

The logo features the word "RFID" in a bold, yellow, sans-serif font. The letter "i" is lowercase and has a small circle above it. Below "RFID" is a thin yellow horizontal line, followed by the word "JOURNAL" in a yellow, serif font. Another thin yellow horizontal line is below "JOURNAL", followed by the word "LIVE!" in a bold, yellow, sans-serif font. The entire logo is centered on a dark blue background with a faint circuit board pattern. A solid red rectangle is positioned at the top of the page, and another solid red rectangle is at the bottom, framing the central text.

**RFID**  
JOURNAL  
**LIVE!**

**SEPTEMBER 26 - 28, 2021**  
PHOENIX CONVENTION CENTER | PHOENIX, AZ

## Harvard Automates Asset Tracking and Reduces Inventory Time with RFID

Jeff DiCiaccio

Director of Strategic Procurement

Harvard Medical School

# Background:

- Harvard University established - 1636
- Harvard Medical School est.- 1782 (1906)
- Graduate School – MD, PhD, & Master
- Located in Boston – HLC - HSDM, HSPH, & Wyss



**Boston  
Children's  
Hospital**



**Joslin  
Diabetes**



**Beth Israel Deaconess  
Medical Center**



**Dana-Farber  
Cancer Institute**



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# Background:

- 18 buildings, 2 million sq. ft.
- \$ 753 million operating expenses
- \$ 4 Billion endowment
- \$ 308 million Research grants and contracts (sponsored)

# Sponsored Funding Definition:

Sponsored – value and quantity

HU - \$ 177,090,458 & 5,733 = 34%

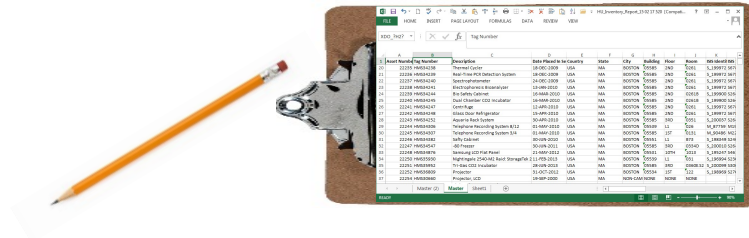
HMS - \$ 59,106,799 & 1,843 = 42%



Asset - is  $\geq$  \$5k w/ 3 + years

Harvard Asset Statistics:	Harvard Medical School	Harvard
Number of Assets	4,332	15,418
Original Purchase Price	\$ 149,431,113	\$ 1,177,805,387
# of buildings w/assets	18	160
# of rooms w/assets	960	2,963

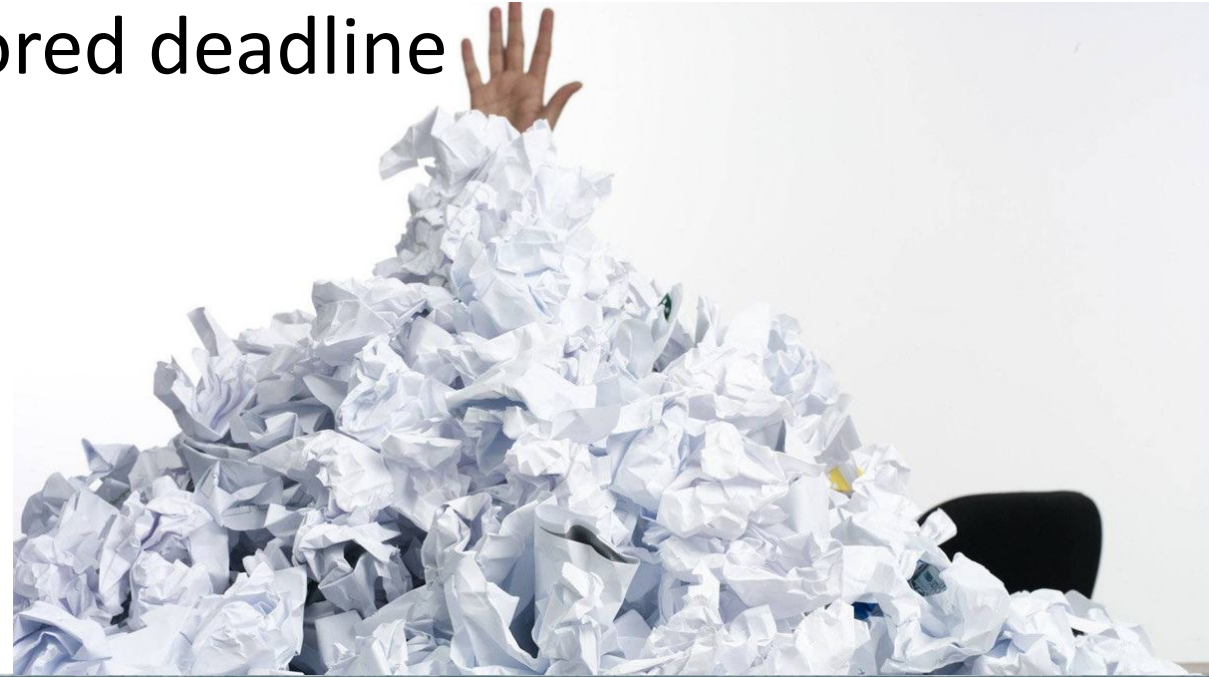
- Inventory - Every asset, every two years
  - To the building/room



