



## WHITE PAPER

*Spring 2023*

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### 'Live' Digital Bottle Inventory Management



### - Introducing - CapTag 'BottleTrack'

*A Disruptive Change for Tracking & Controlling  
Bottled Wines & Beverages*

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## Summary Overview

Any area of saving will help the hospitality industry recover from the damage caused by COVID and the current economic conditions to get back onto its feet.

Controlling stocks of wines and beverages has always been an essential part of maintaining profit margins in the hospitality trade.

- but, done thoroughly, this is a time consuming and costly business as every bottle has to be individually examined – which is especially not recommended for ‘fine wines’

Sommeliers & Managers in busy restaurants, hotels, and bars, dream of being able to do frequent inventory checks, certainly weekly and ideally daily

- but the practicality and cost of doing this has so far been prohibitive.

Now there is a new way to simplify the way wet stock is tracked and counted in bars & cellars on shelves/racks, and even in fridges, based on revolutionary RFID technology from CapTag Solutions.

CapTag Solutions have innovated, and patented, a focused development of an RFID technology that is presently applied globally to over 30 billion items of apparel every year for inventory management using RFID industry standard readers

The CapTag innovation involves using two unique RFID products – used independently - or together, both containing a unique electronic/digital identity stored in the RFID chip during manufacture:

- CapTag Labels – self-adhesive single use labels
- NeckTag - re-usable tags on the bottle neck

Labels, or NeckTags, are applied to bottles which can then be instantly added to the businesses’ stock database.

Bottles are then stored as usual in bar areas, or in cellars, or fridges.

All the Sommelier, or bar manager, needs to do is to scan bottles in stored areas, or in boxes, with the individual bottle identities being captured:

- at long range (several metres)
- at high speed (100’s per second)

so, counting is quick and reliable.

The individual unique electronic identity of each bottle captured is then sent to the central database, which then generates any required reports.

The CapTag inventory management system can either be independent of, or easily integrated into any standard POS, or other internal or cloud database system

## Background: Controlling & recording wet stock levels

The overall purpose of all inventory management system in any Hospitality business is to calculate the cost of sales, and determine the gross margins achieved on those sales. The cost of sales is most often calculated, at the end of each day's trading, ideally when the bar is closed, by measuring the change in stock. The simplest method, used in most bars, relies on the manager checking stock levels, which if done thoroughly, is a time consuming and costly business, so is often only done visually and superficially.

Studies have shown that restaurants rarely conduct thorough inventory counts. Even 41 % of caterers said that an inventory is conducted only once a year, and 40% of them only once a month. Only 17 % of them pay attention on every inventory object to detail and control each item. Around 40% of private bars and restaurants do a manual inventory count once a month.

A daily, or even shift based check would provide much more information to managers and owners helping them to identify and solve potential problems faster and easier and increasing the businesses profits. The sooner problem areas are addressed the better:

- pilferage
- stock waste control, overflowing of drinks, poor storage conditions
- issues with the cash register, e.g.: understatements, misuse not properly programmed
- free drinks, discounts or allowances for goods need to be properly recorded
- department requisition mistakes, (between bars, lounges, restaurants, nightclub bars)
- accurately forecasting future stock orders to reduce overbuying
- mixed drink pricing problems, incorrect quantities, inconsistent prices for overall drinks offering

Ideally daily, or shift-based inventory checks would be best, as problems can then be identified quickly and rapid action taken. Unfortunately, until now, this requires too much time and effort and is not standard practice.

With any inventory system when a stock item reaches a pre-determined minimum stock level then products are re-ordered – but what should be the minimum stock level, taking into account the need to avoid 'stockouts'?

To maintain the lowest stock levels - and cash tied up in the business - this is often done by 'just in time (JIT)' re-ordering but this relies on:

- knowledge of actual stock levels;
- & rapid response from suppliers

- to ensure the business does not run out of stock altogether. With accurate knowledge of actual stock levels and movement of those levels, money tied up in stock can be reduced and ideally stock holding costs can then be carried by the suppliers, who effectively act as the Business's warehouse.

Computerized Point-of-sale Systems (POS) have integrated links to track sales and a good POS system will record information in hourly, daily, and month-to-date increments, such as:

- product sales mix
- revenue (per shift, sales period, or server)
- server-tips report (which is also used for tax purposes in the USA)

- total revenue

More sophisticated POS systems also interface with inventory and purchasing programs to follow beverages and other bar items through purchase, use, to the eventual sale. And can also identify fast and slow-moving stock.

## The Digital Solution

CapTag Solutions Ltd have taken a globally proven RFID technology and have innovated, and patented, a focussed solution for identifying, locating & tracking containers of liquids, such as wine, spirits and soft drinks in bottles.

