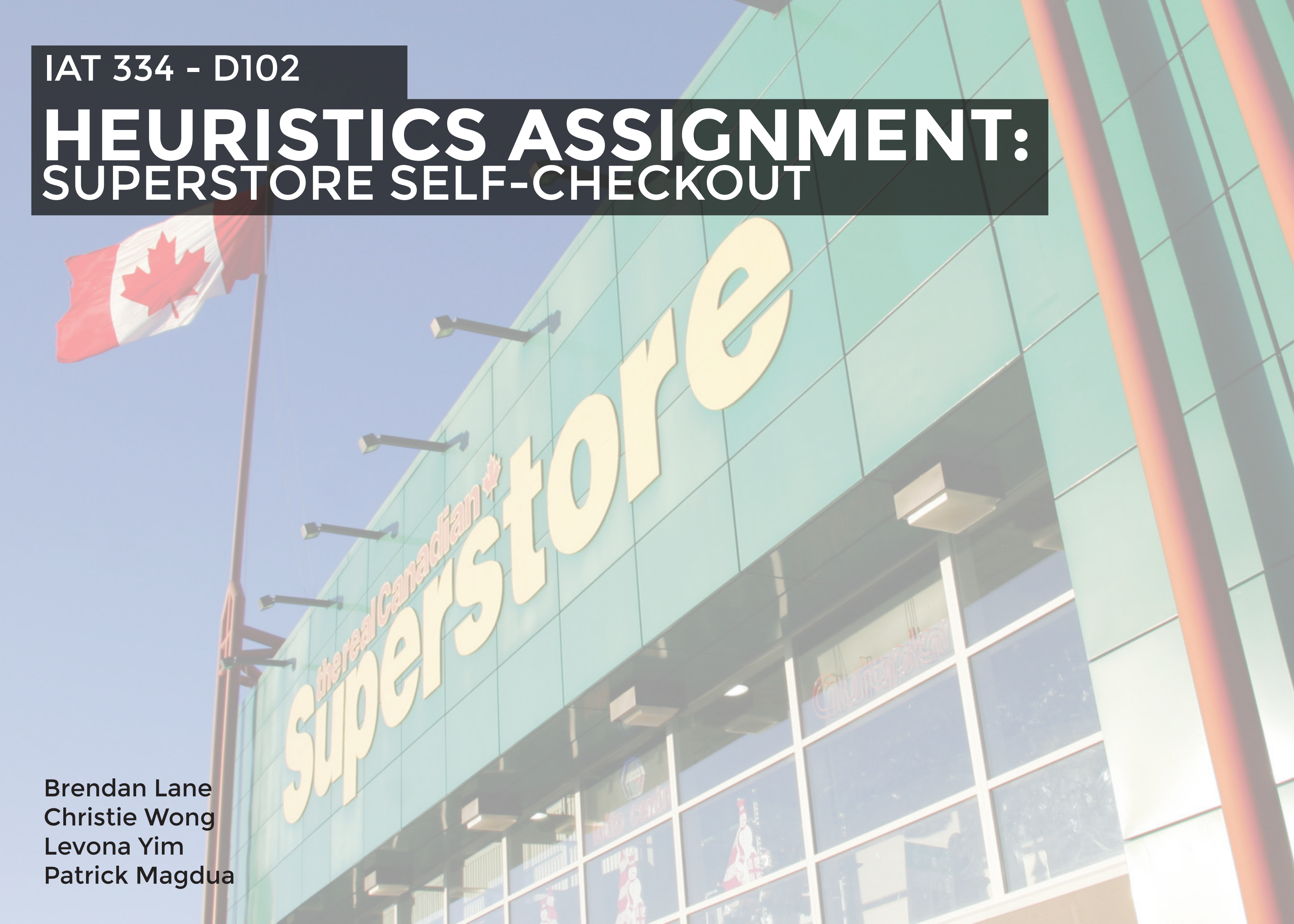


IAT 334 - D102

HEURISTICS ASSIGNMENT: SUPERSTORE SELF-CHECKOUT

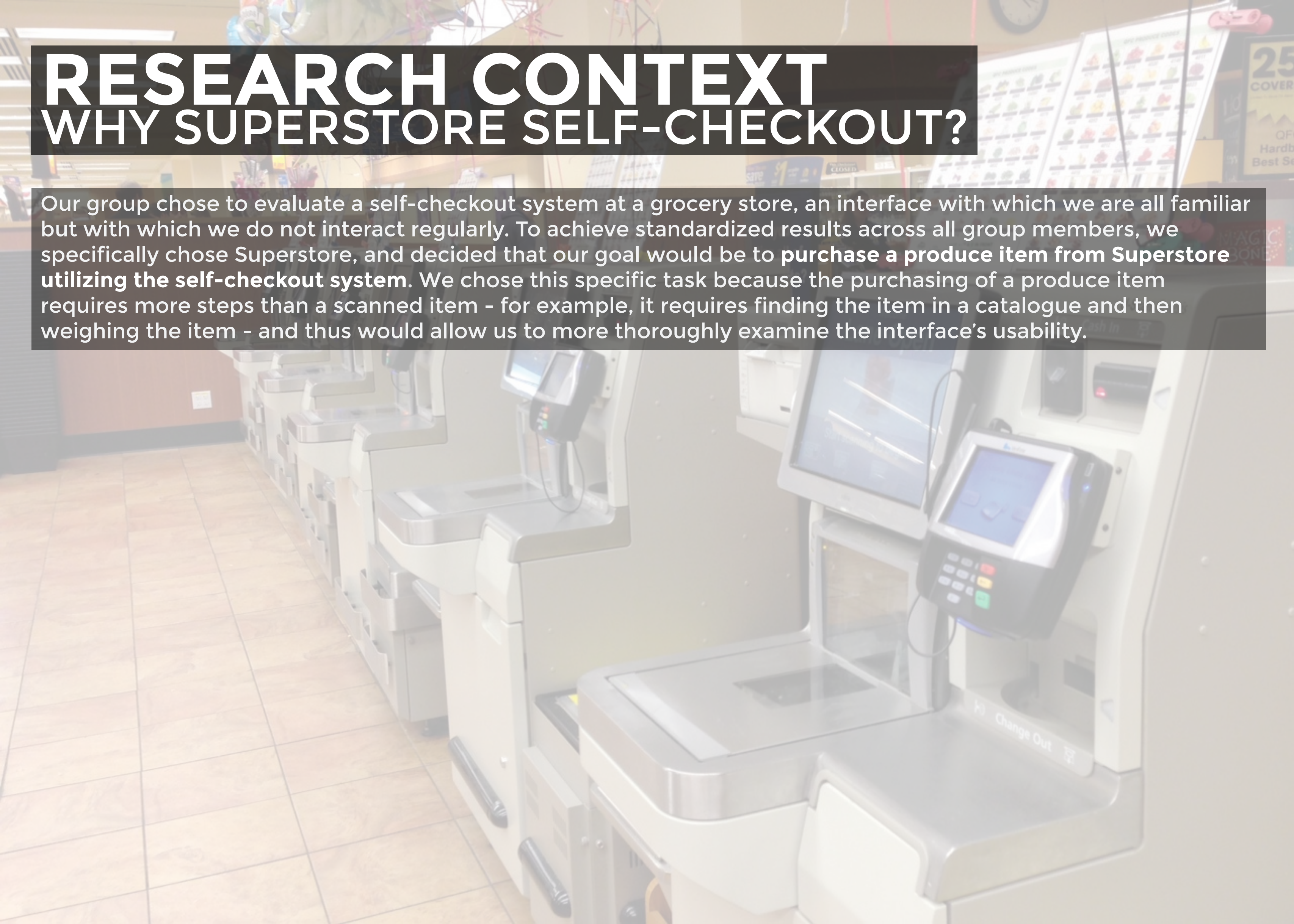
Brendan Lane
Christie Wong
Levona Yim
Patrick Magdua



RESEARCH CONTEXT

WHY SUPERSTORE SELF-CHECKOUT?

