



# **Longer Lifespans, Stronger Security**

S.K.A.R.G.'s Seven

# Roadmap



**01 The Problem**



**02 Research**



**03 Solutions and Prototyping**



**04 Next Steps**



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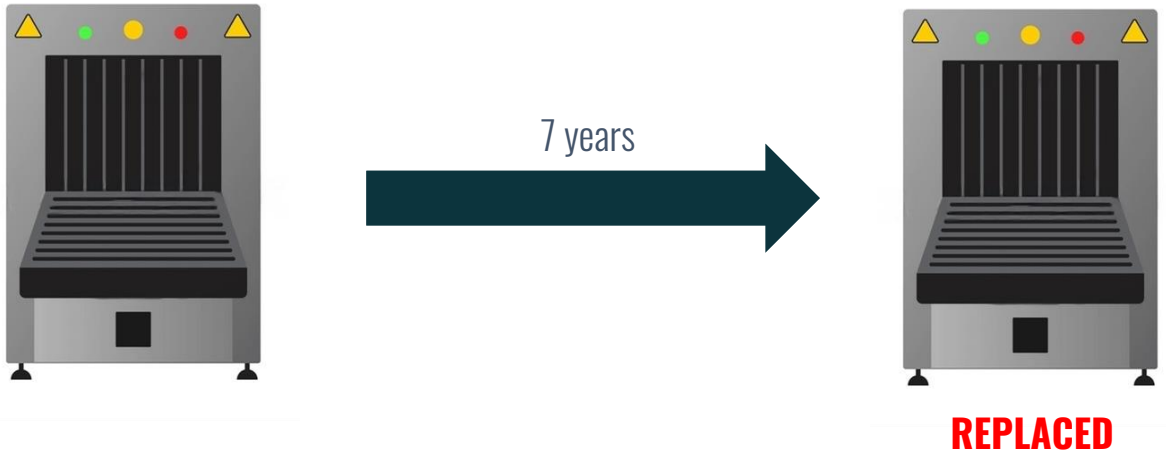
**Junior**

**B.A Writing**

**Sophomore**

**B.A International  
Affairs**

# 01 The Problem



STANDARD seven-year life span  
no matter condition of machine.

The Current System

# 01 The Problem

## The Issue with Standardized Life-cycling

Low Use  
Environment



>7 years



Money wasted

High Use  
Environment



<7 years



Machine down +  
Security Concern

# 01 The Problem

768 X-Rays + 1,100 Itemizers

Average of \$40,000 each per unit

≈ **\$74,720,000**

# Beneficiary Map

Over 50 interviews with...



... and site visits to SA-20 and SA-31.



