h-trak System - Service Description

1. Overview: Delivering Healthcare Information, Improving Healthcare Outcomes

The h-trak Scan4Safety system delivers comprehensive 'track and trace' on implants at patient level; full procedure level costing via barcode scanning; materials management for theatres, wards and clinics, and automated patient-centric stock replenishment within healthcare environments.

Using the latest handheld mobile scanning technology, h-trak decodes industry standard barcodes, such as GS1 and HBIC, to accurately identify devices, providing a rich source of procedure information to enrich patient level costing; trigger stock replenishment and improve patient safety by 'tracking and tracing' clinical implants. It can also capture staffing and timings points, which enables theatre management teams to analyse the data and streamline daily lists and manage resources. The data is essentially *captured once at the point of care, then used in many ways*.

When combined with other data sources h-trak provides an accurate record of all components of a procedure and its associated costs. h-trak's 'Track and Trace' functionality also enhances patient safety, as it captures lot numbers to patient level, and alerts care givers when the product is out of date.

Finance, Clinical and Procurement managers can use the data to review performance, make informed decisions and automate functions, such as purchasing and auto-replenishment.

- Architecture

The h-trak solution is based on the SaaS (Software as a Service) model where all data is held on a central server so no application software is installed on a trust client's PC, meaning that the solution can be set up easily. Data can then be accessed where and whenever it is needed.

The h-trak system's architecture is designed in such a way that the handheld used for data capture can continue to operate in the event that the HRS (h-trak Replenishment System) server, that underpins the system, experiences downtime. This is because it is based on capturing data in batch mode.

Furthermore, the database, and therefore all data captured, is stored on the SD card on each individual handheld computer. Should the handheld computer crash beyond repair, the SD card can be placed into another handheld computer, and any data captured before the crash is restored.

- **Product Master Data**

One of the key advantages of the SaaS approach is the ability to provide and maintain high quality manufacturers' product master data at a single point, the h-trak web server. h-trak customers will no longer need to store and manage master data at a hospital or ICS/STP level.

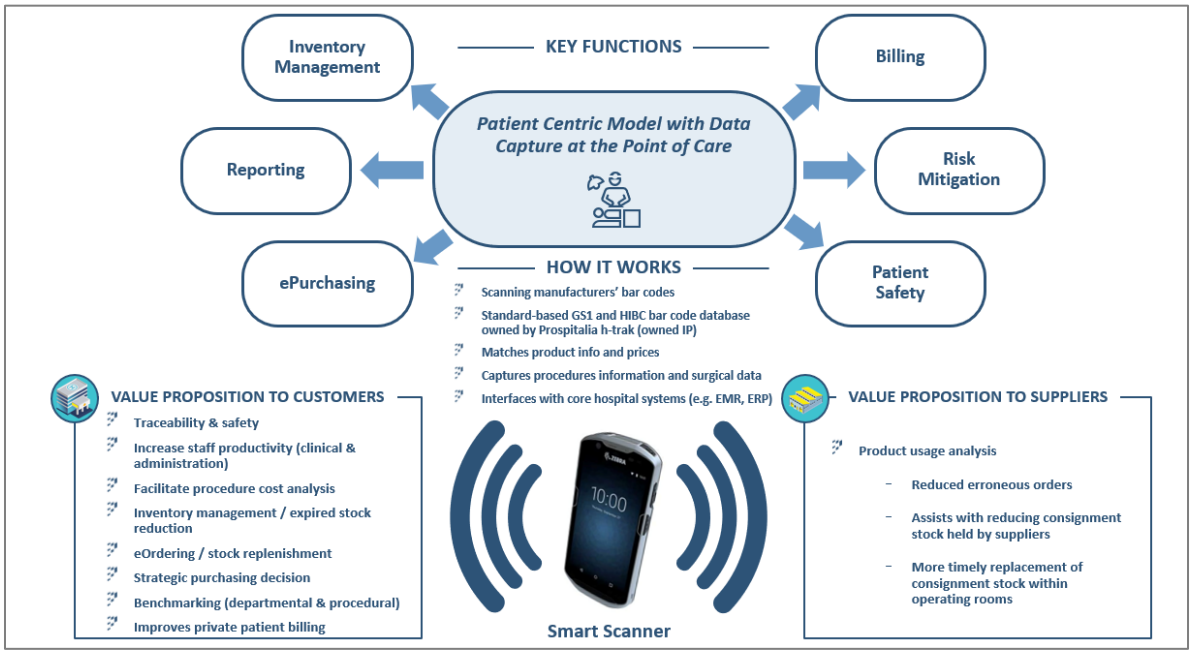
- **Data integration for core IT Systems**

Once data is captured at the point of use, it can be uploaded into a hospital's existing core IT infrastructure. Additionally h-trak can receive important information from core IT systems to enrich the data.