Our group chose to evaluate a self-checkout system at a grocery store, an interface with which we are all familiar but with which we do not interact regularly. To achieve standardized results across all group members, we specifically chose Superstore, and decided that our goal would be to **purchase a produce item from Superstore utilizing the self-checkout system**. We chose this specific task because the purchasing of a produce item requires more steps than a scanned item - for example, it requires finding the item in a catalogue and then weighing the item - and thus would allow us to more thoroughly examine the interface's usability.



NIELSEN HEURISTICS

WHICH HEURISTICS TO CHOOSE?

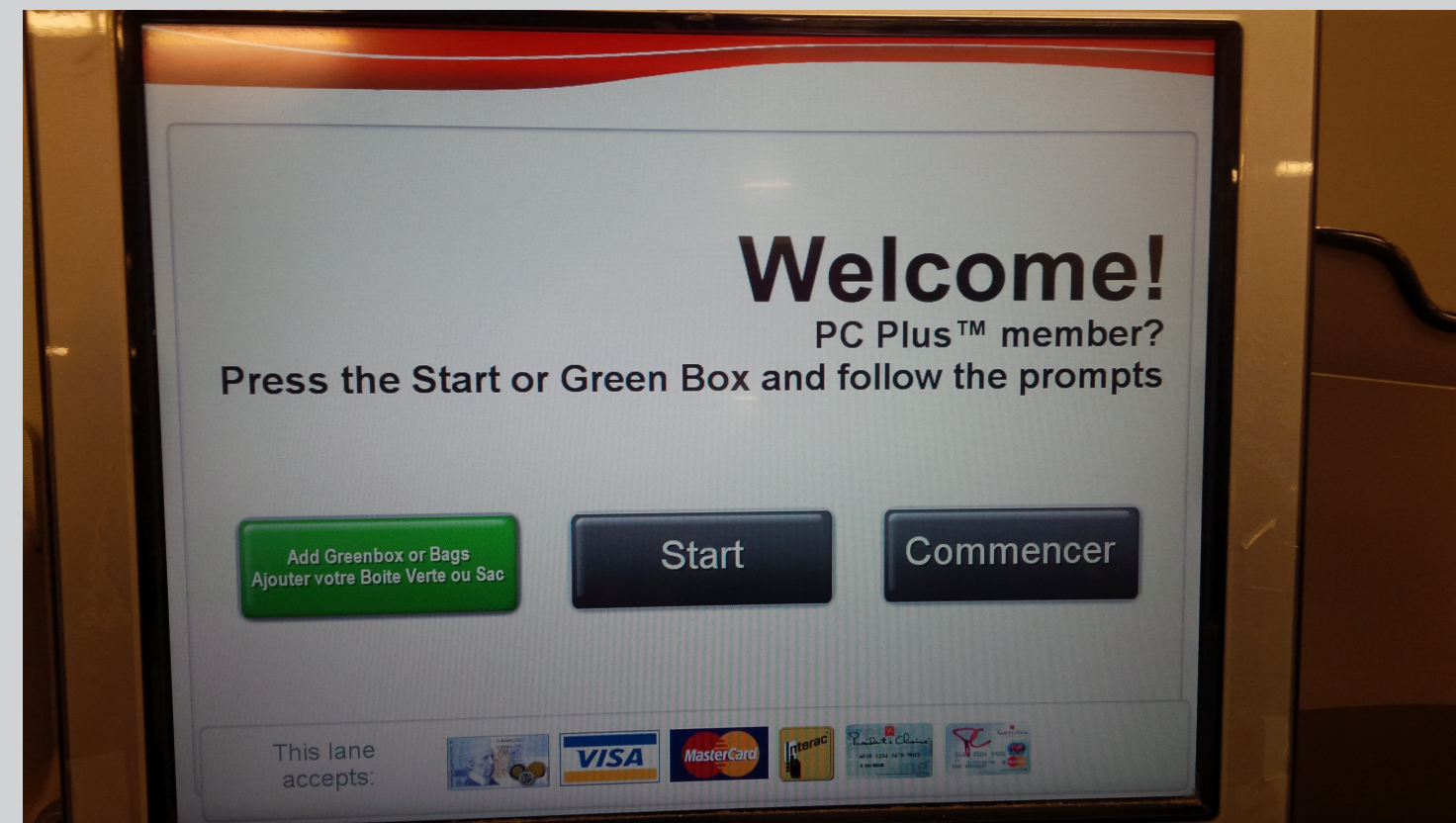
- 1 Visibility of system status**
Let shoppers know how far along they are and how close they are to finishing
- 2 Match between system and real world**
Grocery shoppers aren't technical users - ensure they can easily understand the system
- 3 Recognition rather than recall**
Don't make shoppers remember what they bought, show them what they need
- 4 Error prevention**
Shopping involves money - don't let users make mistakes with their cash!
- 5 User control and freedom**
Let users navigate freely in the interface, give them the ability to undo/redo
- 6 Help users recognize, diagnose, recover from errors**
If mistakes are made, ensure users can fix them. Again, shopping involves money
- 7 Consistency and standards**
Ensure that the interface looks and behaves the same way across screens

LET'S GO SHOPPING!