As you may know, the initials RFID mean Radio Frequency IDentification, which everybody uses, most of the time without knowing it. You may be surprised how many times you use RFID technology in your everyday life, in areas such as animal ‘chipping’, road tolling, building access control, passports, sports event timing, with, by far the largest application being in apparel, where over 30 billion tags are used each year for inventory & stock control.

The basic concept of operation is:

- An antenna, built into a handheld or fixed reader (or scanner), sends out radio signals.
- These signals are received and returned by an RFID label or tag, which has a globally unique digital identity, with information added – which in its simplest form is the digital ID of the label or tag.
- The reader which is integrated with a software system accepts and stores this data and triggers actions.

The advantages of RFID digital technology over its analogue equivalents the barcode & QR Code are:

- RFID technology automates data collection and vastly reduces human effort and error
- RFID supports tag reading with no line-of-sight or item-by-item scans required
- RFID readers can read multiple RFID tags simultaneously, offering increases in efficiency
- All RFID tags within range can be detected instantly and matched with information in your database
- Assets can be cross-referenced against assigned locations and recorded as present, missing, or relocated
- RFID can be integrated with active scanning and fixed readers for a totally automated tracking solution
- Assets and employees can be tracked and located automatically for everything from supply chain and asset management to facility security and emergency planning
- Available scanners support both RFID and barcoding so you can upgrade at your own pace

CapTag Solutions Ltd specialises in RFID technology for bottles containing liquids where conventional RAIN RFID labels, as used in apparel applications, don't work effectively

Conventional RAIN labels are too large and operate only at short range; because the liquid in the bottle absorbs the radio waves on which all conventional labels depend on for their communication.

Now, CapTag® labels & NeckTags have been developed, and 6 patents granted and with further applications in progress, to uniquely use that radio absorption to read bottles, at high speed and from metres away.

... and, as no line of sight is needed, those bottles can also be read inside sealed cartons, wooden cases, or when clustered on shelves or conveyors – unlike QR or traditional barcodes.

In summary CapTag® RFID Labels enable Retailers, Restaurants & Hotels, using the standard CapTag® UHF labels and NeckTags to build productivity solutions that enhance the efficiency of their businesses by streamlining the way stocks of bottles are received, stored and tracked.

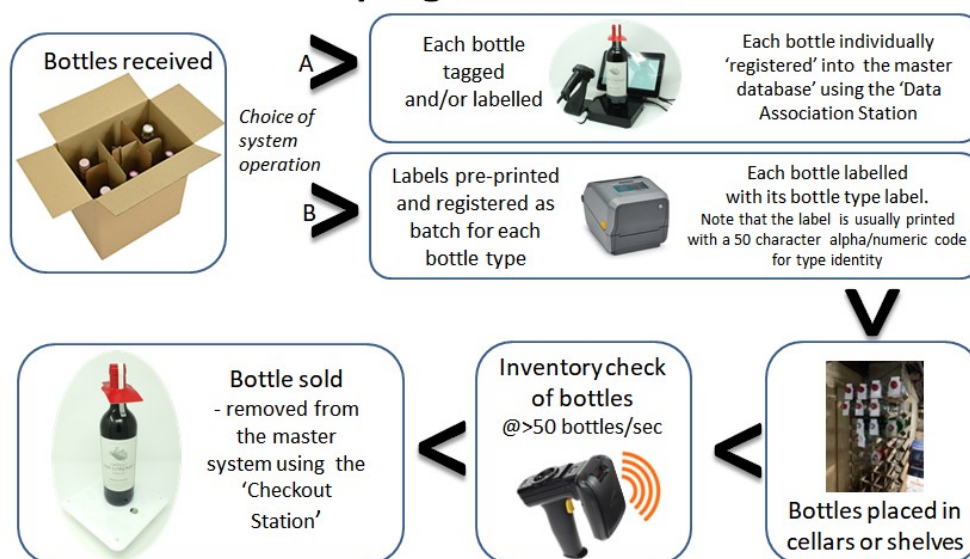
## How the BottleTrack system works

### Overview

The BottleTrack system, in essence, tracks every bottle individually in its journey through the premises: from original receipt from the supplier or wholesaler; through placement and storage in the cellar or bar, in racks, on shelves, in fridges or even in closed boxes; to being moved individually, or in bulk, within a premise; and finally, being sold to a customer.

The major benefit of BottleTrack being that the manager or owner can have an instant and immediate snapshot of the status of any or every bottle within the business. So that key information is available to manage the business effectively and efficiently from a stock perspective and, when combined with the POS data from a sales perspective as well.

### How CapTag BottleTrack works



## System steps

In a standard implementation, bottles of wines, spirits and soft drinks are received in cartons from the supplier/wholesaler/distributor.

