### Longer Lifespans, Stronger Security

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







02 Research



**03 Solutions and Prototyping** 



**04 Next Steps** 











Samantha Boyles **K**evin Cheely Ai Vy Le **R**egina Allen **G**ianna Baorto

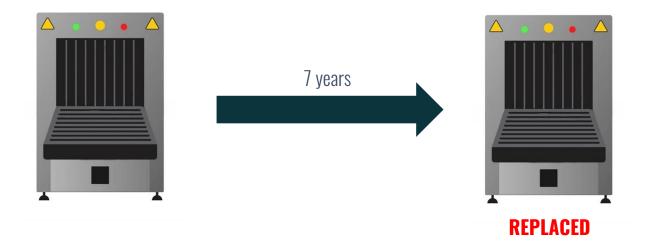
**Senior** B.S Mathematics

**Senior** B.S Mathematics

Junior
B.A Political
Science

**Junior** B.A Writing

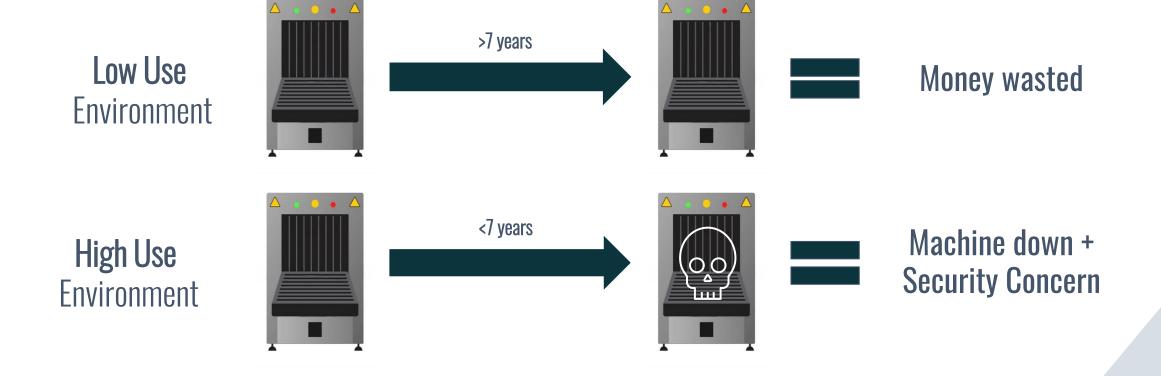
**Sophomore**B.A International
Affairs



The Current System

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

#### The Issue with Standardized Life-cycling



**768** X-Rays + **1,100** Itemizers

Average of **\$40,000** each per unit

≈ \$74,720,000

#### **Beneficiary Map**

Over 50 interviews with...

3 Problem Sponsors

3 SEOs

2 SMEs

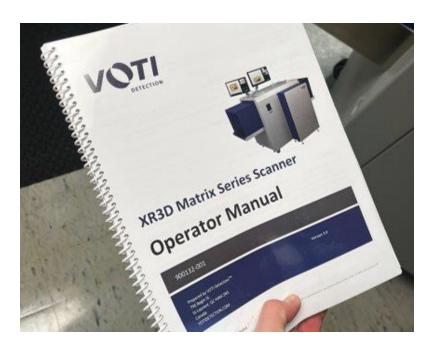
#### **OUR INTERVIEWEES**

5 STSs

3 misc.