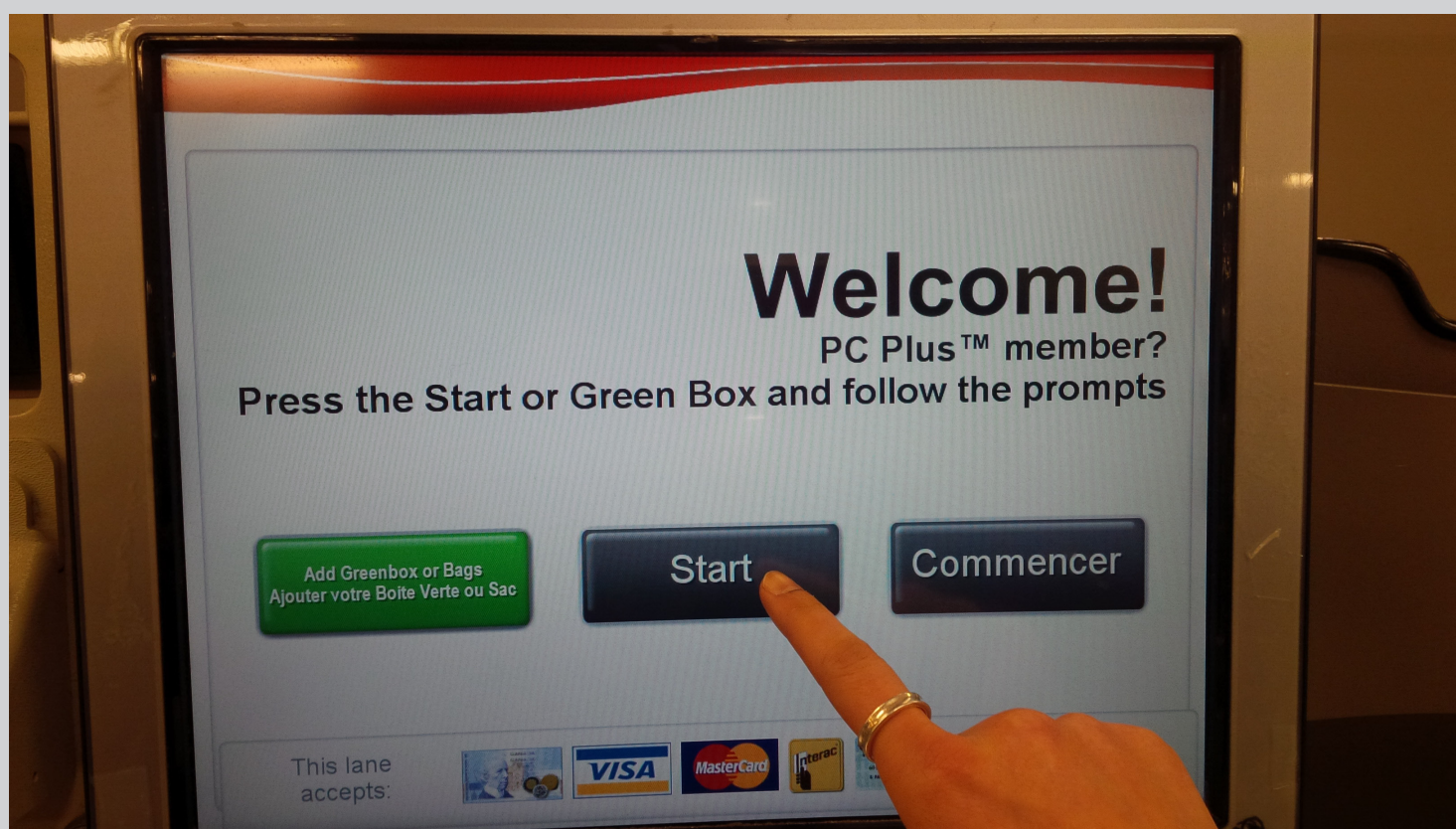
EVALUATION TASK WALKTHROUGH



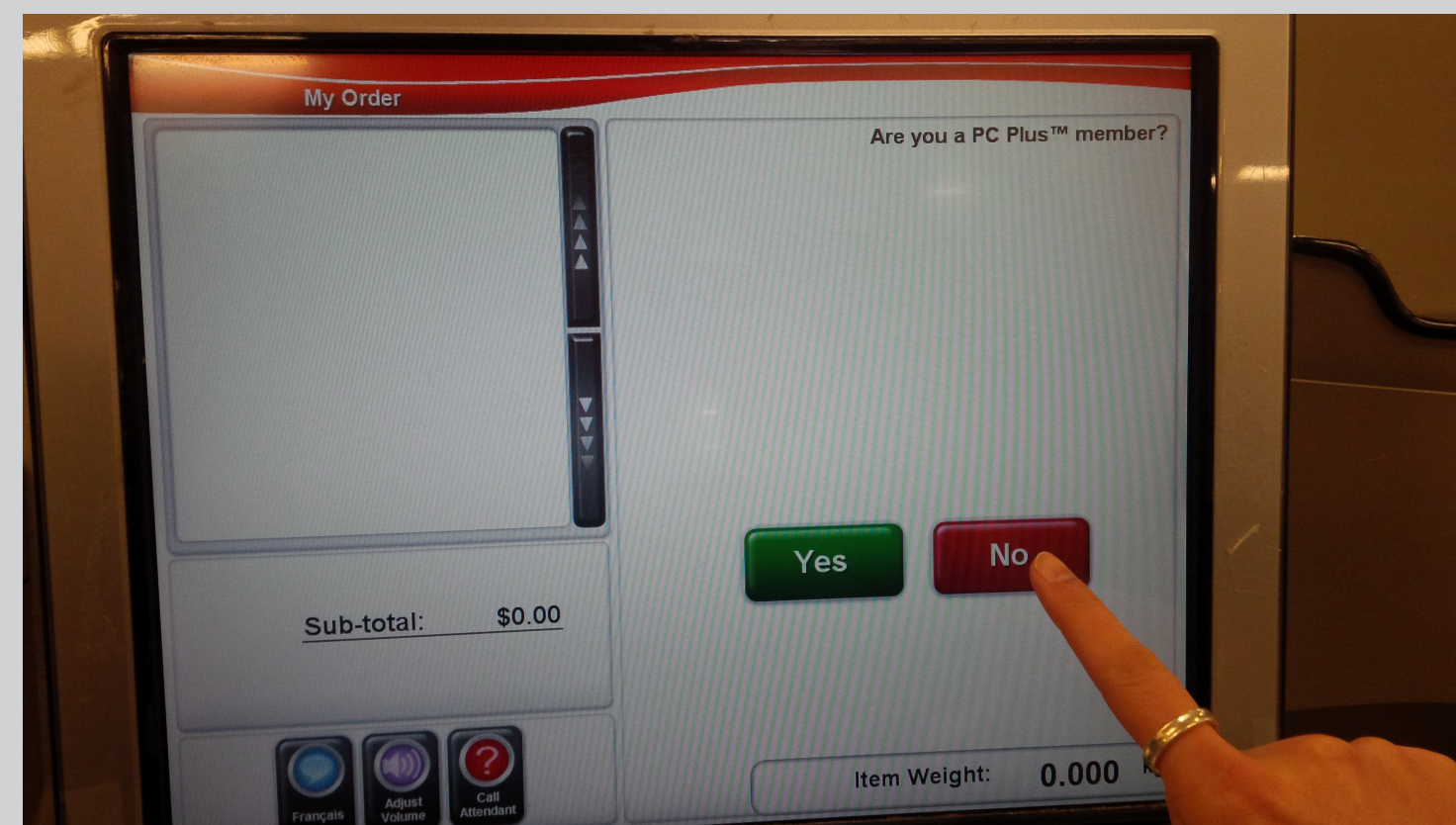
1 What the checkout stand looks like



2 Start screen



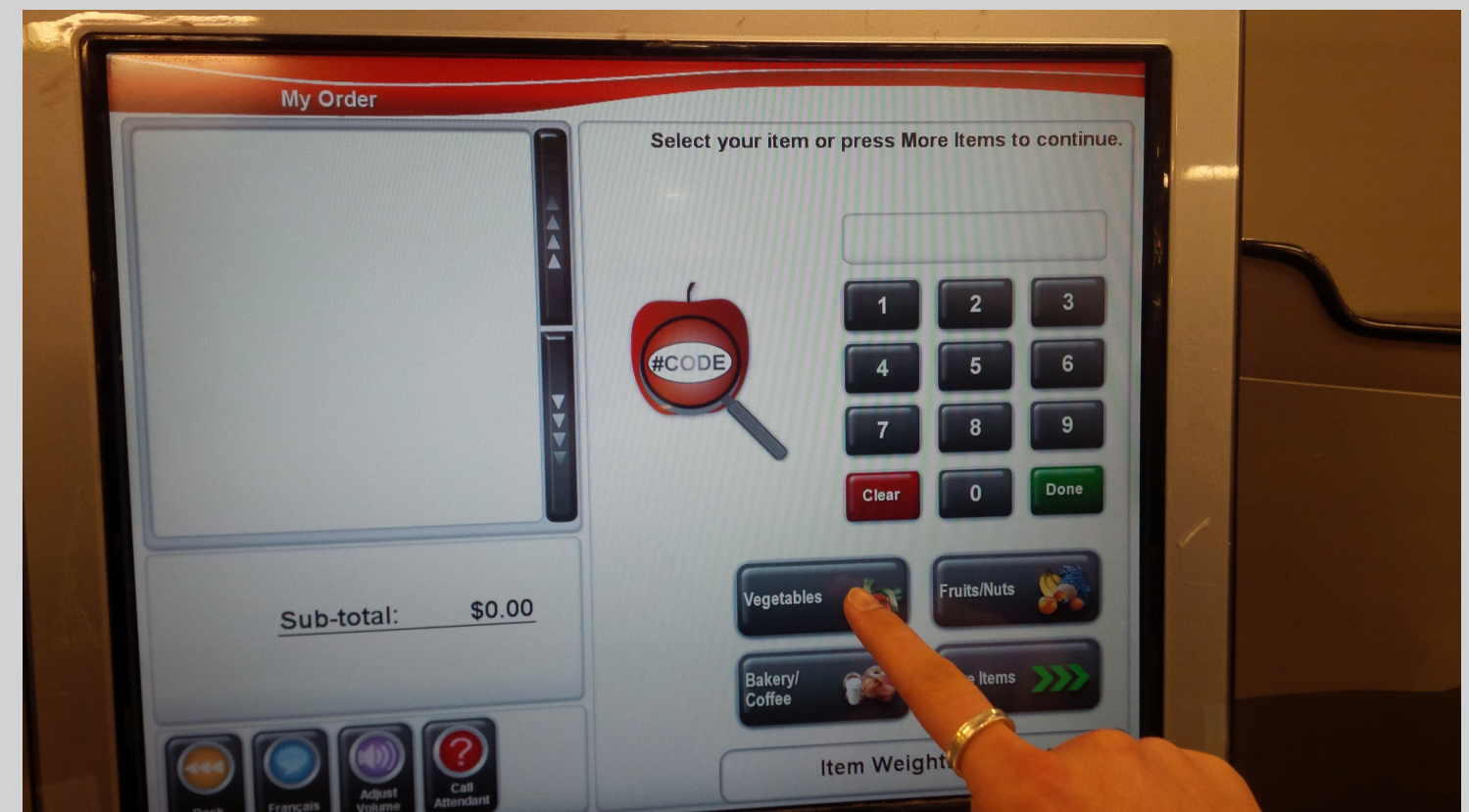
3 Press the start button



4 Confirm/deny PC Plus membership



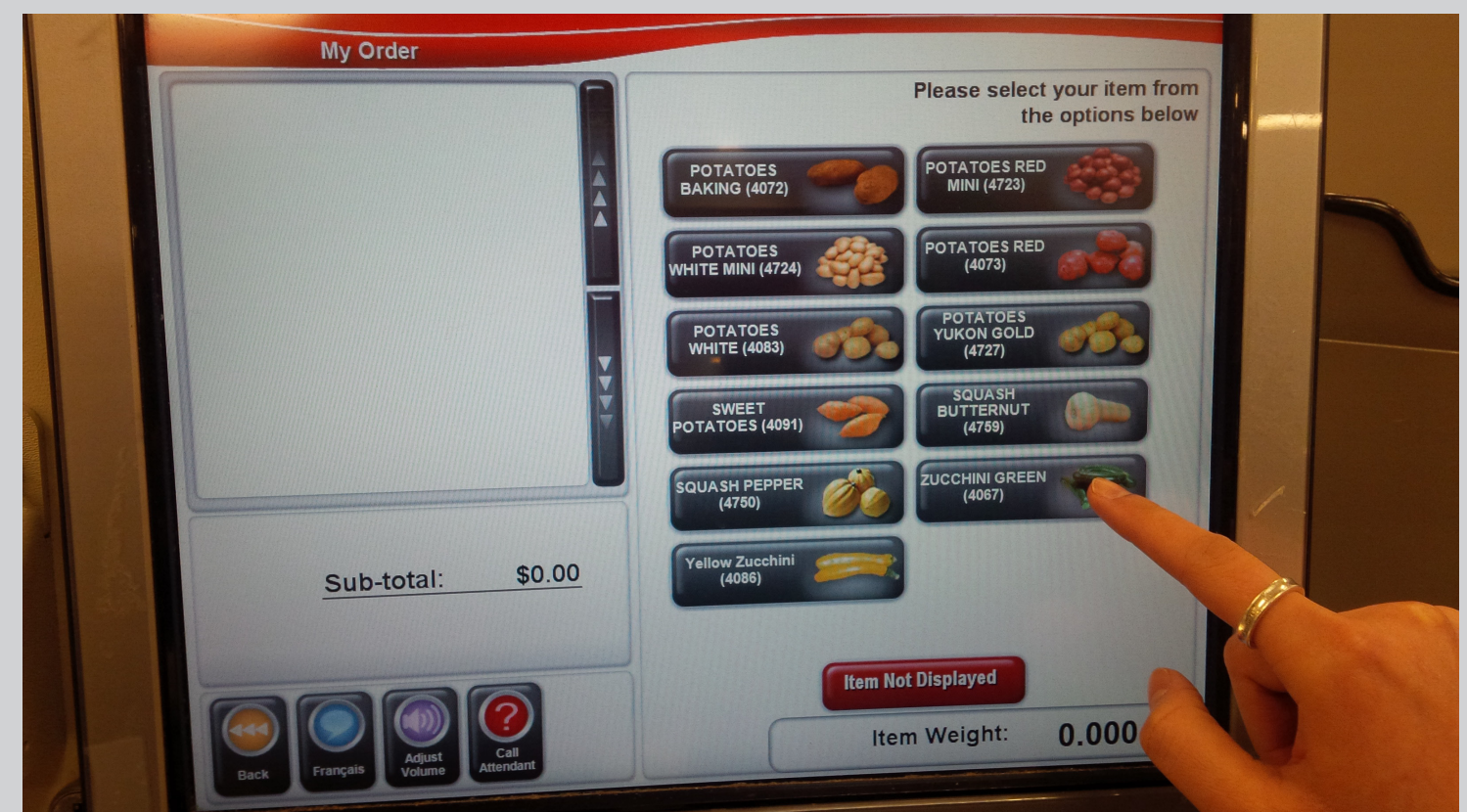
5 Select produce button



6 Select item code or category



7 Select vegetable category



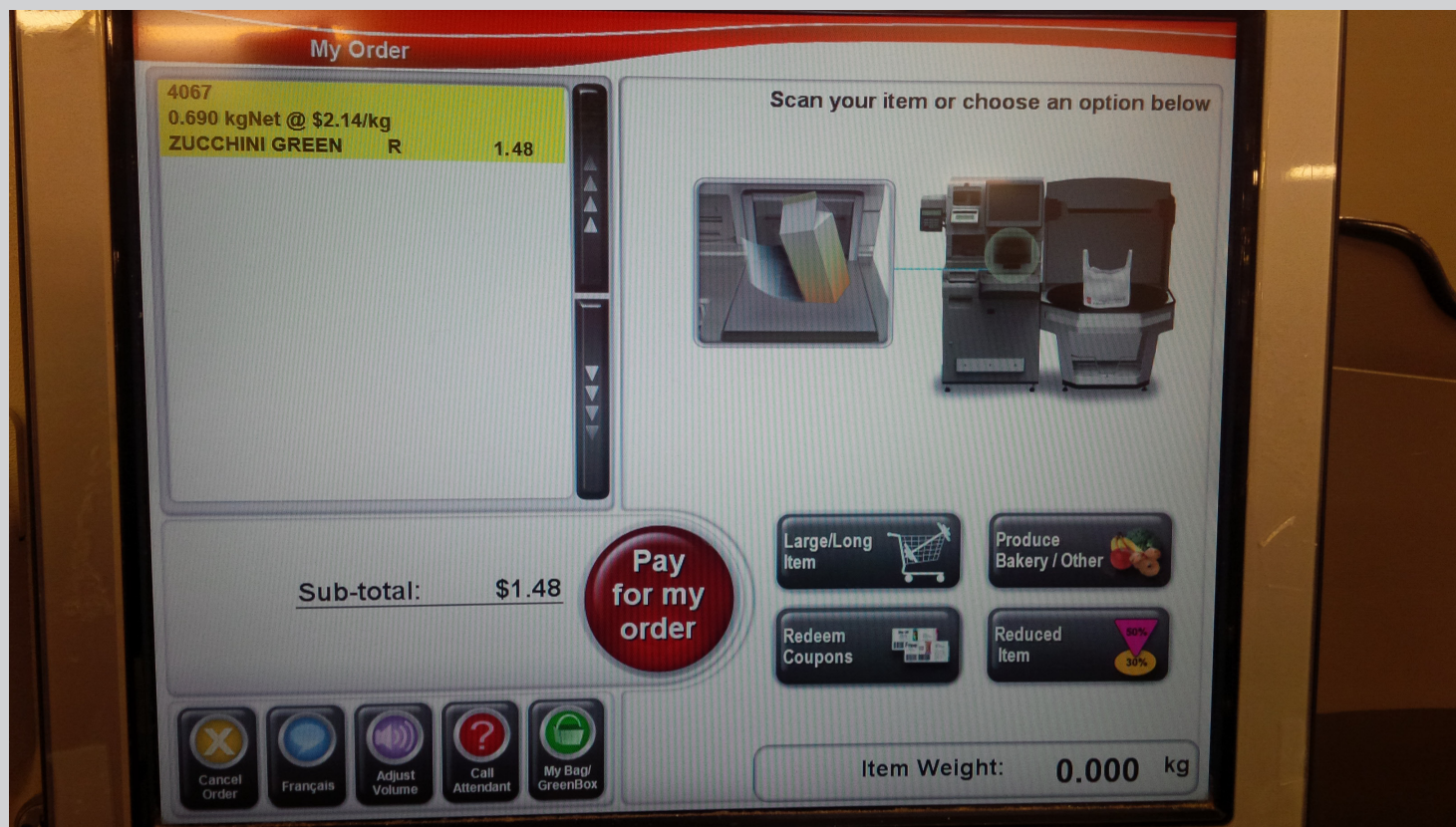
8 Select item



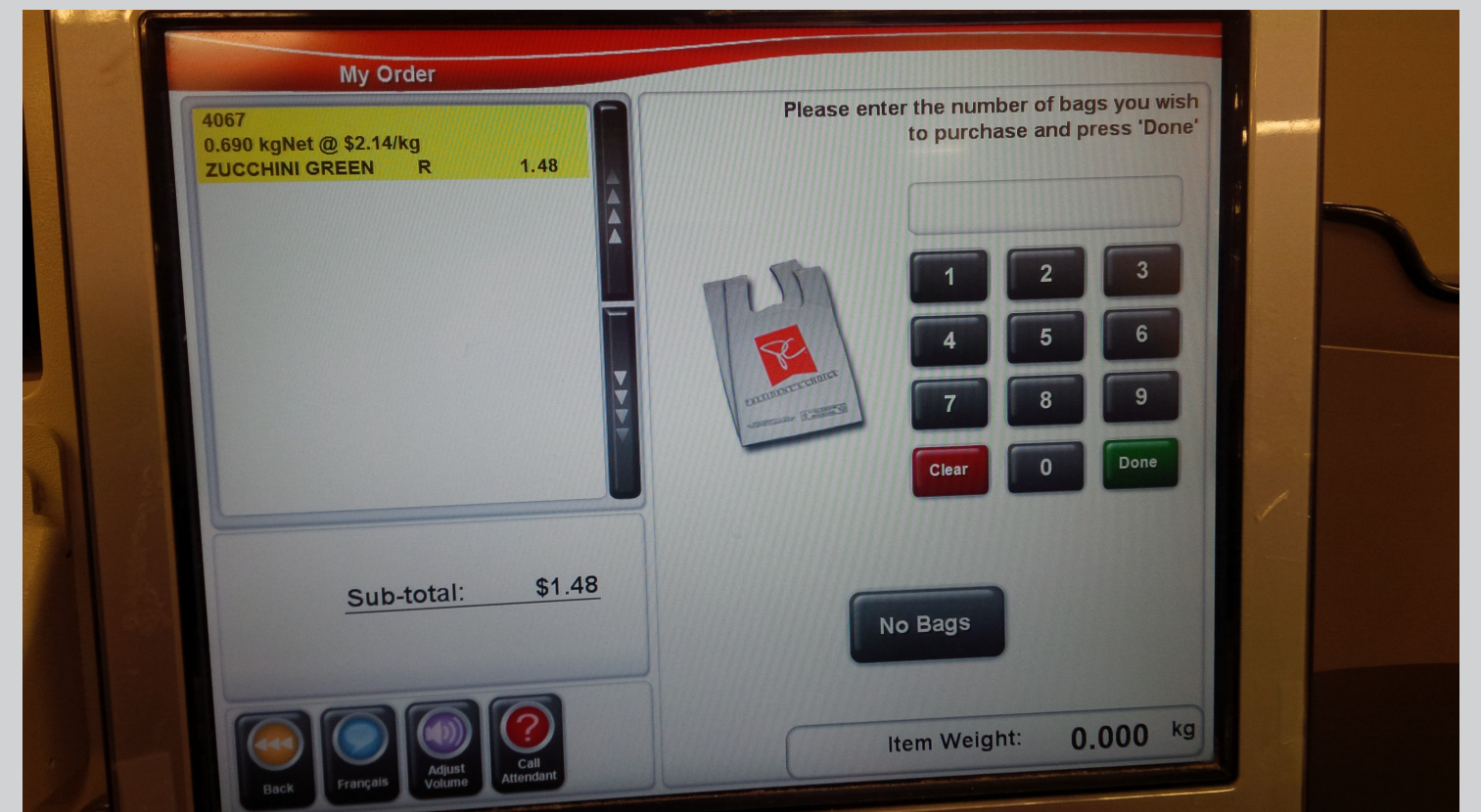
9 Weigh item



10 Place item in bag



11 Pay for order



12 Select number of bags



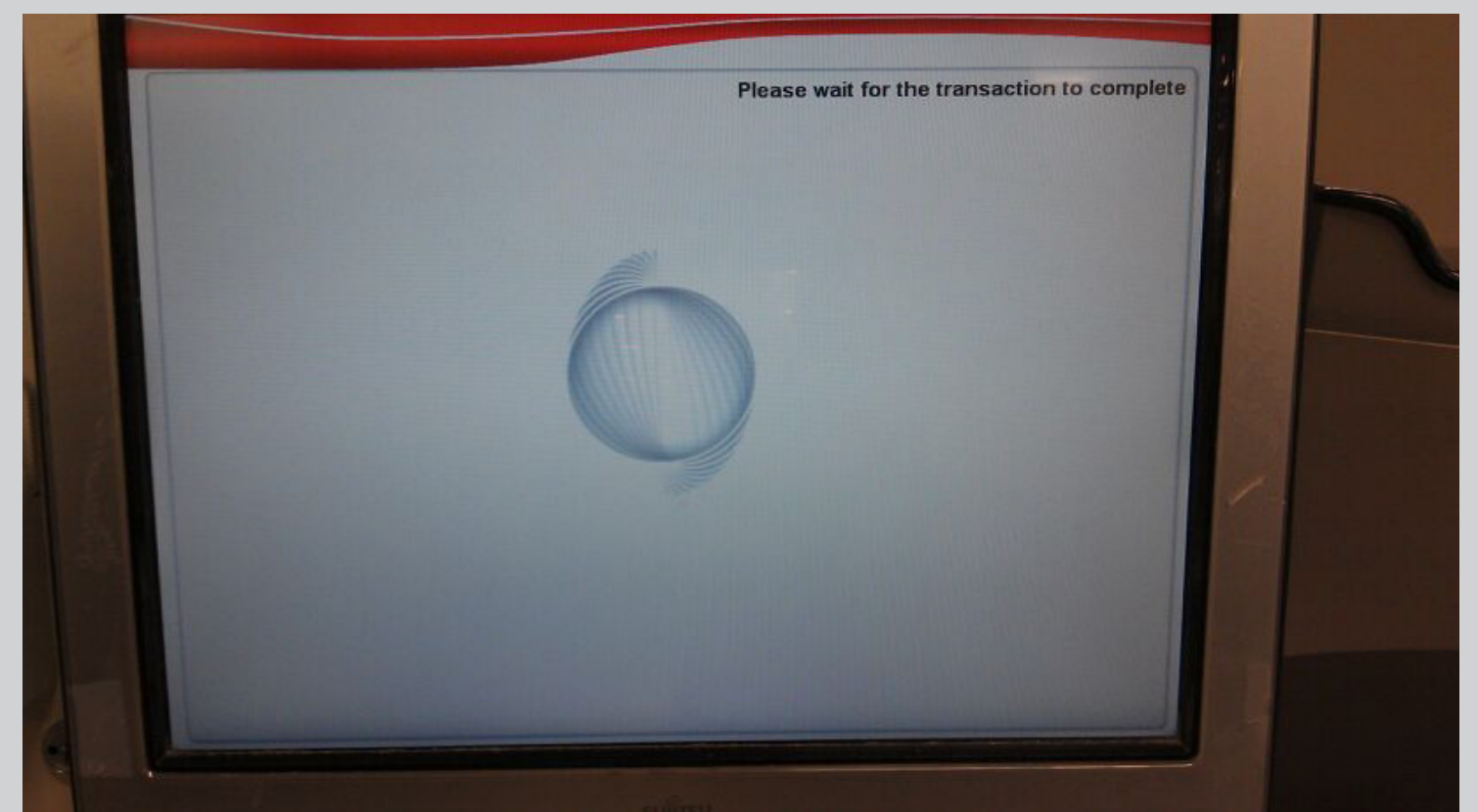
13 Receive cryptic message



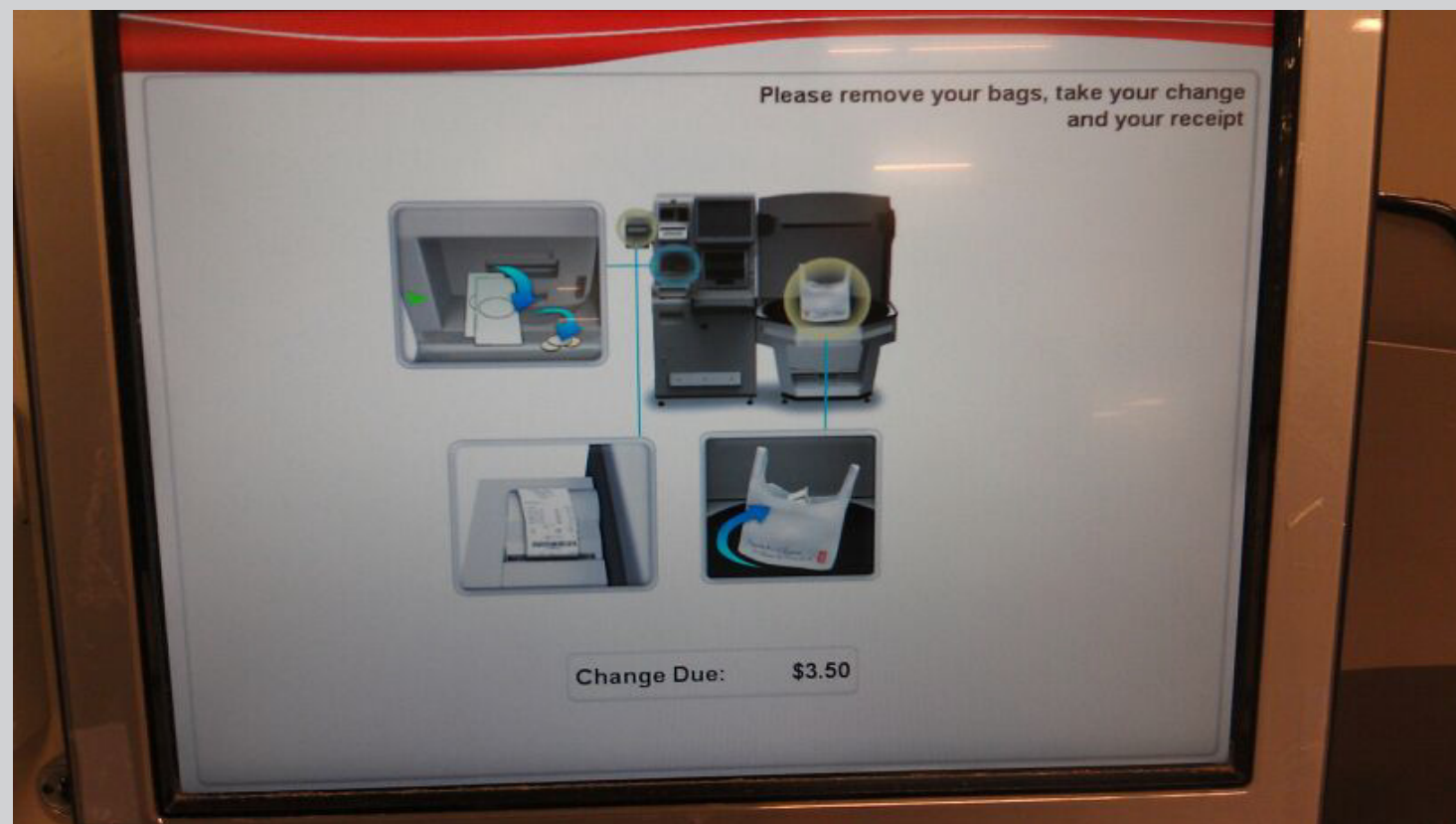
14 Select payment method - cash



15 Pay for groceries



16 Wait for transaction



17 Remove bags from bagging area



18 Receive change



19 Receive receipt

HEURISTIC VIOLATIONS

HOW DID THIS CHECKOUT VIOLATE
NEILSEN'S HEURISTICS?

VISIBILITY OF SYSTEM STATUS

MEDIUM SEVERITY VIOLATION

When trying to find a specific item, there are a lot of steps (category, vegetable, quantity, weight) and no sense of where we are in the process. We also don't know where we are in the entire grocery shopping process.

