

EMPOWERING Health

Transform the Care
Continuum with IoT

IOT Health Slam
December 2nd, 2016

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"Social, environmental and behavioral determinants of health having a strong influence on long-term health outcomes. Data from experience outside the healthcare system (from the Internet of Things, for example) will be at least as important in assessing risk, optimizing interventions and driving business performance."

Gartner, G00291977, Jan 2016

Health industry challenges

Needs are infinite
resources are finite

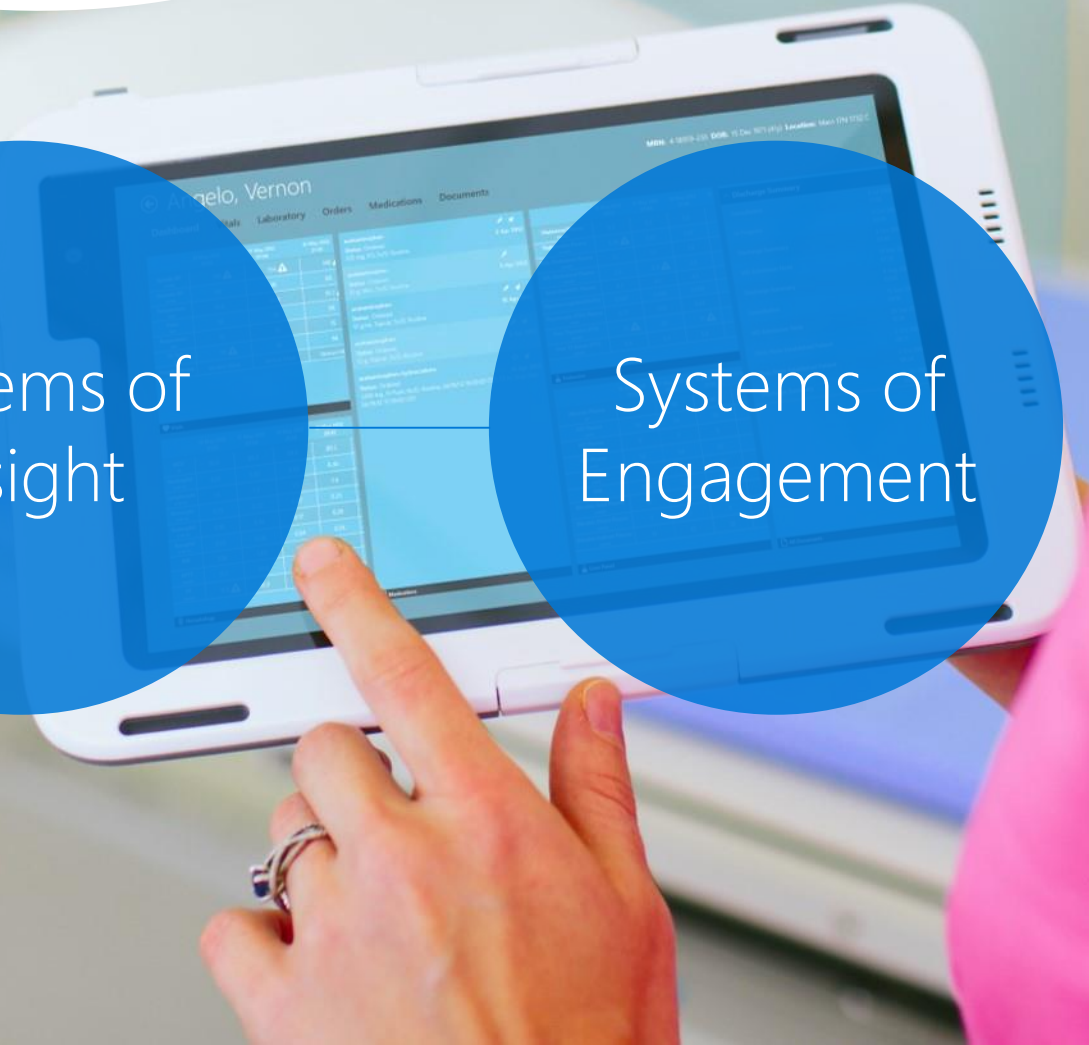


Evolution of Health Solutions

Systems of
Record

Systems of
Insight

Systems of
Engagement



Digital Transformation in the Health Industry



ENGAGE YOUR PATIENTS

to improve experiences & outcomes



EMPOWER YOUR CARE TEAMS

to be more productive & efficient



OPTIMIZE YOUR CLINICAL & OPERATIONAL EFFECTIVENESS

by using data analytics



TRANSFORM THE CARE CONTINUUM

by tapping intelligent devices

FLEXIBLE

Built with what you know
Bridge between cloud & on premises
Work with any device, app, data, OS

