Smart Hospital

Helping you achieve efficiency and optimal performance

December 7, 2022
Today’s speakers

**Edgar van Zoelen**
Global Practice Leader
Performance Analytics and Digital Transformation
Philips

**Angus Cameron**
Enterprise Care Collaboration Lead
Philips
Agenda

1. Smart Digital Healthcare - needs and trends

2. Smart Digital Healthcare - investment and adoption

3. Smart Hospital development and Digital Transformation

4. Elements and examples of a Smart Hospital

5. Summary and Q&A
Our understanding of your issues and challenges

What our customers are asking us

How can I enhance the performance and growth of my hospital?

How can I implement virtual models of care to reduce time in hospital?

How can I enhance placement in subacute or access to subacute beds?

How can I leverage data and technology across the health continuum?

How can I reduce the cost basis of my hospitals?

How can I manage the increasing disease burden and health inequity?

What resources allow me to manage care more efficiently and effectively, in order to improve length of stay and discharge, or move patients to another care setting?
The future of healthcare is an intelligent system of care

Care across settings with proliferation of access points
Facilitating the orchestration of care
Achieving tailored benefits via actionable intelligence and process transformation

Clinical Insights
- Mobile
- Bedside
- Imaging
- Acute Care
- Home

Operational Insights
- Flow management dashboards
- Patient management

People
Technology
System / Processes
Transformation and Smart Digital Healthcare North America and Global Statistics
Smart Hospital and Healthcare 4.0

A long-overdue digital transformation in healthcare

• Technology is affecting industries today in profound ways

• Clinical and operational data however for the most part is still siloed, longitudinal care data are still not part of routine care in many countries.

• The age of digital transformation and Healthcare 4.0 is now paving the way for exciting new opportunities to change the way people develop and receive digital health and care services.

We are at the dawn of a foundational change into the new era of smart and connected health care...
Moving digital healthcare forward

22.97% The CAGR (compound annual growth rate) over 2022-2030 for Smart Hospitals in NAM

$147Bn North American market size by 2030

63% Percentage of hospital leaders in North America say that they are increasing their spending on digitalization

$30Bn Worth of the global Smart Hospital market in 2021

$147Bn North American market size by 2030

$7.6Bn Global market value of remote or virtual care

60% Of patients believe virtual care is more convenient than in-person care

$7.6Bn Global market value of remote or virtual care

$171Bn The global artificial intelligence market is expected to reach $171.02 billion in 2025 at a CAGR of 35%

$171Bn The global artificial intelligence market is expected to reach $171.02 billion in 2025 at a CAGR of 35%

$21Bn North American market size by 2023

76% Percentage of US healthcare professionals who currently use digital health technology or mobile health apps

The current landscape of digital adoption globally - 2022

Radiology / PACS
- Limited image management
- Archive
- Primary reading
- Advanced visualization
- Security
- Workflow orchestration
- Semantic reporting

Stage 0
Vietnam
Indonesia

Potential to leapfrog

Stage 1
India
Malaysia

Stage 2
China
Thailand

Stage 3
Disaster recovery
Encounter-based imaging
Neutral archive
Managed service support

Stage 4
UK & I
Canada

Stage 5
Interoperability
Universal viewing
Performance analytics
Operational AI

Stage 6
Clinical analytics
Clinical AI
Clinical decision support

Stage 7
USA
Netherlands
S. Korea

Digital pathology
Multi-disciplinary tumor board
Genomic analysis
Clinical pathways
AI marketplace

Cardiology / Enterprise Imaging
- Workflow
- Semantic reporting
- Disaster recovery
- Neutral archive
- Managed service support
- Interoperability
- Universal viewing
- Performance analytics
- Operational AI

Pathology, Oncology, Precision Diagnosis
- Clinical analytics
- Clinical AI
- Clinical decision support
- Digital pathology
- Multi-disciplinary tumor board
- Genomic analysis
- Clinical pathways
- AI marketplace

Source: Philips Insights

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The current landscape of digital adoption globally - 2025

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<th>Cardiology / Enterprise Imaging</th>
<th>Pathology, Oncology, Precision Diagnosis</th>
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<td>Limited image management</td>
<td>Archive Primary reading</td>
<td>Advanced visualization Security</td>
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<td>Stage 0</td>
<td>Stage 1</td>
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<td>Workflow orchestration Semantic reporting</td>
<td>Disaster recovery Encounter-based imaging Neutral archive Managed service support</td>
<td>Interoperability Universal viewing Performance analytics Operational AI</td>
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<td>Stage 4</td>
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<td>India Malaysia Thailand China</td>
<td>Netherlands UK &amp; I USA Singapore S. Korea</td>
<td>Indonesia</td>
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Countries are advancing at speed

However, not all hospital systems will be able to make the change

You don’t want to be uncompetitive and stay behind

This is how you approach the transformation...
Smart Hospital development and Digital Transformation
What is our definition of a smart hospital?