This isn't a huge deal because the shopping process is fairly straightforward.

SOLUTION

Use a breadcrumb trail to show users where they've been and allow them to more easily navigate

My Order

Please select your item from
the options below

POTATOES
BAKING (4072)



POTATOES RED
MINI (4723)



POTATOES
WHITE MINI (4724)



POTATOES RED
(4073)



POTATOES
WHITE (4083)



POTATOES
YUKON GOLD
(4727)



SWEET
POTATOES (4091)



SQUASH
BUTTERNUT
(4759)



SQUASH PEPPER
(4750)



ZUCCHINI GREEN
(4067)



Yellow Zucchini
(4086)



Sub-total: \$0.00

Item Not Displayed

Item Weight: 0.000



Back



Français



Adjust
Volume



Call
Attendant

Zucchini Green (4067)
0.690 kg NET @ \$2.14/kg

1.48



Subtotal

\$1.48

Switch
Language

Adjust
Volume

Call
Attendant

Cancel
Order

1. Scan Items

2. Payment

3. Done

PRODUCE

VEGETABLES

Please select your item from the list below.

Artichokes, Asparagus,
Celery, Herbs

Beans, Corn, Peas

Broccoli, Cabbage,
Cauliflower, Cucumber

Fresh Peppers

Garlic, Onions

Lettuce, Leafy Greens

Mushrooms, Eggplant

Squash, Zucchini
Potatoes, Yams

Ethnic Vegetables

