

eBook

*Intelligent Health for Healthcare
and Life Sciences Industries:*

A Guide to Leveraging Data Management



Introduction

Organizations in the healthcare and life sciences (HCLS) sectors now stand at the brink of a transformation — more digitalized, more data-driven. For these industries, data is no longer just a byproduct of operations; it's a strategic asset that can drive efficiency and groundbreaking innovation. A future and strategy known as “Intelligent Health.”

As HCLS organizations navigate an increasingly digital landscape, optimizing and managing that data has become vital for **enhancing patient care, accelerating research, and achieving operational excellence**. This creates a twofold question for organizations in these industries: how to excel and remain competitive in current operations, all while preparing for a radically different future?

Intelligent Health answers this challenge. By connecting the right systems, organizations and data to make healthcare and life sciences ready for the shifting digital future.





Data Management Challenges for Healthcare and Life Sciences Sectors

Longer life expectancies, clinician burnout, healthcare worker shortages, and inflation are grievances across the board for healthcare and life science organizations. The journey toward Intelligent Health is no easier. In many cases, HCLS organizations may face:

Data Fragmentation and Silos

Organizations need to combine data from various sources such as electronic health records (EHRs), clinical trials, genomic data, and wearable devices. Without this integration, scattered data and lack of interoperability on operations can shroud comprehensive views of research and patient health.

Operational Inefficiencies

Inefficient data management systems create disconnect between administrative tasks and increase the potential of redundancies. This can distract from the patient experience and create high costs.

Regulatory Compliance

Organizations must adhere to stringent data security and privacy regulations (like GDPR and HIPPA), all while maintaining transparency and trust with regulatory bodies. Ensuring data security measures, creating audit trails, and enabling strong compliance reporting without efficient or reliable data infrastructure and data management is impossible.



Leveraging Intelligent Health for Patient and Scientific Innovation

The concept of Intelligent Health (i.e. embracing technological and scientific advancements as catalysts to disrupt a healthcare or life sciences organization) is gaining prominence. By harnessing AI, machine learning, and big data analytics, organizations can unlock new opportunities for innovation, efficiency, collaboration and enhanced outcomes.

Data Integration and Interoperability

- **Unified Data Platforms:** Implementing platforms that integrate data from various sources (EHRs, lab systems, wearable devices) ensures a comprehensive view of data.
- **Interoperability Standards:** Adopting standards like HL7 and FHIR facilitates seamless data exchange between different systems.

AI Integration & Automation

- **Hyper-Automation:** Utilizing AI and ML for automating data management tasks, such as data cleaning, integration, and analysis, improves efficiency and reduces manual effort. The accuracy of AI models also improves patient experiences by identifying diseases earlier on and by developing personalized care plans — both of which may be life-saving.
- **MLOps and DevOps:** Implementing these practices ensures continuous integration and deployment of AI models, enhancing scalability and reliability.

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Emerging technologies such as AI and automation will play a huge role in the future of healthcare. With Hitachi solutions as the foundation for our medical imaging platform, we're well equipped to explore how we can apply these technological innovations to our healthcare services.”

[Read more](#) →

**Jake Gully, Digital Operations Manager,
Isle of Wight NHS Trust**

Cloud and On-Prem Solutions

- **Scalability and Flexibility:** Cloud platforms like AWS, Azure, and Google Cloud offer scalable storage and computing power, allowing organizations to adjust resources based on their needs.
- **Cost-Effectiveness:** Pay-as-you-go models help manage costs effectively, ensuring that organizations only pay for the resources they use.

Modern Data Architectures

- **Data Lakehouse:** Combining the best of data lakes and data warehouses, this architecture supports both structured and unstructured data, enabling advanced analytics.
- **Data Mesh:** This decentralized approach treats data as a product, managed by cross-functional teams, enhancing scalability and data ownership.

