

A stack of five donuts is the central focus, set against a light blue background. The donuts are arranged vertically: the top one is covered in a thick layer of dark chocolate and chunky nuts; the second is pink-glazed with multi-colored sprinkles; the third is white-glazed with pink drizzles; the fourth is white-glazed with pink and purple heart-shaped sprinkles; and the bottom one is chocolate-glazed with multi-colored sprinkles. Numerous colorful sprinkles are scattered around the donuts, creating a festive and appetizing scene.

The Doughnut Problem

And how Sample360 provides the Glaze to solve it ...

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INTRODUCTION

Hospitals have over the last few decades invested heavily in large Healthcare software solutions such as Patient Administration Systems (PAS), Lab Information Systems (LIS or LIMS), Order Requesting Systems (Order Comms) and Electronic Patient Record Systems (EPR). These systems worked perfectly as record keeping systems and decision guidance systems that required the user to find a suitable terminal and work at that screen away from the Patient or activity.

The modern Hospital has determined that this practice of leaving the patient or activity and engaging with the *system* is causing errors and contributing to several incidents. These incidents can include delays in treatment, the incorrect operation performed on a patient or even the wrong unit of blood transfused.

At the same time as this revelation the mobile computing revolution has caught up with demand to offer new options to Hospitals to allow them never to leave the patient and have guidance and information at their fingertips with Positive Patient ID (PPID).

Mobile computing will save lives in combination with PPID.

The problem with this technology revolution is the larger healthcare systems do not move that fast from a technology point of view. This is because the technologies these systems were built on are often not modern multi-tiered enterprise platforms but instead single tiered older systems that do not adapt to change well.

This means the larger healthcare systems do not readily have mobile patient vicinity systems unless you count a large laptop on a trolley as mobile computing in the true sense of the phrase(!).

This is where Sample360 comes in.

Sample360 has a powerful integration and interoperability interface that allows it to interface with these larger older healthcare systems via HL7 and FIHR. This means Sample360 provides the patient bedside and patient activity vicinity based mobile solution required by the Hospital.

Sample360 is the *glazed* doughnut ring around the older healthcare systems such as PAS, LIS, LIMS, Order Comms and EPR.

About Sample360.

Sample360 is digital Sample collection management system that enables clinical staff to use handheld devices (Handheld) at the bedside to access the Hospital Electronic Order Requests System. The Handheld receives real-time Sample order requests (providing an electronic worklist) and confirms a Patient's identity. It then prints Sample tube labels featuring an identifying barcode which allows the Sample tube to be loaded directly onto the analyser when it reaches the laboratory.

The digital management system enables paper-free sampling and vastly reduces the risk of error. Sample orders are RAG rated to enable easy identification of highest priority requirements.

Samples are tracked in transit and alert the handheld device once the Sample has been received at the lab, when it is being analysed and when the results are ready. The tracking system is fully automatic and removes the need for clinicians to call the lab for progress reports. The system will also issue an alert if the analyser has had a problem which requires a re-Sample.

Hospitals already using the system have found that the barcode labels have eliminated all incidents of the wrong blood in the wrong Sample tube and all instances of Sample rejection. They also report huge efficiencies in the laboratory, as Samples no longer need to be re-labelled before being loaded into the analyser.



THE DOUGHNUT HOLE

What is in the Hospital Doughnut hole and why is it a Doughnut?

It is simple. It is full of an interconnecting web of older technology healthcare systems trying to communicate using HL7 or bespoke interfaces.

These systems include:

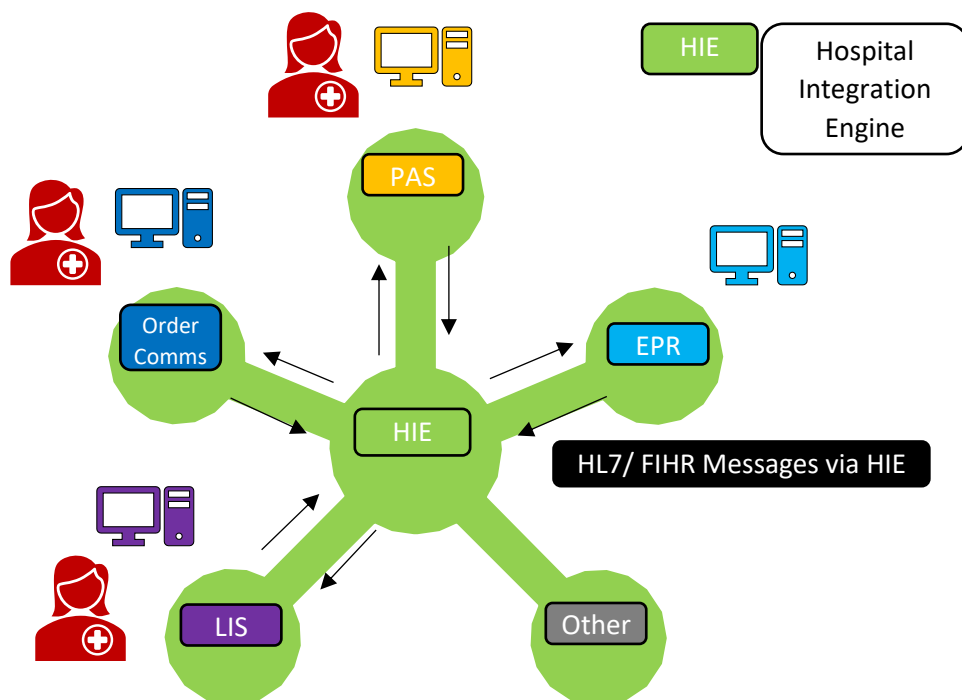
- Patient Administration Systems (PAS),
- Lab Information Systems (LIS or LIMS),
- Order Requesting Systems (Order Comms) and,
- Electronic Patient Record Systems (EPR).

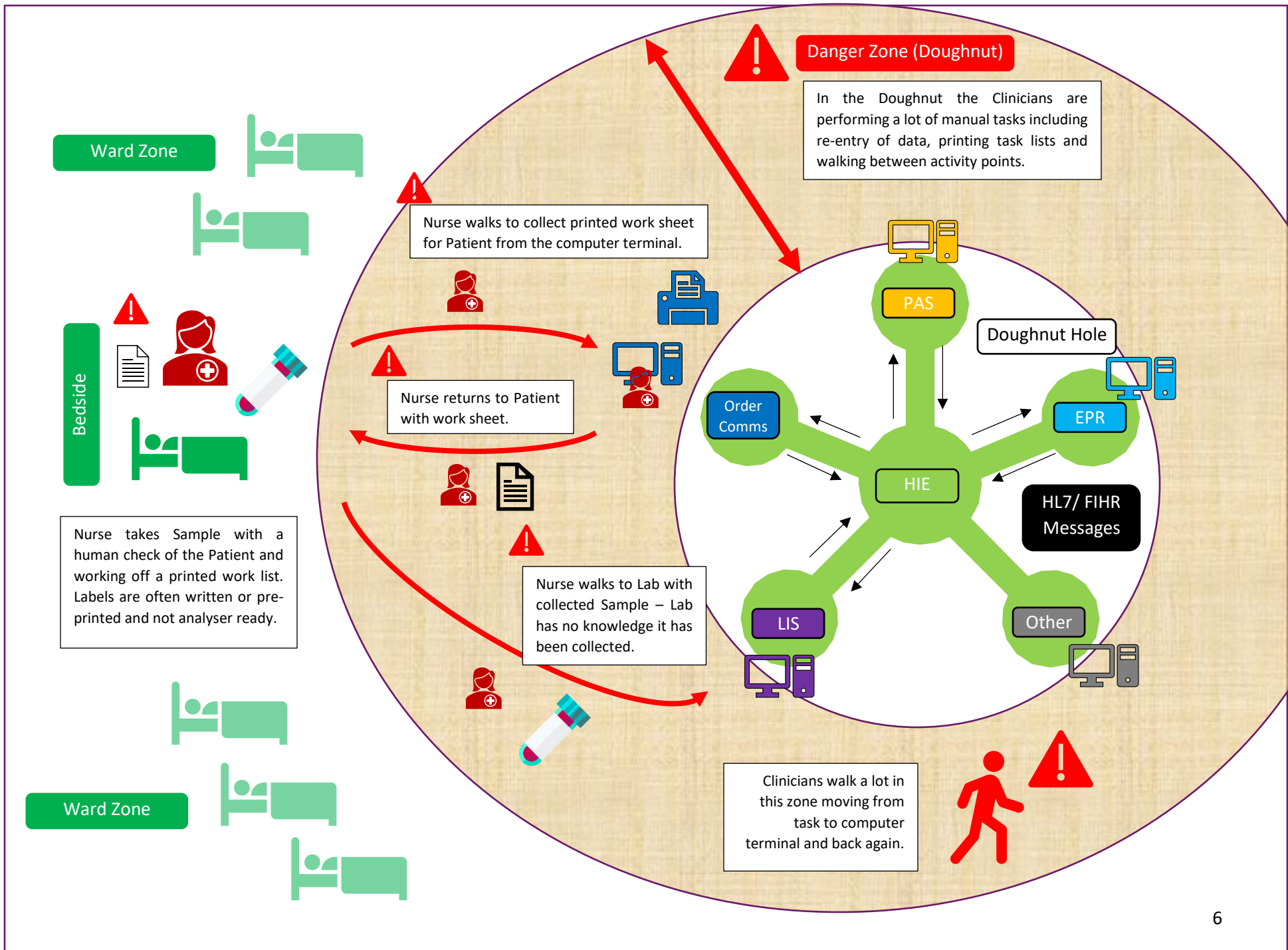
What evidence have we got to prove they live inside the Doughnut hole?

