



**Imperial College Union EPOS Supply
Options Appraisal**

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Contents

Overview	4
Risk Assessment Criteria	4
Current State of Operation	4
Overview	4
Hardware	4
Issues/Risks Hardware	8
Software and Architecture	11
Issues/Risks Software and Architecture	14
Hospitality/Retail Divide	17
Issues with original tender	18
Options Going Forward	19
Scenario 1 – Do Nothing	19
Overview	19
Risks	19
Conclusion	19
Scenario 2 – Continued use of Orbis but with mitigating actions taken	19
Overview	19
Risks	19
Conclusion	20
Scenario 3 – Continued use of Orbis for hospitality outlets and new tender initiated for retail outlets	20
Overview	20
Risks	20
Conclusion	21
Scenario 4 – Separate new tenders initiated for retail and hospitality outlets	21
Overview	21
Risks	21
Conclusion	22

Scenario 5 –New tender initiated to replace EPOS supplier and one solution for all outlets is retained.....	22
Overview	22
Risks	22
Conclusion.....	23
Recommendation.....	23

Overview

As of 2017 Imperial College Union (ICU) has made use of an EPOS system supplied by Orbis Tech to provide software and hardware for use in both its retail stores and bar/catering outlets. Despite being in use for the past 3 years, many of ICUs operational requirements have not been realised, leading to widespread discontent among users of the system.

The volume of hardware and software issues encountered through use of the system poses significant operational risk. This options appraisal aims to identify the nature of that risk and propose a range of potential measures that could be used to mitigate that risk. As such, this appraisal consists of two main components; an overview of the current state of the EPOS system, followed by a breakdown of the options available going forward.

Risk Assessment Criteria

Please note, that in this document, where risks are determined, they are calculated using the following risk assessment matrix:

Risk Matrix – High – Medium – Low (Risk)						
Severity x Likelihood = Risk Rating		Likelihood				
		Certain (5)	Very Likely (4)	Likely (3)	May happen (2)	Unlikely (1)
Severity	(5) Major Incident, affecting all ICU users and causing loss of service/system downtime or large loss of revenue/databreach	25	20	15	10	5
	(4) Major Incident, affecting a subset of ICU users causing loss of service/system downtime or moderate loss of revenue/minor data breach	20	16	12	8	4
	(3) Moderate Incident, affecting all ICU users, causing a minor loss of service/system downtime or minor loss of revenue	15	12	9	6	3
	(2) Minor incident affecting a subset of ICU users, causing a minor loss of service/system downtime	10	8	6	4	2
	(1) Minor/temporary loss of service/function for small number of ICU users/Individual ICU users	5	4	3	2	1

Current State of Operation

Overview

The EPOS solution provided by Orbis Tech comprises of two main components; hardware and software/architecture. The current state of the two key components of the system are as follows.

Hardware

ICU currently has Orbis hardware in place in the following outlets:

Hospitality

- FiveSixEight
- The Union Bar
- Metric
- Reynolds Bar

Retail

- Union Shop
- Shop Extra

In total, as part of the original tender, the following hardware was purchased for use within ICU:

- 15 X Orbis Tech 15" Touchscreen PX150 terminals (£950 per terminal total £14,250)
- 15 X Datalogic QM2430 2D wireless scanner (£290 per unit total £4350)
- 20 X Yoyo Barcode Scanner (£200 per unit total £4000)
- 15 X Cash Drawer (£65 per unit total £975)
- 1 X Epson TM70 kitchen printer (£295 per unit total £295)
- 15 X Magnetic Swipe Reader (£95 per unit total £1425)
- 2 X Move Tablet & Docking Station for Remote Ordering Payment (£1200 per unit total £2400)

This works out at a total of £26,495 (Ex VAT). This number is a best estimate based on delivery notes of hardware and quotations given at tender.

In addition, extra hardware has been purchased to expand ICU EPOS capability, bringing the total hardware held to:

- 23 X Orbis Tech 15" Touchscreen PX150 terminals (£950 per terminal total £21,850)
- 23 X Datalogic QM2430 2D wireless scanner (£290 per unit total £6670)
- 23 X Yoyo Barcode Scanner (£200 per unit total £4600)
- 23 X Cash Drawer (£65 per unit total £1495)
- 1 X Epson TM70 kitchen printer (£295 per unit total £295)
- 23 X Magnetic Swipe Reader (£95 per unit total £2185)
- 2 X Move Tablet & Docking Station for Remote Ordering Payment (£1200 per unit total £2400)

This is a total of £39,495 ex VAT.

ICU has experienced several hardware failures since implementation of the Orbis Tech solution. Out of the above hardware, the following has either been repaired or replaced by third party in the past 12 months:

- 4 X Orbis Tech 15" Touchscreen PX150 terminals

At time of writing, we have the following till setup:

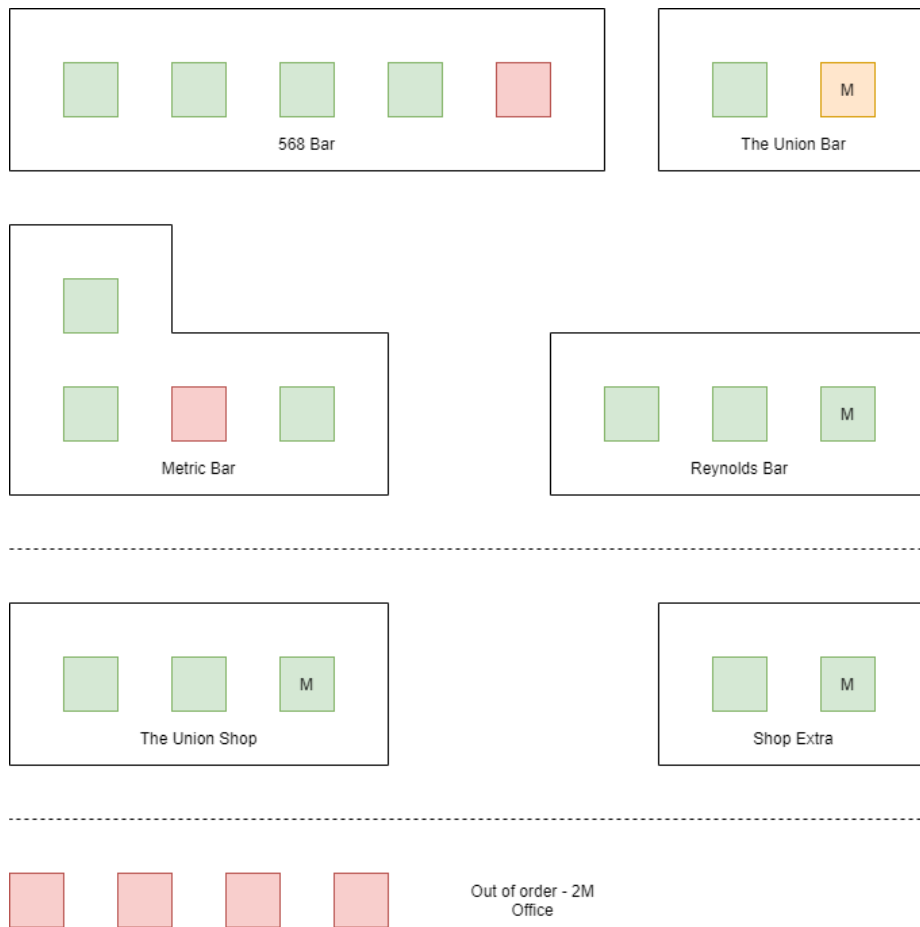


Figure 1 - Red denotes out of service, Orange denotes ongoing issues

In the above diagram, note that 6 of the above tills are non-functional. The 'M' denotes master tills. There is master till for each outlet and the master till must be functioning and connected to the network for other tills in the outlet to function correctly.

Recently, the decision has been made to transition to a cashless operating state across all outlets. This means that hardware such as cash drawers will be rendered obsolete. This is also causing issues surrounding reconciliation as only the Retail outlets make use of integrated PDQs. The Hospitality outlets use standalone mobile PDQ devices provided by **Barclaycard check**. The use of these devices causes instances of human error and difficulties reconciling End of Day.

Transitioning to all integrated PDQ devices will remove this issue, however, cashless introduces new risk surrounding network failure rendering integrated devices inoperable.

Support

A key deficiency in operation is that ICU does not currently have a support agreement in place for any Orbis Tech hardware failure.

During the original tender, Orbis Tech listed hardware support for repair and replacement of failed devices as an optional extra ranging from £60-120 per year, per EPOS terminal depending on the

inclusion of weekend support. This support would have covered ICU for hardware failure with a next business day fix. Peripherals (such as printers and integrated PDQs) would not have been included but cover can be quoted separately for such devices.

In September of 2016, the EPOS Supplier Recommendations document generated as part of the implementation project for the system, offered Orbis as the recommended supplier, with costings that included the optional hardware support. The recommendation also stated that monthly costs could be reduced by removing these optional costs.

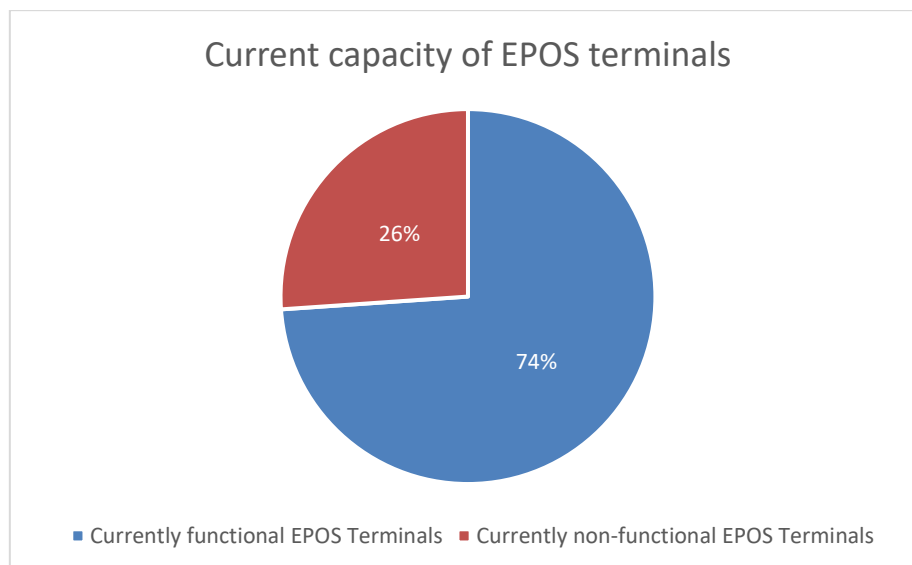
The option that was eventually selected with Orbis Tech did not include the optional hardware support. This led to a situation in which hardware issues and failures are practically the responsibility of the ICU Systems Team to resolve.

