



Optimizing an Application for a Mobile Platform

Crystal Ball Consulting

Meet the Team



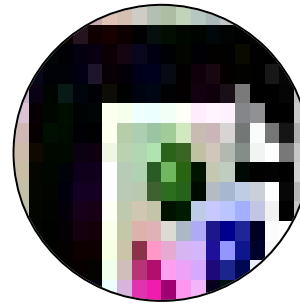
Jay Huang

*Computer Science,
Accounting*



Ben Sheppard

*Supply Chain,
Information Systems*



Andrew Lee

Computer Science



Chintan Patel

Electrical Engineering



Lockheed
Martin



FIELDS Application

Field Integrated Engineering Logistics Data Set

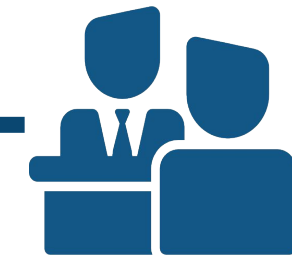
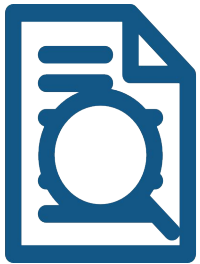
Field data recording for Mission Systems and Training (MST)



Transform the User Experience

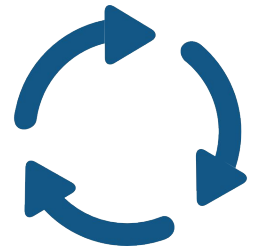
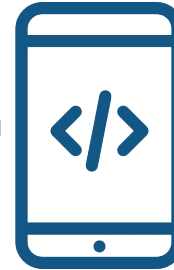
Approach