Stage 1. **Labelling & Enrolling** – The bottles are removed from their boxes and labelled and enrolled into the premises master stock database, with the corresponding description of the bottle. This can be done in one of two ways – see graphic above for choice of operation schematic

Option A. **Individual bottles** - the label/s are first placed on the bottle/s and then are individually enrolled ('encoded') using a system enrolling station. This station relies on using the analogue barcode on the bottle for the generic description of the bottle contents, to reduce repetitive data input .

Option B. **Individual & bulk bottles** (where barcodes may not be available) using an RFID printer to print and encode the labels before being attached to the bottles. The label is printed with a short code (up to 50 characters) alpha/numeric identity for each type of wine.

This would normally be done in advance of supplier deliveries which would have the benefit of checking the physical delivery against the delivery note

– it should be noted that the stock database in its basic configuration is cloud based and can be independent of any existing stock or POS database/s

Stage 2. **Storing** - The labelled and/or NeckTag bottles can then be stored on racks, shelves, in fridges or in cartons or the wooden boxes that the wines were supplied in.

It should be noted that the NeckTag is specifically designed to be repeatedly written on, in line with normal Sommelier working practice – so that the CapTag BottleTrack digital system easily integrates with traditional working practices within any Hospitality business – but is normally used in private cellars.

Stage 3. **Stock Checks** - Routine stock checks can then be done for the complete premises, or areas within premises. Even parts of cellars can have instant & accurate stock checks done on a daily, shift or part shift basis, as the CapTag BottleTrack counts bottles at read rates of 50 bottles per second and at metres distances from the bottles.

The most significant point being that no bottles need to be moved – so fine wines are not disturbed – even when in wooden boxes.

Stage 4. **Bottles sold** - The final step is the removal of the bottle from stock when sold through the use of the 'Checkout Terminal'.

## Components

### Labels and NeckTags



Plain Self-adhesive single use CapTag Label



Plain reusable CapTag NeckTag

Which can both be branded for the premises or business identity

### Enrolment/Data Association Station

To enrol each bottle into the master database of the stock management system bottles already labelled or with a NeckTag applied, are placed on a Data Association station and the bar code on the bottle scanned.

The system then logs the unique electronic ID on each tag and associates it with the all the key product information: e.g.name, bottle size etc.



Data Association Station



# 'Live' Digital Bottle Inventory Management

## RFID readers

When it comes to choosing a suitable reader, any industry standard RAIN compatible RFID reader can be used to read CapTag labels or NeckTags.



Handheld portable reader



Doorway



overhead

Fixed portal readers

## Data cloud

CapTag has created a simple 'cloud'-based software platform to hold the master database in a closed, confidential system. This ensures that the identity of any specific bottle and its location is constantly 'live' and can be accessed from anywhere at any time.

All the data stored can be easily exported or queried, in order to generate reports, apply business intelligence techniques, etc. This can be independent of or easily integrated into any standard POS, or other internal or cloud database system. CapTag's software partners are available to assist in creating a tailored solution, as required.



**CapTag Cloud**

CapTag Cloud interface showing a search form and a list of wine items.

Search form fields: App, Item class, Code, Description, ProductId, Extra, Itemtype, Name, Category, Skuid.

ID	App	ProductId	Skuid	Item class	Itemtype	Category	Code	Name	Image
1009094	captag	500103420400	600103420400	sku			000103420400	O'Reilly L.E.V. 1984	
1009095	captag	501837418584	501837418584	sku			501837418584	Australian White Wine	
1009052	captag	501100018742	501100018742	sku			501100018742	Pinot Grigio Olive Hills	
1009051	captag	26851102004	26851102004	sku			26851102004	Maison Luyry Les Genieres	
1009050	captag	370015103003	370015103003	sku			370015103003	Muscadet Casemichere	
1009043	captag	600889001385	600889001385	sku			600889001385	Sauvignon Klein Steenberg	
1009040	captag	342281180204	342281180204	sku			342281180204	Charles Simon Febone	
1009041	captag	389646002018	389646002018	sku			389646002018	Saint Veran	
1009046	captag	370020331841	370020331841	sku			370020331841	Chateau de Lagrasse	
1009045	captag	800880312676	800880312676	sku			800880312676	Pinot Grigio Ca Luca	
1009044	captag	343056111001	343056111001	sku			343056111001	Jean Paul Cuvee White	
1009043	captag	370061930003	370061930003	sku			370061930003	Orange Du Midi	
1009038	captag	843004358289	843004358289	sku			843004358289	Divino Oro Gran Reserva Temp	
1009038	captag	931208411892	931208411892	sku			931208411892	Cabernet Sauvignon Wolf Blau	
1009034	captag	841040811001	841040811001	sku			841040811001	Ricce Marques De Cadore Vini	
1009033	captag	778803959542	778803959542	sku			778803959542	Malbec Trivento Reserva	
1009032	captag	841036918721	841036918721	sku			841036918721	Bordeaux Tempranillo Dal Du	
1009031	captag	841040611007	841040611007	sku			841040611007	Ricce Marques De Cadore Ros	
1009025	captag	931169600972	931169600972	sku			931169600972	Shiraz Winefield	
1009024	captag	343056001556	343056001556	sku			343056001556	Cotee Du Rhone Villages	
1009023	captag	343056001372	343056001372	sku			343056001372	Ugonda Haule Amoreo	
1009022	captag	370008300264	370008300264	sku			370008300264	Chateau de Du-Pape	
1009021	captag	842513210041	842513210041	sku			842513210041	Ricce El Sono	
1009020	captag	942100520033	942100520033	sku			942100520033	Pinot Noir Borthwick Paper Ros	
1009019	captag	841347202942	841347202942	sku			841347202942	Ricce Leo Reserve	