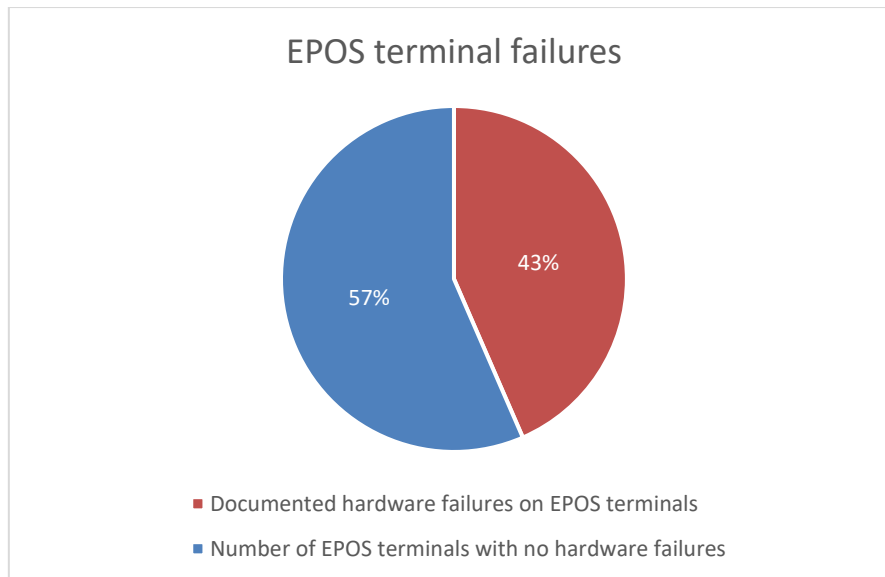
Individual terminal repairs can be purchased via Orbis, however, repair time costs £70 ex VAT per hour and parts purchase is additional. This means that an individual terminal repair cost is generally unknown and without initial assessment could conceivably cost more than the purchase of a new terminal at £950 ex VAT.

The lack of hardware support has put the Systems Team under pressure to perform ad hoc electrical repairs on terminals and perform time-consuming assessments of underlying faults. This diverts resource from the Systems Team.

Conclusion

In short, we now hold 23 EPOS terminals and no hardware support. We've had at least 10 documented/apparent complete failures on EPOS terminals and 6 of those failed devices are still not functional.





We've spent £1910 ex VAT on replacement/repair of hardware in the last 12 months. The cost to replace the 6 terminals that are currently out of service is currently unknown as they need to be assessed for potential repair, but assuming all require full replacement, the cost would be (6 X £950 total £5700 ex VAT). Had we purchased the mid-range weekday hardware support at £60 per year, per terminal upon implementation of the system, we would have spent a maximum of £1380 ex VAT per year at a total of £4140 ex VAT since implementation.

This is a potential overall cost of £7610 ex VAT for non-supported replacement/repair compared to £4140 ex VAT for hardware support during the lifetime of the system.

Issues/Risks Hardware

Issue: EPOS terminals supplied by Orbis Tech have not been as robust as anticipated

The average life expectancy of an EPOS terminal is 4.7 years and many other suppliers offer warranties in the range of 5 years. (<https://risnews.com/new-pos-lifecycles>)

It is not unreasonable to expect hardware to last 5 years even in high capacity hospitality environments such as that in ICU outlets. However, as identified, ICU has experienced failure on as much as 43% of the terminals purchased and all within 3 years of service.

While it is difficult to determine if this is caused by the busy environment of the hospitality outlets or the quality of the Orbis Tech hardware itself, it is likely to be combination of the two.

Risks:

Terminal Failure: Terminals fail at a higher rate than expected, raising the risk of revenue loss on busy nights.

This is determined as risk rating 12 (severity 4, likelihood 3) and categorised as: **HIGH RISK**

Suggested short-term mitigation actions:

- Investigate potential protective products, such as EPOS terminal covers etc.
- Investigate the purchase of hardware cover from Orbis Tech.

Issue: No hardware support agreement in place

The repair of terminals falls within the responsibility of the Systems Team rather than Orbis Tech.

This leads to a situation where Systems Team members are under pressure to make ad hoc repairs to broken terminals, make assessments of the state of disrepair of devices and liaise with third parties to arrange more in-depth repairs/replacements.

Risks:

Systems Team Resource: In performing repairs/assessments of EPOS terminals, Systems Team resources are diverted from other projects that can potentially have a high impact on ICU productivity. Can cause delays to resolving other issues or delivering new services and constitutes a misuse of Web Developer time.

This is determined as risk rating 8 (severity 2, likelihood 4) and categorised as: **MEDIUM RISK**

Suggested short-term mitigation actions:

- Arrange short-term processes with Orbis Tech partners to make repairs/assessments.
- Investigate the purchase of hardware cover from Orbis Tech.

Delays to resolution of hardware issues: There is no formal service level agreement for resolving hardware failures between the Commercial Team and the Systems Team or Orbis Tech. This means that there is no formal incentive for EPOS terminals repairs/replacements to be done within an acceptable time frame.

Where there is no formal procedure in place for assessing EPOS terminal faults or for obtaining further resource for repairs/replacements, delays in resolving these faults will naturally occur.

Currently, an informal and time-consuming liaison necessarily occurs between Systems Team members, Orbis Tech and members of the Commercial Team. This has contributed to the current situation in which we have 6 of our 23 EPOS terminals out of service, reducing our EPOS capacity by 26%. This loss of capacity affects the capability of the commercial team to generate revenue.

This is determined as risk rating 12 (severity 3, likelihood 4) and categorised as: **HIGH RISK**

Suggested short-term mitigation actions:

- Arrange short-term processes with Orbis Tech partners to make repairs/assessments.
- Investigate the purchase of hardware cover from Orbis Tech.