INTEGRATED

Built for—and open to—extensibility
325,500+ partners & millions of developers
Platform, productivity & business apps that
work together

TRUSTWORTHY

Setting & leading industry compliance standards
People-centric security & privacy
Proactively fighting digital crimes
\$15B+ investment in cloud infrastructure



Transform the Care Continuum by tapping intelligent devices



Remote patient
monitoring



Precision
health



Managing devices
& facilities





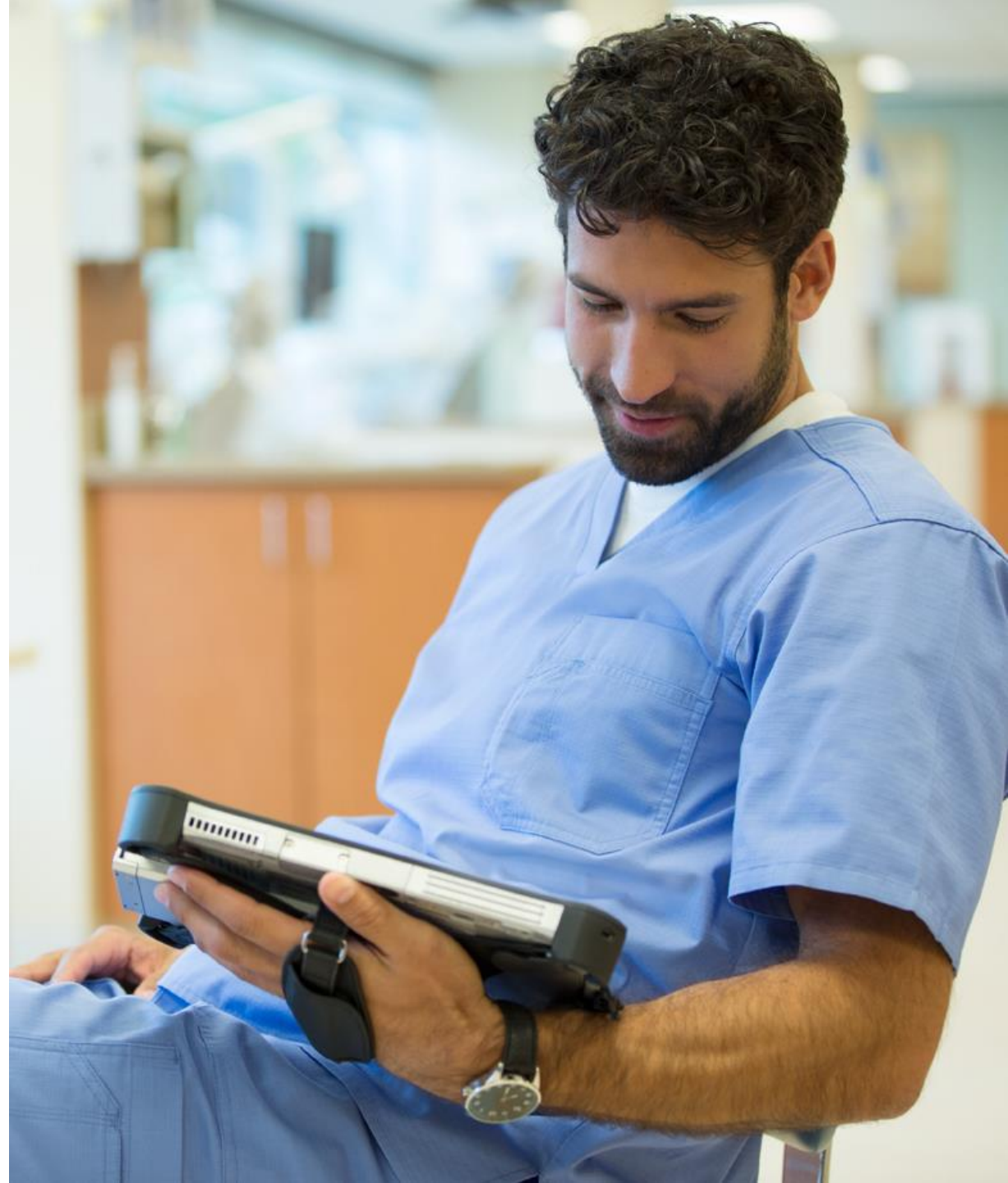
REMOTE PATIENT MONITORING

MONITOR patient
vital signs

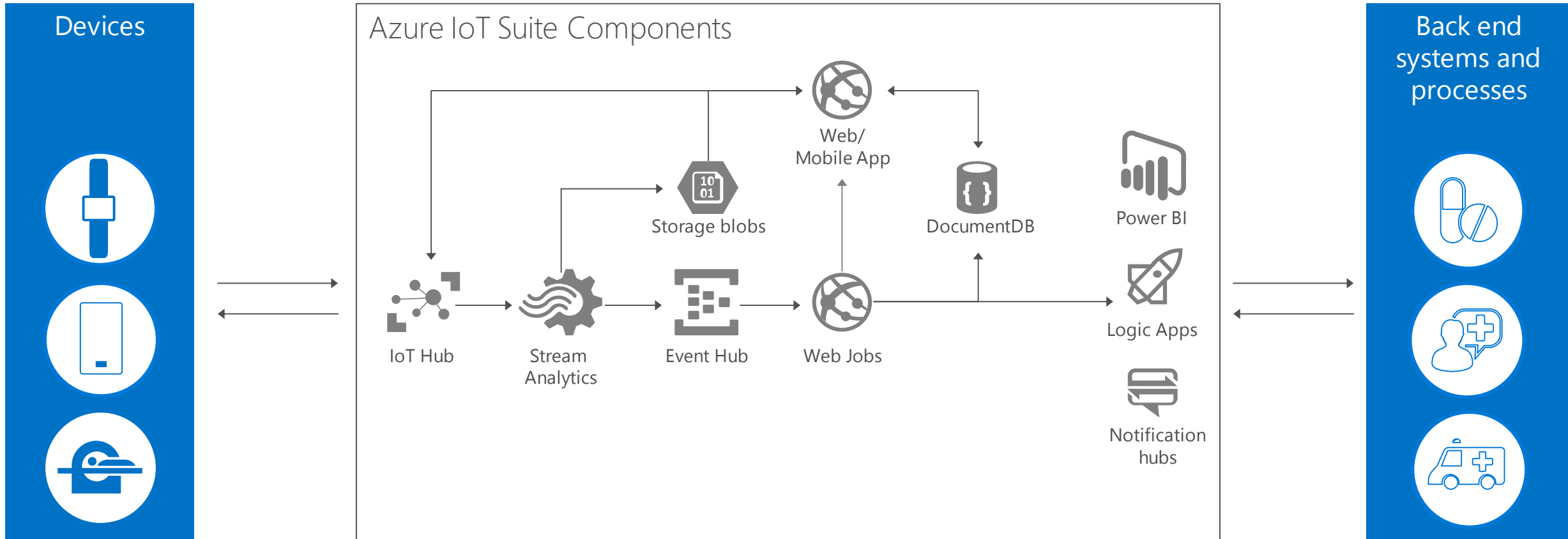
ANALYZE
data for patterns
and warning signs

