

Digitalisation and sustainability in healthcare

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Overview of medical across the value chain





Digital Market principles

1		(CONNECTED	Provide sufficient value to ensure all our instruments & software installations are connected	
	2		OPEN	Own the backbone, create the justification to integrate as many data sources as possible, and partner on content	
		3	SECURE	We make security a key pillar to ensure we always remain a trusted partner to our customers and partners Unified commercial	
		4	EVIDENCE	We first demonstrate economic value or medial value with every aspect model of our offering, rather than ask for data	model
	5		SIMPLE	We strive to make our products and the various components that support it easy to understand by both customers & affiliates	
6			SCALE	Rapidly convert customer base to our digital offering to generate the scale and the data needed for realizing the commercial benefits & vision	



Dimension 1: Value chain of healthcare

Digital products

New product portfolio of digital assets Immense breakthrough potential Upward trend as differentiation factor

Digital customer engagement

Increased & optimised reach Customisable services



Digitalisation of internal value chain

Basis for operational excellence (automation) and advanced analytics (data-driven insights)



Dimension 2: Technology in Healthcare



- Fast changing environment & huge technological progress
- Access to health services & care (especially in remote locations)
- Overcoming labour shortages
- Patient engagement often results in self-service
- Patient self-care for costly care needs such as aging & mental health

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How sustainability can help along the healthcare value chain







Example: Digital Lab



Keep track of expiration dates & quantities used



Optimize inventory workflow



Assign custom locations to more efficiently store & retrieve materials



Simplify material request



Set min. & max. amounts to ensure consistent availability



Reduce lab waste



Pull lists of chemicals such as flammable, out of stock, or expiring



Plan to reduce hazardous substances & to replace with sustainable alternatives



Current Lab



Example: Initiatives in a digital/smart factory

Digital Twin and Data science

- Facility and Process understanding
- Predictive maintenance
- Predictive analytics and control

Modern data infrastructure

- Cloud-based systems ----
- SaaS / PaaS / laaS
- Integration Layer

Interactive work instruction

- Multimedia SOP guidance
- Data recording, verification
 - Improved Training and compliance

Automated Inspection and Quality Testing

- Automated visual inspection
- Real-time release

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- Real-time data from sensors, devices
- Wireless technologies (NFC, RFID, BLE)
- Edge Computing

Connected systems

- Electronic Batch Record / MES
- Process Equipment
- LIMS
- ERP

Logistics

- Track and Trace
- Electronic Warehouse Management (EWM)
- Blockchain



Digitalisation as a solution





The sustainability business case



Return on Investment





Required transformation to drive sustainable change





Conclusions



The intended outcome of a good healthcare system as such is a core component of sustainability



Digitalisation in healthcare is not contradictory to sustainability

Digitalisation can act as an enabler of sustainability if done right



Combination of digitalisation & sustainability usually have a positive/secure business case (ROI) while initial investment is required as returns do not come immediately

- Important to prioritise the areas of transformation with highest impact and return, e.g. R&D labs
- Sustainability has an impact on the entire operating model, so change management to introduce digital solutions for sustainability is key



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We make healthcare better



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