Cost of repairing/replacing terminals may exceed costs of hardware support charges: As mentioned above, if all remaining out of service terminals were to be determined as in need of replacement our hardware costs not covered by a support agreement could exceed the overall mid-range support costs by as much as £3,470.

This could be considered as more pronounced when taking into account lost revenue in the outlets caused by terminals being out of service for prolonged periods of time, although this is an unknown factor.

This is determined as risk rating 9 (severity 3, likelihood 3) and categorised as: **MEDIUM RISK**

Suggested short-term mitigation actions:

- Investigate the purchase of hardware cover from Orbis Tech.

Budget variances: Hardware failure is not considered in the Systems Team budget, yet terminal failures are likely to accelerate as the hardware ages.

This leads to a high risk of regular unplanned expenditure from ICU budget to cover the cost of unplanned hardware repair/replacement.

This is determined as risk rating 9 (severity 3, likelihood 3) and categorised as: **MEDIUM RISK**

Suggested short-term mitigation actions:

- Plan in contingency for hardware repair in next budget round.
- Investigate the purchase of hardware cover from Orbis Tech.

Health and Safety: The current state of the system puts Systems Team members under pressure to make ad hoc repair to EPOS terminals. This has in the past included repairs to internal electrical components.

Without recognised electrical repair training, team members are not considered 'competent' to make these repairs, leading to increased risk of further damage to terminals, electrical shock and electrical fire.

This is determined as risk rating 15 (severity 5, likelihood 3) and categorised as: **HIGH RISK**

- Immediately make clear that Systems Team members are not expected to make electrical repairs to EPOS terminals.
- Investigate the purchase of hardware cover from Orbis Tech.

Issue: Cashless transition and risk

Transitioning to a cashless state of operation removes reconciliation risks and frees up commercial and finance team resources and is considered a positive development. However, it also introduces potential risks that can have severe consequence if left unaddressed.

Risks:

Network failure: If using a system where integrated PDQ is the only method of taking payment, network failure poses a considerable risk. Integrated PDQs require network connections via the EPOS terminals to function. If network was lost, the only method of taking payment is lost with it.

Without backup PDQs, this could leave an outlet in a situation where they are unable to trade until network connection is re-established, raising potential for major loss of revenue on busy nights.

This is determined as risk rating 15 (severity 5, likelihood 2) and categorised as: **MEDIUM RISK**

- Consider retention of a small number of standalone PDQs as backup.
- Consider other emergency measures such as emergency cash float etc.

Software and Architecture

ICU currently makes use of the Orbis Head Office Version: 6.0.6 (70). This is a standalone application that must be installed on individual PCs by the ICU systems team.

The Head Office application communicates with both the Orbis App Server and the Orbis Databases. Both the App server and Databases are self-hosted by ICU and are held on servers X and X.

When changes need to be made to either the App server or Databases, Orbis technicians can access them using a contractor VPN.

The App Server and Databases also communicate directly with the individual EPOS terminals in the outlets via the master tills.

The Databases also communicate with the Newerpol database held on server icsqlq.cc.ic.ac.uk, via Golem.

Diagram

ICU purchased software support at the time of implementation. As such we have a defined SLA with Orbis for resolving software issues. The SLAs can be seen in full as part of the Orbis Tech ICU Support Details document detailed in the Appendix. In summary, our SLA is as follows:

1st & 2nd Level Support (issues not requiring development resources).

Priority	Resolution period
Severity 1:	1-hour response time with maximum 1-day resolution
Severity 2:	4-hour response time with maximum 2-day resolution
Severity 3:	1-day response time with 5-day maximum resolution.
Severity 4:	1-day response time with resolution at the supplier's discretion

3rd Level Support (where changes to the application are required).

Priority	Initial contact	Resolution period
Severity 1:	4 Hours	a temporary workaround within 1 business days and a follow up solution within 3 business days
Severity 2:	4 Hours	a fix for a software fault within 5 business days
Severity 3:	4 Hours	a fix for a software fault within 10 business days
Severity 4:	4 Hours	a fix for a software fault either in the next new version or the next maintenance patch release

Since implementation of the system, Orbis Tech have partnered with Technology Services Group (TSG) to deliver software support. This is an external company that Orbis Tech uses to outsource

support calls. The 3rd level support staff in TSG that deal with ICU calls were originally Orbis Tech staff that were transferred to TSG using TUPE. This means that while 3rd level support has adequate knowledge of the system, there is a perception among ICU users that 1st and 2nd level support is effectively a barrier to resolving issues quickly.

There is also the perception of a disconnect between Orbis Tech and TSG during ongoing discussions, and that account management suffers as a result of this disconnect between account management and technical support.

The SLA defines severity as arising from issues that effect a customer's ability to trade. As such, if an issue arises surrounding the use of Head Office function, it is likely to be classified as Severity 3, so long as we can continue to trade, even if the issue causes us operational difficulty, such as issues surrounding reporting or stock take.

This leads to a situation where bugs identified in the Head Office application can take up to 10 days to resolve before falling out of SLA.

Reporting of faults to Orbis is not well-defined as a procedure within ICU. Currently in existence is a Microsoft Teams site for Orbis users, complete with a form for reporting faults. However, this form is seemingly not in use.

There are also paper based forms for users to complete in the outlets themselves. These are in use, and the Commercial Services Administrator collects these forms on a weekly basis and compiles them into a monthly log sheet. However, this process is time-consuming and disjointed, lacks detail and does not include issues identified by all users, such as Systems Team members.

As a result, there is no historic central log of all EPOS issues (software or hardware) held by ICU since implementation, and general themes for software issues are partially anecdotal rather than fully documented and backed by specific occasions of error.

