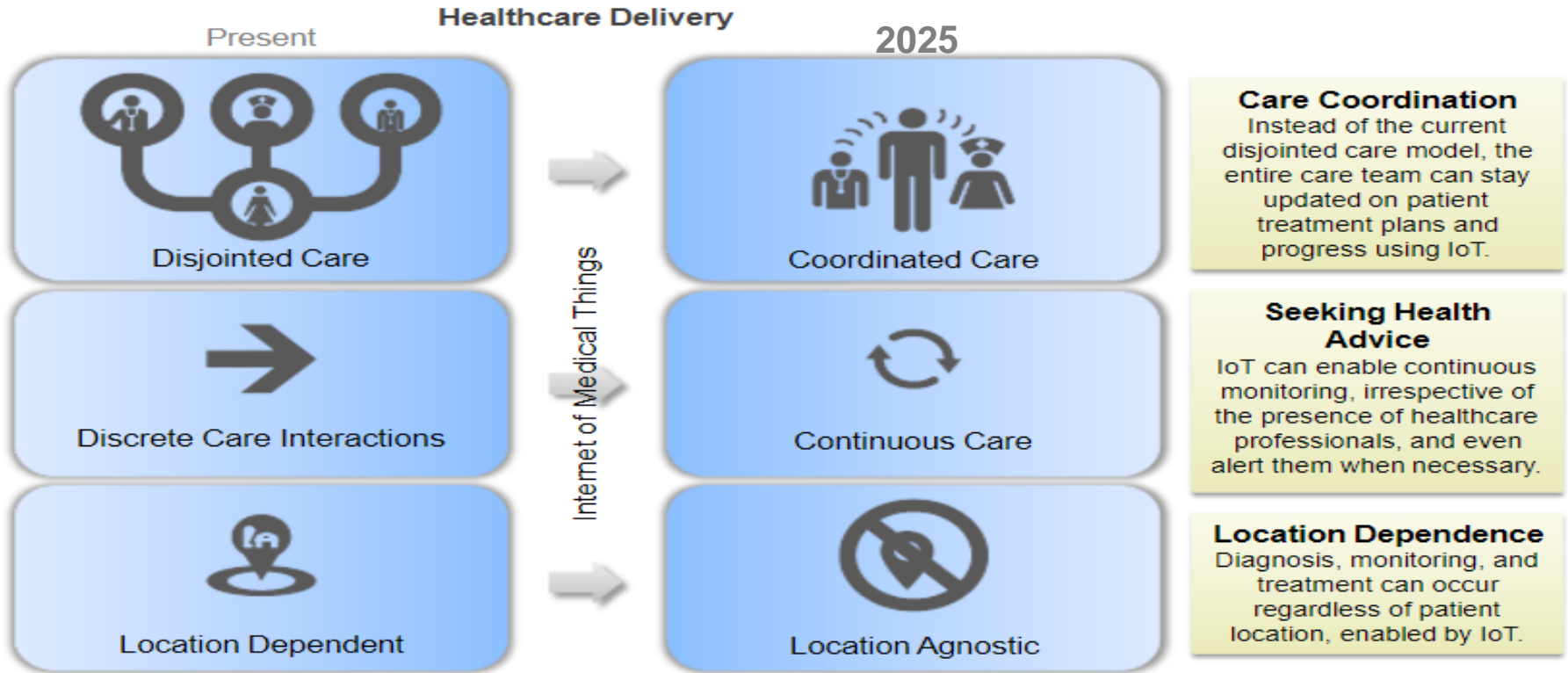


Source: Frost & Sullivan Analysis



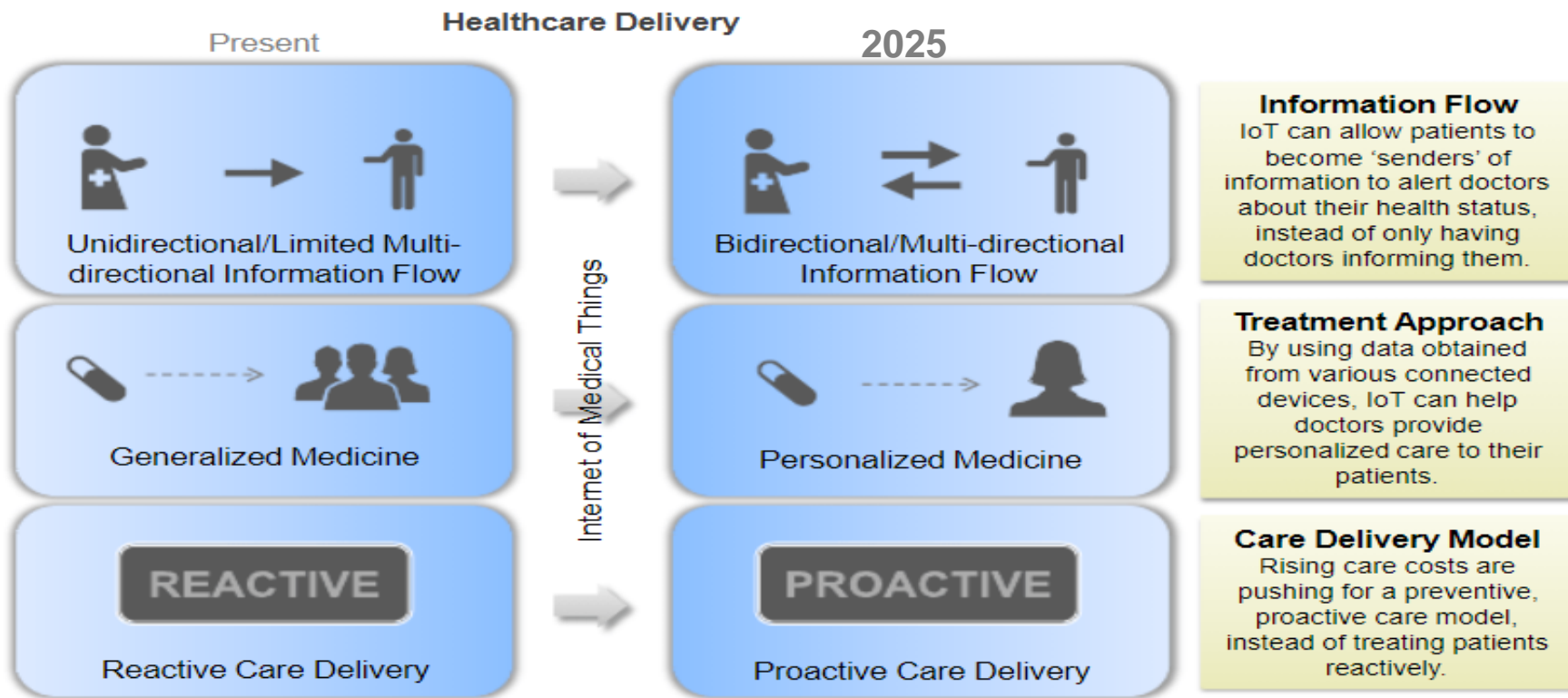
SMART DEVICES – IoT

IoT enables transition of care delivery



Source: Why Now is The Time for