Organic Vegetables

Other Root Vegetables

Item Not Displayed

Back

MATCH SYSTEM AND WORLD

MEDIUM SEVERITY VIOLATION

Fruits and vegetables are categorized in seemingly arbitrary ways, under headings such as “miscellaneous fruit” which don’t correspond to common language.

This can make finding rarer produce items very difficult, as the navigational paths are not always logical or straightforward.

SOLUTION

Use sensible headings, alphabetize fruit list, use real world terms

My Order

Welcome #

Card#: *****308*

06457900701

RUBICON NECTAR MRJ 1.99

DEPOSIT/FEE

ECOLOGY FEE 0.07

DEPOSIT/FEE

DEPOSIT 1 0.05

06038306327

1 @ \$1.97 Spec Price

PC CHO COOKIE MRJ 1.97

Sub-total: \$4.08



Back



Français



Adjust
Volume



Call
Attendant

Please select your item from
the options below

Organic Fruit



Miscellaneous
Fruits



Melons/Grapes/
Berries/Cherries



Ethnic Fruit



Nuts



Item Not Displayed

Item Weight: 0.000 kg

Plum Black (4040)
0.315 kg NET @ \$6.57/kg

\$2.07

Zucchini Green (4067)
0.690 kg NET @ \$2.14/kg

\$1.48

Subtotal

\$3.55

Switch
Language

Adjust
Volume

Call
Attendant

Cancel
Order

1. Scan Items

2. Payment

3. Done

Please select from the categories below.

Apricots

Avocados

Bananas

Kiwi Fruit

Lemons Large

Lime

Mangos Red Small

Papayas

Back

RECOGNITION OVER RECALL

MEDIUM SEVERITY VIOLATION

The interface asks you to define quantity of an item, but removes references to the item so it's possible to forget what item you're currently purchasing.

This can cause a user to type in the wrong quantity or try to go back to ensure that the item they're counting is the right one - this costs them time.

SOLUTION

Keep a reference of the item onscreen so the user remembers what item they're purchasing

My Order

Enter the quantity, then pre

Sub-total: \$0.00

1	2	
4	5	
7	8	9
Clear	0	Done

Zucchini Green (4067)
0.690 kg NET @ \$2.14/kg 1.48



Subtotal \$1.48

- Switch Language
- Adjust Volume
- Call Attendant
- Cancel Order

1. Scan Items
2. Payment
3. Done



Please type your quantity of **Kale** and press "Next"

123

456

789

0

X

- Back
- Next

ERROR PREVENTION

LOW SEVERITY VIOLATION

The starting screen asks users to press start, but the button asking them to use green bags or a Greenbox has more hierarchy - this can cause users to press the wrong button.