Previous inventory method

# How did a Procurement person ...?

- Asset manager left 2 weeks
- CFO “All Hands on Deck”
- *10 People - not trained, no consistency, & not day job*
- 254 Sponsored & 809 Non-sponsored deadline
- **Voluntold** – August 2016



## Audit of all HU Assets focus on Sponsor Funded

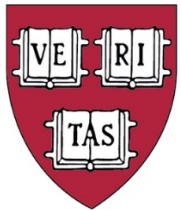
should have been disposed of. Upon further analysis performed by management, it was determined that as of August 2016, 731 out of the 3,690 pieces of equipment with a net book value totaling \$17.9 million had not yet been inventoried within the two year period from the last date of equipment observation.

**University corrective action plans (CAP):** increase training, move to rolling inventory schedules, and research technology solutions (RFID)



# Make life easier – RFID investigation

- Partnered with 3 schools
- 80% of total
- [Harvard President's Administrative Innovation Fund](#) –
- 2018 Grant application (PAIF) - \$25K



**HARVARD**

Faculty of Arts and Sciences



**HARVARD**

School of Engineering  
and Applied Sciences

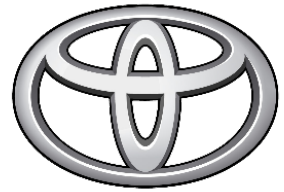


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# Selection Process:

1. RFP – 4 + 4 Vendors
2. Contact 22 references



**TOYOTA**



**DURACELL®**

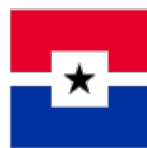


**VCU**



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Dallas County  
Community College District



