ThoughtWire

Bring your built environment to life with ThoughtWire's Digital Twin

Better Patient Experience

Data Driven Clinical Workflows

DIGITAL TWIN

DATA

REASONING

CONTEXT

KPIs
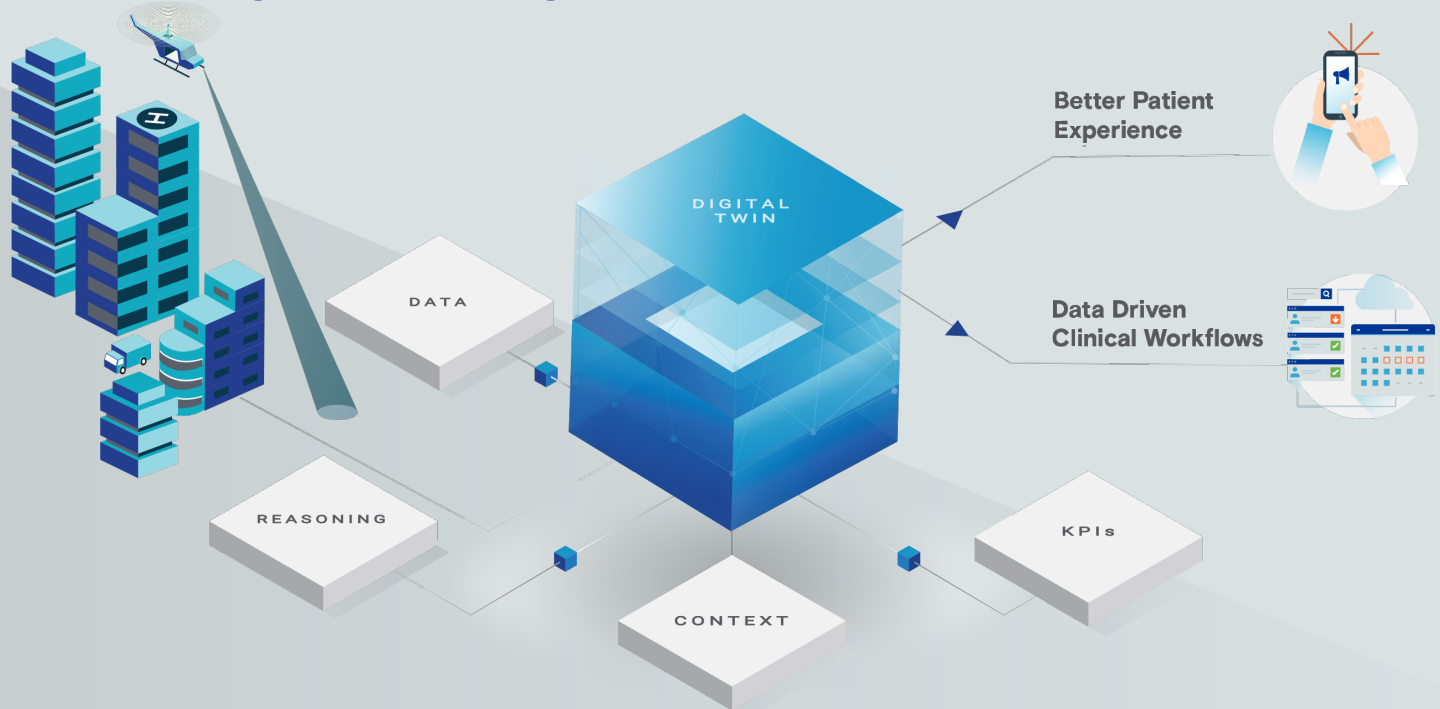
ThoughtWire's Digital Twin is powered by our proprietary super fast in-memory graph database so you can work in real-time.

Not simply a digital mock-up of the physical environment, our Digital Twin is the contextual model of an entire organization and its operation. It's the data from your clinical systems and the real-time interaction between people, process and connected things. ThoughtWire's Digital Twin powers your most important outcomes – improving clinical workflows, hospital operations, and enhancing the patient experience.

The Challenge

Today, the data environment of built hospitals and healthcare delivery organizations is incredibly siloed. Data repositories for operational information, clinical systems, and patient data remain fragmented. In addition, the proliferation of data generated by IoT devices has further exacerbated the problem. Organization's want to be more data-driven and less siloed but lack the tools to derive meaningful insight from their disparate data sets.