However, users can always add or remove bags at a later time, so this has little severity.

SOLUTION

Ask for users to provide bags at a later time, restrict the start screen to language selection

Welcome!

Press 'Start'
to begin

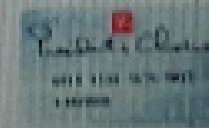
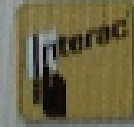
Add Greenbox or Bags
Ajouter votre Boîte Verte ou Sac

Start

Commencer

Cashless Lane

This lane
accepts:



FUJITSU

WELCOME!

Please select your language to start.

English

Français

中文

CASHLESS LANE

This lane accepts:



If you have a Greenbox or green bags,
please place them on the bagging area.

Er

Continue

CASHLESS LANE

This lane accepts:



USER CONTROL + FREEDOM

LOW SEVERITY VIOLATION

Some of the checkouts are cashless, meaning they don't accept or dispense cash. They warn the user about this, which helps prevent errors, but they only provide the user with this warning message after several steps. This can cause users to waste time if they don't have cash.

SOLUTION

Ask the user if they have cash right away

This machine does not accept or
dispense any cash.

Continue?

Yes

No

CASHLESS LANE

This lane accepts:



USER CONTROL + FREEDOM

LOW SEVERITY VIOLATION

Keypads lack backspace buttons, meaning that every keypad error requires users to completely clear the keypad rather than correct a small mistake. It is a minor frustration, but one that strips control away from the user.

SOLUTION

Give users the option to correct errors rather than clear the entire field

My Order

4067

0.690 kgNet @ \$2.14/kg

ZUCCHINI GREEN R 1.48



Sub-total: \$1.48



Back



Français



Adjust
Volume



Call
Attendant

Please enter the number of bags you wish
to purchase and press 'Done'



1

2

3

4

5

6

7

8

9

Clear

0

Done

No Bags

Item Weight: 0.000 kg

Zucchini Green (4067)
0.690 kg NET @ \$2.14/kg1.48



Subtotal\$1.48

Please enter the number of bags you wish to purchase and press “Next”

1

2

3

4

5

6

7

8

9

No bags

0

<

x

USER CONTROL + FREEDOM

HIGH SEVERITY VIOLATION

Occasional lack of a back button to allow users to go back a step. This is especially baffling considering that the button exists in some screens but is completely absent in others. This can cause major frustration and confusion if the user needs to go back a step.

SOLUTION

Have a consistent and visible back button at every step

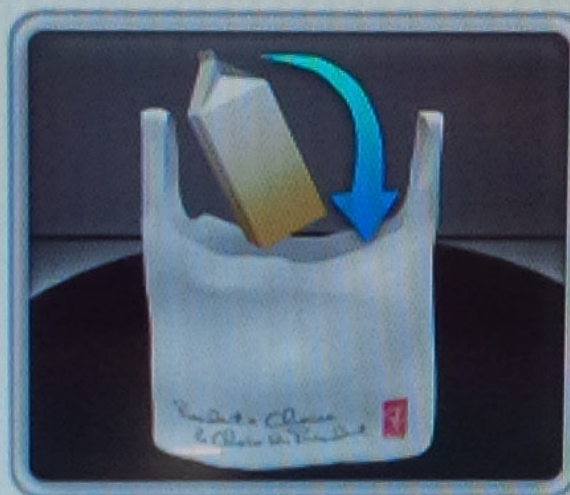
My Order

4067

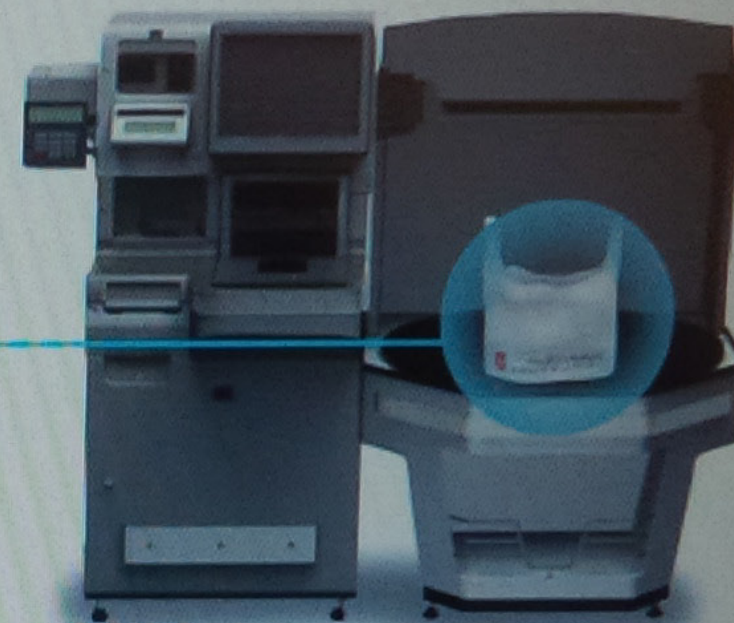
0.690 kgNet @ \$2.14/kg

ZUCCHINI GREEN R

1.48



Place the item in the bag



Sub-total: \$1.48

Pay
for my
order

Large/Long
Item



Produce
Bakery / Other



Redeem
Coupons



Reduced
Item



Français



Adjust
Volume



Call
Attendant

Item Weight: 0.690 kg

Zucchini Green (4067)
0.690 kg NET @ \$2.14/kg

\$1.48



Subtotal

\$1.48

Pay For My Order

- Switch Language
- Adjust Volume
- Call Attendant
- Cancel Order

1. Scan Items
2. Payment
3. Done

Please scan your next item or select an option below.

- Large/Long Items
- Produce/Bakery/Other Items
- Redeem Coupons
- Reduced Price Items

Back

USER CONTROL + FREEDOM

MEDIUM SEVERITY VIOLATION

There are a lack of language options - in Richmond, why do only English and French exist when there is a large Chinese-speaking population?

The system caters to Canada's national languages rather than the languages that the users would actually speak. People who have trouble speaking English lose control due to language problems.

SOLUTION

Offer logical language options given the cultural context of the store

Welcome!

PC Plus™ member?

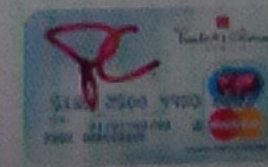
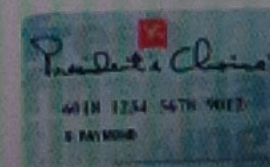
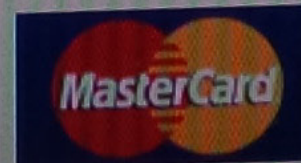
Press the Start or Green Box and follow the prompts

Add Greenbox or Bags
Ajouter votre Boite Verte ou Sac

Start

Commencer

This lane
accepts:



WELCOME!

Please select your language to start.

English

Français

中文

CASHLESS LANE

This lane accepts:



ERROR RECOVERY

HIGH SEVERITY VIOLATION

In multiple cases, we had error messages arise that don't tell users what's wrong. They simply ask for the user to wait for an attendant, or ask them to wait with the option of calling an attendant, but the messages confuse users by not helping them recognize errors.

SOLUTION

Have error message clearly explain the problem, and provide them with logical options

Please wait



Sub-total: \$1.48

Pay
for my
order

Large/Long
Item



Produce
Bakery / Other



Redeem
Coupons



Reduced
Item



Item Weight: 0.000 kg

NET
SALE R 1.57



Please wait
for the attendant

Sub-total 1.57



Item Weight: 0.000 kg

Zucchini Green (4067)
0.690 kg NET @ \$2.14/kg
1.48

Please wait...
The system needs a moment to
process your order.

Call an attendant if this process is taking
too long or if you have a question.