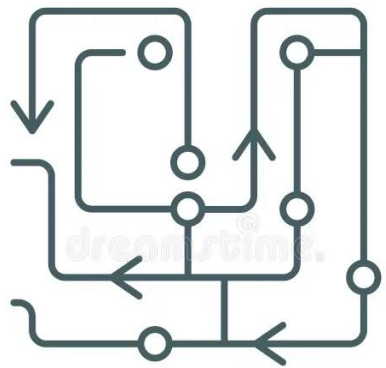




# 02 Research



Machine use data



COMPUTER ALGORITHMS



**Personalized  
Predictor of WHEN  
machine should be  
life cycled**

**Solution  
Roadblock**

# Solution Roadblock

	Asset Number	DS Barcode	Item Number	Asset Description	Asset Creation Date	Asset Age in Years	Asset Status	Status	Most Recent X-Ray On Hours	CM and EM Work Order Count
111	4721310	0083005A	XRU251	X-RAY MACHINE,	09/18/2012	11.03	OPERATING	PENDOBS	290	5
112	4721320	0121533A	XRU251	X-RAY MACHINE,	09/18/2012	11.03	OPERATING	PENDOBS		6
113	4721348	0127640A	XRU251	X-RAY MACHINE, Smit	09/19/2012	11.02	OPERATING	PENDOBS		6
114	4721395	0121535A	XRU251	X-RAY MACHINE,	09/20/2012	11.02	OPERATING	PENDOBS		2
115	4721398	0135987A	XRU251	X-RAY MACHINE, SMI	09/21/2012	11.02	OPERATING	PENDOBS		1
116	4721399	0136418A	XRU251	X-RAY MACHINE, SMI	09/21/2012	11.02	OPERATING	PENDOBS		2
117	4721590	0121534A	XRU044	X-RAY MACHINE, OCC	09/25/2012	11.01	OPERATING	ACTIVE		7
118	4722674	0456068A	XRU251	Riyadh X-RAY C CAC	09/30/2012	10.99	OPERATING	PENDOBS		5
119	4722791	0171256A	XRU251	X-RAY MACHINE,	10/02/2012	10.99	OPERATING	PENDOBS		3
120	4723889	0121567A	XRU251	X-RAY MACHINE, SMI	10/04/2012	10.98	OPERATING	PENDOBS		4
121	4723890	0121573A	XRU251	X-RAY MACHINE, SMI	10/04/2012	10.98	OPERATING	PENDOBS		1
122	4723891	0121579A	XRU251	X-RAY MACHINE, SMI	10/04/2012	10.98	OPERATING	PENDOBS		2
123	4724372	0127933A	XRU251	X-RAY MACHINE,	10/05/2012	10.98	OPERATING	PENDOBS	305	4
124	4724373	0127927A	XRU251	X-RAY MACHINE,	10/05/2012	10.98	OPERATING	PENDOBS	3142	7
125	4724374	0127922A	XRU251	X-RAY MACHINE,	10/05/2012	10.98	OPERATING	PENDOBS	317	2
126	4724488	0083008A	XRU251	X-RAY MACHINE,	10/11/2012	10.96	OPERATING	PENDOBS	0	
127	4727405	0274282A	XRU172	5030 X-RAY (Lobby Sc	10/27/2012	10.92	OPERATING	PENDOBS		3
128	4727403	0127652A	XRU172	X-RAY MACHINE, SMI	10/27/2012	10.92	OPERATING	PENDOBS		
129	4727417	0454970A	XRU251	X-RAY MACHINE, LOC.	10/29/2012	10.92	OPERATING	PENDOBS	591048	3
130	4727464	0154830A	XRU251	MAIN CAC - X-RAY M/	10/31/2012	10.91	OPERATING	PENDOBS		2
131	4727467	0127944A	XRU252	RM C-310 RECEIVING	11/01/2012	10.91	OPERATING	PENDOBS		
132	4727468	0127949A	XRU251	X-RAY MACHINE,	11/01/2012	10.91	OPERATING	PENDOBS	11094	2
133	4727469	0126452A	XRU251	X-RAY MACHINE,	11/01/2012	10.91	OPERATING	PENDOBS		4
134	4727470	0126453A	XRU251	X-RAY MACHINE,	11/01/2012	10.91	OPERATING	PENDOBS		2
135	4729622	0135318A	XRU251	X-RAY MACHINE,	11/04/2012	10.90	OPERATING	PENDOBS		8
136	4729625	0135317A	XRU251	X-RAY MACHINE,	11/04/2012	10.90	OPERATING	PENDOBS		3
137	4729626	0135323A	XRU251	X-RAY MACHINE,	11/04/2012	10.90	OPERATING	PENDOBS		2
138	4729643	0416669A	XRU251	X-RAY MACHINE,	11/05/2012	10.90	OPERATING	PENDOBS		2
139	4730980	0096422A	XRU251	X-RAY MACHINE,	11/11/2012	10.88	OPERATING	PENDOBS	0	4



