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# RFTrackIT™
# RFID & QR Code Sample Tracking & Labelling Solutions for ultra low temperature and room temperature samples

## Biobank Sample Tracking & Labelling Solutions

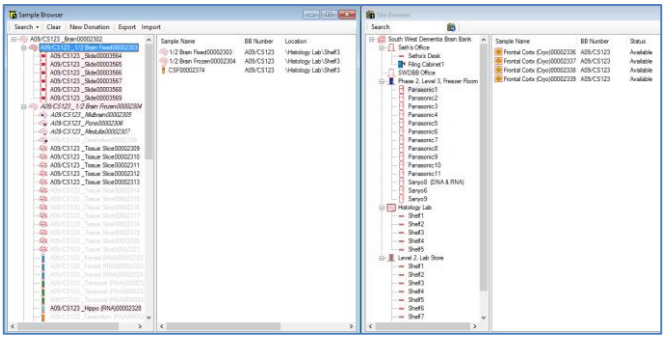
CSols **RFTrackIT™** unique BioBank sample tracking solutions combine state of the art software, hardware, RFID and QR code labels to improve your BioBank's sample tracking, traceability and audit capability. Faster access to samples in turn improves location tracking, reduces analyst effort and turnaround times and transcription errors. Individual solutions will be unique for each site/biobank and hence **RFTrackIT** is fully configurable. Tried and tested RFID labels can be supplied for new samples and old samples can be retrospectively labelled over frosted surfaces.

CSols will help guide you 'Beyond the Technology' sharing their knowledge of laboratory software, Radio Frequency Identification (RFID), QR code labelling and sample tracking and location management to create a solution that meets your precise requirements.

## Fully Scaleable

CSols **RFTrackIT™** is a truly scaleable sample tracking and labelling system specifically designed for hierarchical storage of both room temperature and ultra low temperature biobank specimens. The CSols RFTrackIT™ software system can be configured to precisely map any sampling/sub-sampling regimens, label type and storage locations.

The system can be used with MS SQL Server relational databases in a single or multi-user and single site or multi-site configuration for biobanks of different sizes. The system can also be deployed nationally or internationally as a Cloud based system using MS Azure.



**Fully configurable sampling and site-location trees**

## Defined but configurable sampling trees

The registration of new and existing donations is made easy through the ability to create re-usable sample tree templates. These allow biobanks to map their unique sampling/dissection protocols and then use the preconfigured sample tree to automatically register all of the samples in their protocol in a single step. The software also ensures that all discrete sub samples are uniquely identified and linked with the primary donation and labels that are appropriate to the container size and storage conditions are produced.

The sample tree also allows for the storage of biographical details such as the biobank donation identifier and label types (RFID/2D or 2D bar code) and label designs that have been assigned by default for specific sub sample and container types. A large number of sample fields are available for uploading historical and entering new sample data. CSols can also optionally assist with linking research request and cost recovery systems to RFTrackIT.

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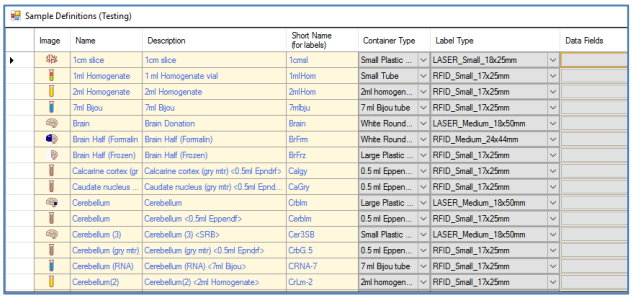
## Advanced labelling technology

CSols RFTrackIT™ software supports label technologies that include QR/2D barcodes and RFID based labels to ensure the right label type and right label size is used for the right storage / temperature combination. All labels are printed with selectable sample field text, QR code, container and sample type and unique SystemID.

**Printable Paper RFID labels**

All RFID unique tag identities are paired with generated sample identities and are stored in the database to allow for the easy locating of stored materials. In addition specially developed RFID labels can be supplied which will support a variety of uses and containers, including storage in Liquid Nitrogen, use with paraffin wax cassettes and labelling of plastic bags. All of our labels ae designed to be **fail-safe** and contain configurable, human readable text, sample and system id information as well as QR codes.