Analysis



Interviews

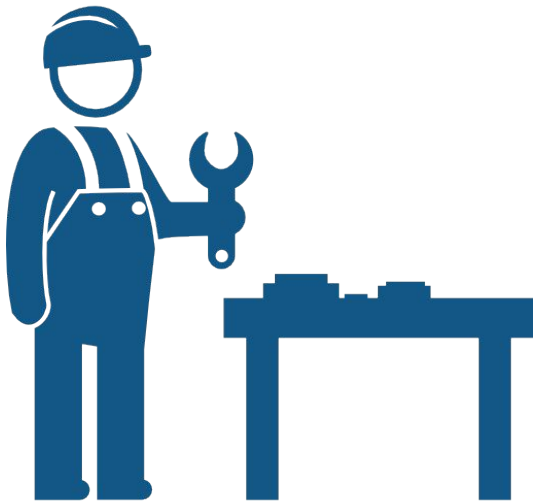
Build



Iterate



The Bigger Picture



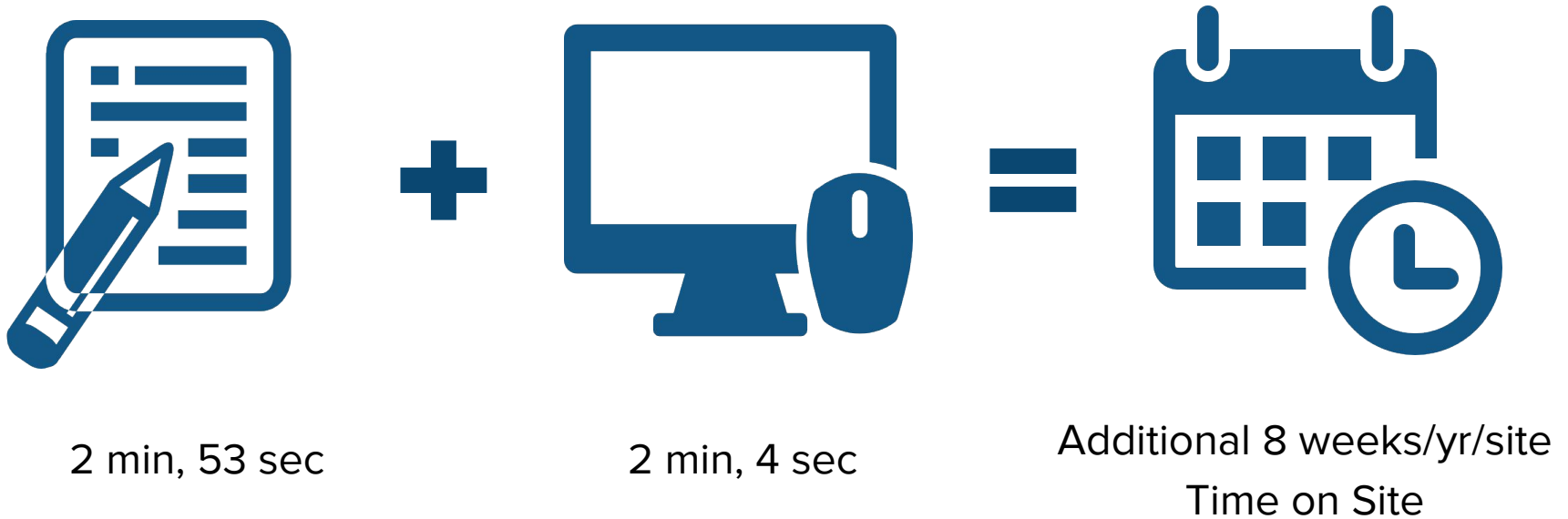
Meet Rick



Meet Rick's Team

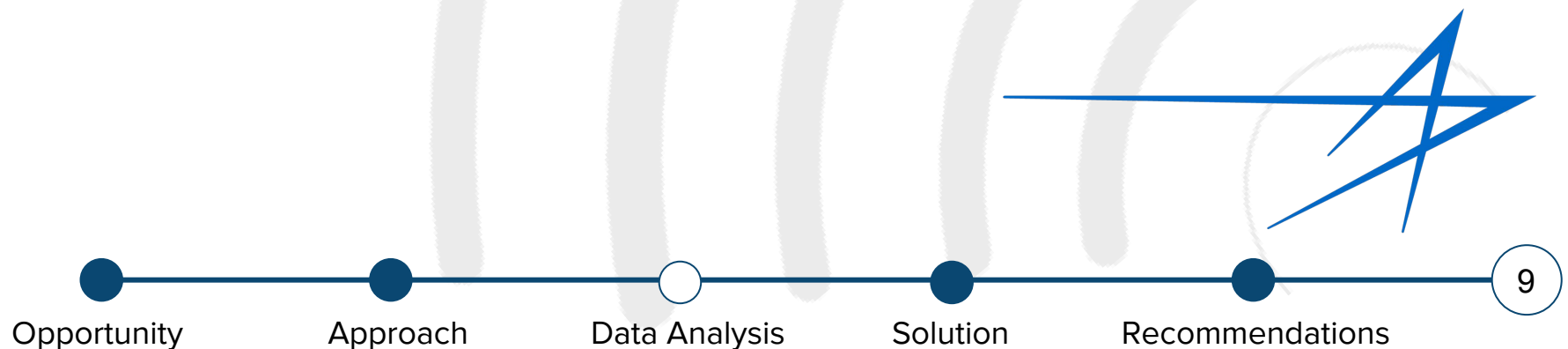


What We Found



End-User Feedback

1. Increased Accessibility/Portability
2. Integrate with Engineering Managers
3. Streamlined Entry Process
4. Enhanced Capacity for Communication
5. Improved User-Interface Overall



