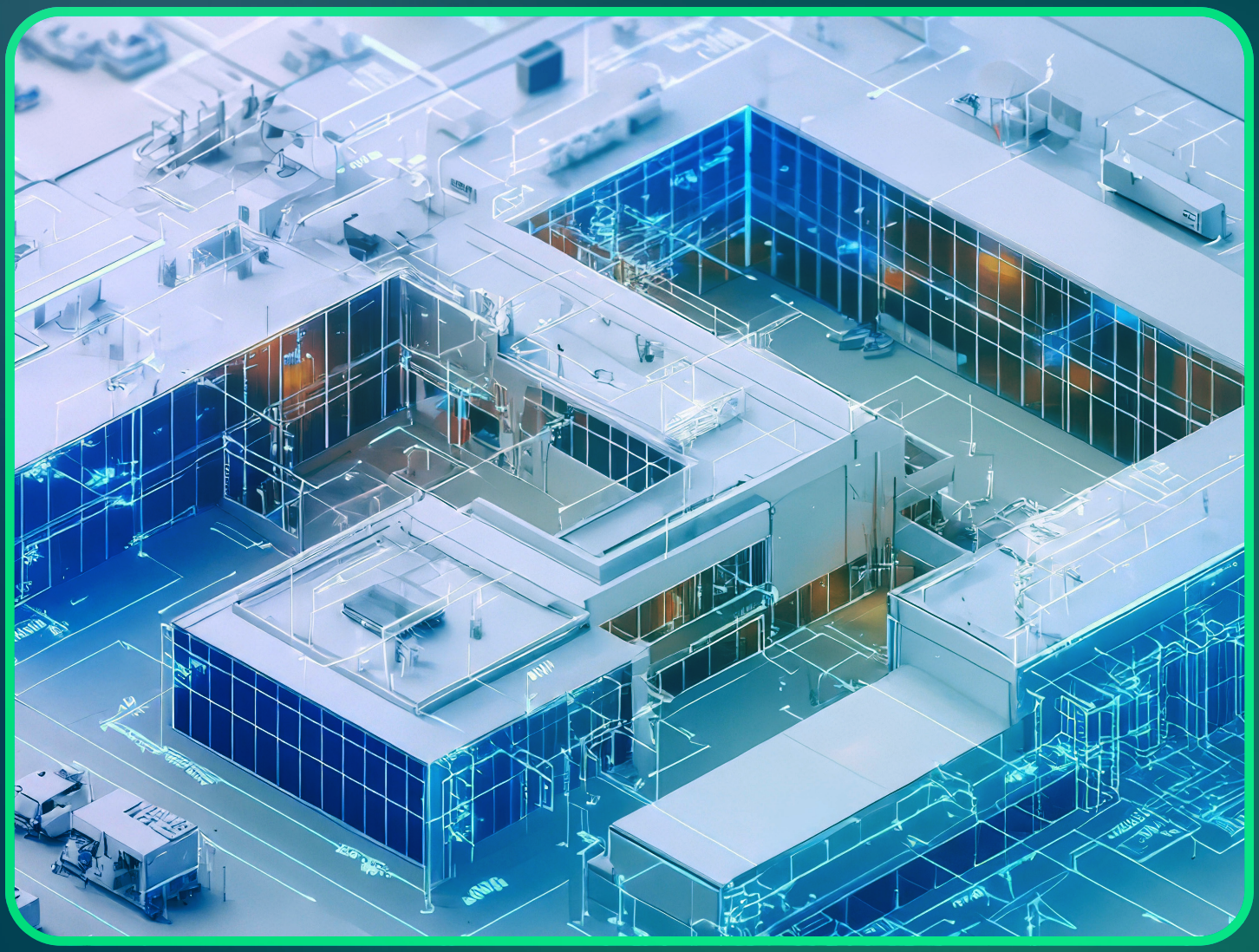
Operations IQ® | Decision IQ®

TeleTracking®



White Paper

The Computational Twin as Catalyst for Capacity Creation

Decision Intelligence
The strategic use of data, analytics, and AI to give operational leaders real-time situational awareness for better, faster decisions.

Computational Twin
A virtual model of a complex, real-world system allowing for analysis and prediction.

Simulation
A low-risk environment to test different patient flow strategies before implementing in the "real world".

