



Advancing population health outcomes through information technology

*Usability, Theory to Implementation
a Case Study Improving Vaccine Ordering*

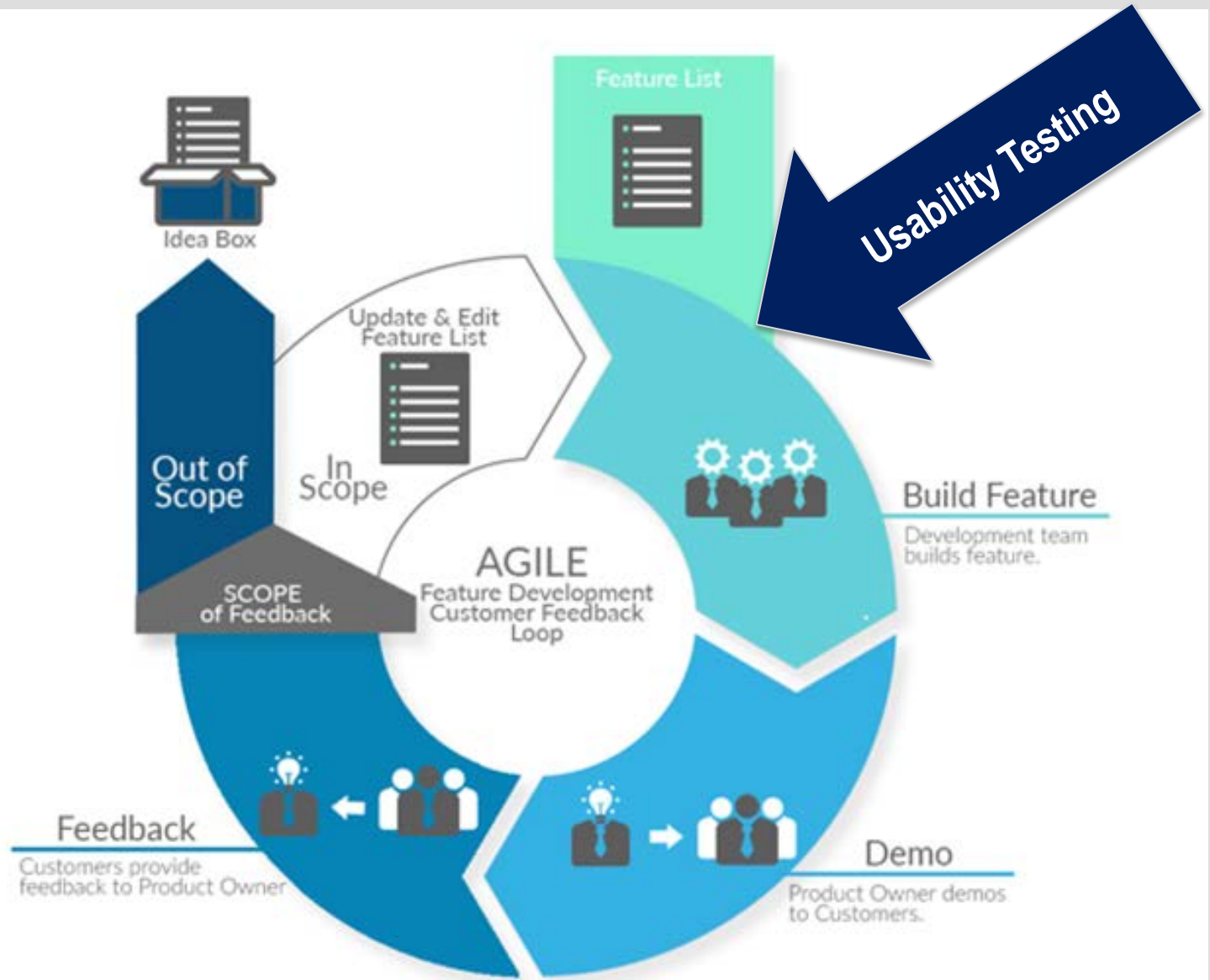
AIRA
April 2017

Presentation Objectives

Learn:

- Best practices – Get Usability into New Feature Development
- Results and lessons learned and impact to final design
- The changes made to reduce user entry and VTrckS file errors

Add Usability into the Development Cycle



Usability Testing Process

- Identify the workflows
- Determine user types
- Develop prototype for testing
- Write testing scenarios and script
- Recruit and conduct testing with the right users
- Apply what you learn



Provider Design – Usability Iterations

Operative (PMS) Facility: ORGANIZATION 1 (19031) / FACILITY 1

Date: June 15, 2016

New messages to read.

Reconcile Inventory

Vaccine Lot Number Exp Date

DTaP (Test Name) 062121 03/21/16

DTaP (Test Name) 00000000 11/11/10

DTaP (Test Name) 9999 11/11/10

DTaP (Test Name) DTAP01 12/01/10

Hep B Post/Adult - Presers Free 11111 11/11/10

Hep B, adult LOT TEST 123 09/21/10

Hep B, adult 000000 08/10/10

Reconcile Inventory

Home > Inventory > Reconcile

Inventory from 07/01/2015 to 08/04/2015

Reconciliation Due: 08/10/2015

Last of Unaccounted For: 1% (up to 5% allowed)

Provider Worksheet

Inventory Action

VOMS

FAMILY HEALTH CENT... FAMILY HEALTH CENT...

Home

Inventory

Reconciliation

Search/Add Inventory

Correct Decrementing

Doses Administered Reporting

Orders & Returns

Cold Storage

Provider Agreement

Reports

Admin & Settings

RECONCILE INVENTORY - Next Report Due: 03/20/2017 Last Submitted Report: 03/10/2017

Expired Expires < 90 Days

Public Private

Date Range: 03/10/2017 - 03/20/2017

Vaccine	Lot#	Exp Date	Funding Source	Lot History	Quantity On Hand	Physical Counts	Discrepancy	Adjustments	Inactivate
NO FAMILY FOUND									
Adenovirus Types 4 And 7 Adenovirus Type 4 and Type 7 Vaccine, Live, Oral 1 pack - TABLET NDC: 51285-0138-50	UPPERCASE42	04/20/2017	STATE	VIEW	7	5	-2	ADJUST	<input type="checkbox"/>
	LOWERUPPER	02/24/2018	PUB	VIEW	6				<input type="checkbox"/>
	LOWERCASE2	02/24/2018	PUB	VIEW	5				<input type="checkbox"/>
	LOWERCASE42	03/09/2018	MAN	VIEW	10				<input type="checkbox"/>
	MH3620	07/23/2018	STATE	VIEW	10				<input type="checkbox"/>
	KX9373	01/16/2019	MAN	VIEW	15				<input type="checkbox"/>
	KW291094	10/14/2020	MAN	VIEW	15				<input type="checkbox"/>
BCG Bcg Vaccine 1 pack - VIALS NDC: Not Found	TEST2723	12/16/2016	PUB	VIEW	2				<input type="checkbox"/>
DTaP/DT/Td									
	TESTING1234	12/20/2016	PUB	VIEW	0				<input type="checkbox"/>

State Approver - Usability Iterations



Logged in: M SMITH

Organization (IRMS): STATE APPROVER (DISTRIBUTER) (1003)

Approve Order

Organization (IRMS): 1020-GOOD DAY PEDIATRICS
Facility: BOCC-BUS FACILITY

First Name: NURSE
Middle Name:

Order # 145933

CDH110 - Clallam Health Human Svcs.

Order Date: 07/27/2016

 Order Status: Noncompliant

Approve Orders 



PROVIDER IS NOT IN COMPLIANCE.
This order cannot be approved.