CSN  
COLLEGE OF  
SOUTHERN NEVADA

UNT | HEALTH  
SCIENCE CENTER

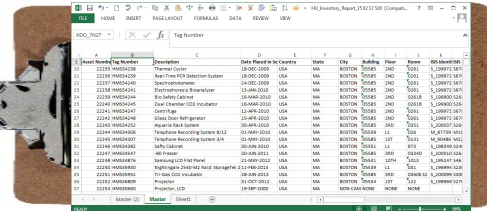


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# Old Process

Oracle  
Fixed Asset

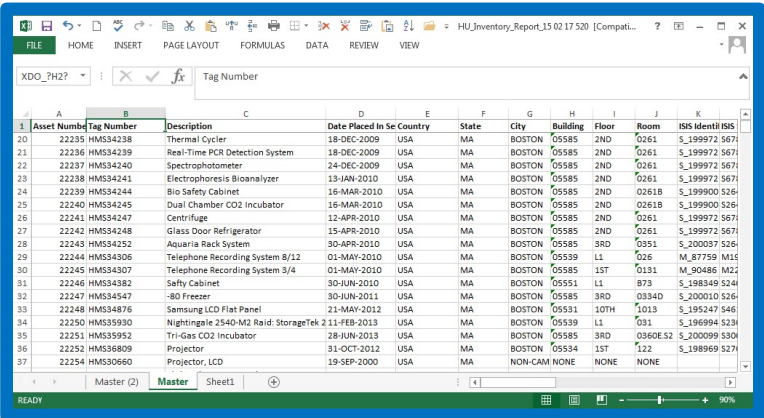


Asset Number	Description	Date Placed in Service	Country	State	City	Building	Floor	Room	ISIS Identif	ISIS
22235	Thermal Cycler	18-DEC-2009	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
22236	Real-Time PCR Detection System	18-DEC-2009	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
22237	Spectrophotometer	24-DEC-2009	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
22238	Electrophoresis Bioanalyzer	13-JAN-2010	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
22239	Bio Safety Cabinet	16-MAR-2010	USA	MA	BOSTON	05585	2ND	0261B	S_199900	5261
22240	Dual Chamber CO2 Incubator	16-MAR-2010	USA	MA	BOSTON	05585	2ND	0261B	S_199900	5261
22241	Centrifuge	12-APR-2010	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
22242	Glass Door Refrigerator	15-APR-2010	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
22243	Aquaria Rack System	30-APR-2010	USA	MA	BOSTON	05585	3RD	0351	S_200097	5261
22244	Telephone Recording System 8/12	01-MAY-2010	USA	MA	BOSTON	05559	L1	026	M_87759	M15
22245	Telephone Recording System 3/4	01-MAY-2010	USA	MA	BOSTON	05585	1ST	0131	M_90486	M21
22246	Safety Cabinet	30-JUN-2010	USA	MA	BOSTON	05551	L1	873	S_198849	524
22247	-80 Freezer	30-JUN-2011	USA	MA	BOSTON	05585	3RD	0334D	S_200010	5261
22248	Samsung LCD Flat Panel	21-MAY-2012	USA	MA	BOSTON	05531	10TH	1013	S_195247	546
22250	Nightingale 2540-M2 Rand. StorageTet	11-FEB-2013	USA	MA	BOSTON	05539	L1	031	S_196994	5238
22251	Tri-Gas CO2 Incubator	28-JUN-2013	USA	MA	BOSTON	05585	3RD	0360E52	S_200099	5304
22252	Projector	31-OCT-2012	USA	MA	BOSTON	05534	1ST	122	S_198869	5271
22254	Projector, LCD	19-SEP-2000	USA	MA	NON-CAM	NONE	NONE	NONE		



ADi Upload:

Manuel update:



Asset Num	Tag Number	Description	Date Placed in Se	Country	State	City	Building	Floor	Room	ISIS Identif	ISIS
20	22235	Thermal Cycler	18-DEC-2009	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
21	22236	Real-Time PCR Detection System	18-DEC-2009	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
22	22237	Spectrophotometer	24-DEC-2009	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
23	22238	Electrophoresis Bioanalyzer	13-JAN-2010	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
24	22239	Bio Safety Cabinet	16-MAR-2010	USA	MA	BOSTON	05585	2ND	0261B	S_199900	5261
25	22240	Dual Chamber CO2 Incubator	16-MAR-2010	USA	MA	BOSTON	05585	2ND	0261B	S_199900	5261
26	22241	Centrifuge	12-APR-2010	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
27	22242	Glass Door Refrigerator	15-APR-2010	USA	MA	BOSTON	05585	2ND	0261	S_199972	5671
28	22243	Aquaria Rack System	30-APR-2010	USA	MA	BOSTON	05585	3RD	0351	S_200097	5261
29	22244	Telephone Recording System 8/12	01-MAY-2010	USA	MA	BOSTON	05559	L1	026	M_87759	M15
30	22245	Telephone Recording System 3/4	01-MAY-2010	USA	MA	BOSTON	05585	1ST	0131	M_90486	M21
31	22246	Safety Cabinet	30-JUN-2010	USA	MA	BOSTON	05551	L1	873	S_198849	524
32	22247	-80 Freezer	30-JUN-2011	USA	MA	BOSTON	05585	3RD	0334D	S_200010	5261
33	22248	Samsung LCD Flat Panel	21-MAY-2012	USA	MA	BOSTON	05531	10TH	1013	S_195247	546
34	22250	Nightingale 2540-M2 Rand. StorageTet	11-FEB-2013	USA	MA	BOSTON	05539	L1	031	S_196994	5238
35	22251	Tri-Gas CO2 Incubator	28-JUN-2013	USA	MA	BOSTON	05585	3RD	0360E52	S_200099	5304
36	22252	Projector	31-OCT-2012	USA	MA	BOSTON	05534	1ST	122	S_198869	5271
37	22254	Projector, LCD	19-SEP-2000	USA	MA	NON-CAM	NONE	NONE	NONE		