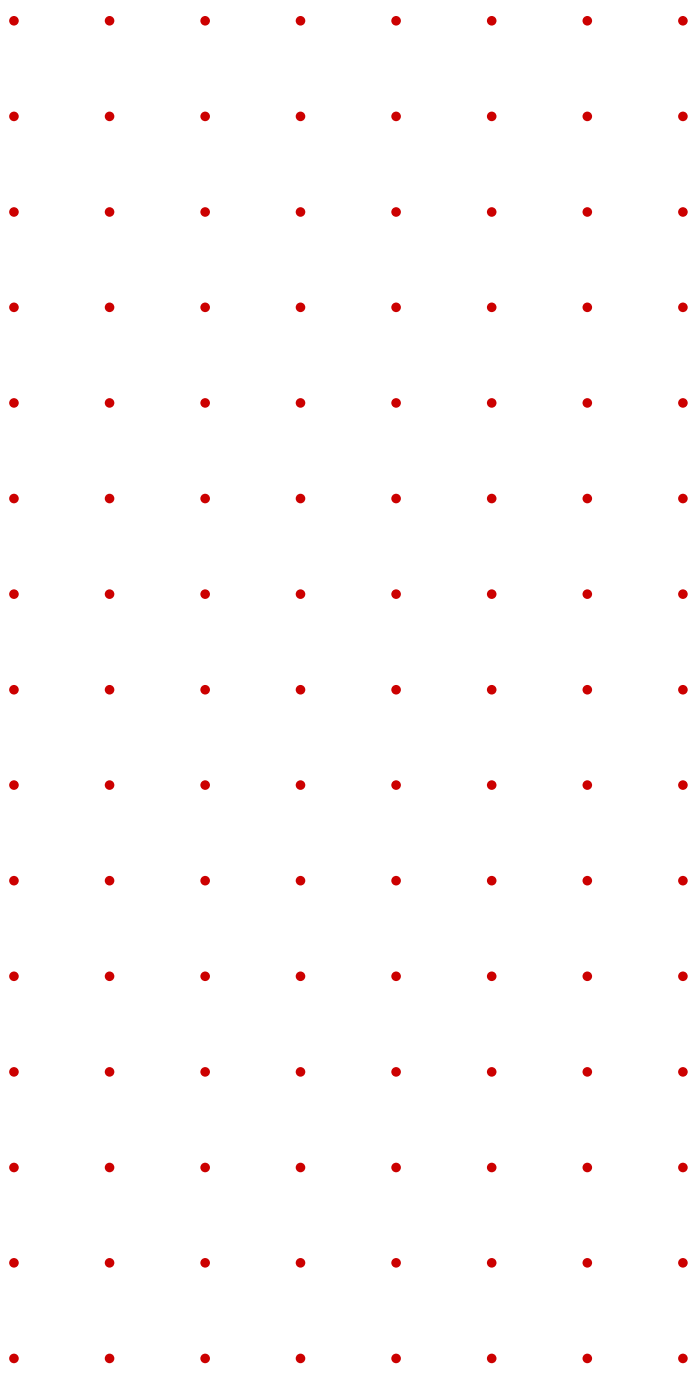


Data Governance

- **Frameworks:** Establishing robust governance frameworks ensures data quality, security, and compliance with regulations like GDPR and HIPAA.
- **Metadata Management:** Effective metadata management helps in tracking data lineage, ensuring transparency and trust in data.



Innovation Opportunities for Healthcare



To navigate the complexities of today's operations and prepare for the future, a scalable, secure, and flexible data management infrastructure is essential. By integrating advanced data management and analytics capabilities, organizations can effectively manage their current needs while laying the groundwork for future innovations.

There are two major categories that healthcare organizations can use to adopt an "Intelligent Health" strategy:

1 *Artificial Intelligence (AI), Machine Learning (ML), and Big Data*

- **Clinical Trials:** AI can streamline the clinical trial process by identifying suitable candidates, enabling data sharing and collaboration to foster innovation, predicting outcomes, and monitoring patient data in real-time. This can lead to more efficient and successful trials.

- **Medical Imaging and Diagnostics:** AI-powered tools can assist in interpreting medical images, such as X-rays, MRIs, and CT scans, with high accuracy. This helps in early detection of diseases like cancer and improves diagnostic precision.
- **Healthcare Analytics:** AI can analyze patient data to predict disease outbreaks, patient admissions, and other healthcare trends. This enables proactive measures and better resource allocation.