- The high manual interaction with the system,
- walking between patient and computer,
- large amounts of paper and,
- the number of errors due to human error.

If the Hospital is experiencing any of the above symptoms, then they have older technology healthcare systems living inside the Doughnut hole away from the Patient on the outside of the Doughnut.

The network layout of the inside of the Doughnut Hole will look like this:





THE DOUGHNUT GLAZE

Sample360 can simply replace the Doughnut dough ring causing all the errors and mistakes. The Sample360 application brings the large older healthcare systems to the Patient's bedside using the latest mobile technology.

Sample360.cloud has effectively become the Hospitals new and favourite brand of Doughnut as it helps the Clinicians reduce their workload and prevent errors.



Clinicians collecting Samples never need to leave the Patient's bedside which has been proven as the main source of human error. This means Clinicians can do the following directly at the bedside:

1. Receive Electronic Worklists at the Bedside
2. Automatic updates of Patient Location
3. Positive Patient ID at the Bedside at the beginning and end of the process
4. Print Tube labels at the Bedside
5. Guidance of what to collect and in what order
6. Can see requestors notes on the device
7. Can see collection advice and guidance
8. No paper
9. Reminders if the process is interrupted so they can return
10. No need to return to the Order Comms or PAS
11. Logistics/ Porters/ Orderlies are alerted when Sample is ready for collection
12. No more walking and waiting for Terminals to become free
13. No need to push a large trolley to the Bedside
14. Speeds the whole process up by more than 2 minutes

The Lab benefits too:

1. Sample Start and End times are recorded – Lab instantly gets this information
2. Logistics teams are more efficient collecting Urgent Samples
3. Labels are Analyser ready – put the tubes straight onto the track
4. LIS/ LIMS is updated the sample has been collected and it is on its way
5. No more re-labelling of Samples
6. Visible workflow displayed on Dashboards

So, the Hospital or Group of Hospitals has a Win-Win situation because they do not need to upgrade their older Healthcare systems to benefit from modern healthcare mobile applications at the bedside.

Ward Zone



Bedside



Nurse takes Sample with a true barcode PPID check of the Patient at the bedside. The Nurse is working off a digital work list on their mobile device. Labels are printed at the bedside and they are analyser ready.