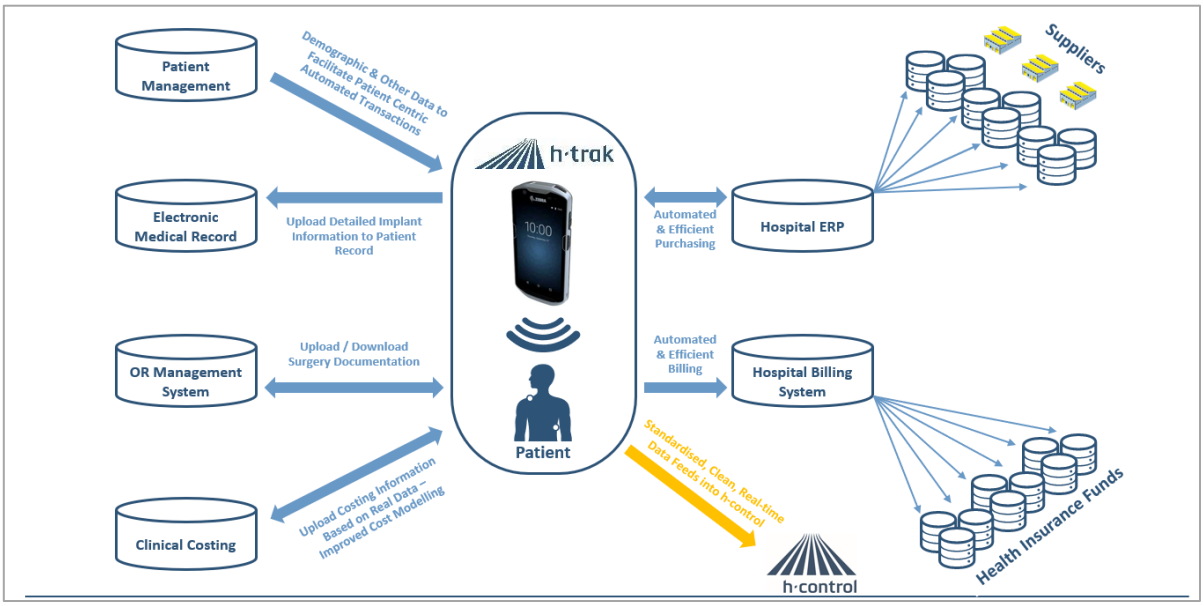
Typically the IT systems working with h-trak include:

- ERP Finance and Procurement systems
- Patient Level Information and Costing System (PLICS)
- Patient Administration systems
- Electronic Patient Record
- Theatre Management systems
- Central data repositories

The figure below illustrated the use of data across hospital functions.



The figure below illustrates the flow of h-trak data between hospital systems



The h-trak system is flexible, and can be adapted to different requirements and processes, and is scalable – from a single department within a hospital or across the ICS hierarchy.

2. Summary of Key Features of the h-trak system

- Over 1.4 Million barcoded products in the central database
- Accurate data collection, which eliminates the need for manual data entry
- Quick and simple to use 'Track and Trace' functionality
- Automatic detection of Expired devices
- Management of hospital, consignment and loan stock
- Patient centric automated replenishment process
- Removal of obsolete stock
- Powerful activity and procedural analysis and reporting tool
- Optional Top Up module to enable replensihment of low value consumables via a Kanban approach or similar

3. h-trak - Delivering business and clinical benefits

Typically hospitals are realising the following benefits:

- Enhances patient safety through the 'track and trace' functionality, as h-trak captures lot numbers so making the process of product recall quick and efficient. Within minutes reports can be run to identify the lot number and the corresponding patient so that action can be taken if necessary.

- Addresses clinical variation and identifies best practice as clinicians can use the data to improve theatre practices, improve patient care and ensure better patient outcomes.