## 03 Solutions and Prototyping: Current Policy System Flaws

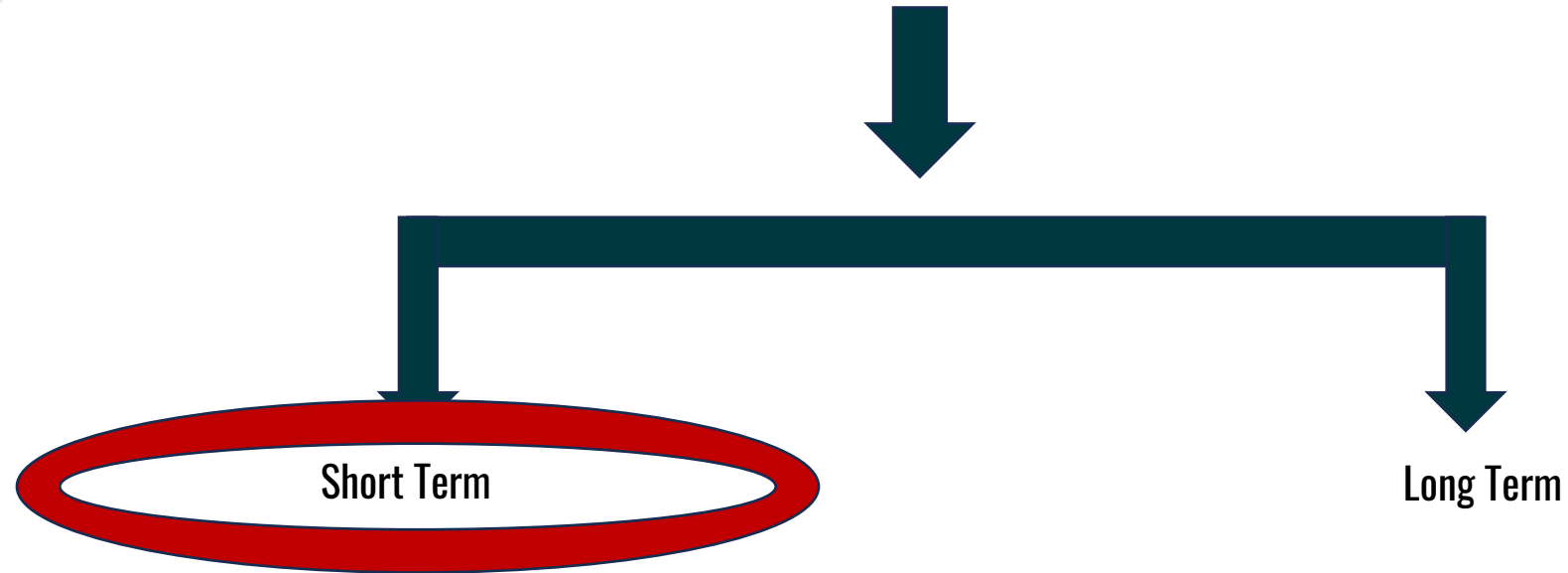


**Permanence** in  
12-Foreign Affairs  
Handbook (FAH)

## Policy Breakdown



## Policy Breakdown





## 03 Solutions and Prototyping: Short Term, X-Ray

1) Collect performance data



2) Create algorithm based on data



3) Algorithm + SME (Subject Matter Expert) decide to lifecycle on case by case basis for each machine

## 03 Solutions and Prototyping: Short Term, X-Ray

1) Collect performance data



2) Create algorithm based on data



3) Algorithm + SME decide to lifecycle  
on case by case basis for each  
machine



**One of our solutions is  
already in the works!**

## 03 Solutions and Prototyping: Short Term, X-Ray

Algorithm:  
Variables (i.e. bag count)



Projected lifespan

1) Collect performance data



2) Create algorithm based on data



3) Algorithm + SME decide to lifecycle  
on case by case basis for each  
machine