MANUALLY OVERRIDE

ACCOUNTABILITY	LAST DATE SUBMITTED	UP TO DATE?	SUBMISSION DATE
1. Cold Storage Temperature Submission?	N/A	No	<input type="text" value="mm/dd/yyyy"/>
2. Annual Enrollment Paperwork?	N/A	No	<input type="text" value="mm/dd/yyyy"/>
3. Accountability Tests?	03/09/2017	No	<input type="text" value="mm/dd/yyyy"/>
4. Provider agreement is within date?	07/31/2017	Yes	
5. Within order window?	N/A	No	<div>VIEW</div>
6. No changes to shipping information?	N/A	Yes	

SAVE

Example Script

Task 1

- It is time to reconcile your inventory:
- Please PRINT your reconciliation worksheet.
- Imagine that you've just done a physical count of the vaccines on-hand, using the worksheet you just printed. Use your worksheet and notes to reconcile:
- [After the user has pressed the Print button, we will hand them a printed worksheet on which we've hand-written the physical counts.]
- [insert list of vaccines and quantities here, including a shortage of 2 doses of Vaccine A for 2 different reasons, 1 wasted and 1 transferred to another clinic; also a shortage of 1 dose of Vaccine B for spoilage]
- Now send your inventory to the state.

- Non-prescriptive
- Scenario based

Testing Participants

- Usability evaluations focused on the end user
- 13 Health Care Provider participants
- 9 IIS Administrator participants
- More than one evaluation conducted with some participants
- 29 total usability evaluations performed