Causes of Low Product Utilization

Limited Internal Promotion

Minimal Search Capacity

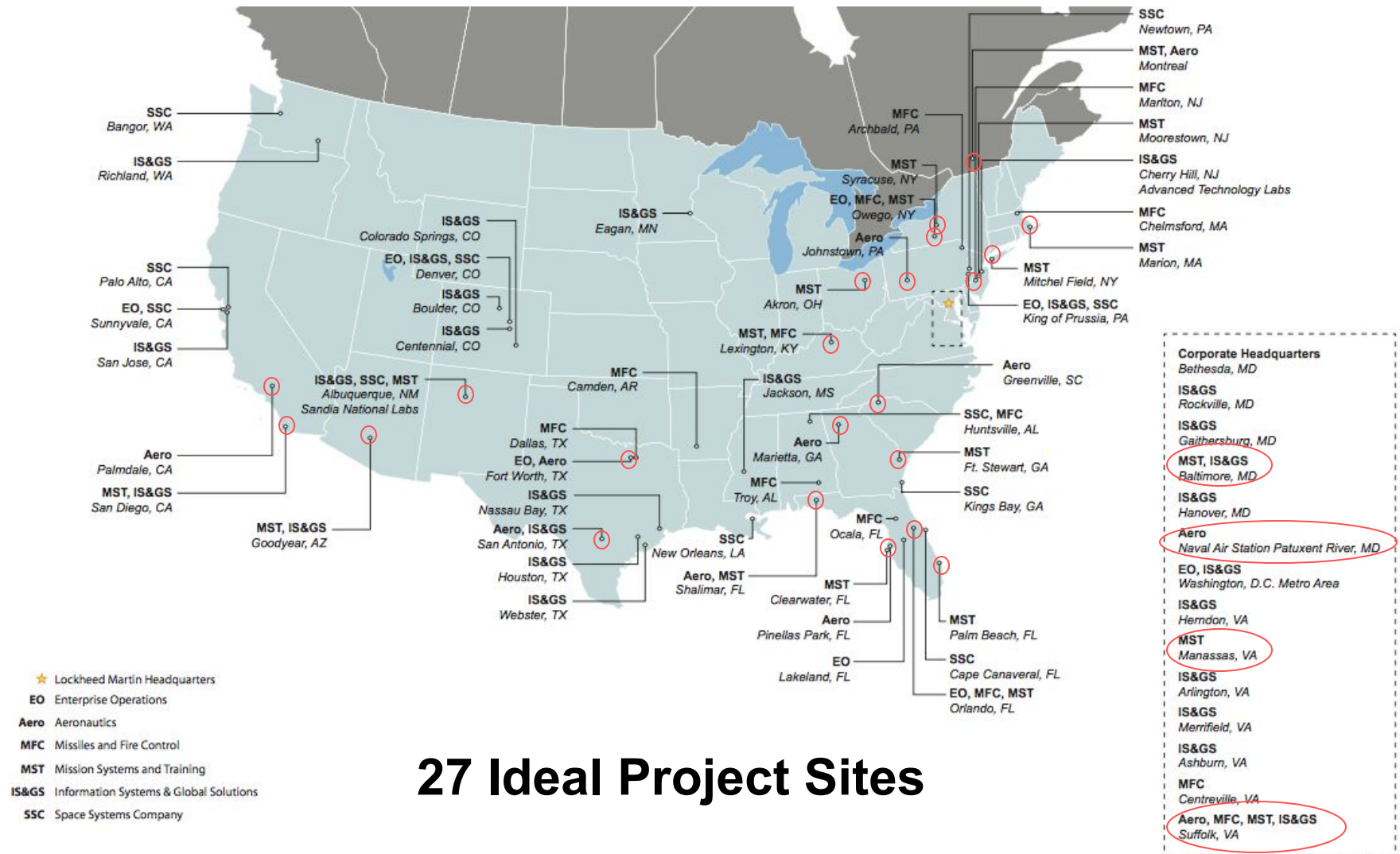
No Connection to Vendor or Client

Email > In App Messaging

Restricted Application Portal



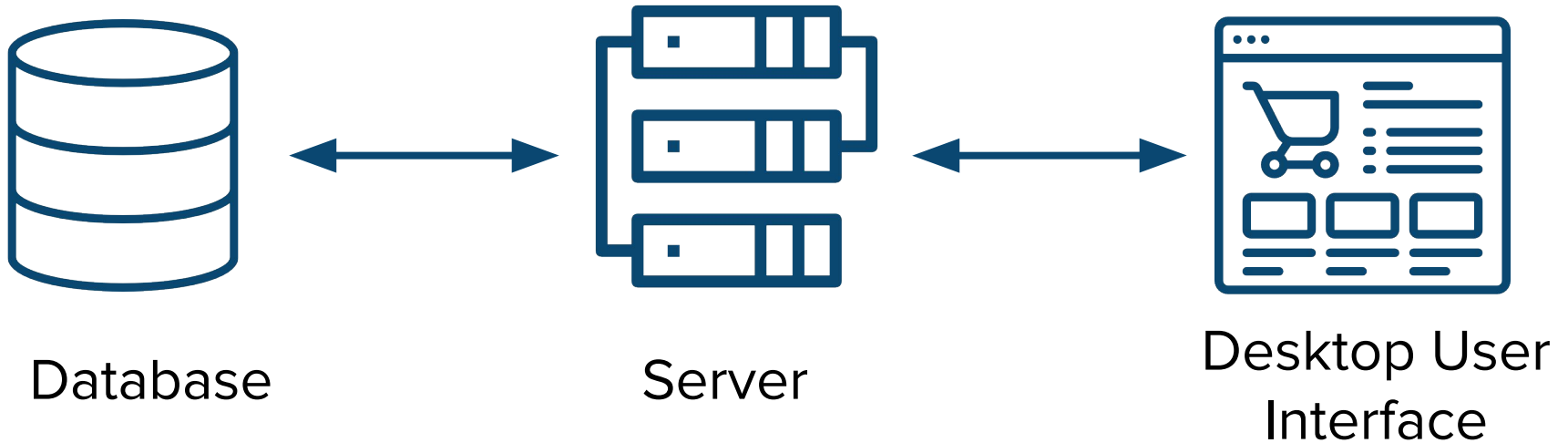
Product Potential



Solution

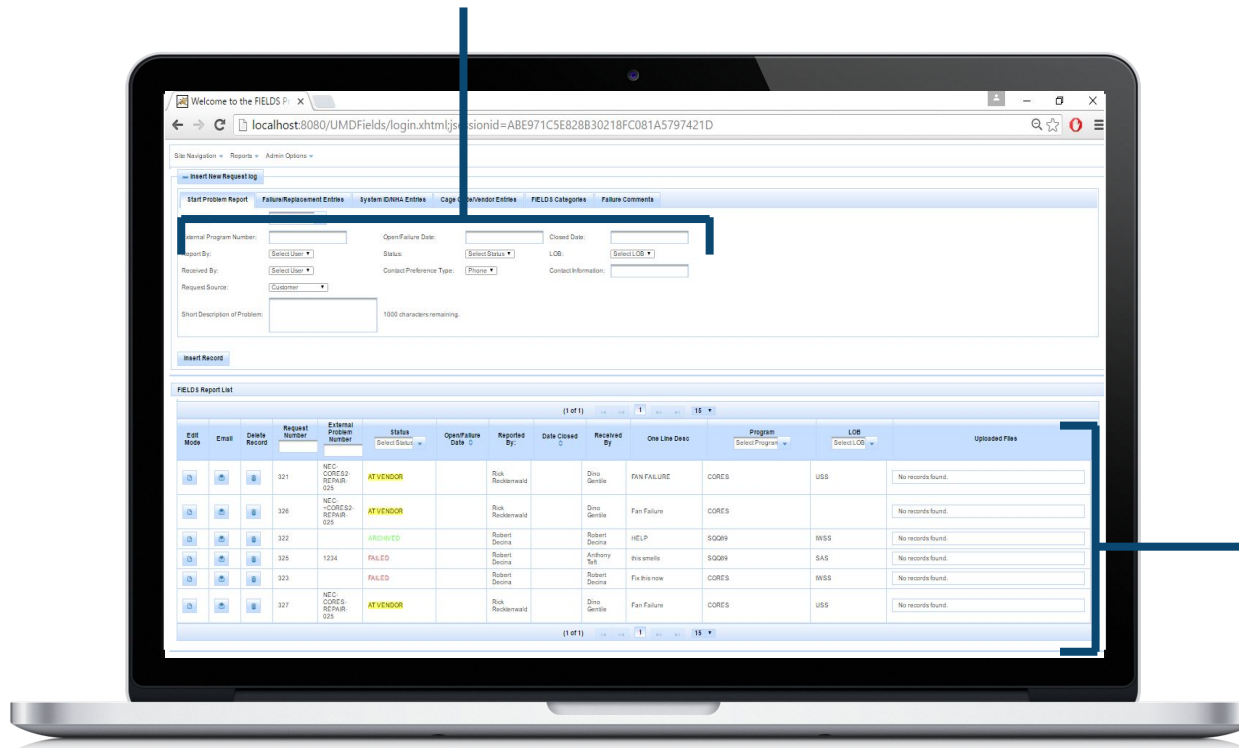
Current State, New State

Current State



Current User Interface

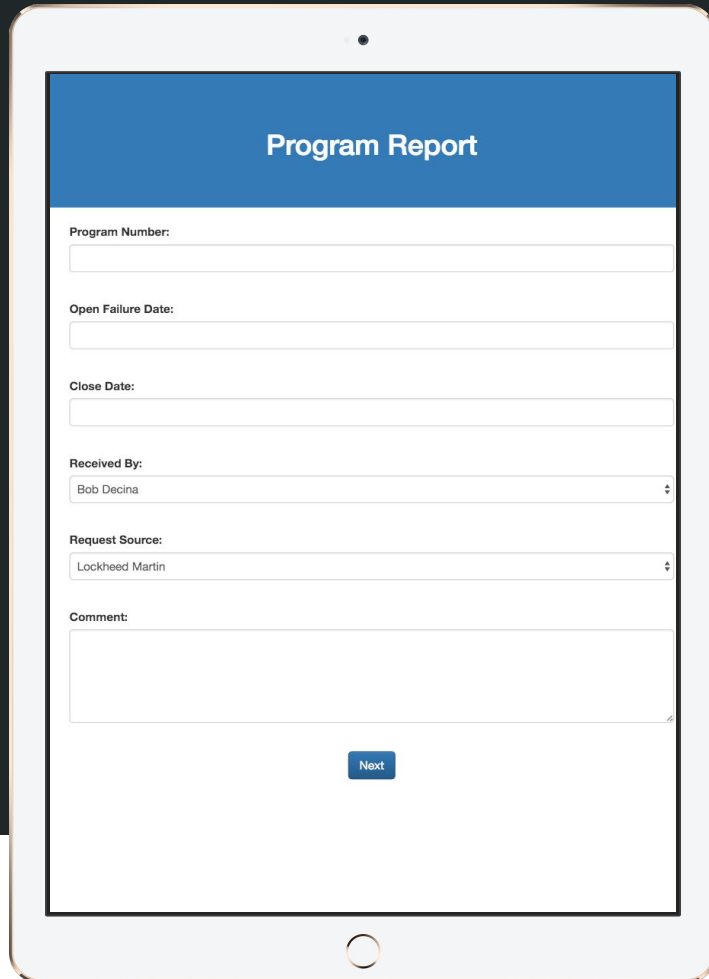
5 categories of information