This process also does nothing to differentiate hardware and software issues. As we only have support for software issues, this can cause confusion between ICU and Orbis Tech account management.

The software issues experienced since implementation fall broadly into four main themes:

- Reporting
- End of Day
- Stock Take
- Terminal Updates

Reporting

The reporting mechanisms available within Orbis Head Office are demonstrably archaic. Anecdotal feedback from staff is that the existing reports are not fit for purpose.

Users of the system have specifically described operational risk arising through the lack of or issues with basic reports such as:

- Refunds Report (Does not exist)

- Voids Report (Does not exist)
- Basket Report (Does not exist)
- Stock reports (Calculates but duplicates stock in some circumstances)
- Wastage (Calculates incorrect price)

The lack of reporting function leads to significant manual manipulation of data pulled from other reports in the system to provide basic management figures to leadership.

One of the original project deliverables was to deliver a high-level management dashboard to display key data relating to general KPIs. This dashboard was scoped and developed in 2018 and partially delivered to ICU by Orbis for a trial period. Scope for the dashboard is detailed in the ICU Dashboard Project Brief document detailed in the Appendix.

In summary the minimum requirements for the first development stage were as follows:

- Show live data (as in up to that point in the trading day)
- Specific metrics listed
- Metrics displayed for all outlets, but also split into retail and hospitality

Upon receiving the trial version of the dashboard, feedback was provided to Orbis on how the dashboard met ICU minimum requirements. Feedback for the dashboard is detailed in the Dashboard Feedback v1 document detailed in the Appendix.

From the feedback given it seems that the dashboard met the absolute minimum requirements specified, however, items in the feedback are also impactful requirements, for example, the ability to run the dashboard for dates in the past. Orbis Tech's response made clear that around half the points raised in the feedback could be delivered in the months ahead, but that many would require extra funding, scope, or were not possible.

In addition, using the dashboard as a permanent feature incurs an extra £100 per month in fees paid to Orbis Tech.

The dashboard deliverable stalled at some point in the middle of 2018 and the trial use of the dashboard expired. ICU subsequently lost access to the feature and since then, no clear decision to re-engage on the matter has been made. In order to obtain this deliverable, ICU would need to accept the extra £100 per month extra cost and incur further undetermined development costs to obtain new functions/satisfy further requirements.

The final avenue for access data held in the Orbis Tech Database is via direct connection to the actual database itself. This requires data be pulled via SQL Server Management Studio on an ad hoc basis by a member of the Systems Team. Due to the deficiencies in reporting described above, there is an increased demand for data obtained this way, taking unnecessary resource from the Systems Team.

The original tender did not include a dedicated reporting section in its requirements/scoring. Some reports were mentioned, such as the dashboard, but generally reports required were not defined. This is despite, better collection of data being one of the key benefits of the project. This is likely a contributing factor to the lack of reporting capability in the system.

End of Day

Past issues have been caused by the End of Day function on individual terminals to sporadically fail. This causes multiple trading days to be elided into one, causing difficulties reconciling the takings for those days.

This has been logged with Orbis Tech, but it is difficult to determine the root cause of the fault. It is suggested that network issues have caused such failures, and this is possible, as faults in network ports have been identified as a cause for other issues, such as terminals freezing during trade. Other potential causes could be hardware failure or general bug within the Orbis App that has yet to be identified.

If the issue does occur and the End of Day does not run, there are no error messages to suggest that an error has occurred, and it takes manual investigation while reconciling to determine a fault.

Stock Take

Orbis Tech Head Office includes Stock Take functionality that ICU makes use of in its retail outlets. This has been particularly problematic and suffered numerous bugs since implementation.

Part of the issue has been caused by incorrect data inserted into the system on implementation, but since then, there have also been bugs surrounding the Stock Take functionality that render the system very difficult to use. One example is the 'Average Cost Price' bug, occurring in 2018/19 that led to significant overreporting of stock levels.

At time of writing another bug surrounding barcoded products has also been identified and logged but not yet resolved. Further issues surround a lack of adequate reporting capability as described above.

Terminal Updates

There have been recurring issues with updates to individual terminals not correctly functioning. For example, if products in an outlet are added, or product prices updated, or buttons added to the tills, there have been issues where some terminals have not updated on command with these changes.

This causes a mismatch between tills on the data that is held, potentially causing some products or functions to be rendered unavailable on some tills but not others.

Orbis Tech have suggested that the cause is related to menu configuration. However, at time of writing, the problem persists despite multiple attempts from Orbis Tech at resolution.

Orbis Tech software does not allow terminals to be programmed with multiple identities. This means that a terminal is difficult to move and repurpose in other outlets without extensive config and re-programming, diverting Systems Team resources away from other projects.

Issues/Risks Software and Architecture

Issue: Orbis Tech software necessitates the designation of a 'Master' till

The concept of a master till, while not unusual does not apply to all EPOS systems. The disadvantage of having master tills is that any hardware failure of a master till leads to various other failures of all other tills in the outlet.

This becomes more likely if a master till is in use and becomes damaged or crashes during service.

Risks:

Master till failure or crash during service: Causes potential loss of revenue/operational difficulties/delays to service/ inability to perform End of Day/reconciliation errors/till update errors etc.

This is determined as risk rating 6 (severity 3, likelihood 2) and categorised as: **MEDIUM RISK**

- Consider removing master tills from service and replacing them with non-master tills. Keep the master tills in a stable environment. However, this will decrease ICU EPOS capacity.
- Assess condition of all network points used by EPOS terminals. Network connection issues can be a culprit of Master till failure/crash.