identify **OPTIMAL**
treatment options

PREVENT
hospital
readmissions



Azure IoT suite components needed for remote patient monitoring





REMOTE PATIENT MONITORING

COLLECT patient
data on tablets or
smartphones

MONITOR patient
activities via motion
sensors

COLLECT billions of
data points

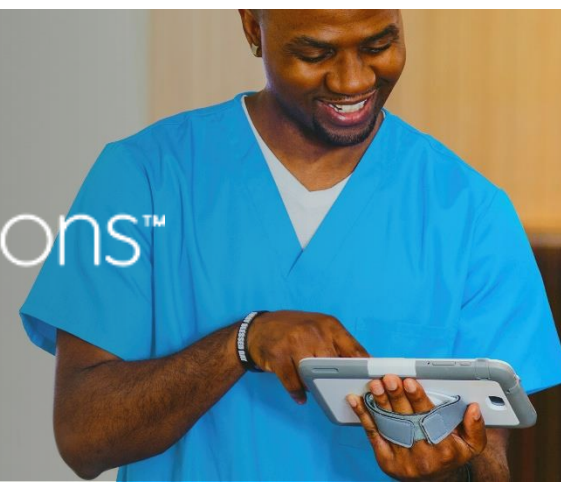
PROVIDE treatment
recommendations

"If we can keep a diabetic's blood glucose level steady, that is a huge value to the patient as well as to those who pay for that patient's care."

Kumar Subramaniam
Care Innovations Chief Information and Technology Officer



careinnovations™





REMOTE PATIENT MONITORING

COLLECT
patient data via
devices

COMPARE
measurements to
thresholds &
generate **ALERTS**

CONTACT
patient or family
member

feed data into
MACHINE LEARNING
for predictive analysis

"We're building a sustainable health system, not a health care system. ImagineCare is about helping people to stay healthy and helping patients to 'get well' faster."