for inserting a new entry



List of all
entries in
database

New User Interface: Field Engineer View

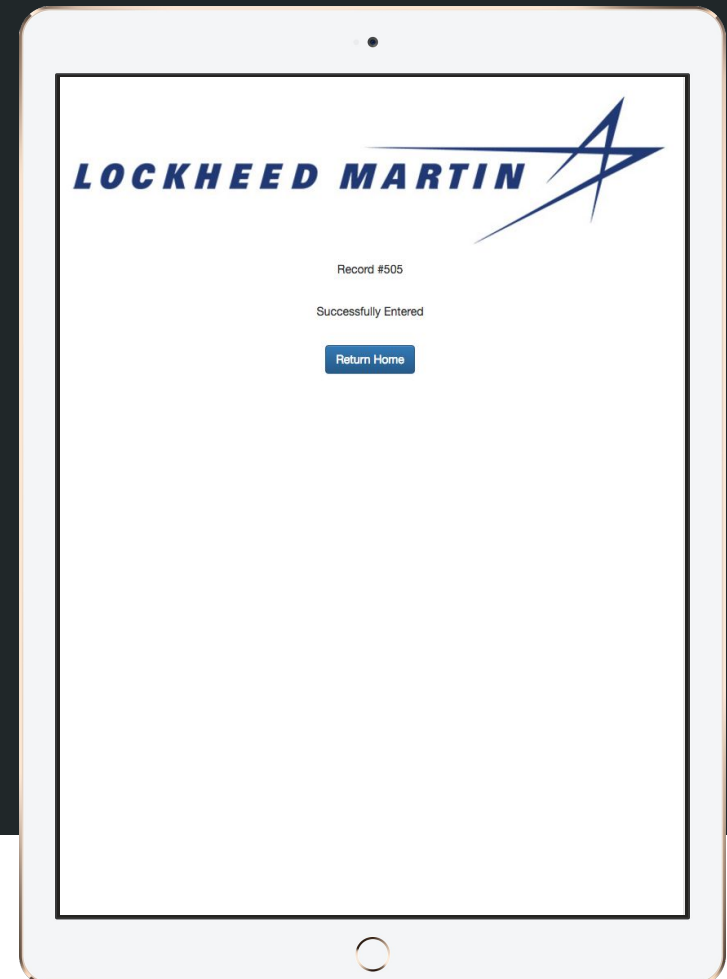
1 page per category



The tablet screen shows a form titled "Program Report" with a blue header. The form contains several input fields and dropdown menus:

- Program Number:
- Open Failure Date:
- Close Date:
- Received By:
- Request Source:
- Comment:

A "Next" button is located at the bottom right of the form.



