3700 Willingdon Avenue
Burnaby, BC V5G 3H2

March 20, 2020

Mr. Rand Clement
Owner & Operator of The Right Shoe
1601 W 4th Avenue
Vancouver, BC V6J 1L8

Dear Mr. Clement,

Proposal for Implementing RFID Technology at The Right Shoe

Please accept our proposal for implementing RFID technology at The Right Shoe to increase the accuracy, speed and cost-effectiveness of stock management.

With our team's combined experience in the retail industry, we know first-hand how challenging it is to maintain consistency between the stock on a point of sales (POS) system and the stockroom itself. We've also seen how these errors can directly impact many aspects of a retail store, including re-ordering product, customer experience and staff responsibilities. RFID chips not only increase accuracy and speed of cycle counts, but also lead to a better customer experience, and therefore higher customer retention.

This proposal begins by discussing the stock management challenges faced by The Right Shoe. It then talks about RFID technology, and how it is already being used to benefit many retail stores. Finally, this report touches on the specific benefits The Right Shoe would gain by implementing RFID chips, as well as the installation process and ongoing maintenance of our system. This process was thoroughly researched and put together by our three-person team.

We hope that reading this proposal is both enjoyable and educational for you. Please don't hesitate if you have any questions or want clarification, we're happy to help. We're excited to work closely with you and your team if you decide to approve this project.

Yours truly,

Laura G.
RFID Project Manager
RFIDemail@company.ca
123-456-7890

encl: RFID Retail Stock Management Proposal

DATE SUBMITTED:
March 20th, 2020

SUBMITTED TO:
Rand Clement

RFID RETAIL STOCK MANAGEMENT

A PROPOSAL FOR IMPLEMENTING RFID TECHNOLOGY AT THE RIGHT SHOE

AUTHORS:
Cyra Cc
Anthony C.
Laura G.

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SUMMARY

The purpose of this proposal is to suggest improvements to The Right Shoe's inventory management with the use of RFID technology. The Right Shoe is a growing shoe store in Vancouver, British Columbia. As the business continues to grow, maintaining an accurate inventory is becoming more crucial to providing The Right Shoe's high customer service standards.

The Right Shoe manually counts their stock, which is time-consuming and costly. Inaccurate stock counts cause discrepancies between the count on the store POS (point of sales) software and the actual stockroom numbers. The Right Shoe's website also relies on the store POS, meaning discrepancies could result in order delays or cancellations. The combination of these problems leads to a poor customer experience and negatively impacts The Right Shoe brand.

An RFID (Radio-frequency identification) System can simplify stock management at The Right Shoe. RFID uses radio waves to receive and transmit data, which allows items with RFID tags to be read at a distance. As a result, item data in the system can be automatically updated each time a reader receives signals from a tag.

Implementing an RFID System at The Right Shoe will require phases for planning, initial setup, employee training, and complete installation. This overall process is estimated to span six weeks and will require $11,840 to complete.

The immediate benefits of switching from a manual system to an RFID system are increased stock accuracy and a lot of time saved. We recommend that The Right Shoe starts using RFID tags on stock and installs an RFID fixed reader that will update stockroom counts at set intervals. This project should be started on or before April 13th, 2020. Doing so will ensure the project is fully operational before June 1st, which means that the system will also be operational for the store's busiest sales period.

INTRODUCTION

The Right Shoe (see Figure 1) is a shoe store in Vancouver that has been open since 1991 (The Right Shoe, 2020). The store sells a variety of different brands and styles, but always focuses on comfortable shoes that fit correctly. The store prides itself in providing great customer service from staff that have been trained in biomechanics. This high level of service coupled with comfortable shoes sets The Right Shoe apart from other shoe stores.