Interoperable Healthcare Solutions?, Frost & Sullivan

IoT enables transition of care delivery



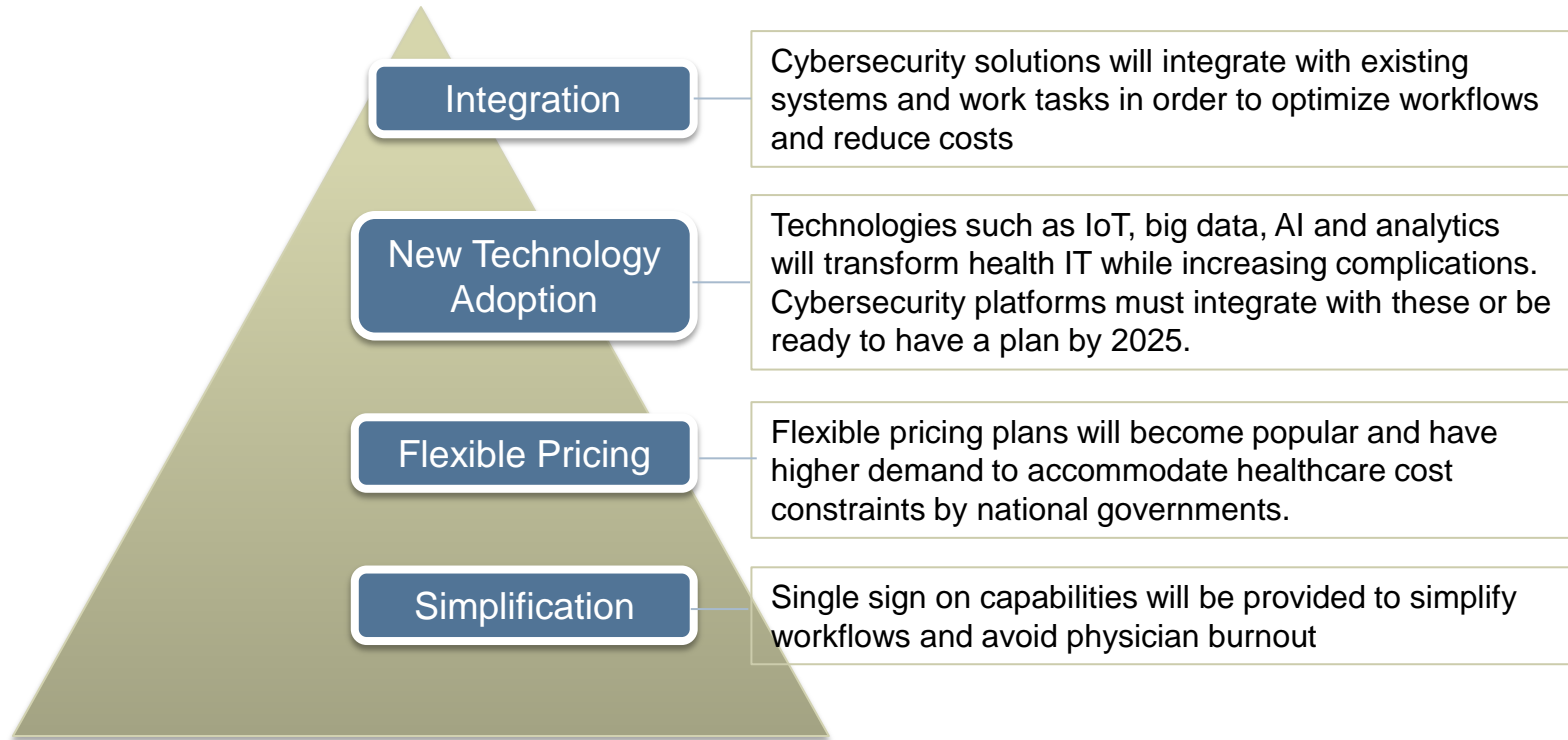
Source: Why Now is The Time for Interoperable Healthcare Solutions?, Frost & Sullivan