The Solution

A new way of modeling, managing and actioning data from the built environment – ThoughtWire's Digital Twin
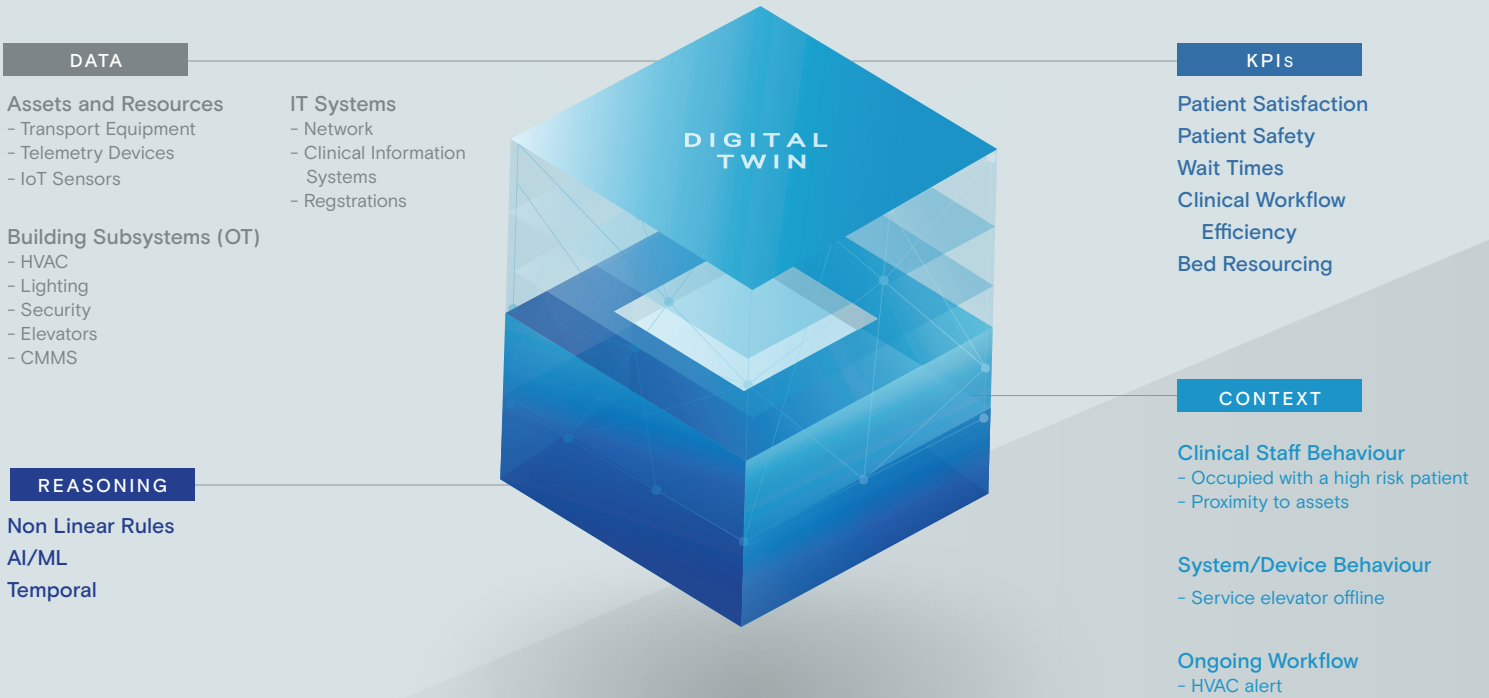
Solve the challenges and get closer to a real time health system by bringing together data from IT and OT systems, IoT sensors, telemetry systems, and clinical interactions in a contextual representation of your built environment.

Benefits

- Command and control of your health system

- Respond faster to patient needs

- Understand patient and clinical staff behaviour

- Real-time asset tracking and management

- Automated intelligent workflows that give the right information to the right people at the right time

- Predict and prevent adverse events

- Respond to critical alerts and alarms in real time

ThoughtWire

Building a real-time, context aware engine to power the future of healthcare

ThoughtWire's Digital Twin is a graph based semantic model that captures real-time context in order to drive action. By capturing data about people within the environment, its various clinical workflows, and day to day operations, you are able to better control the unique demands and understand how they all relate to each other. This model unlocks an organizations ability to understand the complex relationships that exist between people, process, the environment itself and how they all impact the ever changing healthcare landscape

DATA

Assets and Resources
- Transport Equipment
- Telemetry Devices
- IoT Sensors

Building Subsystems (OT)
- HVAC
- Lighting
- Security
- Elevators
- CMMS

IT Systems
- Network
- Clinical Information Systems
- Regstrations

DIGITAL TWIN

KPIs

Patient Satisfaction
Patient Safety
Wait Times
Clinical Workflow Efficiency
Bed Resourcing

REASONING

Non Linear Rules
AI/ML
Temporal

CONTEXT

Clinical Staff Behaviour
- Occupied with a high risk patient
- Proximity to assets

System/Device Behaviour
- Service elevator offline

Ongoing Workflow
- HVAC alert

Enabling the Digital Twin requires:

Data from across the entire built environment. From people, processes, connected devices, operational building systems, IT and even external information like weather or transit feeds.

Context is all the real-time information about the actual state of the environment, what actions occupants take, the behavior of devices, and the state of all workflows.

Reasoning is applied to data to drive action. Asynchronous rules processing, Machine Learning models, and AI . Most commonly reasoning applied to data is based on asynchronously processed rules, AI or Machine Learning models, and temporal reasoning when dealing with varied frequency of events.