2 *Converged Storage and Data Integration*

- **Patient Analytics:** Accessing data is complexly stored across public cloud, private cloud, on-premises, and colocated/managed services — and the amount stored is [expected to double by 2025](#). Data infrastructure designed for energy efficiency, resilience and data delivery at the speed of on-demand business can address this explosion of data, which often stems from electronic medical records (EMRs) and [electronic health records \(EHRs\)](#).
- **Patient Experience:** Integrated data from personal health devices, health apps, and other sources allow for comprehensive patient profiles, leading to stronger precision medicine initiatives like better diagnoses and personalized treatment plans. This can improve efficacy, reduce adverse effects for individuals, and delight patients as part of their customer experience.
- **Operational Efficiency:** Data integration helps streamline hospital operations, from patient scheduling to inventory management.
- **Cyber Security:** Healthcare organizations risk revenue loss, privacy violations, lawsuits and other setbacks without a reliable, always-on cyber security solution. This can eliminate the risk of data loss, protect data everywhere it resides, and provide fast recovery and agile restoration. It also enables fast, uninterrupted access to business applications and mission-critical data.

Case Study →

Cloudnine Hospitals Improve Data Access for Staff, Meet Government Regulations and Cut Data Center Costs With Hitachi Content Platform



Innovation Opportunities for Life Sciences

Adopting a scalable data management infrastructure offers numerous benefits for life sciences organizations, enhancing their ability to manage and analyze vast amounts of data efficiently and effectively.

There are two major categories that life sciences organizations can use to adopt an “Intelligent Health” strategy:

1 *Artificial Intelligence (AI), Machine Learning (ML), and Big Data*

- **Robotic Surgery:** AI and ML enhance the capabilities of surgical robots, allowing for more precise and minimally invasive procedures. This can lead to faster recovery times and reduced complications.

- **Drug Discovery and Development:** AI and ML can analyze vast datasets to identify potential drug candidates, predict their efficacy, and optimize the drug development process. This can significantly reduce the time and cost associated with bringing new drugs to market.
- **Manufacturing Analytics:** For pharmaceutical manufacturing facilities and labs, IoT-enabled solutions can be used for predictive maintenance of equipment, ensuring minimal downtime and operational efficiency.

2 *Converged Storage and Data Integration*

- **Research and Development:** Unified datasets enable researchers to identify patterns and correlations that might be missed in isolated datasets, accelerating drug discovery and development.
- **Innovative Treatments:** By merging fields like genomics, bioinformatics, and engineering, researchers can develop advanced treatments such as personalized medicine and regenerative therapies.
- **Operational Efficiency:** Data integration can optimize supply chain operations, ensuring efficient distribution of pharmaceuticals, vaccines, and medical supplies while maintaining quality and compliance standards.