Hospital that **digitizes** and **interconnects** assets and all forms of data to **optimize** and redesign processes in order to create value, achieve **better patient care, experience and operational efficiency.**
There is no one-size-fits-all solution for a Smart Hospital

Every organization has unique goals and operating principles. Stemming from these differences, each hospital would also have different value drivers, areas for advancement and different visions for their Smart Hospital. As they have different focus areas, distinct solutions would need to be prioritized and priorities may create unique timelines or roadmaps. Hence, no two Smart Hospitals builds, or Digital Transformation journeys are the same, as each is customized to suit individual needs and aims.
We look at Smart Hospitals more holistically and across four domains

The Healthcare Information and Management Systems Society has a focus on clinical information, digitalisation and underlying platforms we incorporate a broader lens to include operations and experience and capability

These are the fundamental dimensions of Smart Hospital to achieve excellence in healthcare delivery in an integrated fashion across three domains or principles.

Operational efficiency
To leverage smart insights from a digitally connected ecosystem to improve internal logistics and maximize utilization rates of resources as well as control over people flow

Experience Centricity
To create the healing environment to ensure faster recovery while also looking at non-clinical touchpoints to alleviate patient fears, support and inconvenience associated with hospitals

Clinical Excellence
To make extensive use of innovative technology and its insights to drive excellence in clinical outcomes and efficiency in the care system

Innovation capability
Smart hospitals develop and embed new organizational capabilities to sustain digital innovation and create a culture of continuous improvement
Within this broader Smart Hospital perspective, we provide tangible direction and potential levers and enablers within each domain.

These initiatives are then supported by either Philips or other organisations solutions.

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<th>Principles</th>
<th>Levers</th>
<th>Core enablers</th>
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<td><strong>Operational Efficiency</strong></td>
<td><strong>HIS infrastructure</strong></td>
<td>Data Platforms and Integration</td>
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<td>Information Logistics</td>
<td>Inventory Control</td>
<td>Asset tracking</td>
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<td>People Flow (Patient &amp; Staff)</td>
<td>Patient flow tracking</td>
<td>Hospital staff flow tracking</td>
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<td><strong>Clinical Excellence</strong></td>
<td>Digital Care Management</td>
<td>Digitally-enabled workflow</td>
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<td>Inter-professional collaboration</td>
<td>Inter-professional decision making</td>
<td>Inter-professional care practice</td>
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<td>Leading Practice</td>
<td>Population Health</td>
<td>Tech-enabled patient care</td>
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<td><strong>Experience Centricity</strong></td>
<td>Environment</td>
<td>People-centric care environments</td>
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<td>Patient services</td>
<td>Shared care decision-making</td>
<td>Patient education and information access</td>
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<td>Admin services &amp; Hospitality</td>
<td>Patient concierge services</td>
<td>Financial management</td>
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<td><strong>Innovation Capability</strong></td>
<td>Purpose</td>
<td>Shared strategic understanding</td>
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<td>Empowerment</td>
<td>Cultural maturity</td>
<td>Cross functional &amp; talented teams</td>
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<td>Agility</td>
<td>Governance and oversight</td>
<td>Adaptive digital platforms</td>
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We believe you need a structured and stepwise approach to realizing the right Smart Hospital and digital transformation roadmap for your organization.

Starting with a shared understanding of where you are, setting the vision and then developing the culture and capability to continually improve and innovate are key foundational elements of the journey.

Current assessment and shaping the vision

Building consensus around service line & patient focused digital requirements

A purposefully designed multi-year process to build capability to innovate and drive improved performance

Digital Maturity Assessment

Co-creation

Roadmaps and Performance Improvement loops
Elements and examples of a Smart Hospital
An example of some of Philips digital healthcare solutions

We can partner and create a scalable healthcare ecosystem

Advanced Diagnostics & Treatment
New Features, machine learning and AI for Diagnostic Imaging & Int. Cardiology Systems

Staff & Patient Experience
Optimized Digital patient journeys, patient navigator and Ambient Experiences

Smart seamless Trauma & Emergency Care
Connected Ambulance monitoring and virtual care with mobile Ultrasound & Patient Monitoring within the ED

AI Research
Medical Image AI Research center (Radiology, N.M, Path.) based on latest technological developments

Digital Pathology
Digital & Computational Pathology

Virtual Home Care Services
World leading Remote Cardiac and other disease cohort patient monitoring solutions

Tele-ICU across Network
World leading Tele-ICU across Network

Scalable Connectivity: Operations Centre & Virtual Connected Care

Enterprise Imaging
Foster collaboration and optimize workflows, shortening the path to precise decisions.