Issue: Orbis Tech software lacks adequate reporting

As described in detail earlier in this document, the software solution offered by Orbis does not adequately cover ICU requirements surrounding reporting.

Risks:

Commercial Team Resource: necessitates significant manual manipulation of the basic data that the system can provide. Administrators have had to devise multiple workarounds involving excel spreadsheets and manual data entry to provide basic management data such as void reports and refund reports. Manual data entry could lead to human error and misrepresenting data.

This is determined as risk rating 8 (severity 2, likelihood 4) and categorised as: **MEDIUM RISK**

Suggested short-term mitigation actions:

- Consider revival of dashboard deliverable.
- Consider third party reporting tools.

Systems Team Resource: Systems Team members have been involved in manually producing ad hoc reports directly from the Orbis database.

Systems Team resources are diverted from other projects that can potentially have a high impact on ICU productivity. Can cause delays to resolving other issues or delivering new services and constitutes a misuse of Web Developer time.

This is determined as risk rating 8 (severity 2, likelihood 4) and categorised as: **MEDIUM RISK**

Suggested short-term mitigation actions:

- Consider revival of dashboard deliverable.
- Consider third party reporting tools.

Issue: Orbis Tech End of Day function prone to error

As described in detail earlier in this document, the End of Day function offered by Orbis Tech suffers from regular failure leading to operational difficulties, time-consuming troubleshooting and potential misrepresentation of revenue levels.

Risks:

Misrepresentation of revenue/difficulty reconciling: Errors in End of Day are not immediately apparent as no error messaging exists to notify users of End of Day failure.

Failure that has not yet been diagnosed could lead to the short-term misreporting of revenue/ minor difficulties in reconciling financial data. It also diverts resource from the commercial/finance teams in identifying where a failure has occurred.

This is determined as risk rating 4 (severity 2, likelihood 2) and categorised as: **LOW RISK**

- Continue liaising with Orbis Tech to find solution.
- Consider mitigating against master till issues. End of Day issues can sometimes be caused by issues with master till connectivity.
- Assess condition of all network points used by EPOS terminals. Network connection issues can be a culprit of End of Day failure/crash.

Issue: Orbis Tech stock take functions prone to error

As described in detail earlier in this document, the stock take solution offered by Orbis Tech suffers from regular occurrence of bugs and errors leading to operational difficulties, time-consuming troubleshooting and potential misrepresentation of stock/revenue levels.

Risks:

Commercial Team Resource: Errors occurring necessitates significant manual checks of stock levels that may already have been counted.

This is determined as risk rating 8 (severity 2, likelihood 4) and categorised as: **MEDIUM RISK**

Suggested short-term mitigation actions:

- Continue liaising with Orbis Tech to find solution to deep-rooted system deficiency.
- Consider using external stock take systems.

Systems Team Resource: Errors occurring necessitates significant manual checks of data in database and troubleshooting exercises that divert Systems Team resources from other projects that can potentially have a high impact on ICU productivity.

This is determined as risk rating 8 (severity 2, likelihood 4) and categorised as: **MEDIUM RISK**

Suggested short-term mitigation actions:

- Continue liaising with Orbis Tech to find solution to deep-rooted system deficiency.
- Consider using external stock take systems.

Misrepresentation of stock/revenue levels: Errors that have not yet been diagnosed could lead to the misreporting of revenue/stock held. This can have consequences that are not immediately apparent and can lead to errors in budgeting and later sudden recalculation of revenue/stock held.

This is determined as risk rating 6 (severity 3, likelihood 2) and categorised as: **MEDIUM RISK**

- Continue liaising with Orbis Tech to find solution to deep-rooted system deficiency.

- Consider using external stock take systems.

Issue: Orbis Tech terminal update function prone to error

As described in detail earlier in this document, there are regular occurrences of problems updating terminals with new data/buttons/pricing etc. Terminals are also difficult to reprogram/reassign to other outlets.

Risks:

Inconsistent terminal configuration: Terminal update failures can cause inconsistencies between terminals, such as missing products, differences in price, missing functions etc. Effects can range from having minor operational issues/reputational damage/difficulties in reconciling financial data, to full inability to use the terminal (although the latter is less likely).

This is determined as risk rating 6 (severity 2, likelihood 3) and categorised as: **MEDIUM RISK**

Suggested short-term mitigation actions:

- Continue liaising with Orbis Tech to find solution to deep-rooted system deficiency.
- Consider mitigating against master till issues. Update issues can sometimes be caused by issues with master till connectivity.
- Assess condition of all network points used by EPOS terminals. Network connection issues can be a culprit of terminal update failure/crash.

Inflexibility in moving terminals between outlets: Terminals are difficult to move between outlets. In order to change a terminal's identity, it must be re-configured in Orbis Head Office. The configuration is extensive and time-consuming and often difficult to plan into Systems Team resource especially with short notice.

This leaves little flexibility when it comes to running events that push ICU to capacity, leading to potential revenue loss/operational difficulty.

This is determined as risk rating 9 (severity 3, likelihood 3) and categorised as: **MEDIUM RISK**

Suggested short-term mitigation actions:

- Consider obtaining Orbis Tech support in making necessary config changes and agree process for making terminal swaps.
- Consider making more use of mobile tills to boost EPOS capacity for busy evenings.
- Consider devising process involving swapping hard drives between EPOS terminals. Drive swapping is relatively simple and may offer an extra avenue to explore.

Hospitality/Retail Divide

It should be noted that the primary issues experienced by Hospitality and Retail are different as the two environments offer different challenges. To generalise, hospitality outlets suffer more from the issues identified surrounding hardware, whereas retail outlets are suffering from the software faults.