## 03 Solutions and Prototyping: Short Term, EDP

1) Summarize Performance and Symptoms



2) Create algorithm based on data



1) Algorithm + SME decide to lifecycle on case by case basis for each machine

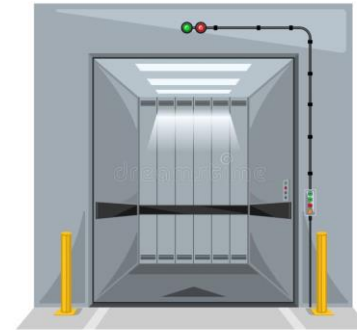




# Solution Roadblock

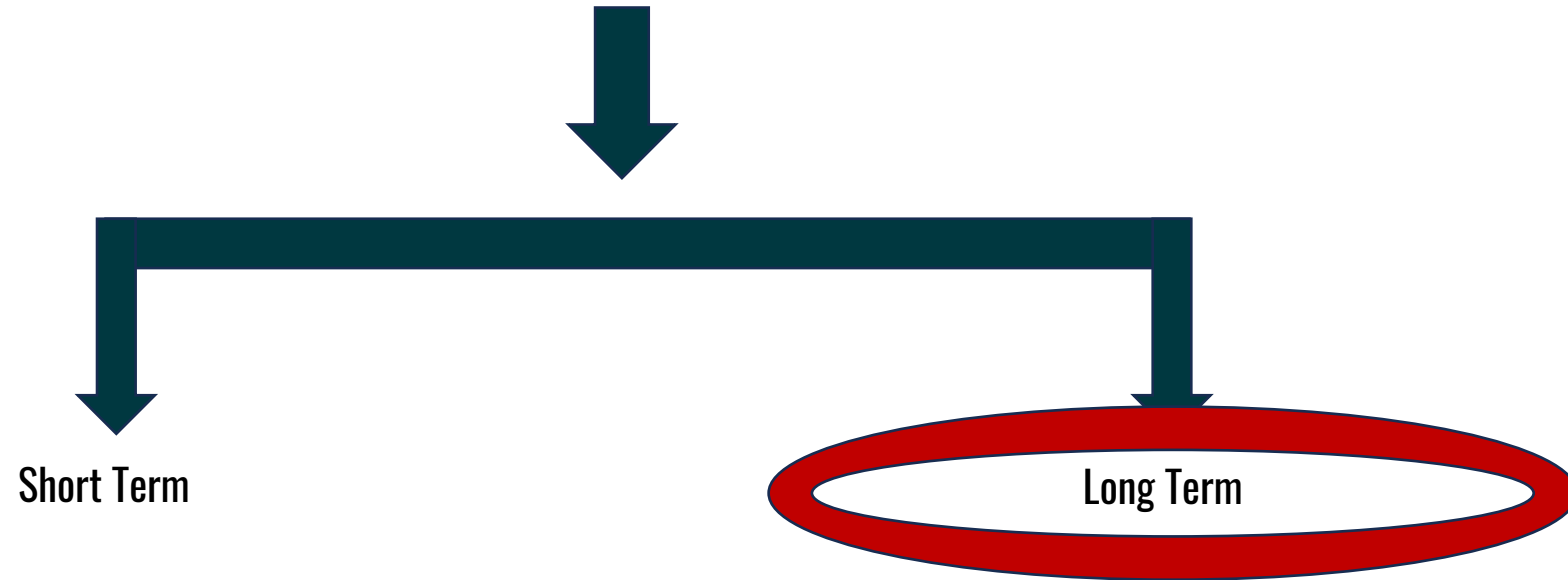


Old Machine:  
**Smiths Detection 6040i**



New Machine:  
**VOTI XR3D**

## Policy Breakdown



# 03 Long Term Solutions and Prototyping: Automated Detection and Reporting



**Breakdown: a multifaceted solution**

## Problem

Lack of data on current machines

No Permanent Policy

Older machines being upgraded

Initial start-up barriers

## Solution

Policy Review + Form Edits

12 FAH

Short-term and long-term solutions

Longevity



# Acknowledgements:

A *special* thanks to:

Matthew Fister

Varnell Butler

Stephen York

Edwin Gwira

Bernie Kaussler

Hala Nelson

Seán McCarthy

Colton McLaughlin

We could not have done it without the grace, support, and wisdom from all those we interviewed. We extend our sincere gratitude to everyone who helped us along the way. This journey was one for the books!