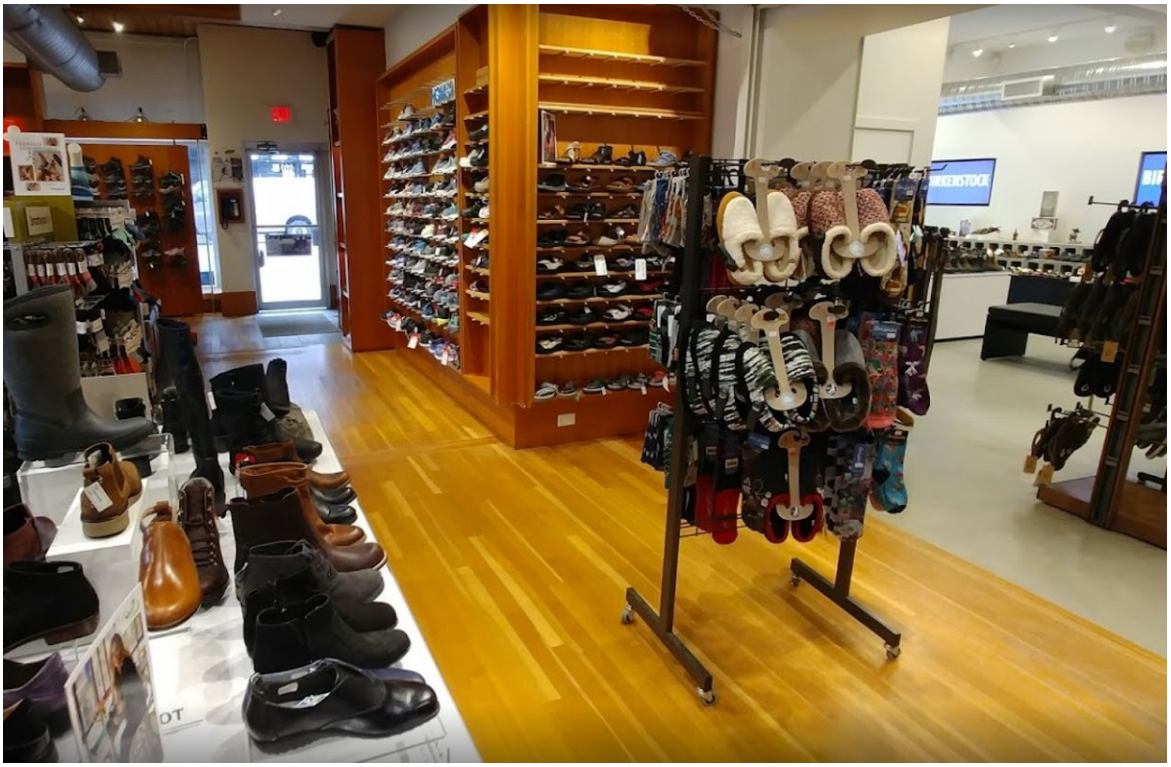


Figure 1 The Right Shoe interior

The Right Shoe has become more and more popular over recent years. An aging population means increases in people that are experiencing foot related health issues. These people often require extra help finding a comfortable pair of shoes. Word of mouth has helped many people discover the store and the products they carry. Additionally, many local doctors and other medical professionals send their clients to The Right Shoe to purchase shoes to help with medical ailments. For these reasons, The Right Shoe has continued to see steady growth.

THE PROBLEM

As The Right Shoe continues to grow, the number of products and inventory in the store also increases. With more and more stock, keeping an accurate count of inventory becomes increasingly challenging.

MANUALLY COUNTING STOCK

According to store owner Rand Clement, there are currently over 11,000 pairs of shoes in The Right Shoe stockroom (see Figure 2).

Figure 2 The Right Shoe stockroom

With this many pairs, manually taking inventory is both time-consuming and costly. Stock needs to be counted, tracked and then manually adjusted on the computer's POS (point of sales) software. Manually counting stock also rarely leads to correct counts, as human error does and will occur.

INCORRECT STOCK COUNTS

An incorrect stock count negatively impacts the store. When reordering stock, only the current count on the POS system is referenced. This can lead to situations where a size that is needed is not reordered. Instead, a size that the store already has in stock is ordered. This can result in situations where POS shows a complete size run is in stock, but in the stockroom certain sizes are missing.

NEGATIVE CUSTOMER EXPERIENCE WHEN SHOPPING ONLINE

Figure 3 shows the size selection of a shoe on The Right Shoe's Website. This is what a customer would see when trying to place an order online.