MEDICAL REPORT
Health Data
lab test
surgery

CYBERSECURITY

Cybersecurity will be an essential component for digital health services characterized by integration and flexi-plans for users



Source: Frost & Sullivan Analysis



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Consumers take complete control of their health and wellbeing



Health systems are **reeling under enormous pressures** and are moving towards outcomes based medicine

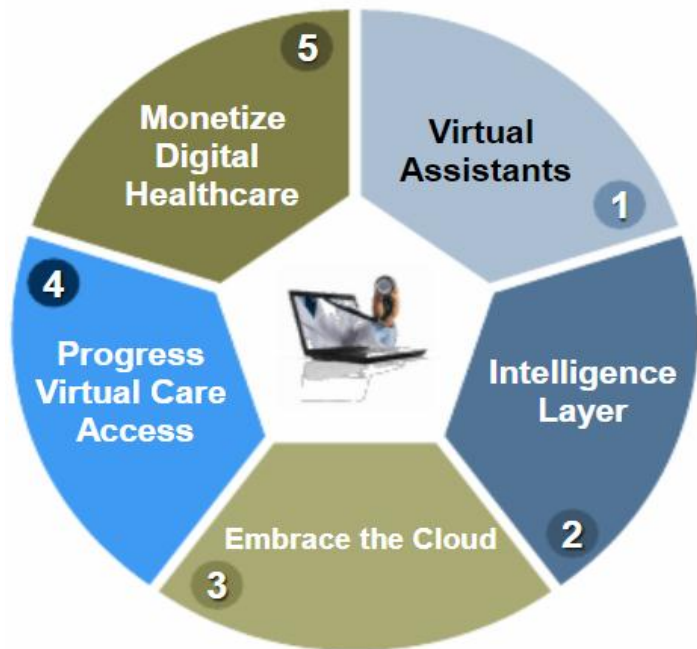
Technology is becoming **increasingly pervasive** in a consumers' day to day life. Significant growth of digital health tools such as mHealth, wearables, cloud and AI is expected.

This is in turn driving the **need for preventive care – health and wellbeing** – empowering patients to manage their own health

Evolving digital concepts such as sleep tech and Femtech are gaining steam and their benefits are quantified via studies

Aggregating more data on markers of health and wellbeing, digital health will allow individuals to improve their lifestyles and maintain good health for longer, and **so need fewer visits to their physician – save costs**

By 2025, benefits from AI and virtual assistants will gain more visibility, propelling their adoption



1. Virtual Assistants will be utilized to interact with patients directly to improve enterprise healthcare workflow
2. AI devices will improve communication with patients and aid problem solving
3. Cloud will be increasingly utilized to manage large data sets
4. RPM and virtual visits will be utilized by some health plans, employers and also healthcare enterprises
5. Digital solutions will be used to generate revenues, patients will have a say in how their health data is used

Source: Global Digital Health Outlook, 2018, Frost & Sullivan



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