- Improves supply chain efficiency as automated consumption-based stock replenishment reduces the time spent by clinical staff ordering products, enabling them to spend more time on patient care. With h-trak, theatre staff spend on average of 70% less time on admin. Stocktakes are significantly faster and levels of expired stock are dramatically reduced.

- Availability of detailed procedure and purchasing reports enable managers to identify wastage and obsolete stock or reduce 'off contract' purchasing, and importantly, support organisational process change.

- Facilitates patient level procedure costing, creates insights and supports reporting compliance by interfacing or importing h-trak data with hospital systems such as PLICS.

4.0 Overview - h-trak's core capability

Feature	Description
Software as a service (SAAS)	h-trak software is provided as a service. This means that all future upgrades to the software are available to customers without the need for costly, inefficient and time consuming upgrades. In addition, the web based technologies used by h-trak reduces costly deployment, and minimises the impact on existing IT Infrastructure. Users of h-trak can access the h-trak Resource System (HRS) from any place, using an industry standard web browser, e.g. Firefox or Google Chrome.
Centrally Managed Product Master Database	h-trak manages a central Product Master Database (PMD) comprising more than 1.2 million products on behalf of all customers. The PMD also includes the manufacturer barcodes (UPN – HIBC or GS1) so that products can be captured in h-trak by scanning the manufacturers' barcodes.
Decoding of manufacturers' standard barcodes	h-trak scans and decodes the HIBC or GS1 Standard barcodes used by manufacturers of medical devices. These barcodes include production data, such as lot number and expiry date, so that h-trak captures this data from a single scan.
Multiple Product Pricing	h-trak has the ability to handle multiple prices for medical devices: • Public Versus Private Purchase Prices • Rebate price for billing
Ability to report total cost of procedure	h-trak is able to calculate the total cost of the procedure, including: • Cost of all consumables used • Labour cost (by applying a unit cost rate for each staff member) • Facility overhead (by applying a unit cost rate to the facility)
Purchasing	h-trak produces purchase orders or purchase requisitions from actual product usage. It is h-trak's core belief that the purchasing driver should be based on actual product usage to patient. Typically, product usage by other systems considers usage to be at a time when a product is "expensed" from a system. This is usually when taken from a central store, or delivered to a department. h-trak has developed interfaces into Enterprise Finance Systems, such as SAP, Oracle, Great Plains, eFinancials, Agresso/Business World and Integra to further streamline the purchasing process.

Billing	h-trak produces reports that allow the accurate and complete billing of procedures.
Patient level costing	h-trak data can be fed into local Patient Level Costing (PLICS) systems to generate reports.
Reporting	h-trak includes standard reports that provide hospital management with rich information about procedures, product usage and costs including: • Procedure data • Product usage and cost data • Procedure timers • Billing reports (private patients) Reports can be easily and effectively filtered to "slice and dice" the data. For example, by Clinician, Procedure Type, Product Type etc. A list of standard reports is outlined in this document.
Patient safety - Traceability	h-trak captures prostheses and other medical devices used on patients accurately and efficiently. This includes the lot number or serial number of the product, directly from the manufacture's barcode. It also captures the expiry date from the barcode, ensuring that the clinicians are adequately informed about the product prior to implanting to patient. In the case of product recalls, the h-trak system is able to quickly and efficiently (less than 30 minutes) retrieve patient procedures where a recalled device has been used.
Flexible and configurable	The h-trak system is very flexible, and can be configured based on the requirements of the customer. This is determined through a comprehensive business process review conducted during the implementation phase, so that the system works with and compliments existing systems.
Hierarchical Organisational Unit Structure	The h-trak system allows for the creation of independent Organisational Units belonging to a Hierarchy. This allows for a Theatres Department, for example, having a different configuration to a Cath Lab, while still belonging to the same hierarchy. This provides not only flexibility, but it also allows a corporate approach to the overall management of the system.