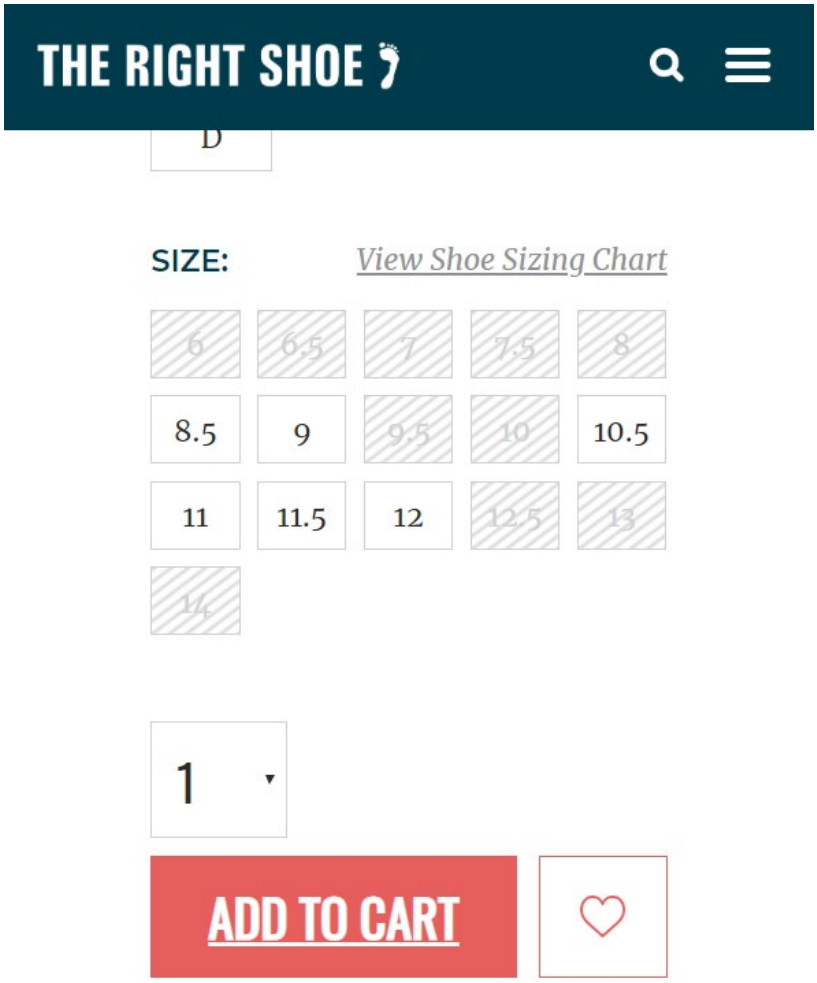


Figure 3 The Right Shoe website - sizes that are not shown in stock on POS will automatically be unavailable for purchase online

As shown in the above figure, certain shoe sizes will be shown as unavailable on The Right Shoe's website. This occurs when a size is out of stock on the POS software. When the stock information on POS is not correct, customers can order sizes that are not actually in stock. At best, these orders are delayed for a week or two. At worst, these orders need to be cancelled completely. Either way, this leads to a poor customer experience and negatively impacts The Right Shoe brand.

OUR SOLUTION

We propose that The Right Shoe install and use RFID (define here) technology to simplify the stock management process. This will speed up the stock counting process, improve stock count accuracy, save money on counting inventory, and help reduce negative customer experiences caused by stock errors.

RFID IMPLEMENTATION

This section discusses background information on RFID technology and its current success in the retail industry. It then looks at how The Right Shoe can benefit and implement this technology.

RFID TECHNOLOGY

RFID (Radio Frequency Identification) is a technology that uses radio waves to receive and transmit data (atlasRFIDstore, 2020). Each tag can have a unique identification code, which allows for individual items to be identified and tracked separately from each other (Government of Canada, 2009). This means that RFID has greater scanning power over traditionally used barcodes. Barcodes are read using a light-based reader that scans directly from a tag, meaning that a reader will only work within line of sight. On the other hand, an RFID tag can be detected at a distance by a fixed reader, given that the tag is within a specific working diameter (Government of Canada, 2009). Figure 4 shows a diagram of an RFID System and its main components.