Dr. Jim Weinstein, Dartmouth-Hitchcock
CEO & President





PRECISION HEALTH

ANALYZE
patient symptoms
& attributes

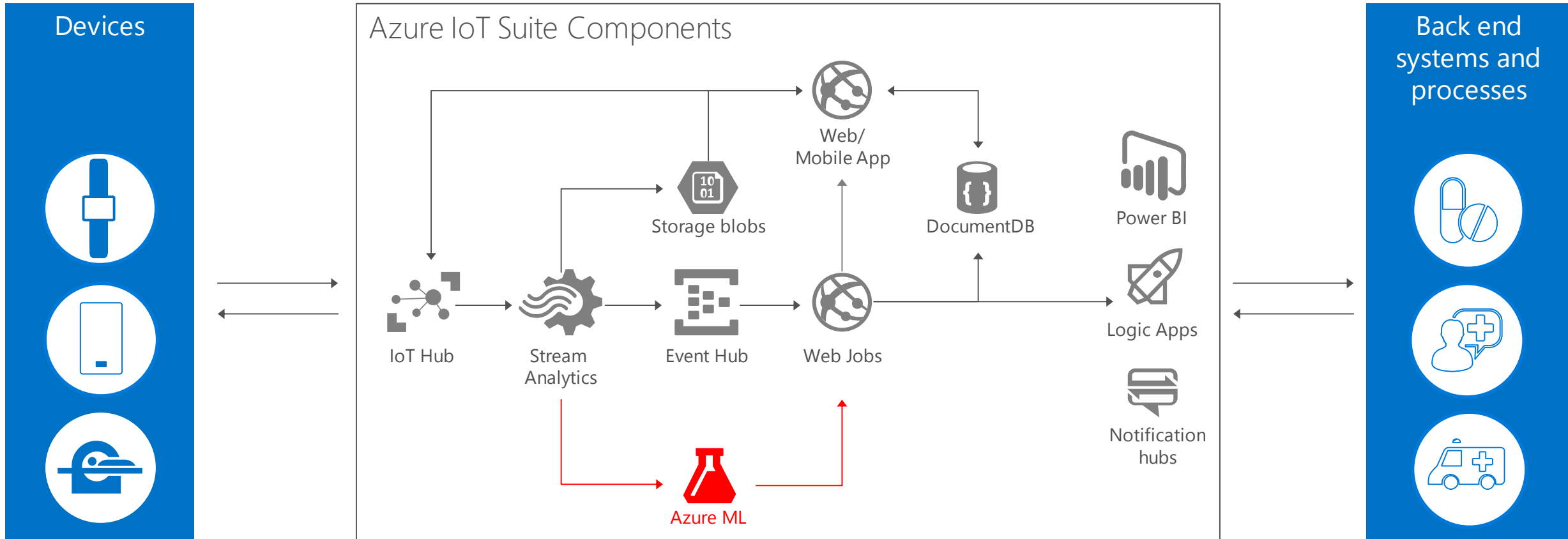
COMPARE
patient with
similar patients

DETERMINE
best treatment
options

TRACK
treatment outcomes



Azure IoT suite components needed for personalized health





PRECISION HEALTH

Microsoft Band
COLLECTS data

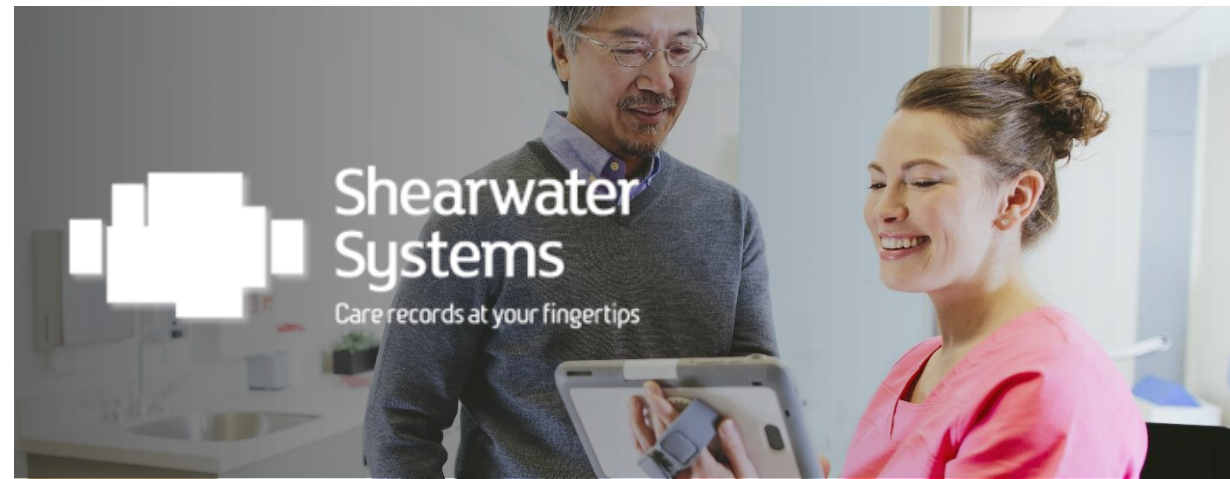
patient **ENTERS**
data via mobile portal
& social media

combined data is
STORED in the cloud

doctors **ANALYZE**
data to optimize
care plan

"This technology can help us identify patterns of stress, behavior, lifestyle, and other factors that contribute to seizure risk. That will help us deliver more effective care."

Dr. Rupert Page
Chief Clinical Information Officer & Consultant Neurologist
Poole Hospital NHS Foundation Trust



**Shearwater
Systems**

Care records at your fingertips



MANAGING DEVICES & FACILITIES

TRACK devices
& supplies

adjust devices to
OPTIMIZE energy
usage and uptime

MONITOR
& **ADJUST** device
health indicators

set up **ALERTS**
for preventative
maintenance





MANAGING DEVICES & FACILITIES

activity counter
TRACKS flow of
traffic in healthcare
settings

sensor in Purell
dispenser
TRACKS use

app **AGGREGATES**
data to determine
compliance

REPORTS are
viewed via the web or
a mobile device

"The GOJO SMARTLINK solution has not only become the global leader in hand hygiene compliance monitoring but also delivers a higher standard of care through providing better insights as well as increasing patient safety. Sometimes it's the simplest things that can save a life."

Jeff Hall, VP of Business Development, GOJO Industries





MANAGING DEVICES & FACILITIES

SENSORS capture
data about elevator
components

system extracts
and **VISUALIZES** data
from the cloud

technicians view
alarms and events
via **DASHBOARD**

elevators identify
likely error causes
based on **MACHINE
LEARNING**

"We wanted to go beyond the industry standard of preventative maintenance, to offer predictive and even preemptive maintenance so we can guarantee a higher uptime percentage on our elevators."

Andreas Schierenbeck, ThyssenKrupp Elevator CEO



thyssenkrupp

CGI



MANAGING DEVICES & FACILITIES

scripts automatically
CONFIGURE new
refrigerator kiosk

INVENTORY
updates when smart
fridge dispenses
or accepts vaccines

proactive **ALERTS**
notify employees if
fridge temperatures
change

DASHBOARD
shows temperature,
inventory & events

"Our goal is to provide real-time dispensing data, so we can let distributors and manufacturers know if there may be upcoming vaccine shortages at specific clinics or in certain areas."