Approximately 2 hours to find 50 assets  
2 people



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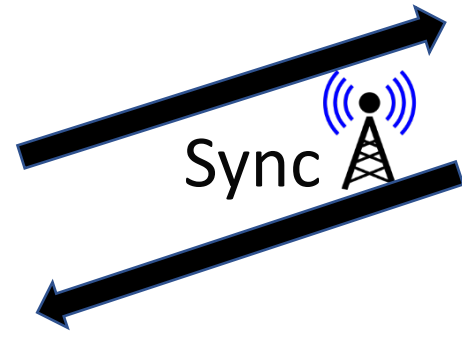
# RFID Process

Oracle  
Fixed Asset

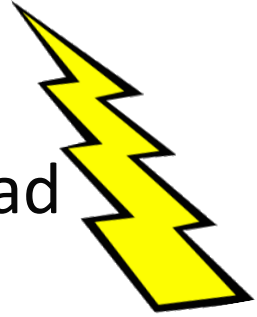


Import

Radiant  
Web app



ADI Upload



Excel

Asset Number	Tag Number	Description	Date Placed in Service	Country	State	City	Building	Floor	Room	BIS Identifiers
22235	HMS34238	Thermal Cycler	18-DEC-2009	USA	MA	BOSTON	05585	2ND	0261	S_199972 5671
22236	HMS34239	Real-Time PCR Detection System	18-DEC-2009	USA	MA	BOSTON	05585	2ND	0261	S_199972 5671
22237	HMS34240	Spectrophotometer	24-DEC-2009	USA	MA	BOSTON	05585	2ND	0261	S_199972 5671
22238	HMS34241	Electrophoresis Bioanalyzer	13-JAN-2010	USA	MA	BOSTON	05585	2ND	0261	S_199972 5671
22239	HMS34244	Bio Safety Cabinet	16-MAR-2010	USA	MA	BOSTON	05585	2ND	0261B	S_199900 5266
22240	HMS34245	Dual Chamber CO2 Incubator	16-MAR-2010	USA	MA	BOSTON	05585	2ND	0261B	S_199900 5266
22241	HMS34247	Centrifuge	12-APR-2010	USA	MA	BOSTON	05585	2ND	0261	S_199972 5671
22242	HMS34248	Glass Door Refrigerator	15-APR-2010	USA	MA	BOSTON	05585	2ND	0261	S_199972 5671
22243	HMS34252	Aquaria Rack System	30-APR-2010	USA	MA	BOSTON	05585	BRD	0351	S_200037 5266
22244	HMS34306	Telephone Rack System	01-MAY-2010	USA	MA	BOSTON	05539	L1	026	M_87759 M15
22245	HMS34307	Telephone Recording System 3/4	01-MAY-2010	USA	MA	BOSTON	05585	1ST	0131	M_30486 M21
22246	HMS34382	Safety Cabinet	30-JUN-2010	USA	MA	BOSTON	05551	L1	875	S_198540 5244
22247	HMS34547	-80 Freezer	30-JUN-2011	USA	MA	BOSTON	05585	BRD	0534D	S_200010 5266
22248	HMS34876	Samsung LCD Flat Panel	21-MAY-2012	USA	MA	BOSTON	05531	10TH	1013	S_195247 546
22250	HMS35930	Nightingale 2540-M2 Raid StorageTek 2	11-FEB-2013	USA	MA	BOSTON	05539	L1	031	S_196994 523
22251	HMS35952	Tri-Gas CO2 Incubator	28-JUN-2013	USA	MA	BOSTON	05585	BRD	0360E 52	S_200099 530
22252	HMS36809	Projector	31-OCT-2012	USA	MA	BOSTON	05534	1ST	122	S_198969 5271
22254	HMS30660	Projector, LCD	19-SEP-2000	USA	MA	NON-CAM	NONE	NONE	NONE	



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Dimensions	Sled	MC9190-Z
Weight	13.4 oz*	34 oz
Length	6.3"	10.8"
Width	3.1"	4.7"
Height	6.8"	7.7"

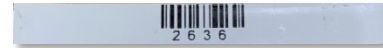
\*iPhone XR 6.8 oz = 20.2 oz

Old Bar code tag  
1.75" x 0.63"