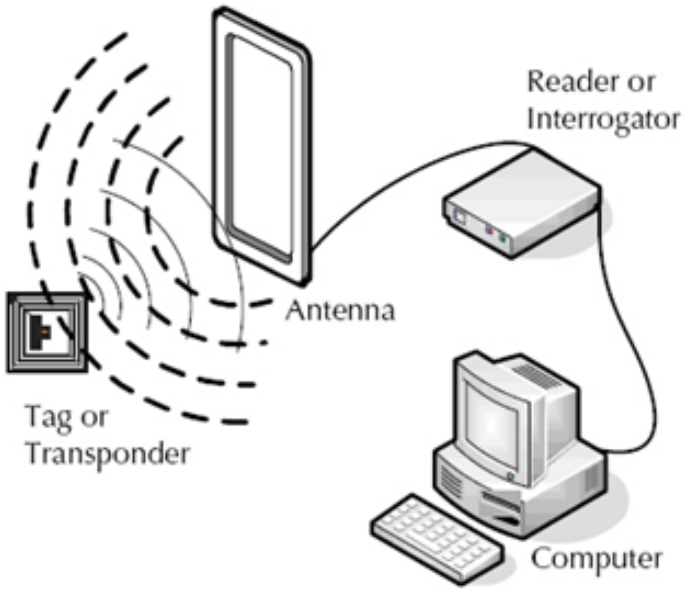


Figure 4 Diagram of an RFID System (EPC-RFID Info, 2020)

An RFID tag consists of an antenna that receives and transmits signals, and a microchip that stores identifying information (EPC-RFID Info, 2020). An RFID tag can be powered by a small battery, or simply with radio wave energy transmitted by a reader (EPC-RFID Info, 2020). In the latter type of RFID tag, energy is collected via the tag's antenna, which is then transmitted down to its chip (Kalnoskas, 2017).

An RFID reader is a two-way radio transmitter and receiver that works with another antenna to communicate with an RFID tag (EPC-RFID Info, 2020). The reader emits radio wave signals to a tag, which activates the tag as energy is transmitted to its chip. The chip then generates the appropriate information, which is transmitted back to the reader and reader antenna (atlasRFIDstore, 2020). The reader subsequently transmits this information to RFID software on a computer (EPC-RFID Info, 2020).

RFID USE IN RETAIL SETTINGS

In 2003, Walmart started to use RFID technology on pallets with the goal of more accurately tracking what was being shipped (Kaplan, 2018). Since then, RFID prices have decreased while the performance has vastly improved, resulting in more and more retailers following suit. The increased stock accuracy and time it saves retailers are the major reasons for RFID technology's increased adoption in the retail space (Kaplan, 2018).

Today, Nike is using RFID tracking on almost all of its footwear and apparel, and praises how precise it is compared to more traditional stock tracking systems (Cosgove, 2019). It is estimated that switching from traditional stock tracking (ex. barcodes) to RFID tags improves stock information accuracy from 80% to over 95% (Paragon ID, 2020).

BENEFITS OF USING RFID AT THE RIGHT SHOE

Installing RFID tags on the inventory at The Right Shoe will provide three major and immediate benefits for managing and tracking stock. The improvements to inventory tracking will also result in a better customer experience.

INCREASED STOCK ACCURACY

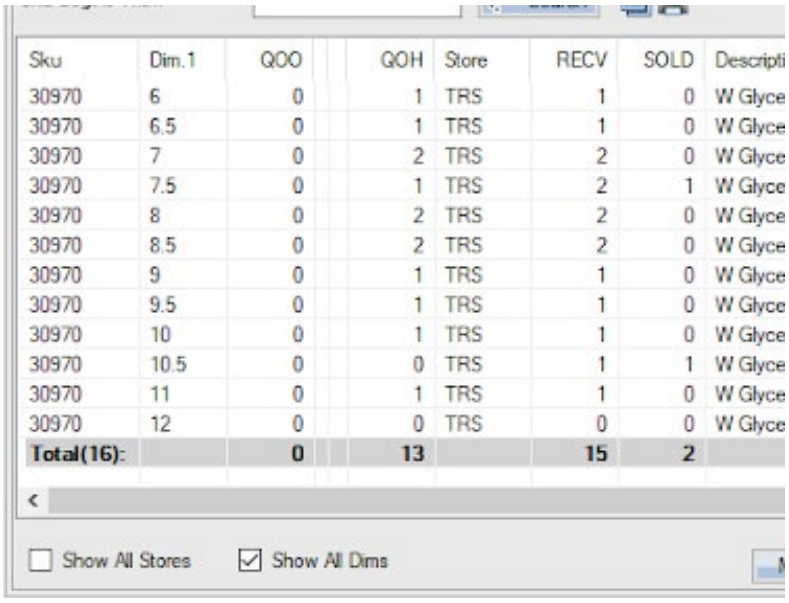
The most obvious benefit to installing RFID tags at The Right Shoe is increased stock accuracy. Nike has implemented RFID tracking in almost all of its products and calls it "the most complete view of our inventory that we have ever had" (Cosgove, 2019). We are confident that The Right Shoe would also benefit from the increased stock accuracy RFID tags provide.