Alan Lowenstein, COO, Weka Health Solutions



BLUEMETAL



weka health
solutions



MANAGING DEVICES & FACILITIES

Use connected BD
Veritor device for
flu **DIAGNOSIS**

"De-identify" data
collected from devices

Send data to Cloud
& hospital IT
**AUTOMATICALLY
& SECURELY**

ALERT hospitals
to increase staffing
& medicine supply
if flu outbreak
is detected

"The impending health care transformation to value-based care requires connectivity of the diagnostics and the connectivity of the therapeutics, and tying those two together."

David Feygin
VP of Health IT Innovation & Integration
Becton Dickinson and Company



Trusted Cloud Principles

Our commitments to your organization



SECURITY

We will implement strong security measures to safeguard your data



PRIVACY & CONTROL

We will provide you with control over your data to help keep it private



TRANSPARENCY

We will explain what we do with your data in clear, plain language



COMPLIANCE

We will help you meet your specific compliance needs

Microsoft Certifications & Compliance Programs in Health



PAYER

ISO 27001/ISO 27018

HIPAA BAA

FedRAMP

EU Model Clause



PROVIDER

ISO 27001/ISO 27018

HIPAA BAA

EU Model Clause



PUBLIC HEALTH & SOCIAL SERVICES

ISO 27001/ISO 27018

HIPAA BAA

EU Model Clause



LIFE SCIENCES & PHARMACEUTICALS

ISO 27001/ISO 27018

HIPAA BAA

FDA Title 21 CFR Part 11

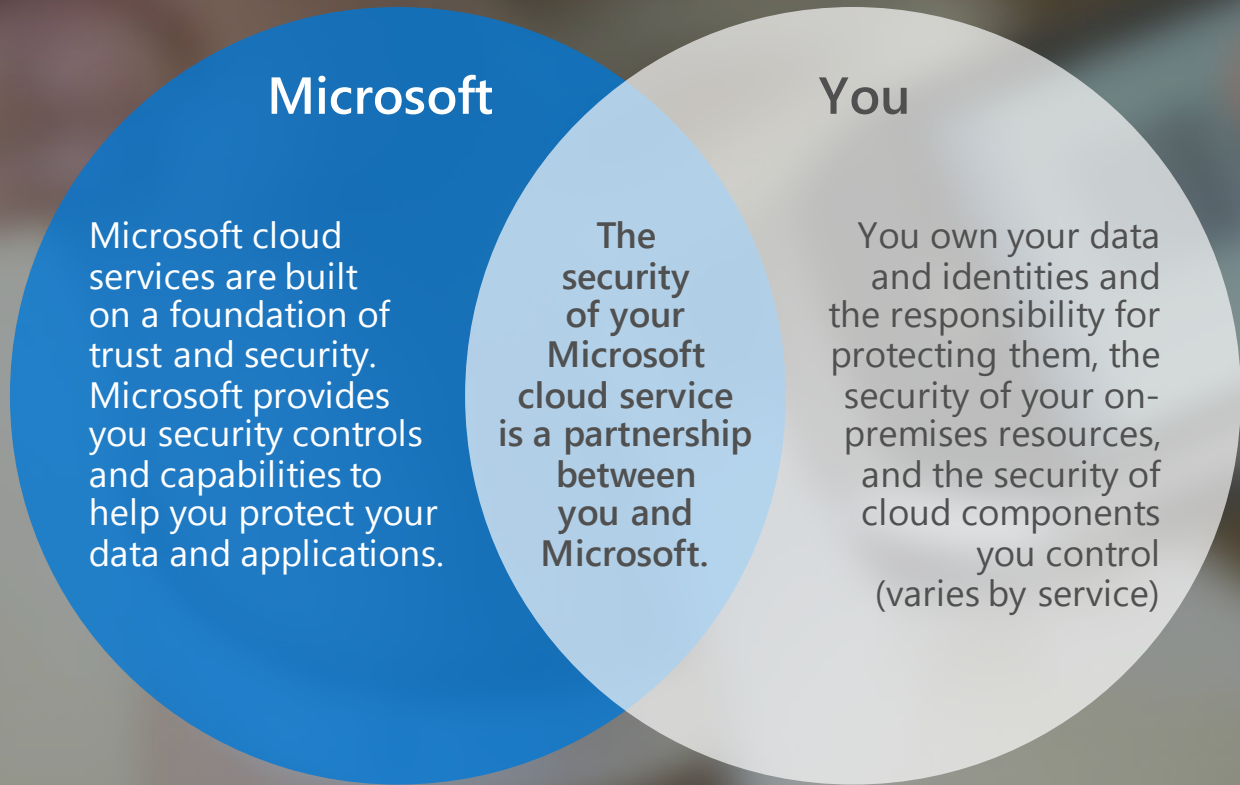
FDA 510 (k)