5. Detailed h-trak features

Feature	Description
Barcode scanning or drop down lists to capture data	All data captured in h-trak is "structured" data. Data is captured by either scanning barcodes, or through drop down or other lists. Capturing structured data is the most efficient and accurate way of capturing data. It also enables data to be easily reported. Unstructured (free text) data cannot be easily reported, and is next to useless from a reporting perspective.
Decoding the standard HIBC or GS1 Manufacturer barcodes	h-trak decodes the standard HIBC or GS1 barcodes that have been adopted by most manufacturers of medical devices. This allows users to scan the barcodes on product packaging, without the need for the hospital to create their own barcodes for products, which is costly, hard to maintain and inherently inaccurate.
Defined stock types for all products	Ability to define different business rules for each stock type defined in the system. For example: • Consignment – pay and replace • Loan – invoice only • Non-stock • Stock Also, rules can be assigned on whether stock should be replenished via h-trak or not. For example, stock items are often replenished by another process, such as imprest, either using the h-trak Top-Up module or another system. A rule in h-trak can be assigned to prevent requisition orders from being created for such items.
Units of Issue	h-trak defaults all units of issue to the Suppliers' units of issue. However, users are able to change the unit of issue for a specific department to a desired level.
Virtual Kits	h-trak has the ability to create virtual kits for certain standard setups or surgeon preference cards. This allows the capturing of multiple products in a standard setup by scanning a single barcode.
Scopes and Trays	h-trak is able to capture scopes or trays used on patient procedures, including the serial number of the scopes.

System pricing for pacemakers and Defibrillators	Typically, suppliers of pacemakers and defibrillators sell these products at either the "System" level, where the leads are included in the price, or the Unit (box) level, where the leads used are priced independently of the unit. h-trak is able to apply rules that allow for both system or unit pricing to apply based on the user selection.
Procedure Reports as PDF files	h-trak is able to turn on a feature to allow procedure reports to be opened as a PDF file. The PDF report can then be printed and placed on the patient record. The PDF report could also be uploaded electronically to the Electronic Patient Record (EHR), if this system is in use by the Trust. This feature compliments existing medical record information, and provides greater completeness and accuracy around products used, for example, in the medical record for a patient procedure.
Barcode scanning sheets	All scanning sheets are centrally managed in the h-trak Resource System (HRS). For example, scanning sheets can be created for Staff, Procedure Types, and other data captured to enable the easy capture of data. When updates are made to the data (for example new staff members of new procedure types added), the scanning sheets are automatically updated, and can be printed directly from the HRS.

6. Data captured in h-trak

Data	Description
Patient details	• Patient URN or MRN (from barcode on patient label or wristband) • Cost centre for the procedure • Patient type (Elective, Emergency etc)
Location	Operating room or procedure room where procedure performed
Timers	Configurable to requirements. Typicall examples include: • Anaesthetic start • Patient in room • Procedure start • Procedure end • Anaesthetic ends • Patient out The exact description can be configured to User needs.
Staff	Staff attending and their type and role: • Nurses • Doctors and consultants • Roles
Procedure(s) performed	The ability to record the procedures, including the OPCS codes. A hierarchical procedure tree exists in h-trak, where a procedure could relate to one or many item codes.
Anaesthetic Type	The anaesthetic type(s) used on the patient, e.g. • General • Local • IV Sedation • Epidural
Case Data	h-trak has the ability to record other data. There is a degree of flexibility as to what this other data contains, but typically, this may include such things as: • Reason for late session start • Procedure outcome • Certain QA checks, for example, whether Timeout performed, diathermy used or specimens taken.

Products used in procedure	Consumable products used in the procedure, including implantable and other high cost medical devices are captured as well as Lot number and Expiry date of products. Additionally, h-trak captures whether or not product has actually been used on patient, or whether item was not used, and a reason for not using, for example: • Opened but wrong size • Sterile issue • Damaged during implantation • Faulty product. This allows the customer to report on wastage, but also to apply processes depending on the reason for non-usage. For example, a product not used due to sterile issue needs to be replenished, but it cannot be charged or assigned to patient.

7. Reporting

A range of standard h-trak reports are available to users via any PC browser.

- Accumulation Report: Lists, for defined parameters, the products accumulated through usage, and not yet purchased.
- Do Not Re-order Report: Lists products where re-ordering (replenishment) has been turned off.
- Products in a supplier contract report: Lists all products for specified supplier contracts
- Search for SPC in current contracts: Allows user to obtain details about a specific item based on search by the Supplier Product Code (SPC).
- List current contracts report: Provides a list of all contracts on a department profile
- Zero/Blank Values Report: Lists data for selected parameters (e.g. Price, GL Code, Stock Type), where the field has no or zero value. The report is very useful for system maintenance.
- Purchasing Reports: Lists all purchases or requisitions submitted through h-trak over a designated time period.
- Procedure Reports: A range of reports is available here as follows:
    - Procedure List: List of all procedures over specified date range and for specified parameters defined by user (e.g. by procedure type, funding type, patent type, doctor etc)
    - Procedure details: List of detailed procedure reports (all data captured for procedures) over selected date range, and specified user parameters (Funding type, patient type etc)
    - Product usage: List of products used on specified procedures, over specified date range for specific parameters as defined by user.
    - Implantable device usage report: List of all implantable devices used over specified date range.
    - Prostheses Rebate Code Report: List of products used that are on the Commonwealth Prostheses List over designated date range.
    - Business Managers Report: Provides a report for business manager to allow strategic assessment of data, and for reporting and budgeting.
    - Procedure Timers Report: Reports on the timing of procedures for the applicable timing points captured.
    - Procedure Timeout report: Reports on the Timeout for procedures.
- Procedure Type Report: List of all procedure types on the department profile.