Opportunity Score
An AI-recommended, human-approved, priority ranking that guides the frontline on which patient flow actions to take first.

Silos
Slow Patient Flow

Strong unit performance can create downstream bottlenecks when decisions aren't aligned across the system.

Each day, frontline teams make countless operational decisions that impact both patient outcomes and flow, such as when to initiate discharge, whether to transfer a patient, or how to allocate limited capacity. These decisions are complex and involve difficult trade-offs for even your most experienced frontline teams who understand the pulse of your system's operations better than anyone.

Despite best efforts, the decentralized nature of these decisions, made at the unit or ancillary level, can lead to unintended impacts on other areas of the hospital.

Over time, these choices accumulate and ultimately shape hospital performance.

Efforts to streamline operations through data have delivered powerful analytics but still fall short in supporting frontline decision-making. This is because traditional data tools are fragmented, primarily reflect the current state of operations and lack actionable outcomes.

What's been missing is a solution that turns operational data into timely, actionable guidance, bridging the gap between strategy and action.

With AI-powered Decision Intelligence, health systems can capture the full complexity of their operations, from admission to discharge.

Teams now have the tools to make coordinated decisions that align patient care with performance – all embedded within the systems they already use.

Coordination
Creates Capacity

With Decision IQ, priorities are coordinated across teams, opening capacity where it's most needed.

Decision IQ introduces a new standard for operational coordination and alignment which integrates data, workflows, and predictive insights into a single, cohesive decision intelligence platform, powered by artificial intelligence.

Decision IQ unlocks a forward-looking view which enables a proactive, centralized throughput strategy to be developed at the hospital level and shared to your frontline via the tools they already use.

Data evolves from static reporting into an active tool for decision intelligence and workflow optimization.

Using workflow recommendations to share unified priorities across the hospital, Decision IQ reduces the cognitive burden of prioritization and enables teams to shift from reactive to strategic throughput management. This frees up frontline teams to focus on what matters most: delivering high-quality care.

As Decision IQ is embedded in workflows, you can track operational improvements over time. This closed loop system makes it simple to understand how effectively the discharge recommendations are being used.

How it Works

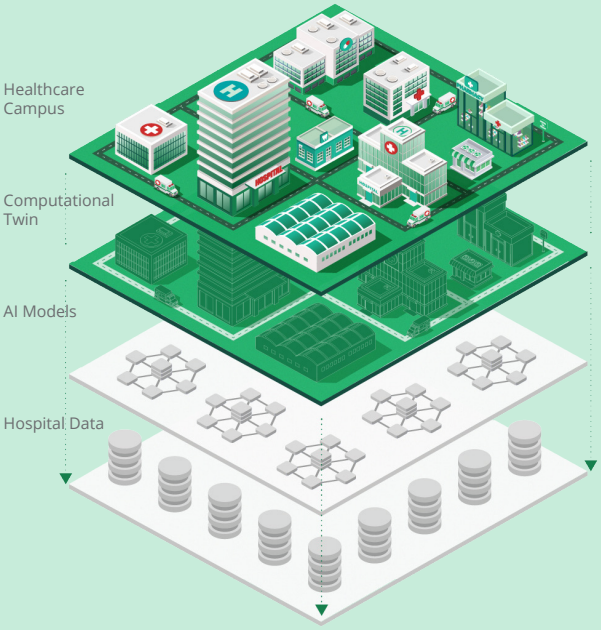
Decision IQ leverages the hospital's own process data to construct a facility-level **computational twin** — a true model of the complex system that is the hospital.

In this virtual environment, patient flow decision-makers view demand and bed availability **forecasts** across the entire system.

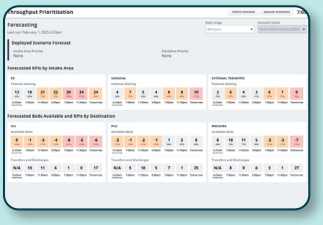
They can safely prompt **simulations** of alternate possibilities that prioritize preserving capacity in specific areas and disciplines, and view their predicted impact on the whole hospital before implementing them.

Decision IQ will then align discharge priorities to frontline staff through an embedded **opportunity score**, making it simple to deploy patient flow strategies at scale.