GXP – announcement next week



Australia IRAP | UK BS1596 | Article 29 WP | Singapore MTCS

Cloud Services Security is a Shared Responsibility



	On Premises	IaaS	PaaS	SaaS
Administration	Managed by Customer	Managed by Customer	Managed by Customer	Managed by Customer
Applications	Managed by Customer	Managed by Customer	Managed by Service Provider	Managed by Service Provider
Data	Managed by Customer	Managed by Customer	Managed by Service Provider	Managed by Service Provider
Runtime	Managed by Customer	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider
Middleware	Managed by Customer	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider
O/S	Managed by Customer	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider
Virtualization	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider
Servers	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider
Storage	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider
Networking	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider	Managed by Service Provider

How should you determine what data lives in the cloud?

Understanding the risk of unintended disclosure of data and safeguards

DATA SENSITIVITY LEVELS & VOLUMES

DEFINITION

TECHNICAL SAFEGUARDS

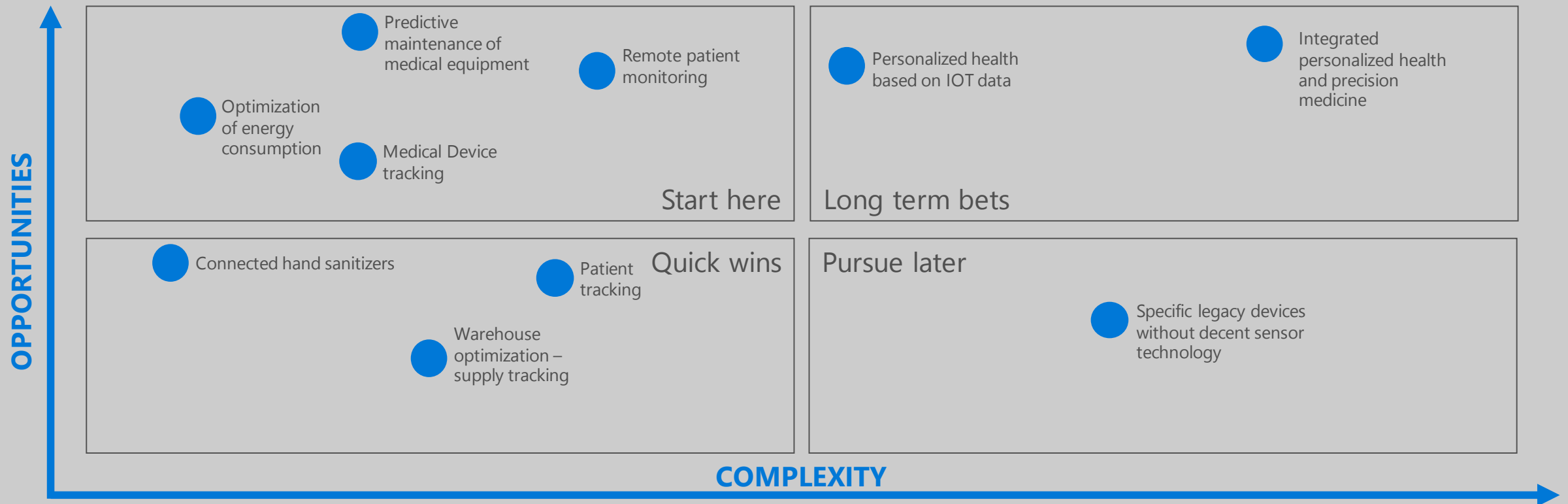
Level 1	Publicly available data, with no restrictions on use	Suitable for public cloud
Level 2	Aggregated and trend data sets (aggregated population, weather, health trends, etc.)	Suitable for public cloud with some security controls
Level 3	Shared within the government by default, but rarely shared outside	Suitable for public cloud with robust security controls on underlying data and redaction
Level 4	Restricted by default and shared with individuals on a need-to-know basis	Suitable for government cloud or public cloud with robust security controls
Level 5	Data that is critical to national and economic security	Secure government cloud or on-premises storage

>10x Cost

Disclaimer: If you have a country standard, use it; if not, consider this approach.