## We use - passive RFID style

Edge tag  
1.77" x 0.22" x 0.03"



Universal tag (most common)  
1.875" x 0.63" x 0.05"



Data Center tag (with hole for cable tie)  
1.50" x 0.51" x 0.16"



Not to scale

# Timeline

- Expected Timeline
  - Investigation to completion – 7 months
- Reality Timeline
  - Investigation to completion – 18 months



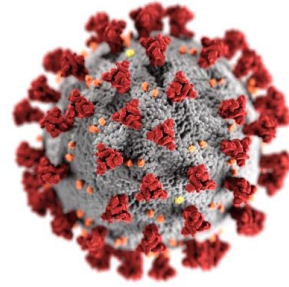


# Deployment/Implementation Issues

- Funding \$
- Test environment 
- Departure of Project members
- Covid

# Inventory cycle

July 2018 to June 2021



Feds extended

March 11<sup>th</sup>, 2020, March 13<sup>th</sup>, 16<sup>th</sup>, 18<sup>th</sup>

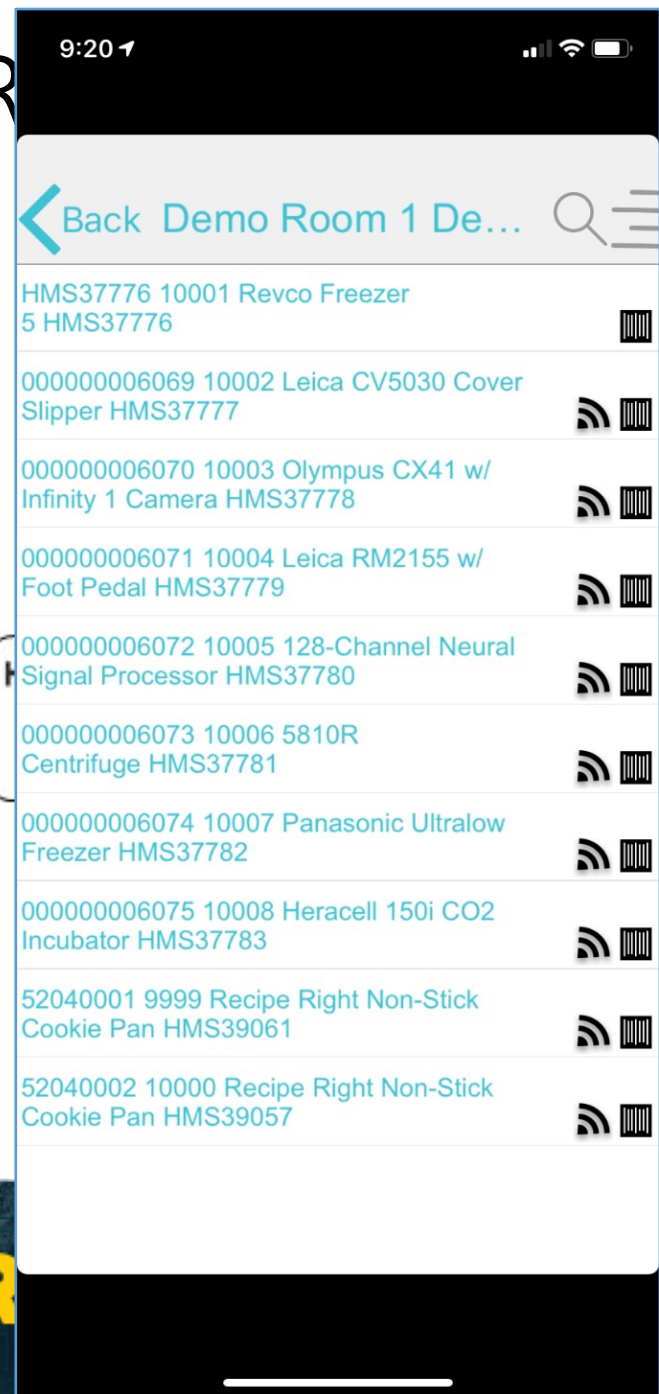
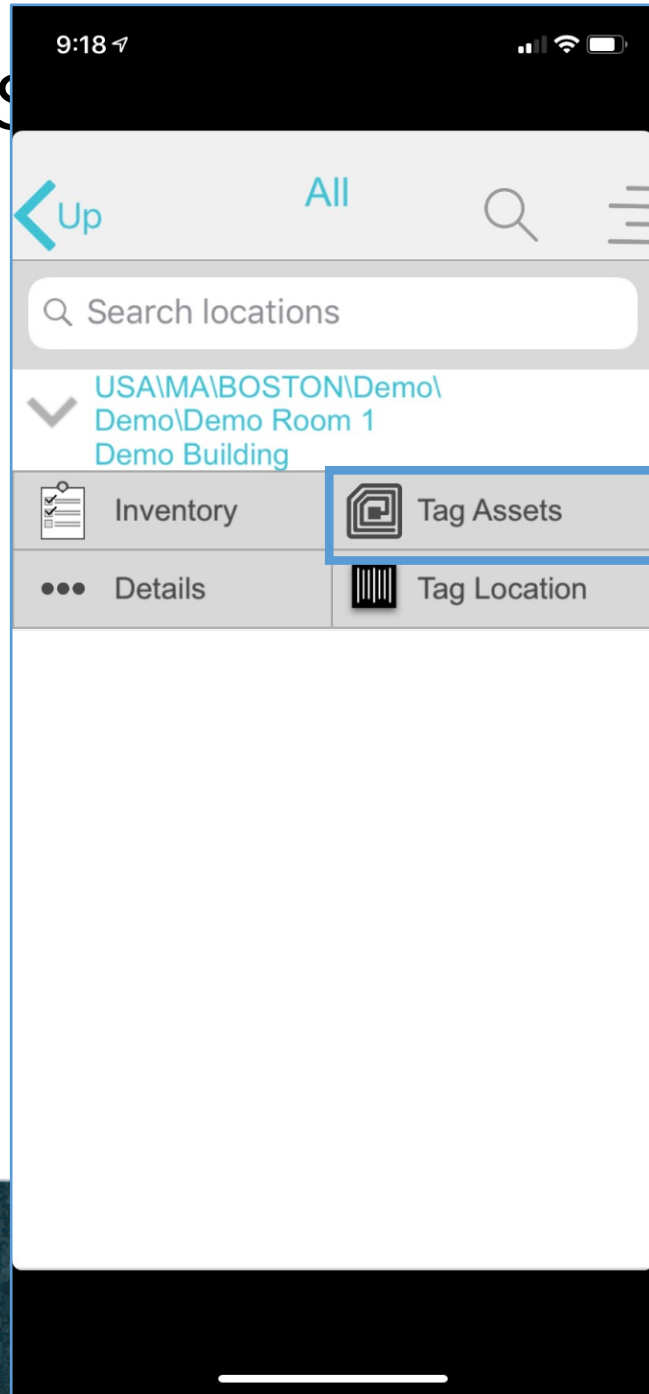
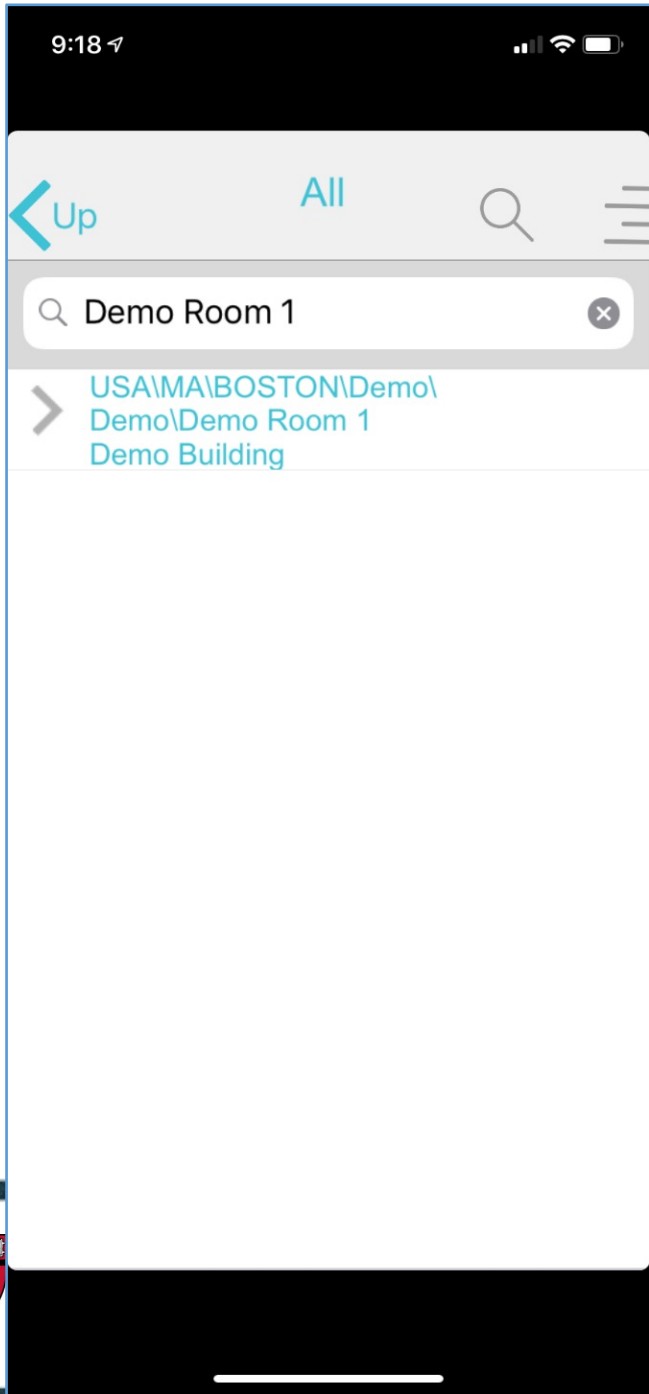
New Equipment +270