Sample Definitions (Testing)

| Image | Name | Description | Short Name (for labels) | Container Type | Label Type | Data Fields |
|---|---|---|---|---|---|---|
| | 1cm slice | 1cm slice | 1cmsl | Small Plastic ... | LASER_Small_18x25mm | |
| | 1ml Homogenate | 1 ml Homogenate vial | 1mlHom | Small Tube | RFID_Small_17x25mm | |
| | 2ml Homogenate | 2ml Homogenate | 2mlHom | 2ml homogen... | RFID_Small_17x25mm | |
| | 7ml Bijou | 7ml Bijou | 7mlbju | 7 ml Bijou tube | RFID_Small_17x25mm | |
| | Brain | Brain Donation | Brain | White Round... | LASER_Medium_18x50mm | |
| | Brain Half (Formalin | Brain Half (Formalin) | BrFrm | White Round... | RFID_Medium_24x44mm | |
| | Brain Half (Frozen) | Brain Half (Frozen) | BrFrz | Large Plastic ... | RFID_Small_17x25mm | |
| | Calcarine cortex (gr | Calcarine cortex (gry mtr) <0.5ml Epndrf> | Calgy | 0.5 ml Eppen... | RFID_Small_17x25mm | |
| | Caudate nucleus ... | Caudate nucleus (gry mtr) <0.5ml Epnd... | CaGry | 0.5 ml Eppen... | RFID_Small_17x25mm | |
| | Cerebellum | Cerebellum | Cblm | Large Plastic ... | LASER_Medium_18x50mm | |
| | Cerebellum | Cerebellum <0.5ml Eppendf> | Cerblm | 0.5 ml Eppen... | RFID_Small_17x25mm | |
| | Cerebellum (3) | Cerebellum (3) <SRB> | Cer3SB | Small Plastic ... | LASER_Medium_18x50mm | |
| | Cerebellum (gry mtr) | Cerebellum (gry mtr) <0.5ml Epndrf> | CrbG.5 | 0.5 ml Eppen... | RFID_Small_17x25mm | |
| | Cerebellum (RNA) | Cerebellum (RNA) <7ml Bijou> | CRNA-7 | 7 ml Bijou tube | RFID_Small_17x25mm | |
| | Cerebellum(2) | Cerebellum(2) <2ml Homogenate> | CrLm-2 | 2ml homogen... | RFID_Small_17x25mm | |

**Sample types and data fields are defined with images, label descriptions, container and label type and sample specific data fields**

Using years of industry experience, unique cryogenic RFID and barcode labels with proprietary construction have been designed to remain in freezers for long term storage. Combined with the highest quality printer ribbon, these thermal transfer labels can be printed and applied to previously frozen cryovials.

Today this technology is used on six continents and in countless freezers. Whether you are a repository, hospital / charity biobank, government agency, university or in the private sector and require labels that accurately identify an irreplaceable specimen, you cannot take chances with an unproven product.

After all, labelling is only effective when the label sticks to anything, at any temperature...forever!

## RFID Sample Tracking

Specimens have traditionally been identified with barcode labels to save time when cataloguing and storing them. The only requirement was to have a barcode scanner on hand when doing an inventory so that the item may be accurately scanned into a database. This reduces errors, eyestrain and tedious handling of specimens. Saved time and accurate identification makes barcode labelling a must for a lab or repository to operate efficiently.