In addition, enhanced reporting can be accessed using the h-control business intelligence tool, which provides users with ready and quick access to data for identifying product variability and highlighting procedure cost variations in real-time, in order to make clinical procurement decisions.

Through an intuitive dashboard, h-control produces reports from raw h-trak data uploaded each evening from the h-trak system into the h-control database.

h-control has been successfully deployed at a number of sites, where it is providing unprecedented information and cost benefits. Managers with critical information at their fingertips can better plan and manage financial outcomes for their business.

Example of h-control reports

- Procedures by Period: A report that lists the total number of procedures performed month on month, including the number of private procedures performed.
- Procedures Year on Year: A report producing a month by month comparison of number of procedures performed current year over previous year.
- Device Costs by Time: A report producing the total Prostheses and Consumable cost over time (month by month). It also overlays the total number of procedures performed month by month so that expenditure can be assessed in the context of total number procedures performed.
- Device Costs by Location and Time: A report producing in tabular format, the total and average costs by specific location for selected options. It compares the total and average cost over a 3-month period to enable user to assess trends on whether costs are increasing or reducing.
- Device Costs by Cost Centre: A report producing in tabular format the Prostheses and Consumables total and average costs.
- Prosthetics Revenue: A report showing in tabular and chart form the month by month prosthetics revenue.
- Prosthetics Expenditure: A report showing the overall prosthetics month by month expenditure, including a comparison with previous year. In addition, it overlays the prosthetics revenue against this expenditure so that users can assess the expenditure offset for prosthetics (or the net cost).
- Device Costs by Procedure Type: A report highlighting the total and average costs by procedure type
- Device Cost by Consultant: This report produces the total and average Prostheses and Consumables cost by consultant (or Surgeon) performing procedure.
- Top Suppliers: This report produces in tabular format the top 20 Suppliers over a specified period.

- Top Suppliers by Consultant: A report illustrating the top suppliers as used by consultants/surgeons. This report is most useful when filtering the data set on a specific procedure, for example Total Knee Replacements.
- Device Costs by Product Type: A report showing the total and average cost of Prostheses and Consumables by product type.
- Elective Versus Emergency: A report showing the total number of Elective Versus Emergency Procedure.

8. h-trak pricing structure

h-trak understands the current NHS funding landscape and truly believes that better materials management, business process efficiencies through automation and cost savings achieved using the h-trak system will deliver a strong ROI for hospitals.

At the proposal and pre-implementation planning stage, the hospital trust's business requirements and current stock information are input into h-trak's ROI tool to assess the costs of an implementation against a prediction of potential long term savings.

- **The fee structure**

- Annual h-trak system location licence fee (quoted per handheld device). Please note a site-based licence can be provided. More details on request.
- Annual h-trak system department fee (quoted per handheld device)
- Implementation fees are quoted on a case by case basis, and include the following considerations:
    - Interfaces involved and the complexity
    - Type of department and case-mix
    - Number of nurses/clinicians requiring training
    - Number of h-trak resources that will be required to implement the solution
    - Travel/Accommodation and other out of pocket expenses
- Hardware fees for handhelds can be supplied on a leased basis or purchased outright.

- **Passing on the savings**

The Cloud- based service that h-trak offers allows trust clients to implement the h-trak system progressively to spread the cost across the life of the project. This staging allows a trust to implement in a single department and utilise the savings gained from that h-trak implementation to release funding for another department implementation.

A trust could then build on the initial implementation to rollout to other departments, efficiently and at low cost compared to the traditional software approach where investment in hardware and other IT infrastructure is costly and often difficult to deploy.