**Call
Attendant**

Subtotal \$11.10

No bags 0 

ERROR RECOVERY

HIGH SEVERITY VIOLATION

We found that if we there was no easy or visible way to remove an item from our shopping cart if we no longer wanted it. We had to call an attendant if this problem arose, defeating the purpose of the self-checkout, taking control away from the user, and preventing them from correcting their mistake on their own.

SOLUTION

Give users a series of options when then tap on an item, including the option to remove the item from the shopping cart

Plum Black (4040)
0.315 kg NET @ \$6.57/kg

\$2.07

Zucchini Green (4067)
0.690 kg NET @ \$2.14/kg

Please **Scan, Select** a category, or **Enter**
in the **4-digit code** of your next Item

You've Selected...

Plum Black (4040)
0.315 kg NET @ \$6.57/kg

\$2.07

Delete

Continue

Call
Attendant

3

6

9

X

Subtotal: \$3.55

Pay Order

Fruits/Nuts

Vegetables

Produce
Bakery/Other

Large/Long
Items

Switch
Language

Adjust
Volume

Call
Attendant

Cancel
Order

Back

Next

ERROR RECOVERY

MEDIUM SEVERITY VIOLATION

Users can't proceed to the purchasing stage if they have items on the scanning area. Once this error is committed, there is very little feedback given to users to tell them what to do. This can lead to frustration and unnecessary confusion at the end of the shopping process.

SOLUTION

Give users a clear error message telling them what is wrong and how they can rectify the situation

Zucchini Green (4067)
0.690 kg NET @ \$2.14/kg
\$1.48

1. Scan Items
2. Payment
3. Done

Please select an option below.

Cannot proceed to payment!

Please remove items from scanning
area and place them in bagging area,
then press continue.

Continue

Subtotal

Meat/Fishery/Other Items

Pay For My Order

Redeem Coupons

Reduced Price Items

Switch
Language

Adjust
Volume

Call
Attendant

Cancel
Order

Back

CONSISTENCY AND STANDARDS

HIGH SEVERITY VIOLATION

The number of options on the bottom left-hand corner changes from step to step. Furthermore, some options are switched out with others with no warning. This leads to an inconsistent set of options that cannot always be accessed - most notably, many screens lack the ability to go back a step or cancel an order.

SOLUTION

Provide users with a consistent set of options which they can make use of, and instead of removing and switching out items, grey out the ones that cannot be used at that time

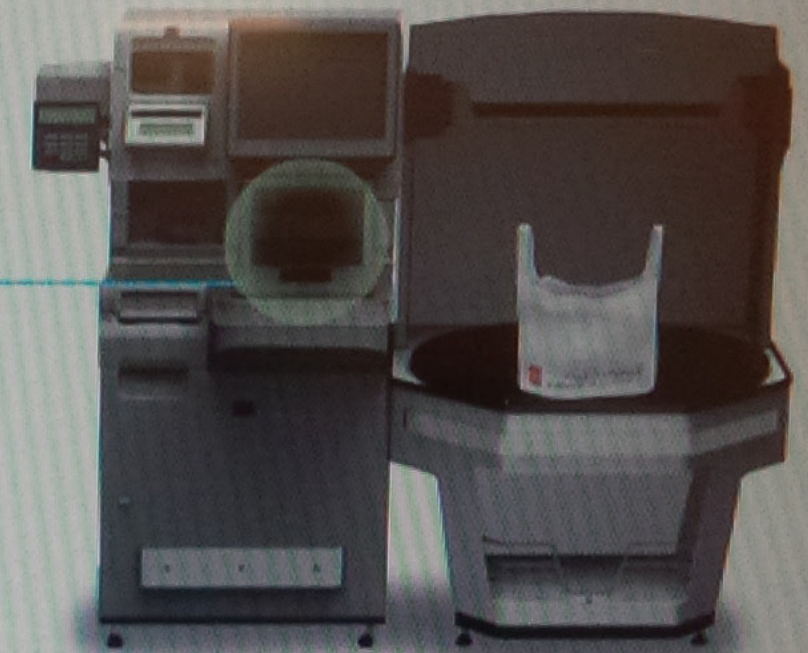
My Order

4067

0.690 kgNet @ \$2.14/kg

ZUCCHINI GREEN R 1.48

Scan your item or choose an option below



Sub-total: \$1.48

**Pay
for my
order**

Large/Long
Item



Produce
Bakery / Other



Redeem
Coupons



Reduced
Item



Item Weight: 0.000 kg



Cancel
Order



Français



Adjust
Volume



Call
Attendant



My Bag/
GreenBox

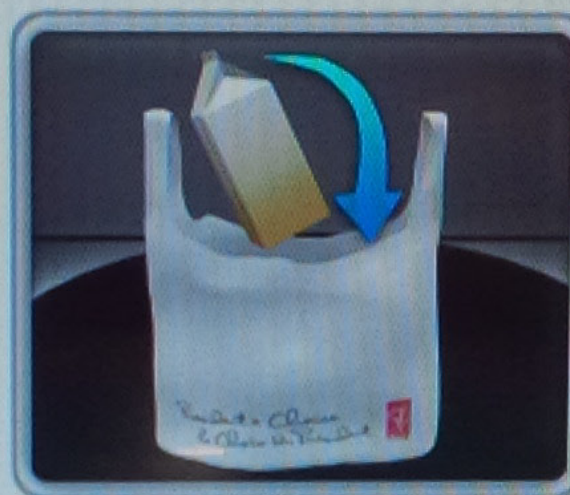
My Order

4067

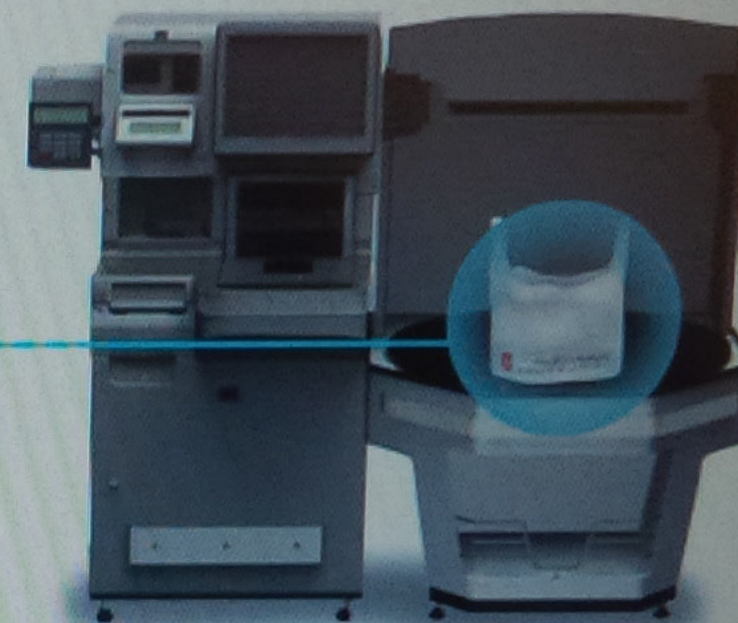
0.690 kgNet @ \$2.14/kg

ZUCCHINI GREEN R

1.48



Place the item in the bag



Sub-total: \$1.48

**Pay
for my
order**

Large/Long
Item



Produce
Bakery / Other



Redeem
Coupons



Reduced
Item



Français



Adjust
Volume



Call
Attendant

Item Weight: 0.690 kg

Zucchini Green (4067)
0.690 kg NET @ \$2.14/kg

\$1.48



Subtotal

\$1.48

Pay For My Order

- Switch Language
- Adjust Volume
- Call Attendant
- Cancel Order

1. Scan Items
2. Payment
3. Done

Please scan your next item or select an option below.

- Large/Long Items
- Produce/Bakery/Other Items
- Redeem Coupons
- Reduced Price Items

Back

Zucchini Green (4067)
0.690 kg NET @ \$2.14/kg \$1.48



Subtotal \$1.48

Pay For My Order

- Switch Language
- Adjust Volume
- Call Attendant
- Cancel Order

Please place items in the bag.

- Large/Long Items
- Produce/Bakery/Other Items
- Redeem Coupons
- Reduced Price Items

Back

THANK YOU!