1RSO

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













#### 02 Research



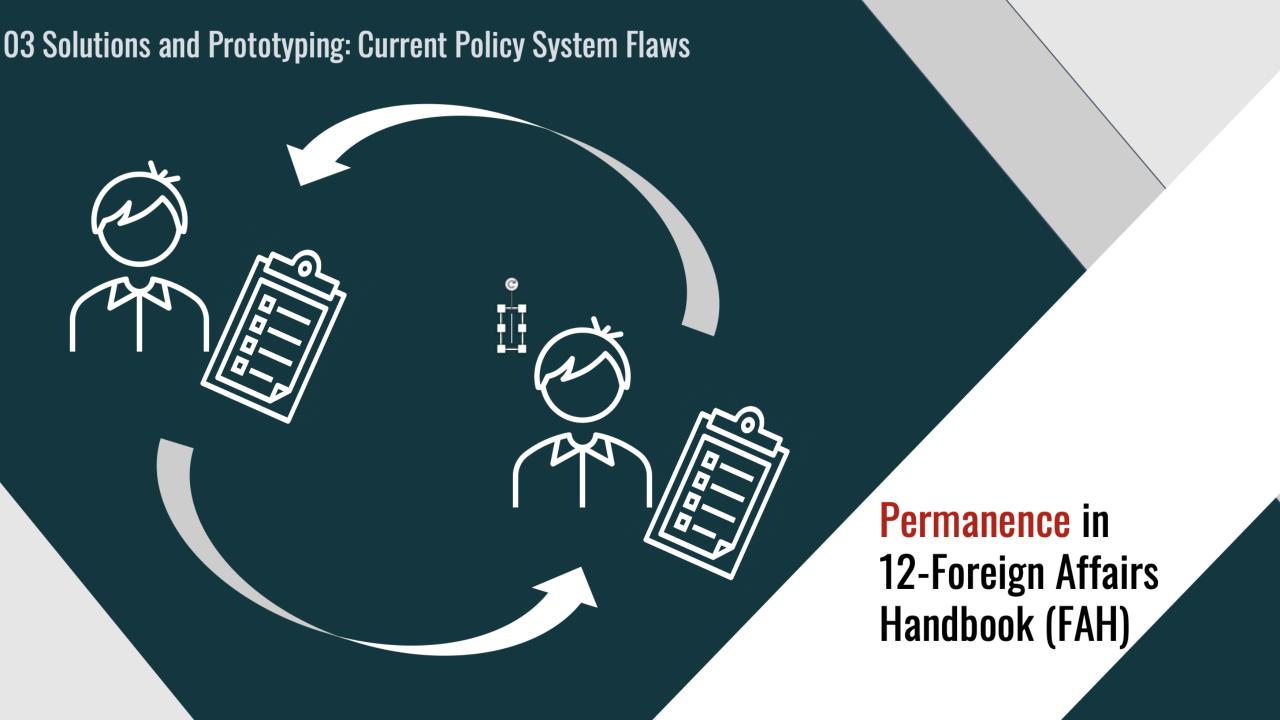
Solution Roadblock



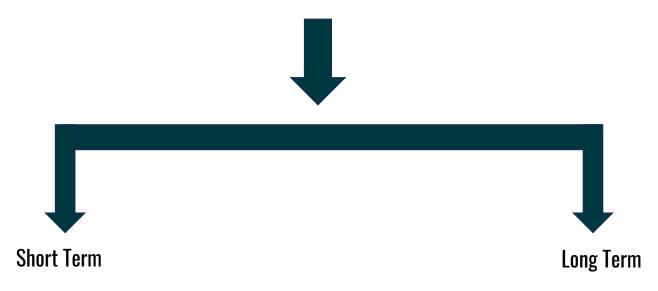
Personalized
Predictor of WHEN
machine should be
life cycled

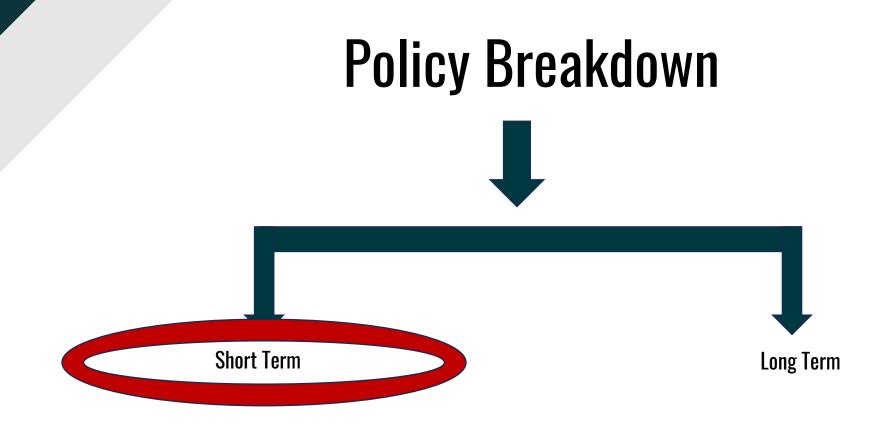
#### **Solution Roadblock**

Asset Namber   DS Barcode   Item Number   Asset Description   Asset Creation Date   Asset Age in Years   Il Asset Status   Status   Most Recent X-Ray On Hours   290	der Count
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129       4727417       0454970A       XRU251       X-RAY MACHINE, LOC.       10/29/2012       10.92 OPERATING       PENDOBS       591048         130       4727464       0154830A       XRU251       MAIN CAC - X-RAY M/L       10/31/2012       10.91 OPERATING       PENDOBS         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         133       4727469       0126452A       XRU251       X-RAY MACHINE,       11/01/2012       10.91 OPERATING       PENDOBS	3
130     4727464     0154830A     XRU251     MAIN CAC - X-RAY M/     10/31/2012     10.91 OPERATING     PENDOBS       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       133     4727469     0126452A     XRU251     X-RAY MACHINE,     11/01/2012     10.91 OPERATING     PENDOBS	
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     11/094       133     4727469     0126452A     XRU251     X-RAY MACHINE,     11/01/2012     10.91 OPERATING     PENDOBS	3
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135 4729622 0135318A XRU251 X-RAY MACHINE, 11/04/2012 10.90 OPERATING PENDOBS	8
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
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



### 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



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!