In the simplest terms, Decision IQ considers the current and future state of the entire system, and then specifically **sequences patient discharge to alleviate throughput systemwide.**

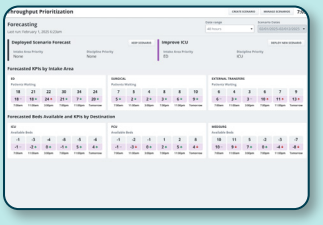


Core Features



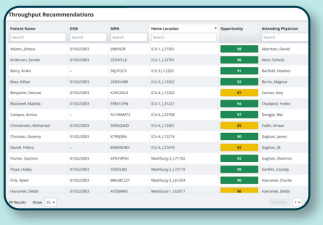
Forecast

Decision IQ integrates patient flow data from across the hospital and forecasts bottlenecks before they occur.



Simulate

Informed by hospital-defined priorities and parameters, Decision IQ simulates the impact of different patient flow strategies.



Deploy

Decision IQ creates opportunity scores that align decision-makers and frontline teams around an optimal throughput strategy.

Smarter Decisions at Every Level

Decision IQ supports decision-makers systemwide, from frontline teams and patient flow directors to executives and leaders. Everyone benefits from fewer manual steps and greater visibility.

Patient Flow Leaders identify upcoming bottlenecks, review recommendations and set priorities for the frontline

I can see the impact of a decision on the metrics that matter *before* I take action.

I can easily set the same priorities for multiple interdisciplinary teams.

Interdisciplinary Care Staff receive automated priority recommendations within their existing workflows

I know who to prioritize for discharge so that other operations will run smoothly.

I no longer need to make phone calls to know what to do next.

Executive Teams track team compliance and performance improvements, all within TeleTracking's Operations IQ platform

My care teams are driving in the same direction, increasing their satisfaction.

Meetings are more meaningful and strategic discussions are grounded in contextual data.

AI that Enhances Human Insight

As AI becomes more embedded in healthcare, its role is to support, not replace, human decision-makers.

Decision IQ is built to assist, not override.

Decision IQ identifies patterns in complex data and surfaces ready-to-act recommendations to enhance decision-making and boost alignment of operational teams. It provides support and consistency while keeping human accountability at the center.

A closed-loop system ensures transparency by tracking decisions from forecast to recommendation.

Systemwide Benefits

Decision IQ accelerates patients on their care journey, alleviates pressure on care teams, and expands capacity for the health system.

Faster, easier decisions; fewer low-value tasks for care teams.

When priorities are set centrally and are automatically distributed, case managers, care teams, and all services departments on the frontlines spend less time chasing information, making numerous phone calls, and more time delivering quality patient care.

Shorter wait times.

Coordinated care helps get patients into the right place, at the right time with fewer delays, reduced boarding times and off-service admits.

Increased capacity using existing resources.

By focusing teams on the highest value tasks that have an outsized impact on flow, Decision IQ reduces waste from the system by aligning resources to support efficient discharge. This creates capacity to treat more patients and improves flow from the Emergency Department and procedural areas.

Enterprise-driven strategic operations.

A data-driven, AI-enabled approach to hospital operations sets the culture and strategy for proactive, long-term improvements in patient flow.

Decision IQ FAQs

What data is Decision IQ trained on?
It's trained on hospital-specific data to reflect your hospital's unique workflows and operations.

Will it integrate with my existing systems?
Yes. Decision IQ complements your existing infrastructure, avoiding platform switching.

Is there a heavy change management burden?
With its focus on parallel processes and automated workflows, Decision IQ is designed for easy adoption and minimal disruption to existing processes.

How was it developed?
In collaboration with frontline and operational leaders, ensuring alignment with healthcare data privacy laws and clinical risk management standards.