Retag old equipment

WFH - Mailing tags

Lab Inventoried old tags

# Existing / R



# Detagging Existing Assets w/RFID tags



9:20

Back Demo Room 1

ASSOCIATION VIEW

**Tag Number**

HMS37776

**RFID Code**

**Secondary Tag**

HMS37776

**Description**

Revco Freezer 5

**Serial Number**

Y20027676

**Model Number**

Save

9:20

Back Demo Room 1

ASSOCIATION VIEW

**Tag Number**

52042287

**RFID Code**

0100F02B002A000052042287

**Secondary Tag**

HMS37776

**Description**

Revco Freezer 5

**Serial Number**

Y20027676

**Model Number**

Save

ID  
NAL  
E!

SEPTEMBER 20

iPod 12:18 PM

Back Demo Room 1 Asset (6/2/8/0/0)

Find	Reports	Filter	Scan
000000006074 10007	HMS37782 Panasonic Ultralow		
000000006075 10008	HMS37783 Heracell 150i CO2		
✓ 000000006068 10001	HMS37776 Revco Freezer 5		
✓ 000000006069 10002	HMS37777 Leica CV5030		
✓ 000000006070 10003	HMS37778 Olympus CX41 w/		
✓ 000000006071 10004	HMS37779 Leica RM2155 w/		
✓ 000000006072 10005	HMS37780 128-Channel Neural		
✓ 000000006073 10006	HMS37781 5810R Centrifuge		

SEP

iPod 12:22 PM

Back Demo Room 1 Asset (8/0/8/2/4)

Find	Reports	Filter	Scan
✓ 000000006068 10001	HMS37776 Revco Freezer 5		
✓ 000000006069 10002	HMS37777 Leica CV5030		
✓ 000000006070 10003	HMS37778 Olympus CX41 w/		
✓ 000000006071 10004	HMS37779 Leica RM2155 w/		
✓ 000000006072 10005	HMS37780 128-Channel Neural		
✓ 000000006073 10006	HMS37781 5810R Centrifuge		
✓ 000000006074 10007	HMS37782 Panasonic Ultralow		
✓ 000000006075 10008	HMS37783 Heracell 150i CO2		
! 000000006076 10009	HMS37784 Thermo Scientific		
! 000000006077 10010	HMS37785 Agilent/HP 1100		

SEP 28, 2021

# Return of Investment:

- None – less/more
- Improved spot inventory process
  - lab moves & PI transfers
- Improved data quality
  - elimination of clerical errors
- Compliance with PwC CAP
  - modernize our process
- Less interruptions

# Spreading the word:

HSPH - 1600

HBS -193

HMS IT - bluetooth

4 colleges

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<https://www.linkedin.com/in/jeffdiciaccio/>



THANK YOU

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