**An entire box or plastic bag of containers can be read in a single read**

The latest advancement takes barcode labels a step further by adding Radio Frequency Identification (RFID) tags integrated into the labels with printed barcodes. CSols RFTRackIT cryogenic labels can automatically read

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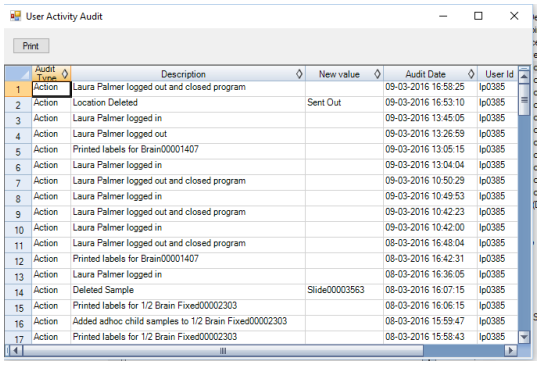
a box of ultra cold vials. This eliminates the need to wipe ice off samples and scan each one with a barcode scanner. A A tablet RFID reader can be used to read boxes of samples without having to even see the barcode! This means that a box of 56 or even 100 vials may be read while still frozen and sealed in a box. An entire box can be read in the time that a single vial used to take to scan. The reduced handling of specimens in a sealed box makes it faster and easier than ever to take an inventory of specimens for regulatory compliance. It also readily shows misplaced or missing vials whilst reducing freeze/thaw cycles and even electricity costs!

## Can be combined with barcode labelling

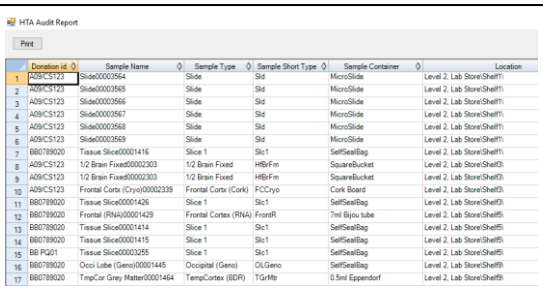
Using RFID doesn't necessarily mean dropping paper / barcode labelling. We can design and source label stock and printers to combine the two, to give you full continuity with your current systems. Our sample logging and labelling software can for example replace or enhance your existing LIMS sample handling mechanisms.

## Reporting

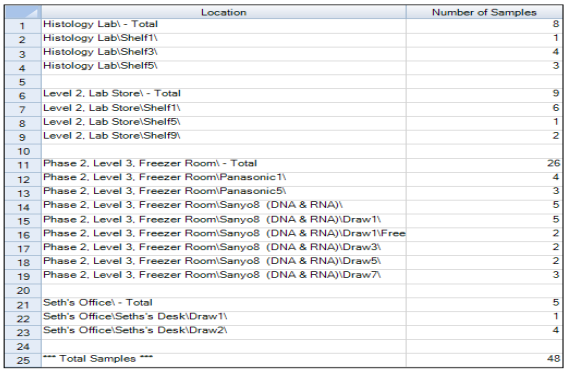
A number of reports are available to facilitate regulatory compliance, user and sampling auditing and KPI reporting. These can be further tailored to meet your precise needs.