ONLINE ORDER AVAILABILITY

The availability of shoes and sizes for sale on The Right Shoe website mirrors the count on the POS system. This means that improved accuracy helps reduce the number of errors customers have when placing online orders. This will result in a more positive and consistent customer experience.

REORDERING STOCK

When reordering stock at The Right Shoe, decisions on what sizes and colours to order are based solely on what the POS software shows (see Figure 5 below).



Sku	Dim.1	QOO	QOH	Store	RECV	SOLD	Descripti
30970	6	0	1	TRS	1	0	W Glyce
30970	6.5	0	1	TRS	1	0	W Glyce
30970	7	0	2	TRS	2	0	W Glyce
30970	7.5	0	1	TRS	2	1	W Glyce
30970	8	0	2	TRS	2	0	W Glyce
30970	8.5	0	2	TRS	2	0	W Glyce
30970	9	0	1	TRS	1	0	W Glyce
30970	9.5	0	1	TRS	1	0	W Glyce
30970	10	0	1	TRS	1	0	W Glyce
30970	10.5	0	0	TRS	1	1	W Glyce
30970	11	0	1	TRS	1	0	W Glyce
30970	12	0	0	TRS	0	0	W Glyce
Total(16):		**0**	**13**		**15**	**2**	

Show All Stores Show All Dims

Figure 5 AmberPOS: the POS software used by The Right Shoe

The above figure shows the sizes of one shoe on AmberPOS, the POS software used at The Right Shoe. The Dim.1 column shows the sizes of the shoe, while the QOH (quantity on hand) column shows how many pairs are currently in stock for each size.

When there is a stock error on POS, it means it's likely that the incorrect size or colour will be reordered. This can lead to high stock in some sizes and low stock in others. Improved accuracy will help keep size runs in the store correct and complete. This can help improve product sell-through, as well as reducing the number of customers who are frustrated when their size is not in stock.

IN-STORE EXPERIENCE

Finally, with improved accuracy, staff can place more trust in what is shown on POS when helping a customer in store. This means fewer trips to the stockroom are needed to confirm that a certain size or colour is actually in the store. Again, this will result in a faster, more positive experience for the customer.

SPEED OF COUNTING STOCK

According to store owner Rand Clement, manually counting all stock in The Right Shoe currently takes six staff members approximately ten hours to complete (60 hours in total). With RFID tags, scanning the stock would take seconds. A report of all discrepancies between the scan and POS would then be printed. The manager on duty would then review the report and update POS as needed. All in all, this process would take one person at most 15 minutes to complete.

Additionally, when a POS and stock mismatch occurs, it takes the staff time to find the source of the error. Often, multiple staff members are pulled into the stockroom to try and locate the source of the error. This means staff members are taken off of the sales floor, often resulting in customers having to wait longer until they get assisted.

REDUCED COST TO TRACK STOCK

RFID tags can also increase profits. As discussed in the “Stock Accuracy” section above, having more accurate stock tracking will result in less online orders needing to be cancelled. Increased stock accuracy also helps The Right Shoe ensure they have complete size runs of popular products. This means that the store is more likely to have a customer's size in stock.

As mentioned in the “Speed of Counting Stock” section above, counting inventory is estimated to take about 60 hours. With RFID tags installed, there would no longer be a need to take inventory of all shoes in the stock room, resulting in reduced staffing costs.