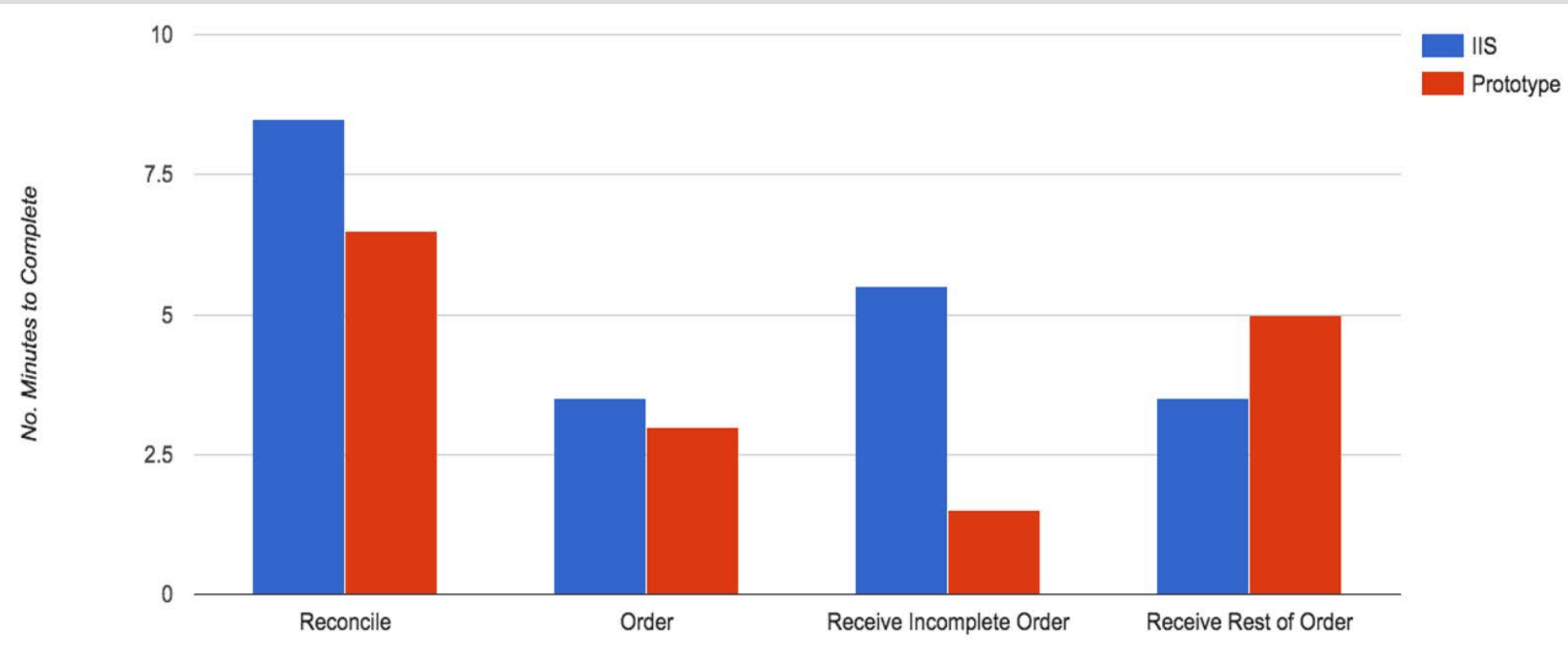
Evaluated Functionality

- General Navigation
- Inventory Reconciliation
- Create Order
- Approve Order (Admin)
- Receive Order
- Define Vaccine Information (Admin)
- Creation and Editing of ‘Order Sets’ (Admin)
- Assessment of Facility compliance (Admin)