This is not a rule however, as hospitality have completely shunned the use of certain features such as stock take, due to the incompatibility with their operations. Similarly, retail cannot be wholly discounted from the risks associated with hardware failure.

Issues with original tender

The original tender that facilitated the implementation of the Orbis Tech solution was detailed and approached the implementation with enough structure to constitute a defined project. However, some of the risks and issues identified above may have arisen from conclusions made during that tender and may have been mitigated by having more definition on ICU requirements.

Reflecting on the original tender could offer lessons learnt for future projects.

The originally intended high – level benefits for the project were:

3. Outline the outcomes and benefits that the project will bring to the organisation and stakeholders

- a. More robust financial control, including limiting or doing away for our need to use the manual Casio till systems
- b. Better data collection on sales, customers and transaction formats in order to help us monitor or trade on all sites.
- c. To provide an EPOS solution for the Entrainments, mobile shop, cloakroom, Account sales and online sales functions,
- d. If possible, to provide an epos solution that could be used for the annual Summer Ball event, increase speed of service, payments systems, data and speed of service.
- e. To include payments systems, including:
 - i. Integrated PDQ systems
 - ii. Non-Integrated PDQ systems
 - iii. Contactless payment
 - iv. Apple pay
 - v. Yoyo
 - vi. Future new payment systems
- f. More robust stock control
- g. Increased EPOS points in Reynolds and the Union bar to help with speed of service issues.

Arguably, some of these benefits have been realised, despite the risks identified in this appraisal. Benefits 'e' and 'g' have been met. 'a' has mostly been met. While H bar still makes use of a manual till system, this could be rectified with more hardware from Orbis Tech. 'c' and 'd' have arguably been met as the mobile terminal solution does offer some flexibility for use in Summer Ball etc.

Where the project has not delivered its intended benefits, is in points 'b' and 'f'. The inadequate reporting has caused significant issues in realising the benefits surrounding collection of data and the stock take functions are not used by hospitality outlets and have caused significant operational risk for the retail outlets.

Other issues/risks that have identified by this appraisal arise from potential omission of requirements from the previous tender. For example, it could be argued that nay new tender should specify a minimum life expectancy for EPOS terminals and define support requirements towards both hardware and software.

In general, future tenders could benefit from a defined 'User story' or 'Functional requirements' documents and a 'Non-Functional requirements' document at the invitation stage. Many functional requirements were specified in the previous tender, but not formally at invitation and were only included in the tender scoring matrices used to score individual suppliers at demonstration stage.

These matrices did not specify all requirements, especially surrounding reporting. The tender in general did not well define reporting requirements in general and offered little definition of ICU expectations surrounding benefit 'b' and no business analysis was used to determine ICU processes.

Generally, more detail surrounding requirements could have been of benefit in defining the solution that was implemented, if not the supplier that was picked. On the final scoring and recommendation, lessons could have been learned from selecting a relative newcomer to the Higher

Education sector and accepting the risks involved in doing so. Future tenders should take these lessons into account.

Options Going Forward

Considering the risks and issues identified above, the following options are available to ICU moving forward.

Scenario 1 – Do Nothing

Overview

This option proposes that ICU accepts all risks above and takes no action to mitigate against them. ICU continues to use the Orbis Tech solution as is and continues to purchase hardware from them.

Risks

All risks identified above remain exactly as they are.

This is determined as risk rating 20 (severity 4, likelihood 5) and categorised as: **HIGH RISK**

The severity is determined as an average severity of all issues identified above and likelihood of them continuing as certain.

Conclusion

This is not a recommended option. Significant operational risk has been identified as arising from the use of the system in its current state.

Scenario 2 – Continued use of Orbis but with mitigating actions taken

Overview

This option proposes that ICU recognises all risks above and takes action to mitigate against them while continuing to use Orbis Tech as a supplier.

Risks

The risks above remain, but their severity or likelihood is reduced through use of mitigating actions.

Further risks arise from the likelihood of these mitigating actions having a significant effect on all identified issues. Some mitigating actions will have more of an impact than others, and some mitigating actions could incur significant extra costs.

Examples include extra costs surrounding till repair and hardware support and potential costs surrounding development work or switching to external stock take systems if Orbis Tech is unable to address our ongoing issues.

This is determined as risk rating 12 (severity 3, likelihood 4) and categorised as: **HIGH RISK**

The severity is determined as an average severity of all issues identified above and assumes that mitigating actions can lower all risks by an average of one severity rating and one likelihood rating.

Conclusion

This is a preferred option to Scenario 1 but still unlikely to be recommended. Mitigating actions will have varying impacts on identified risks and very likely will not address them all.

If this option is selected, it is strongly recommended that a hardware support agreement is put in place and that the reporting dashboard is revisited at the very least.

Scenario 3 – Continued use of Orbis for hospitality outlets and new tender initiated for retail outlets

Overview

This option proposes that ICU recognises all risks above and takes action to mitigate against them while continuing to use Orbis Tech as a supplier for the hospitality outlets but not for the retail outlets.

A new tender is initiated specifying requirements that favour the operation of the retail outlets and the system is put in place to work in tandem with the Orbis Tech solution in place in the hospitality outlets.

This option recognises that the main functional deficiencies of the Orbis Tech solution are more detrimental to the retail outlets than the hospitality outlets.

Risks

This option addresses some but not all the risks identified above. For example, the issues surrounding Orbis Tech hardware would need to be addressed and mitigated against.

The main risks involved are:

The intended benefits of using a combined solution for all outlets is lost

These benefits included having combined source of data for reporting, less training needs, less system integration required etc.