Operational Informatics
Integrated, scalable portfolio of innovative technology, analytics and professional services to empower hospital departments to improve their efficiency & performance

Seamless patient care management
Leading global integrated monitoring solution eICU, ICCA, Guardian, BioTel, Vital Health

Long-term Strategic Partnership supported by

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<tr>
<th>Governance Structure</th>
<th>Customer Service</th>
<th>Project Management</th>
<th>Philips Capital</th>
<th>Continuous Improvement</th>
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“Philips is the best partner to achieve our Digital Hospital vision with their world class digital solutions and global experience!”
Dr. Choi, Donghoon – CEO

“Amazed by co-create workshop methodology and the outcome report which was a huge help to align and prioritize solution needs.”
Dr. Park, Jinyoung
Chief Hospital Planning & Management

Solution overview
By using a rigorous and robust approach to strategic account management and needs assessment helped us develop 8 solutions which included our equipment, software and solutions within “Smart hospital” solution bundles. The client after this engagement selected five bundles to start their journey.

Solution approach
We understood the need to differentiate and position as a “smart / digital hospital” stay relevant so we have supported their continuous access to latest technology.

One Philips
Philips’ ability to deliver “Smart Hospital” solutions, and act as a “trusted advisor” with regard to technology, strategy and innovation.

One clinical & technological capability
We sold a vision and solution underpinned with equipment & services.

Know your customer
We engaged with all stakeholders including in a 2 day co-create sessions with executives, clinicians and staff (64+) to jointly develop the hospital’s vision to become a digital hospital.

Focus
Strategically targeted this opportunity and Severance Hospital Group. Utilised a strategic account management approach including Daily Management review.

Seoul – South Korea
A four hospital private university hospital network established in 1885 with over 3,700 beds, 1m Inpatients and 3m+ Outpatients. This opportunity focused on the planning and commissioning of a new 750 bed “Smart” digital hospital.

YongIn Severance Hospital (New YongIn) – a multi year Strategic Partnership

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YongIn Severance Hospital (New YongIn) – a multi year Strategic Partnership
Royal Mandaya Hospital Puri – a 7 years Strategic Partnership

Jakarta, Indonesia

Opened in early 2021, Mandaya Royal Hospital Puri will have over 350 beds, six operating theatres, over 100 outpatient examination rooms, three advanced medical centers – a Cardiovascular Center, an Advanced Oncology Center, and a Neuroscience Center – and 14 state-of-the-art specialist clinics.

Solution bundle

The latest advanced technology and solutions from Philips, including the next-generation Azurion image-guided therapy system, the Ingenia Ambition MR, the world’s first MR for helium-free operations and the IQon Spectral CT, the world’s first and only detector-based spectral CT.

- 7 year Comprehensive Maintenance Services
- IT (ISP Enterprise, ISCV, PACS)
- Connected Care (ICCA, IGS)
- Ambient Experience
- Turn-Key Project Management
- Performance Optimization
- Financing services
- Selective 3rd party equipment

“Our philosophy aligns perfectly with Philips’ concept of connecting patients and providers for more effective, coordinated and personalized care. Building medical services around the wellness of the patient is exactly what we plan to offer at Mandaya Royal Hospital Puri.”

Dr. Benedictus R. Widaja
President Director
Mandaya Hospital Group

Results based a case study and are not predictive of other results. Results may vary.
Philips developed a virtual demonstrator to showcase opportunity areas for existing and next-generation solutions to optimize care delivery and patient/staff experiences.

**Challenge**
YNHH was looking to develop virtual demonstrators to convey current and future state experience journeys to convey a comprehensive roadmap to accommodate future-readiness strategies and convey opportunities for enhancing care delivery.

**Solution**
Philips developed a virtual demonstrator to showcase opportunity areas for existing and next-generation solutions to optimize care delivery and patient/staff experiences.

**Workflow scenarios**
- Pre-visit / Approach
- Drop-off / Arrival
- Reception / Validation
- Unit Admissions
- Daily Patient Cycle
- Bedside Procedures
- Urgent Events
- Discharge / Transfer

**Content Hotspots**
- 76

**Technology Solutions & Recommendations**
- 150+

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Results based on a case study and are not predictive of other results. Results may vary.
In Summary

Moving closer to a Smart Hospital and utilizing integrated and contextualized data will help you achieve your operational, clinical and strategic goals

Examples of potential benefits

- Increased efficiency / productivity
- Reduced length of stay
- Lower cost or site of care
- Increased clinical collaboration
- May lead to enhanced decision making (prediction, machine learning & artificial intelligence)
- Extend clinical capability through virtual / remote care
- Increased staff capability
- Enhanced customer and staff experience
- Enterprise awareness

Transformation: 75% Process & Culture, 25% Technology & Design
Q&A
Thank you!

For more information about Philips smart hospital solutions, contact:

Edgar van Zoelen edgar.van.zoelen@philips.com or,
Angus Cameron angus.cameron@philips.com

Read more about Smart hospitals in our new position paper – The hospital of the future won’t be bound by walls – it will offer seamless experiences across care settings.