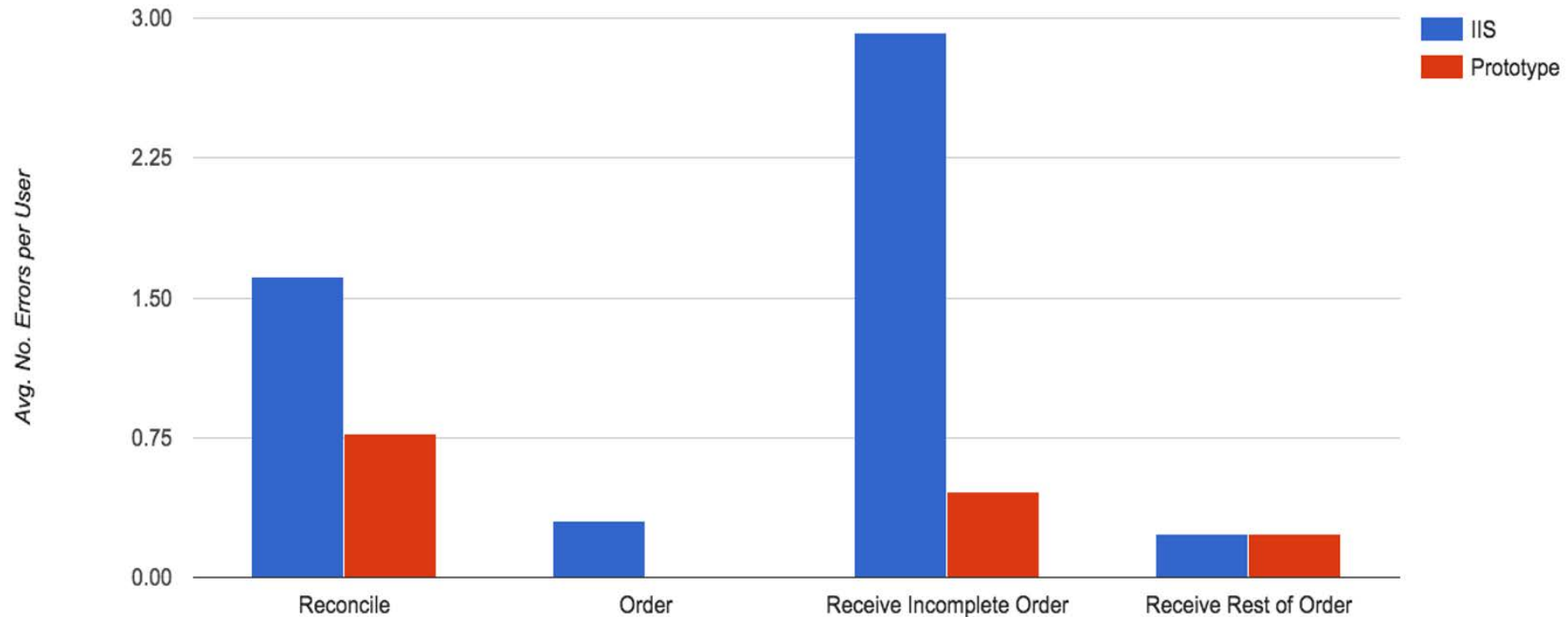
Items Measured

- Unassisted Success
- Assisted Task Success
- Task Failure
- Number of Errors Observed
- Time-on-Task
- Subjective Ease-of-use Rating

Results – Time on Task

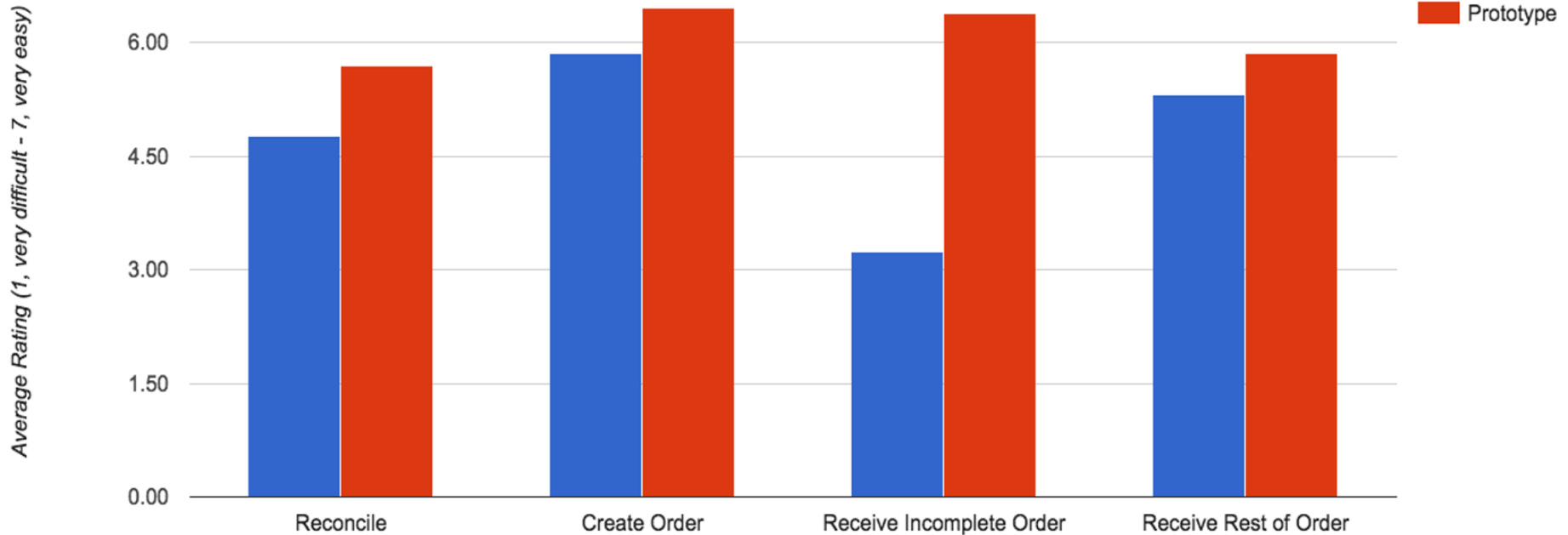


Results – Number of Errors



Results – Ease of Use

Average Ease of Use Ratings



Provider Quote

“I can’t wait to have access to the new inventory workflow, it will make training additional vaccine coordinators much easier and will allow our organization expand this this important role to others without the current complexity and apprehension”

-Nurse Supervisor from a clinic in Spokane, WA

References

- Initial design concepts for UI revisions leveraged CDC's *ExIS Usability Best Practices Catalog*
- www.usability.gov

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