Summary table from interface:

Code	Name	Image	Image	Image
501100018742	Pinot Grigio Olive Hills			
800880312576	Pinot Grigio Ca Luca			
942100520033	Pinot Noir Borthwick Paper Ros			
5054775909995	Pinot Grigio Delle Venezie			
8005011000164	Pinot Grigio Rose Ponte			
8000160617607	Pinot Grigio Blush			

## The Checkout Station



The Bottle 'CheckOut Station'

To 'remove' sold bottles from the master database in the inventory control system, any NeckTags collected and removed from sold bottles or CapTag labelled empty bottles are simply passed over a Bottle 'Checkout Station'.

This is a simply flat-bed RFID scanner connected via an ethernet cable to the network with no keyboard or moving parts. It captures the digital identity of the NeckTag and/or label and the system records the fact that a specific bottle is no longer 'in stock'.



## Benefits achievable

Deploying a regular CapTag-based stock management system will help control costs and significantly improve gross profit margins as highlighted below:

- To control costs, by reducing under and over-stocking, minimizing stock levels and capital tied up, with more efficient re-ordering & improving stock rotation, while maintaining adequate levels of products are maintained to satisfy customer demand
- Improving gross profit margins - The exact savings to be made will of course depend on the size of the bar and the number of bottles being managed, but conservatively, improvements of between 2 and 5% on the gross profit margin can be expected.

Furthermore, regular stock control can also help to identify 'problem areas' in relation all wine and beverage stocks so that steps can be taken to control possible losses, information which is vital to highlighting poor controls.

Being able to scan bottles at long range (several metres), and providing required reports delivers benefits in a variety of ways as follows:

- Live stock counting, anywhere – on racks, in fridges or in cartons or boxes
- Instant & accurate stock checks, even daily, without the need to disturb 'fine wines'



- Finding a selected wine is quick and easy.
- It is just a matter of referencing the bottle ID you want and using the hand-held reader to approach stored bottle until the Geiger counter on the device begins to detect the signal. The closer you are to the required bottle the faster the beep becomes and the bar on the smart phone screen increases.
- This means that there is no longer any need to store wines in tag numeric order, often saving valuable storage space. Wines can be stored randomly



- Furthermore, checking out re-usable NeckTags on sold bottles provides a simple and immediate way of reconciling data from the PoS system at the end of or even during a trading day. Any discrepancies or problems can be identified and investigated immediately.

## Getting started on your digital journey

In the UK, CapTag Solutions, or one of our fully trained partners, can assist you in demonstrating the system as well as initial training and system set up. If you require further information, or would like to arrange for a demonstration please contact us directly by email at:

[info@captag.solutions](mailto:info@captag.solutions)

For other territories, we normally work with local partners. For further details please contact us directly on the email address above.

## About CapTag Solutions Ltd

CapTag Solutions Ltd was founded in 2015 by and has designed a complete family of unique RFID labels for use not only on bottled products (especially wines & spirits) but also on packaged meat and cheese.

CapTag’s self-adhesive labels and re-usable NeckTags deliver exceptional performance when used as a key component in stock control, as well as in applications such as EAS security and smart cabinets. The range of labels includes multi-functional RAIN UHF & NFC labels that are also read with smart phones, as well as at long range, using standard RAIN UHF readers.

A range of hardware and software has also been developed to support systems integrators and people less experienced in deploying autoID tracking solutions based on bar codes.

CapTag can supply all the components directly, but we have established a network of fully trained systems integrators throughout the world able to provide local support.

Website: [www.captag.solutions](http://www.captag.solutions)

Linkedin: <https://www.linkedin.com/company/captag-solutions-ltd/>

YouTube: [https://www.youtube.com/channel/UCx\\_rVR4EY2dlz1z22mSH1-w](https://www.youtube.com/channel/UCx_rVR4EY2dlz1z22mSH1-w)