The tablet screen shows a success message with the Lockheed Martin logo at the top. The text on the screen reads:

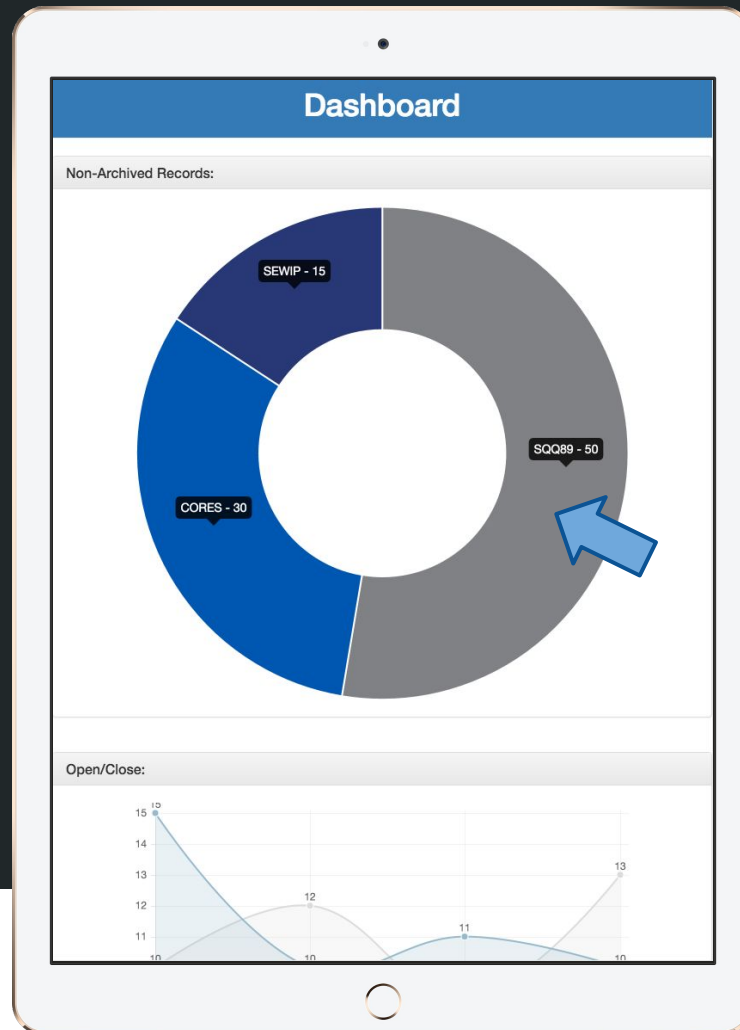
LOCKHEED MARTIN

Record #505

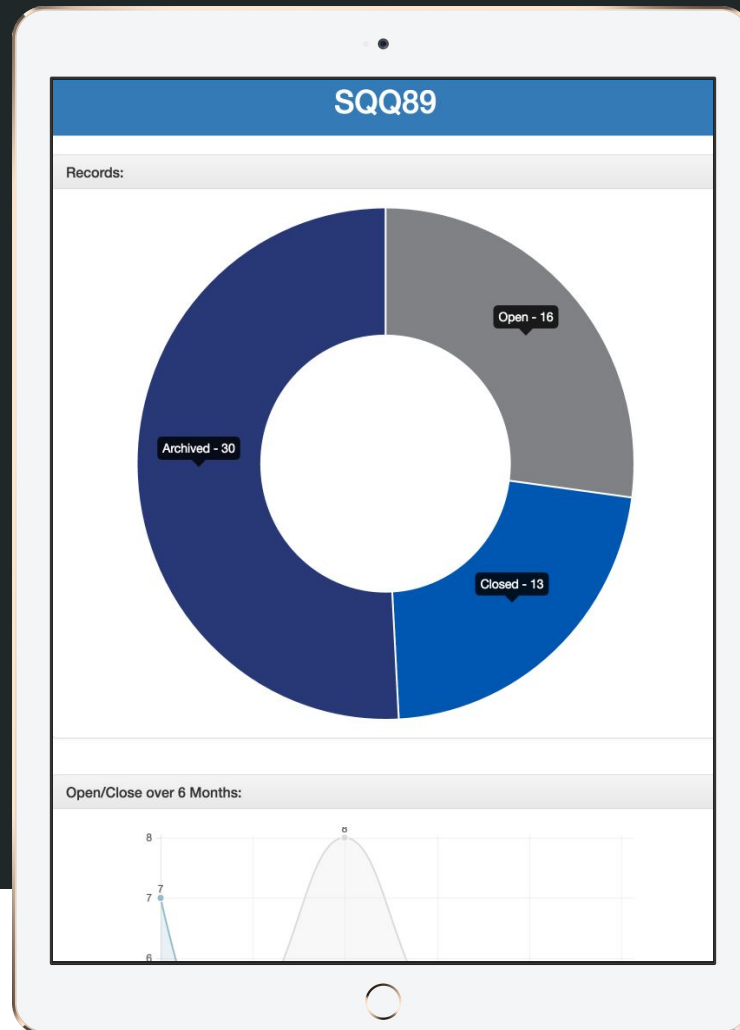
Successfully Entered

[Return Home](#)