# O3 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

# O3 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**

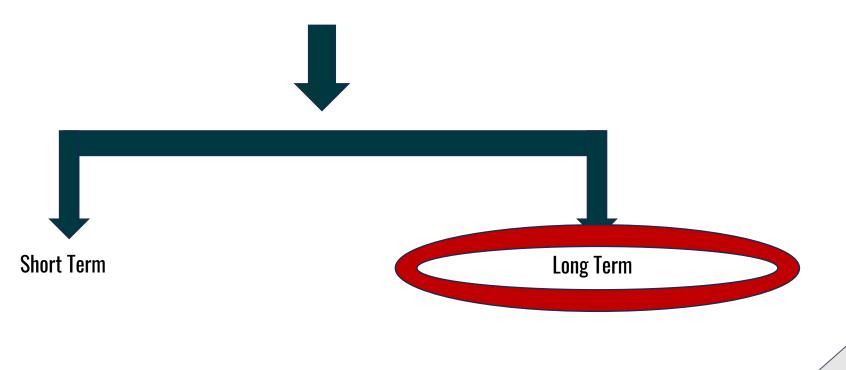




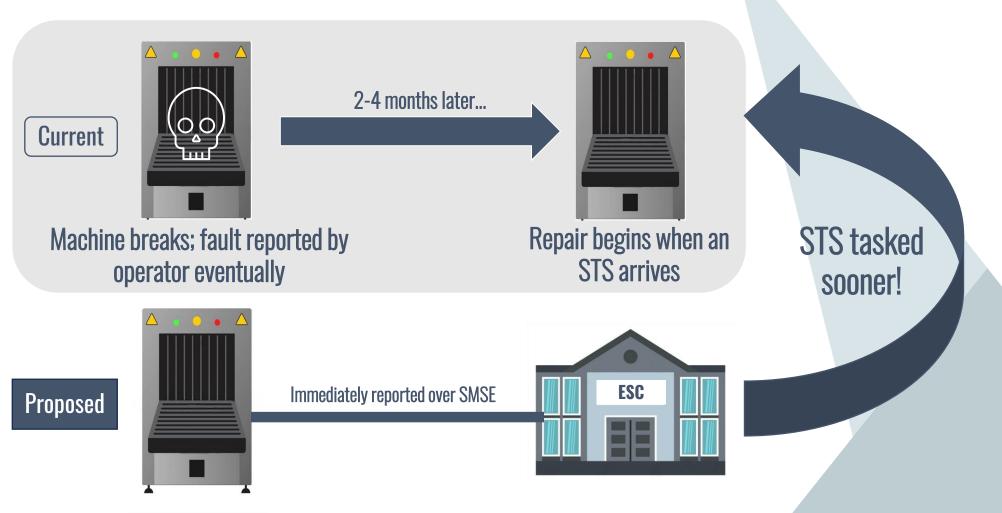


New Machine: **VOTI XR3D** 

### Policy Breakdown



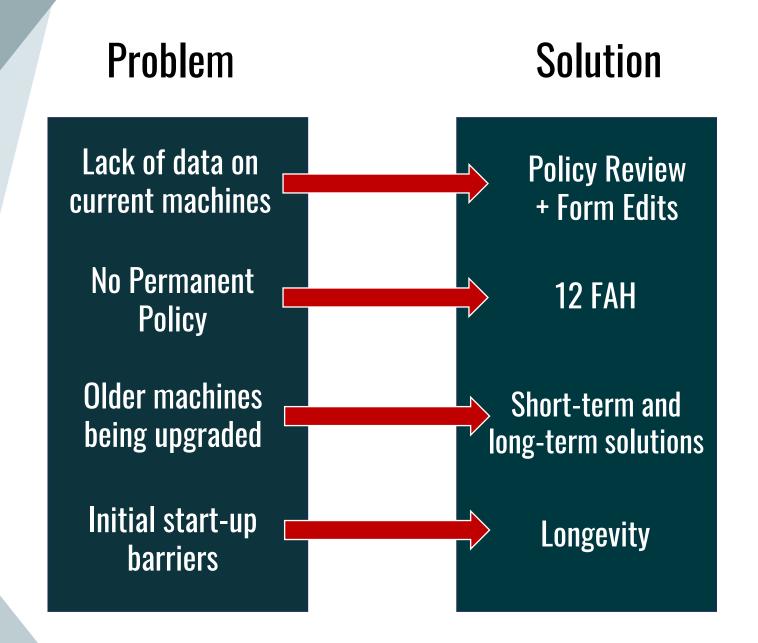
## O3 Long Term Solutions and Prototyping: Automated Detection and Reporting



Performance metrics and machine faults are detected and reported automatically

Data and faults are automatically reported to Engineering Services
Center

Breakdown: a multifaceted solution



### 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!