HOW AN RFID SYSTEM WILL WORK AT THE RIGHT SHOE

When the system is first implemented, each pair of shoes will be fitted with an adhesive RFID tag on the shoebox. Each tag will be encoded with the product’s unique identifying information using a handheld RFID reader. The RFID reader will be able to scan a product’s barcode and subsequently scan an RFID tag to encode it with the item’s information. As new shipments are received, new products will also need to be fitted with RFID tags. This process will be done as soon as shipments come in throughout the week. The employees responsible for unpacking shipment will attach RFID tags to the product as they process the shipment. This ensures all products are accounted for, and that new products can be placed on the salesfloor as soon as possible.

Fixed RFID readers will be installed into the stockroom and salesfloor to scan inventory periodically. The readers will scan every hour to ensure inventory is up to date. Each hourly update will also print a report which will also highlight any existing discrepancies with the POS system. A sample report is shown in Appendix A. Because possible errors are highlighted frequently in hourly reports, the manager on duty will be able to quickly and efficiently deal with the source of error.

SCHEDULE

Implementation of RFID tags will require a planning phase, an initial setup phase, an employee training phase, and a full-scale installation phase. Altogether, the full implementation process is estimated to take approximately six weeks.

PLANNING PHASE

Figure 6 details the schedule for the planning and initial setup phases.

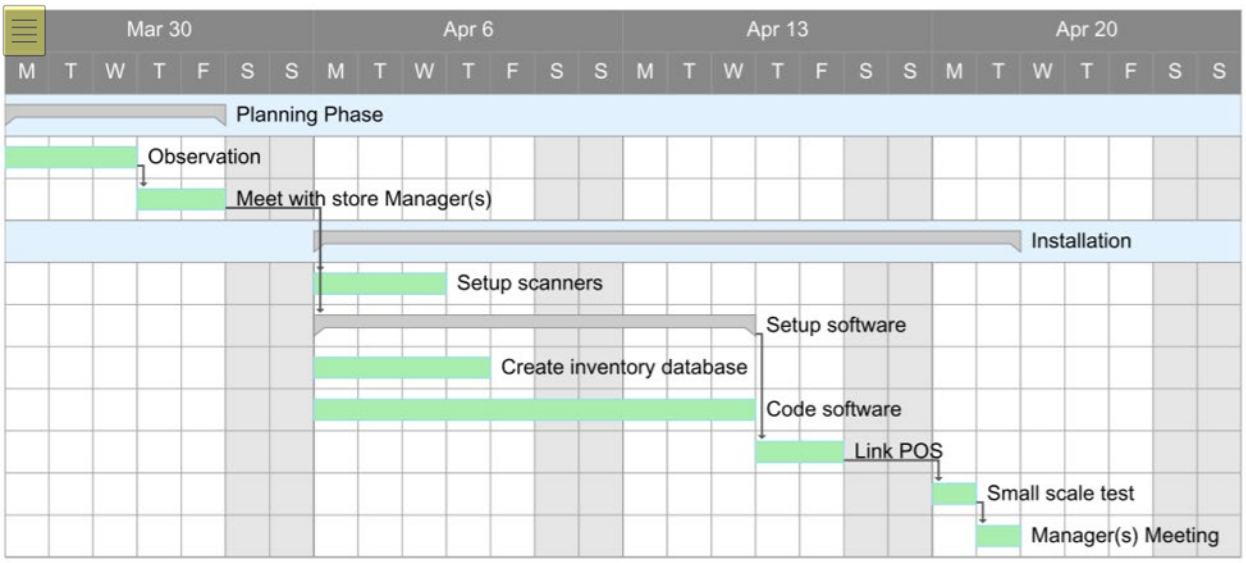


Figure 6 Schedule of the planning and initial setup phases

During the planning phase, we will spend three days observing the current receiving and manual inventory count procedures. This will be followed by two days of management/team lead meetings to gain the best possible understanding of how The Right Shoe currently operates and tracks stock. This process will allow us to seamlessly integrate RFID technology at The Right Shoe.

INITIAL SETUP PHASE

The initial setup phase will consist of setting up the scanners and fixed RFID readers, creating a database of products, coding the integration software, and small-scale testing.

Initial setup will take about three days and includes setting up the RFID hand scanners, the fixed RFID readers, and RFID stickers. Figure 7 shows a Zebra RFD200 Scanner/Writer, which we plan on implementing.