Use of IOT in the cloud is a progressive journey

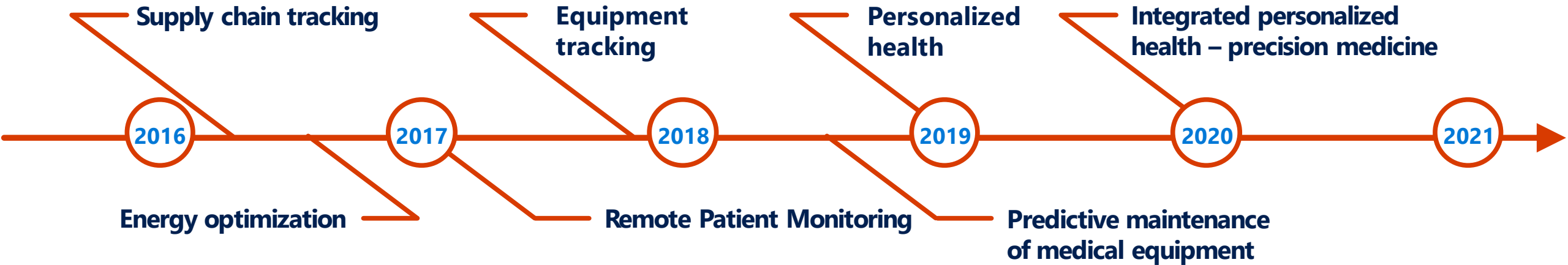
Begin with projects that fit your needs today and allow you to follow a transformational path and pace to the cloud that fits your organization.



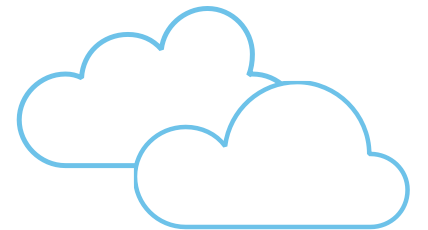
This graph is a sample. Opportunities versus complexities are unique to each organization.

Transform the care continuum with IOT

Creating an implementation roadmap



This graph is a sample. An IOT roadmap is unique to each organization.



Next Steps Toward Digital Transformation



EXPLORE
CHALLENGES
& SOLUTIONS



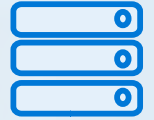
CONNECT
WITH
PARTNER



BUILD
PROOF-OF-
CONCEPT



RUN PILOT



BUILD &
DEPLOY FULL
SOLUTION

Partners in the IOT health industry



Aerocrine

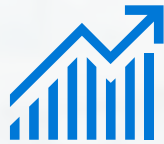


Why IoT with Data Analytics in the Cloud?



SPEED

provisioning
in minutes



SCALE

access to
unlimited
resources



ECONOMICS

only pay for
what you use



TRUST

designed, built and
operated to meet
compliance standards

Transform the Care Continuum

what are your most pressing issues?



Remote patient
monitoring



Precision
health



Managing devices
& facilities



Resources

- ➔ Learn more at microsoft.com/health
 - ➔ Blogs, videos and articles
 - ➔ Customer stories
 - ➔ Events & webcasts
 - ➔ Social channels
- ➔ The digital transformation in health
www.HealthDigitalTransformation.com
- ➔ Trusted cloud
www.windowsazure.com/trustcenter
- ➔ IoT
www.microsoft.com/IoT
- ➔ Customer stories
www.microsoft.com/customers
- ➔ Sign up
 - ➔ LinkedIn group: Microsoft in Health
 - ➔ Twitter: @Health_IT (Microsoft in Health)
 - ➔ Facebook: @MicrosoftHealth (Microsoft in Health)