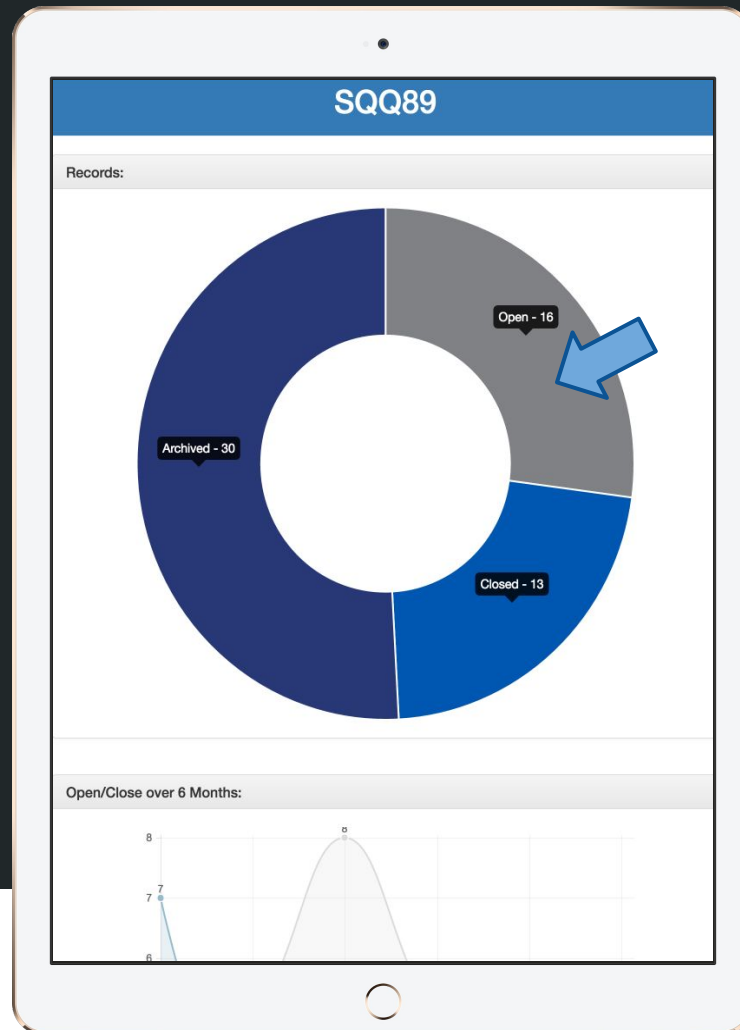
New User Interface: Project Manager View



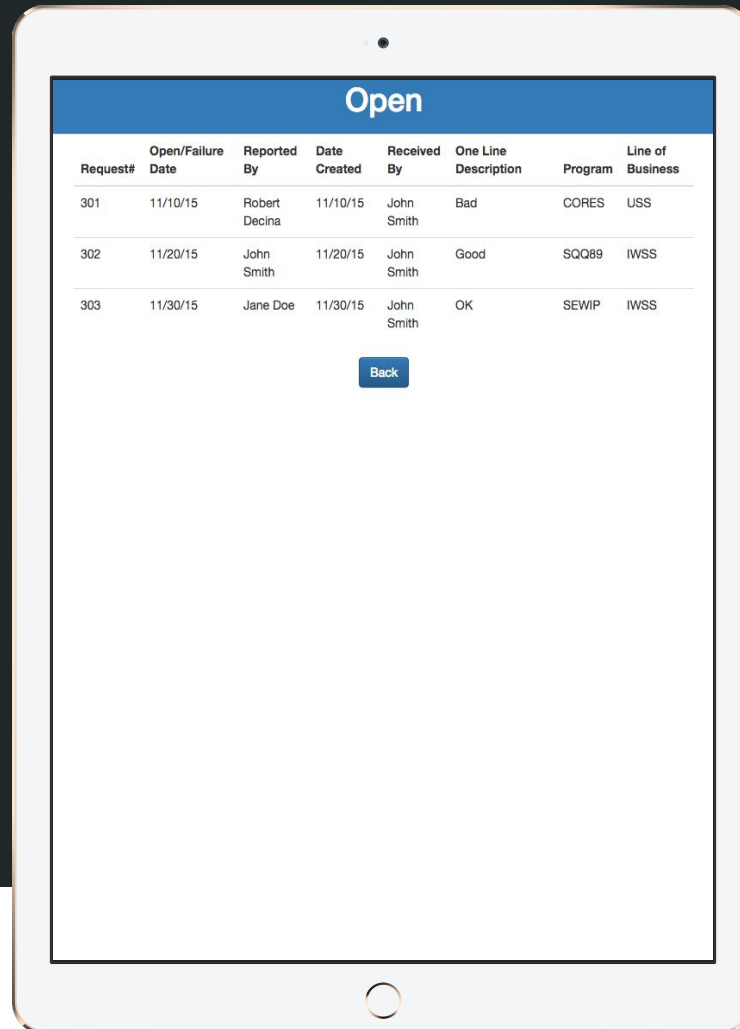
New User Interface: Project Manager View