Figure 7 RFD200 Scanner/ Writer (Zebra, 2020)

These handheld scanners both read and write to the RFID stickers. Having one device that can do both will keep the process as simple as possible for the receiving staff.

Figure 8 below shows a Zebra FX7500 Fixed RFID Reader, which we plan on installing at The Right Shoe.

Figure 8 FX7500 Fixed RFID Reader (Zebra, 2020)

We will install the fixed RFID readers in both the stockroom and on the sales floor. These readers will scan the RFID stickers in the stockroom and sales floor hourly to get an accurate inventory count of what products are currently in the store.

In this initial setup phase, we will also attach RFID stickers (see Figure 9 below) to a small number of products until the optimal process has been decided upon.

Figure 9 RFID Sticker (Tech Spirited, 2020)

Creating a database of products is estimated to take four days and will consist of adding the RFID codes to each product SKU. The coding phase is estimated to take ten days. The coding required for this project is integrating the RFID tag database into the existing POS software already used by The Right Shoe (AmberPOS). Once the coding phase is completed, AmberPOS will be able to compare existing stock information against the RFID tag information, and print a report highlighting the difference. Management can then use this report to adjust the POS stock count. A sample report is shown in Appendix A.

Initial testing will be done with management and team leads to identify areas of improvements. This first round of testing will be followed with a manager meeting to agree on the final receiving and cycle count procedures.

TRAINING PHASE

Figure 10 below details the schedule for the training phase and full-scale installation.

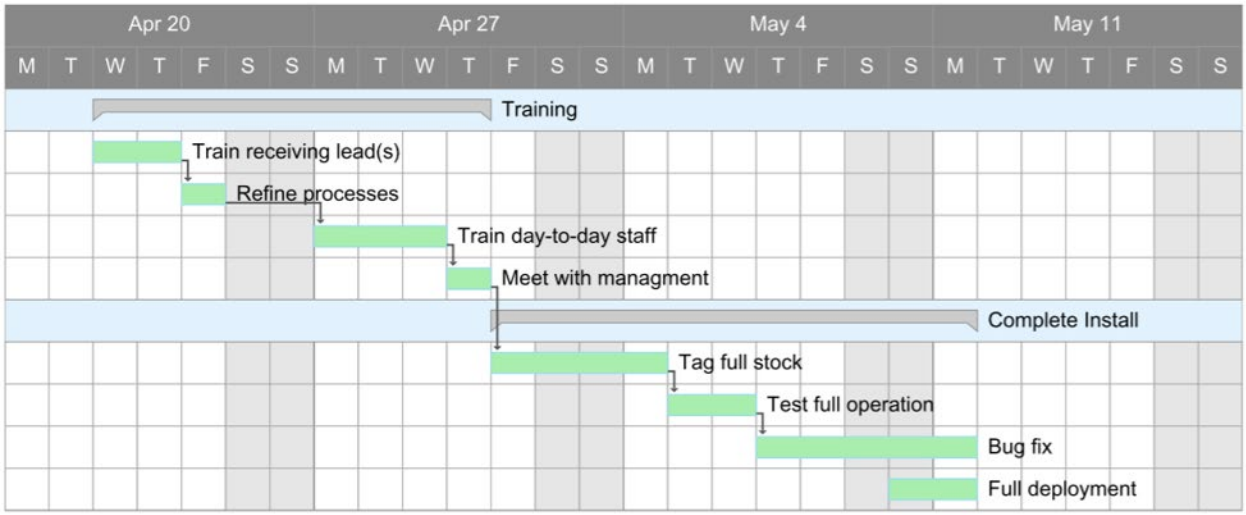


Figure 10 Schedule of the training and full-scale installation phases

Once we have agreed on procedures for both receiving and cycle counts, we will begin training all members of staff. We have allotted a week and a half for the full training.

During this training phase, we will teach staff how to correctly scan and attach RFID tags to new product during the receiving process. We will also teach the store management how to read and resolve the reports printed by the fixed RFID reader.

FULL-SCALE INSTALLATION PHASE

During the final installation phase, we will begin attaching RFID tags to all current stock, as well as any new stock that arrives. Once all the stock is tagged, we will take two days of testing the system in a sandbox environment. After the testing, we have allotted five days to fix any bugs that come up while testing. If the project follows our suggested start date of March 30th, we plan to have the entire system completely installed on May 11th.