User Activity Report

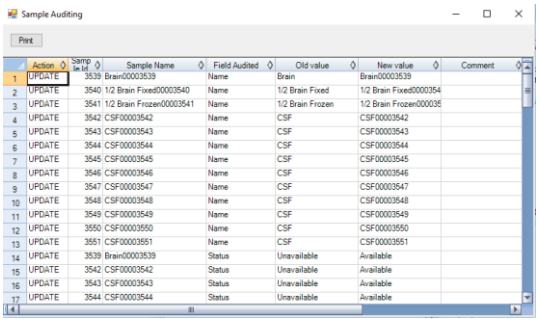



Regulatory Compliance Sample Audit Report



| | Location | Number of Samples |
|---|---|---|
| 1 | Histology Lab\ - Total | 8 |
| 2 | Histology Lab\Shelf1\ | 1 |
| 3 | Histology Lab\Shelf3\ | 4 |
| 4 | Histology Lab\Shelf5\ | 3 |
| 5 | | |
| 6 | Level 2, Lab Store\ - Total | 9 |
| 7 | Level 2, Lab Store\Shelf1\ | 6 |
| 8 | Level 2, Lab Store\Shelf5\ | 1 |
| 9 | Level 2, Lab Store\Shelf9\ | 2 |
| 10 | | |
| 11 | Phase 2, Level 3, Freezer Room\ - Total | 26 |
| 12 | Phase 2, Level 3, Freezer Room\Panasonic1\ | 4 |
| 13 | Phase 2, Level 3, Freezer Room\Panasonic5\ | 3 |
| 14 | Phase 2, Level 3, Freezer Room\Sanyo8 (DNA & RNA)\ | 5 |
| 15 | Phase 2, Level 3, Freezer Room\Sanyo8 (DNA & RNA)\Draw1\ | 5 |
| 16 | Phase 2, Level 3, Freezer Room\Sanyo8 (DNA & RNA)\Draw1\Free | 2 |
| 17 | Phase 2, Level 3, Freezer Room\Sanyo8 (DNA & RNA)\Draw3\ | 2 |
| 18 | Phase 2, Level 3, Freezer Room\Sanyo8 (DNA & RNA)\Draw5\ | 2 |
| 19 | Phase 2, Level 3, Freezer Room\Sanyo8 (DNA & RNA)\Draw7\ | 3 |
| 20 | | |
| 21 | Seth's Office\ - Total | 5 |
| 22 | Seth's Office\Seths's Desk\Draw1\ | 1 |
| 23 | Seth's Office\Seths's Desk\Draw2\ | 4 |
| 24 | | |
| 25 | *** Total Samples *** | 48 |

Example of an HTA BioBank Summary Sample Audit Report




Sample Audit Report

## Summary

To support the use of RFID labels, workstations can consist of PCs, laptops and tablets equipped with RFID/2D barcode readers and laser / RFID printers. Collecting Sample IDs in this way is much faster than scanning

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barcodes and allows for the rapid scanning of boxes or plastic bags containing multiple samples. This helps improve regulatory compliance e.g. with The Human Tissue Act (HTA) and other internal or external regulatory audits, allowing for a 100% inventory to be performed in just a few hours instead of months. The ability to read RFID labels without having to handle containers means that inventory can be rapidly checked without removing material completely from the freezers thereby reducing thaw, freeze cycles. Specimens can also be more quickly located in storage once an external request has been made. An added bonus is a reduction in freezer electricity use due to faster sample handling capabilities. In combination with industry standard RFID scanners, printers and special labels, the RFTrackIT™ software solutions allows biobanks to freely use both 2D barcode and RFID labels for simple or complex dissection protocols on an extensive range of container types.

Moreover the flexible design helps support both new and existing numbering and nomenclature systems to allow the system to be used in any type of biobank.

**CSols RFTrackIT™** is a powerful, flexible, configurable system that supports the identification and tracking of samples of all types. The following benefits are possible:

- Significant time savings during the processing of schedules, reception, finding and tracking of samples using sampling and location trees
- Rock solid compliance with a full location audit
- Ensuring that sampling strategies, dissection protocols and associated labelling and storage are fully met
- Elimination of all paper transcription errors
- Reduced freeze/that cycles and electricity costs using novel RFID cryogenic labels
- Easily produced sample audit reports
- User and activity auditing
- Improvements in batch / sample integrity and accuracy of data collection
- Where required, addition to, or replacement of LIMS functionality

## About CSols Ltd.

CSols is a well-established and successful company producing and delivering and supporting software solutions that dramatically improve costs, quality and compliance in laboratories. CSols clients include : University of Bristol / MRC UK Brain Banks, Central Manchester NHS Trust (Manchester Royal Infirmary MRI), Charing Cross Hospital, Falun Hospital, Galway University Hospital, Heart of England NHS Trust (Heartlands Hospital), Imperial College Healthcare Trust (Charing Cross Hospital), Leeds Teaching Hospitals NHS Trust (St. James Hospital), Lund University Hospital & Oxford University Hospital Trust (John Radcliffe Hospital), Royal Surrey County Hospital (SAS Trace Element Centre UKNEQAS for Trace Element).

## Further Information

**CSols Ltd.,** The Heath, Runcorn, Cheshire. WA7 4QX, UK
Tel: +44 (0) 1928 513535 Fax: +44 (0) 7006 061106
Web: www.csols.co.uk email: rftrackit@csols.com

Alternatively please scan the QR code below and complete our online enquiry form.