New User Interface: Project Manager View



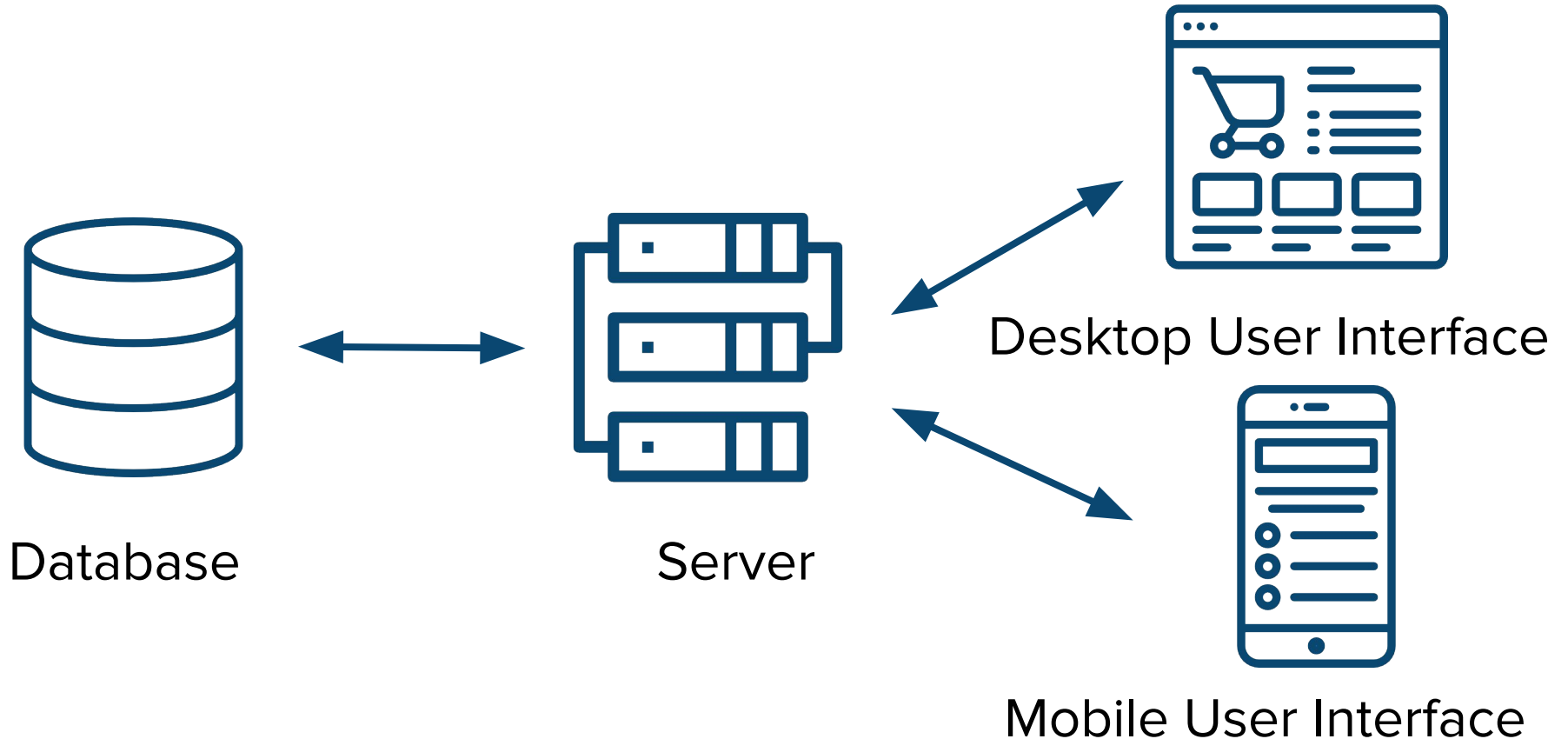
New User Interface: Project Manager View



Open							
Request#	Open/Failure Date	Reported By	Date Created	Received By	One Line Description	Program	Line of Business
301	11/10/15	Robert Decina	11/10/15	John Smith	Bad	CORES	USS
302	11/20/15	John Smith	11/20/15	John Smith	Good	SQQ89	IWSS
303	11/30/15	Jane Doe	11/30/15	John Smith	OK	SEWIP	IWSS

Back

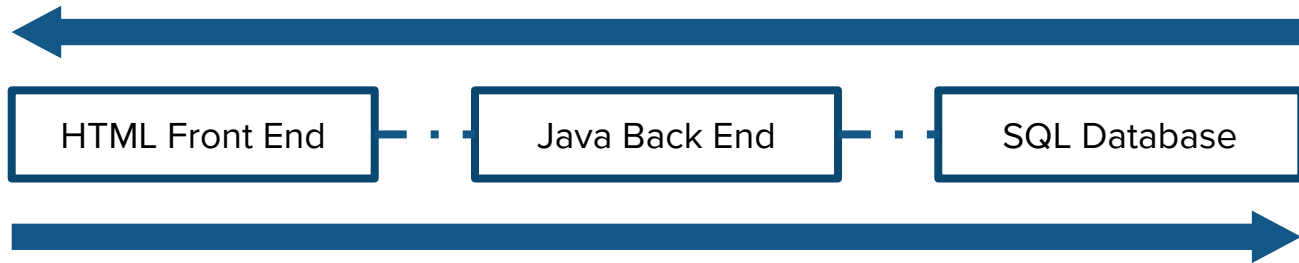
New State



Recommendations

Deployment, Automation, Expansion

Deployment



Security Testing



Program Manager
Training



Automation



Part Number → Barcodes



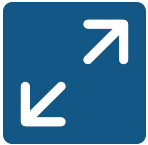
Local Encrypted Storage



Vendor Selection



Expansion



Expand FIELDS to New Regions



Communication Features



Partitioned Database



Acknowledgements

Project Champion: Robert Decina

Faculty Advisor: Dr. James Purtilo

490H Faculty:

Kylie Goodell King

Dr. Jeffrey Herrmann

Hannah Buehler

Liya Ai

Lockheed Martin Team

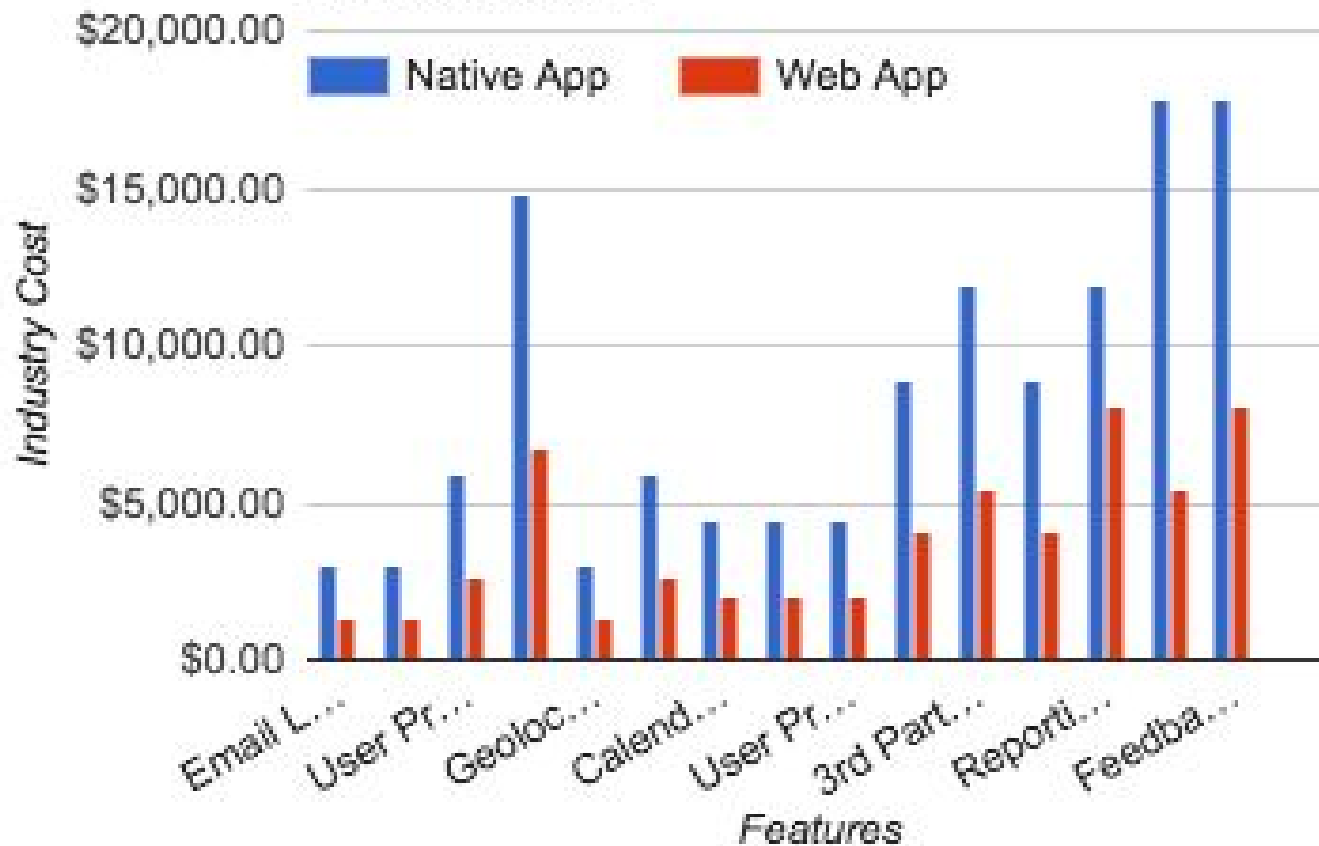


Appendix A

<http://jayhuang12.github.io/>

Appendix B

Native App vs. Web App Cost Breakdown



Appendix C

Anticipated Costs:	Time (days)	Min Cost (\$)	Max Cost (\$)
Expected Yearly Maintenance:	25 days/year	\$28,000.00	\$40,000.00
Expected Yearly Updates:	8 days/year	\$8,960.00	\$12,800.00
Test Bar Code Scanners:	5	\$175.00	\$250.00

Deployment Costs:			
-Backend Estimates;	70	\$78,400.00	\$112,000.00
Data Storage	13	\$14,560.00	\$20,800.00
User Management	13	\$14,560.00	\$20,800.00
Server-Side Logic	12	\$13,440.00	\$19,200.00
Data Integration	13	\$14,560.00	\$20,800.00
PUSH	7	\$7,840.00	\$11,200.00
Versioning	12	\$13,440.00	\$19,200.00

Yearly Projections:	HDET	DET	MET
-Yearly Total (Min)	\$56,916.00	\$52,452.00	\$15,984.00
-Yearly Total (Max)	\$83,540.00	\$76,988.00	\$23,456.00
Savings:	Min	Max	
HDET - MET	\$40,932.00	\$60,084.00	
DET - MET	\$36,468.00	\$53,532.00	

Appendix D

Risk Matrix		Likelihood		
		1 Unlikely	2 Possible	3 Probable
Severity	1 Trivial			
	2 Moderate	Difficulty in Connecting Back-end Logic to UI	Restricted Areas Where App Cannot be Used	Resistance to Change from End Users
	3 Severe		Incomplete knowledge of all end user requirements	

Appendix E

Summary Statistics:

MET (Mobile Entry Time)		DET (Desktop Entry Time)		HWT (Handwritten Time)		HDET (Handwritten + Desktop Entry Time)	
Mean	237.0909091	Mean	360.2121212	Mean	360.2121212	Mean	533.020202
Standard Error	2.810187423	Standard Error	2.3120004	Standard Error	2.3120004	Standard Error	4.862084317
Median	235	Median	360	Median	360	Median	531
Mode	204	Mode	362	Mode	362	Mode	546
Standard Deviation	27.96101182	Standard Deviation	23.00411353	Standard Deviation	23.00411353	Standard Deviation	48.37712813
Sample Variance	781.8181818	Sample Variance	529.1892393	Sample Variance	529.1892393	Sample Variance	2340.346526
Kurtosis	-1.074458211	Kurtosis	-1.122938599	Kurtosis	-1.122938599	Kurtosis	-1.257990515
Skewness	0.03025906	Skewness	-0.077046578	Skewness	-0.077046578	Skewness	-0.015504466
Range	98	Range	77	Range	77	Range	157
Minimum	189	Minimum	322	Minimum	322	Minimum	455
Maximum	287	Maximum	399	Maximum	399	Maximum	612
Sum	23472	Sum	35661	Sum	35661	Sum	52769
Count	99	Count	99	Count	99	Count	99