This is determined as risk rating 15 (severity 3, likelihood 5) and categorised as: **HIGH RISK**

The severity is due to the operational changes/resource required to run both systems simultaneously and the likelihood of that being required as certain.

Increased costs of running more than one EPOS solution simultaneously

A second system is likely to have significant implementation costs and ongoing fees for hardware/software support. Orbis Tech software support costs would remain.

This is determined as risk rating 15 (severity 3, likelihood 5) and categorised as: **HIGH RISK**

The severity is due to the loss of revenue experienced by incurring extra cost and the likelihood of that being required as certain.

Risks surrounding Orbis Tech solution remain

The deficiencies of the Orbis Tech system experienced by hospitality would remain unless mitigated against.

This is determined as risk rating 12 (severity 3, likelihood 4) and categorised as: **HIGH RISK**

The severity is determined as an average severity of all issues identified above surrounding hardware and assumes that mitigating actions can lower all risks by an average of one severity rating and one likelihood rating.

Conclusion

This is a preferred option to Scenario 1 + 2 as it is most effective at removing operational risk surrounding retail operations. However, this still incurs new risk while not addressing all the risks associated with using Orbis Tech.

If this option is selected, it is strongly recommended that a hardware support agreement is put in place and that the reporting dashboard is revisited at the very least.

Scenario 4 –Separate new tenders initiated for retail and hospitality outlets

Overview

This option proposes that ICU removes the risks associated above by fully replacing the Orbis Tech EPOS solution with two fully separate systems for use in hospitality and retail outlets respectively.

New tenders are initiated specifying requirements separately favour the operation of the both categories of outlet and the systems are put in place to work in tandem.

This option removes all risks associated with the use of Orbis Tech as a supplier but introduces a range of new risk.

Risks

This option removes risks identified above. Foreseeable new risks involved are:

The intended benefits of using a combined solution for all outlets is lost

These benefits included having combined source of data for reporting, less training needs, less system integration required etc.

This is determined as risk rating 15 (severity 3, likelihood 5) and categorised as: **HIGH RISK**

The severity is due to the operational changes/resource required to run both systems simultaneously and the likelihood of that being required as certain.

Increased costs of running more than one EPOS solution simultaneously

Both systems are likely to have significant implementation costs and ongoing fees for hardware/software support.

This is determined as risk rating 15 (severity 3, likelihood 5) and categorised as: **HIGH RISK**

The severity is due to the loss of revenue experienced by incurring extra cost and the likelihood of that being required as certain.

Risks surrounding implementation

Implementing two systems simultaneously would incur significant operational risk. This would double risks involved in selecting suppliers, double the integrations required to capture financial data, double the work involved to specify solutions, double the training requirements and double the implementation work involved.

This could be mitigated by not implementing both solutions simultaneously, but this would introduce new complication in running concurrent projects and the resources involved in doing so.

This is determined as risk rating 20 (severity 4, likelihood 5) and categorised as: **HIGH RISK**

The severity is determined as having a major impact on Systems Team resources and being certain in likelihood.

Conclusion

This option is not recommended above scenario 3 as it introduces high implementation and cost risk. However, this is the first scenario that fully removes risks associated with continued use of Orbis Tech as a supplier.

Scenario 5 –New tender initiated to replace EPOS supplier and one solution for all outlets is retained

Overview

This option proposes that ICU removes the risks associated above by fully replacing the Orbis Tech EPOS solution with a new singular EPOS solution for use in hospitality and retail outlets.

A new tender is initiated specifying requirements for both retail and hospitality outlets. Tender documents are extended to include function and non-functional requirements and an emphasis is placed on reporting capability and robust hardware.

Consultation with other Unions and Higher Education institutions is conducted to ensure low risk suppliers are considered. A closed tender could be selected inviting lower risk suppliers to participate.

This option removes all risks associated with the use of Orbis Tech as a supplier but introduces some new risk.

Risks

This option removes risks identified above. Foreseeable new risks involved are:

Implementation costs

High costs that are necessarily associated with implementing new systems will necessarily be incurred. This can be budgeted for and need to be considered as offsetting costs associated with risks identified above.

This is determined as risk rating 10 (severity 2, likelihood 5) and categorised as: **MEDIUM RISK**

The severity is due to the ability to plan for such costs and the likelihood of these being required as certain.

Risks surrounding implementation

Implementing a new system always carries risk surrounding selecting suppliers and allocating the resources required to implement new solutions.

These can be mitigated by applying a good project structure and a detailed tender with clearly defined requirements. Focusing on implementation plans during the tender process can ensure that clearly defined stage gates and deliverables can be set, lowering risk of implementation failure.

This is determined as risk rating 6 (severity 3, likelihood 2) and categorised as: **MEDIUM RISK**

The severity is determined as having a moderate impact on Systems Team resources and being less likely to have a severe impact if mitigated correctly.

Conclusion

This is option is recommended above other options.

Recommendation

This appraisal recommends the following option going forward: **Scenario 5 –New tender initiated to replace EPOS supplier and one solution for all outlets is retained**

This is based on the ability for this option to remove all current risks associated with the use of Orbis Tech as ICU’s EPOS supplier, while introducing moderate risks compared to other scenarios.

Heavy consultation with other Unions and Higher Education providers can lower risk by providing an insight into successful case studies. A developed project structure can mitigate against implementation risks while providing the best cost/benefit ratio.

For that reason, it is recommended that ICU proceeds with full replacement of the Orbis Tech solution with a new singular EPOS solution via tender.

Version Control			
Version	Author	Date	Changes
V1	Ashley Cory	24/02/2020	NA