BUDGET

Table 1 below provides a summary of the project budget.

Table 1 Summary of project budget

Category		Total
Hardware	$	6,100.00
Software	$	4,765.00
Training	$	975.00
Grand Total	$	11,840.00

The budget is broken down into three categories: hardware, software, and employee training. The initial total is estimated at $11,840.00. The detailed breakdown can be found in Appendix B.

The hardware is supplied by Zebra. The specific models were chosen with The Right Shoe's business needs in mind. All software and training will be completed by our team and are based on the median BC income for specified tasks (Job Bank, 2018). The numbers of hours are estimates and are subject to change.

CONCLUSIONS

Maintaining accurate stock counts is becoming more important as The Right Shoe continues to grow as a business. The Right Shoe's current practice of manually counting stock raises problems of inefficient costs, incorrect stock counts, and a negative customer experience that affects the store's overall brand. Given these growing problems, The Right Shoe urgently requires an improved alternative to how they currently count their stock.

We conclude that RFID technology is the ideal solution to The Right Shoe's problems. RFID technology is being implemented in the retail sector with increasing frequency due to its track record of increasing stock accuracy in big retailers such as Nike (Cosgove, 2019) and Walmart (Kaplan, 2018). Integrating RFID technology into The Right Shoe's stock management will increase accuracy and significantly reduce time to complete stock counts. With an increased stock accuracy, The Right Shoe can improve their online order services, reorder the correct stock, and have more confidence in providing a positive customer experience.

RECOMMENDATIONS

According to Rand Clement, owner of The Right Shoe, the busiest months of operation are from June to August. Because of this, we recommend starting this project as soon as possible. This ensures that The Right Shoe can take full advantage of benefits offered by using RFID technology during its busiest sales period. The improved accuracy and time saving advantages of an RFID stock management system will not only increase profits but also will improve overall customer experience. If this project is started by April 13th, we are confident the entire system can be fully operational before June 1st.

The first course of action is to schedule the initial planning days, where we observe how The Right Shoe operates and receives stock. We would also interview management and team leads during these days, so it's important to select days when the senior staff are available to speak to us.

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APPENDICES

APPENDIX A: SAMPLE INVENTORY COMPARISON REPORT

SKU:	Name:	Color:	Brand:	Size:	POS Qty:	RFID Qty:	POS Adjust:
27947	ML574EGG	Grey	New Balance	10	1	2	+1
30019	W Pegasus 35	Rose Gold	Nike	7	0	1	+1
22003	W Gel-Nimbus 33	Black/White	Asics	6.5	2	1	-1
19999	W Grid Integrity	Tan	Saucony	8	1	0	-1
20202	M Moab 2 WTPF	Gargoyle	Merrell	11	3	1	-2
31001	W Original	Black	Kodiak	7	1	0	-1
26789	Arizona Leather	Havana	Birkenstock	43	2	1	-1
22222	Gizeh Birko-Flor	White	Birkenstock	37	0	1	+1
32200	W990GR5	Grey	New Balance	9.5	1	2	+1
27090	Round Toe	Dark Brown	Blundstone	5	0	1	+1

APPENDIX B: COMPLETE BUDGET BREAKDOWN

Hardware

Expense	Quantity	Unit Price	Total
RFID Tags (Initial)	11,000	$ 0.05	$ 550.00
RFD2000 RFID Reader/ Writer	3	$ 650.00	$ 1,950.00
FX7500 Fixed RFID Reader	2	$ 1,800.00	$ 3,600.00
Total			$ 6,100.00

Software

Expense	Number of Hours	$ per hr	Total
Database	20	$ 60.00	$ 1,200.00
POS Integration	40	$ 75.00	$ 3,000.00
Installation	5	$ 98.00	$ 490.00
Testing	15	$ 65.00	$ 75.00
Total			$ 4,765.00

Training

Expense	Number of Staff	$ per Person	Total
Receiving	5	$ 75.00	$ 375.00
Sales Training	10	$ 60.00	$ 600.00
Total			$ 975.00

Initial Total	$ 11,840.00