Case Study →

Accelerating Medical Research and Testing

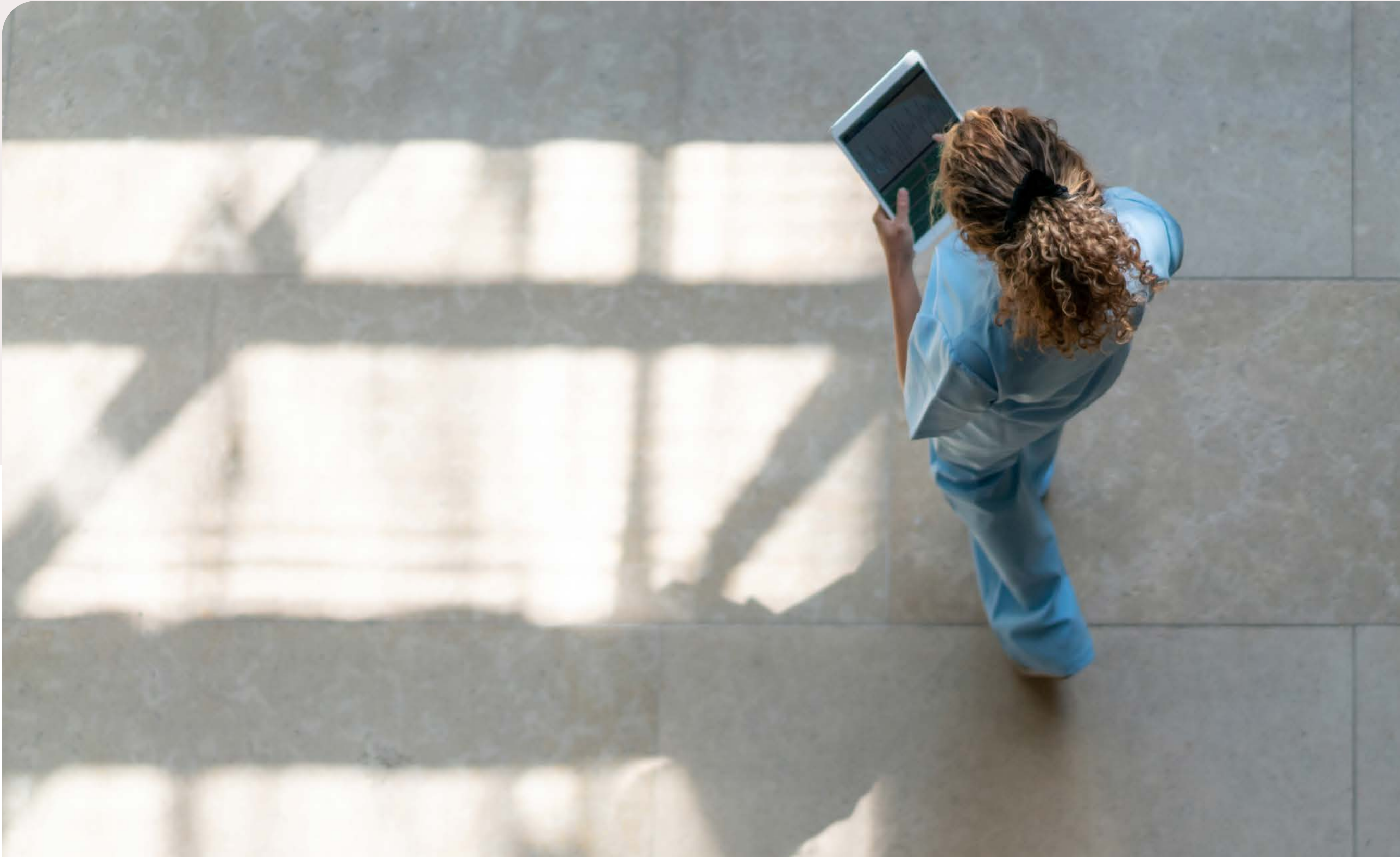


Achieving Intelligent Health Readiness

To fully embrace Intelligent Health, organizations need to build a future-ready data infrastructure that also carries current requirements — security, reliability, and scalability — forward. By leveraging AI and ML, real-time data sharing, and robust support for research and development, organizations can position themselves at the forefront of innovation and transformation.

Is your organization ready to implement Intelligent Health? Use the checklist below to find out.

- ✔ **Build a future-ready data infrastructure**
- ✔ **Leverage AI and ML for predictive analytics and personalized care**
- ✔ **Facilitate real-time data sharing and collaboration**
- ✔ **Support research and development with robust data infrastructure**
- ✔ **Enable real-time, data-driven decision-making**



Conclusion

The journey toward Intelligent Health is both challenging and rewarding. By adopting the right strategies and solutions, organizations can navigate this transformation effectively, addressing current challenges all while pursuing digital readiness. As the HCLS sectors evolve, a balanced approach to data management will be key to achieving sustained success and innovation.

The Hitachi Vantara Advantage for Healthcare and Life Sciences Industries

Unlike other vendors on the market today, Hitachi Vantara goes beyond basic integration and testing by layering on a century of Hitachi's industry specific capabilities and expertise, so outcomes can be more specific and relevant to an organization's business.

[Learn more →](#)



About Hitachi Vantara

Hitachi Vantara is transforming the way data fuels innovation. A wholly owned subsidiary of Hitachi Ltd., we're the data foundation the world's leading innovators rely on. Through data storage, infrastructure systems, cloud management and digital expertise, we build the foundation for sustainable business growth.

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