KPIs give meaningful business context to the Digital Twin. KPIs are a critical design element of our Digital Twin to align stakeholders on objectives and performance measurement.

Why use graph technology?

Graph databases are tuned for creating context-rich and highly complex models. ThoughtWire's proprietary graph database is tuned to high speeds in order to handle the data frequency and variety of IoT or connected environments. To sift through the volume of signals to pinpoint the relevant information from a vast array of noise.

How it works.
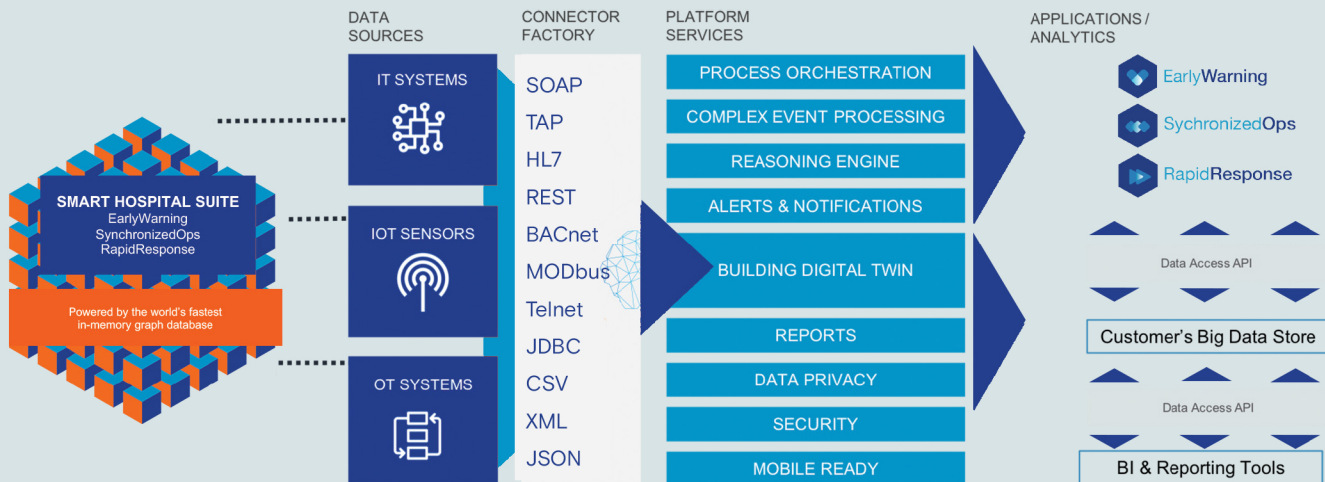
1

Utilize pre-built connectors in the Connector Factory to Map data from sources like IoT devices, building control systems, IT systems, and people to our semantic graph model

Connector factory is our proven connectivity layer that orchestrates pre-built connectors to simplify and streamline integration and communication with a wide variety of protocols including:

SOAP, TAP, HL7 (v3 and FHIR), BACnet, Modbus, Telnet JDBC/ODBC, RESTful, File-based connectors such as CSV, XML, JSON and more...

2

Dynamically build a graph of meaningful information from these data sources using formal semantics – Digital Twin

Formal semantics serves as a universal translator for multi-nodal subsets of data. Taking data collected via the connector factory and describing the information independent of the source system but keeping the meaning unambiguous.

3

As graph changes (more data is added) rules are triggered and asynchronously processed when these new states are recognized

Asynchronous processing allows relevant information to be delivered to the end user as it's available rather than a pre-defined set of rules that orders the information ahead of time.

4

Evolve the understanding of this new state or information by interacting with external systems to further analyze for more context or trigger actions to respond to changes

Continuous learning means as more data becomes available the Digital Twin gets smarter, making it easier to deliver the right information to the right person at the right time. This context drives intelligent optimization of workflows. As the Digital Twin ingests more data and context the insights become more meaningful.

Thought\\Vire

A unique suite of software applications that transform hospitals into people-centric buildings.

A better approach for unlocking life-changing outcomes.

Learn more about our Smart Hospital Suite of applications powered by our Digital Twin visit info.thoughtwire.com

Powerful and proven results.
Reduced code blues. Decreased wait times and increased patient satisfaction

900%
improvement in cost savings using **SynchronizedOps.**

100%
efficiency using **RapidResponse.**

61%
reduction of code blue calls using **EarlyWarning.**

SynchronizedOps   RapidResponse   EarlyWarning

About Thoughtwire

ThoughtWire is on a mission to bring the built environment to life. By orchestrating data from people, process, and the physical built environment ThoughtWire's built environment Digital Twin delivers smarter, safer and more efficient commercial buildings, hospitals, and cities. Connect and follow us to learn more. www.thoughtwire.com

Contact us today
See what a Digital Twin can do for you and the people in your facility.

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