Ward Zone



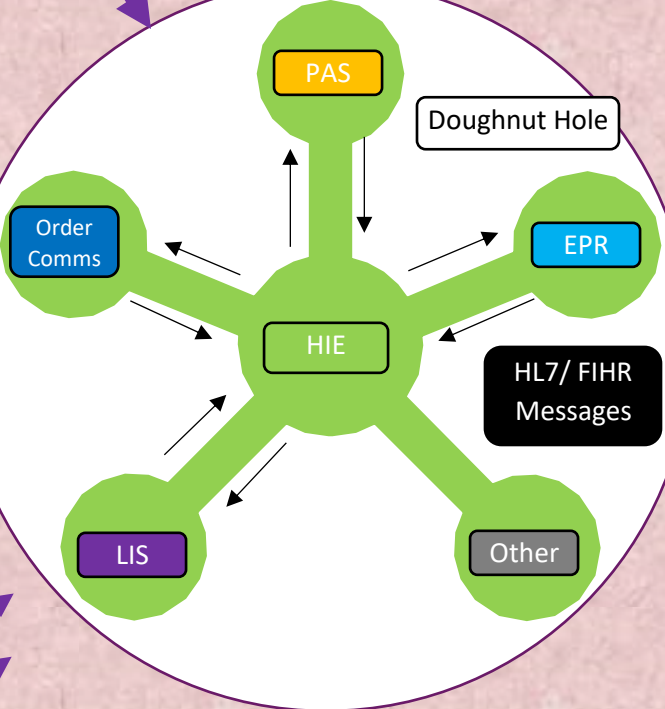
Sample360 Comms Zone

In this zone all manual tasks are replaced by Sample360 controlled messaging. This means all activities remain at the bedside and the Doughnut centre is updated electronically with true PPID.

HL7: Order Request

HL7: Order Update

HL7: Collect Time



Logistics team takes collected Sample to Lab – Lab has FULL knowledge of it before its arrival.





CONCLUSION

The first benefit Sample360 provides is the ability for these large older healthcare systems the Hospital has invested in *reach the bedside*. This begins the process to reduce human error to leaving the bedside to perform tasks on a computer terminal somewhere on the Ward.

The second main benefit is Sample360 provides a full *closed loop* checking system by matching the original requested task to the patient using *positive patient ID* (PPID). By performing this task of PPID the Clinician is not only verbally and visually checking the patient's ID against the sample order but there is a final check with Sample360 barcode scanning the patient's wristband to confirm it is the correct person.

Thirdly the user is guided through the sample order request on the mobile device screen indicating the colour of tubes to prepare, requestor and sample type notes, sample draw order and even how to package the sample once selected.

Finally, Sample360 provides information updates to the main Hospital systems from the bedside. These include cancellation requests, exact sample collection times, in transit times, potential lost samples and when logistics companies, orderlies or porters can come and collect the samples.

The concluding and possibly the main IT main benefit of using Sample360 with these larger healthcare systems already invested in is that their life can be extended for many more years. Sample360 even supports multiple large healthcare systems so there is no need to invest further and force all locations to adopt the same large healthcare systems – this is especially true if you are currently trying to work out how to bring together disparate systems as part of a pathology network.

How does Sample360 do this?

Sample360 has a powerful integration and interoperability interface that allows it to interface with these older healthcare monolith systems via HL7 and FHIR. This means Sample360 provides the patient bedside and patient activity vicinity based mobile solution required by the Hospital.

Sample360 is also cloud based; this means that it is perfectly suited to the modern Healthcare environments as it is quickly deployed, and the Hospital can invest slowly in the technology without the need for a one-hit large investment. Sample360.cloud is offered with contracts as short as 3 months commitment to 5 years – obviously, the longer commitment attracts discounted pricing.

Sample360 has been designed to operate on the modern mobile devices and it is available on Apple iOS and Google Android. Sample360 also offers a web interface too supporting all modern browsers and includes a powerful Business Intelligence tool called Exago; this tool provides reports and dashboards.

Sample360 also offers a 6-month trial with all the hardware included.

Sample360 truly is the *glazed* doughnut ring around the older healthcare systems such as PAS, LIS, LIMS, Order Comms and EPR providing a bedside solution.