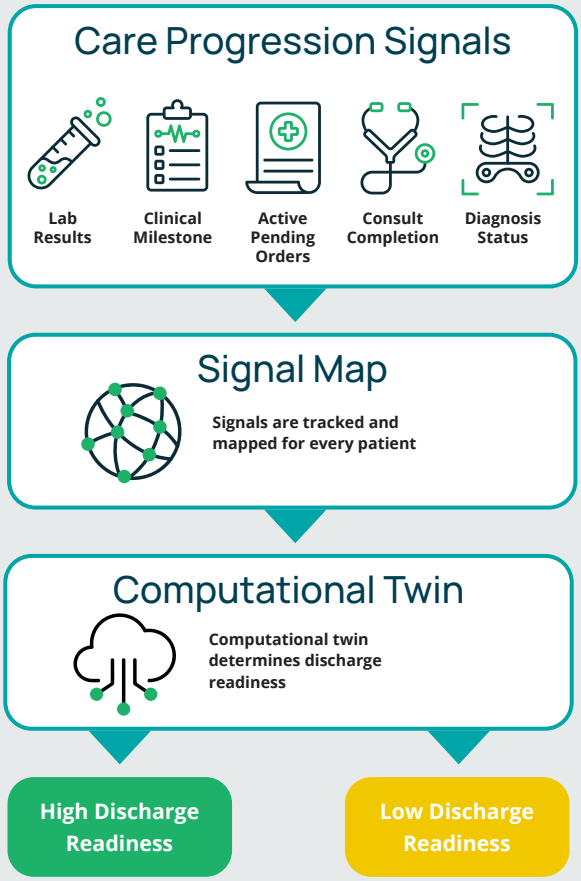
Does it use public LLMs?
Decision IQ does not use Public Large Language Models (LLMs) to generate forecasts or recommendations. All AI-produced outputs run inside the TeleTracking technology stack. Hospital data is not exposed to public-facing APIs.

The Signal Map behind the Computational Twin

The **Signal Map** defines the input data required to build and run the **Computational Twin** (CT). It includes all relevant **care progression signals** for each patient, such as clinical milestones, orders, and other indicators of treatment status.

These signals help the CT determine discharge readiness. For example:

> Patients with fewer active or incomplete signals (e.g., pending orders, unachieved milestones) are typically easier to discharge.
>
> Patients with multiple active care progression items may require more complex coordination and are likely not yet ready for discharge.



Technical Data Requirements

Decision IQ draws on hospital data already deployed for existing patient flow applications.

Decision IQ utilizes data from TeleTracking's Data IQ® generated by Capacity Management Solutions® (CMS) or Capacity IQ®, and its associated interfaces.

Specifically:

Patient Visit Data Source: Patient journey attributes such as when they were admitted, marked as pending/confirmed discharge, and actually discharged.

Patient Placement: Detailed placement journey data such as when a patient's bed was requested, when placement occurred and/or was canceled and details of placement such as target unit as specified in CMS or Capacity IQ.

Discharge Milestones: Detailed data for each patient's discharge milestones, such as time created, time of status change, etc.

Care Progression Indicators: Detailed tasks and orders as configured in CMS or Capacity IQ and typically interfaced with ADT/EMR for seamless visibility of patient care progression for CMS or Capacity IQ users. These are configured to suit specific hospital requirements and so vary, however typically contain data such as discharge destination, presence of certain order types and mode of transport for patient.

Census: Unit level census data from CMS or Capacity IQ. Each row in this data source contains the current census metrics.

Additional interfaces are also in the process of being scoped – primarily additional order types such as radiology and labs, which will provide additional indications of discharge complexity.

Model Improvement & Performance Tracking

Ongoing evaluation ensures continuous calibration with your real-world environment and evolving operational patterns.

Performance of the models used in Decision IQ is assessed on an ongoing basis using automated pipelines. These pipelines compare the outcomes predicted by the models against actual values for the same period and monitors for drift. This approach enables any changes to model performance to be detected and assessed by machine learning engineers and data scientists.

Models are retrained on a regular basis. Model retraining prevents model drift and helps to maintain consistent performance over time. Model retraining can also be manually triggered in response to known or expected changes in workflow processes.

In the event of a large, unpredictable shift, such as the COVID-19 pandemic, that may adversely affect model performance the tool will indicate which features are affected and which can remain in use. It should be noted that no predictive system can respond to such events before they happen.

Bias Prevention & Human in the Loop

The models underpinning Decision IQ are trained on customer-specific data to reflect each hospital's nuances and avoid bias from other organizations. The models do not use Personal Health Information (PHI) or protected characteristics.

In cases where the Computational Twin makes patient-level recommendations, it uses optimization methods based on non-protected characteristics, such as timestamp data from the patient's stay. These models are designed to produce uniform, deterministic outcomes across patient cohorts, further reducing the risk of patient-level bias.

Decision IQ predictions and recommended priority scores always require human intervention to deploy actions based on those outputs.

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