Optimizing Part Flow Management

Thrust Consulting

The Team

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Mechanical Engineering

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01 | Client and Objectives

02 | Methods and Findings

03 | Recommendations

04 | Impact

Client and Objectives

2,587,000 *passengers fly in and out of US airports every single day*

39.9 billion *pounds of freight transported yearly,*

$736 billion *revenue yearly in the commercial airline industry*

Middle River Aircraft Systems

Wholly owned subsidiary of GE Aviation

Operate out of a 1.7 million square foot facility

World leading supplier of engine nacelles and thrust reversers

Hold a contract to manufacture engine nacelles and thrust reversers for the Airbus A320


unbeatable fuel efficiency
neo
AIRBUS

Nacelle

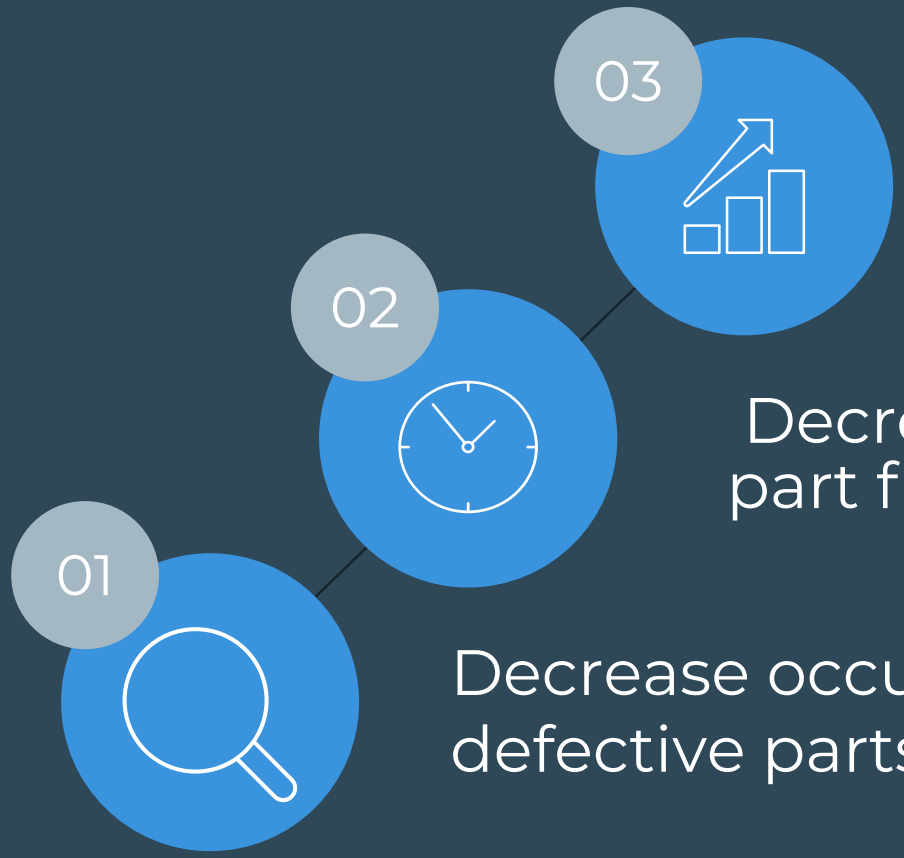
Nacelle

Thrust
Reverser

Objective

Help our client adjust to the demands that accompany an increased production schedule

Objective



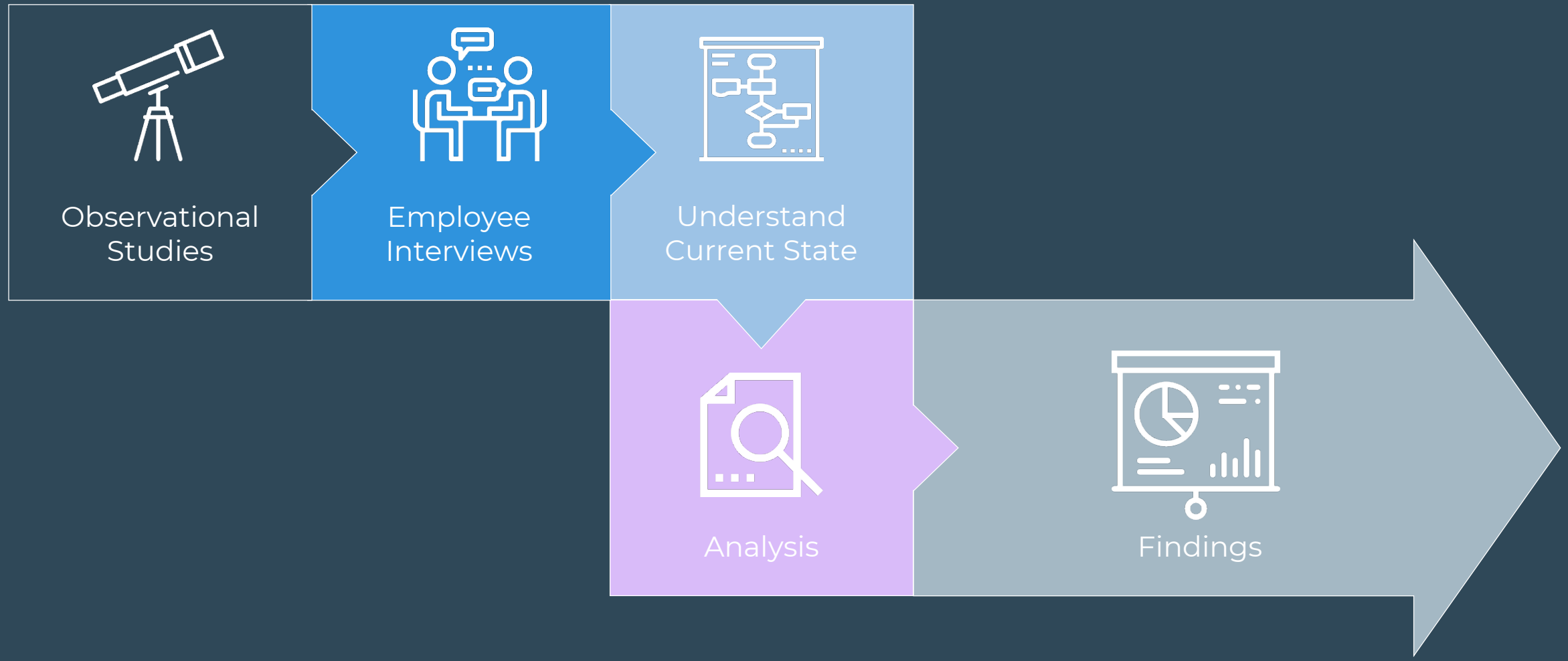
Help scale to a new production schedule

Decrease time and effort spent managing part flow

Decrease occurrences of missing or defective parts

Methods and Findings

Methods


Observational Studies
Employee Interviews
Understand Current State
Analysis
Findings

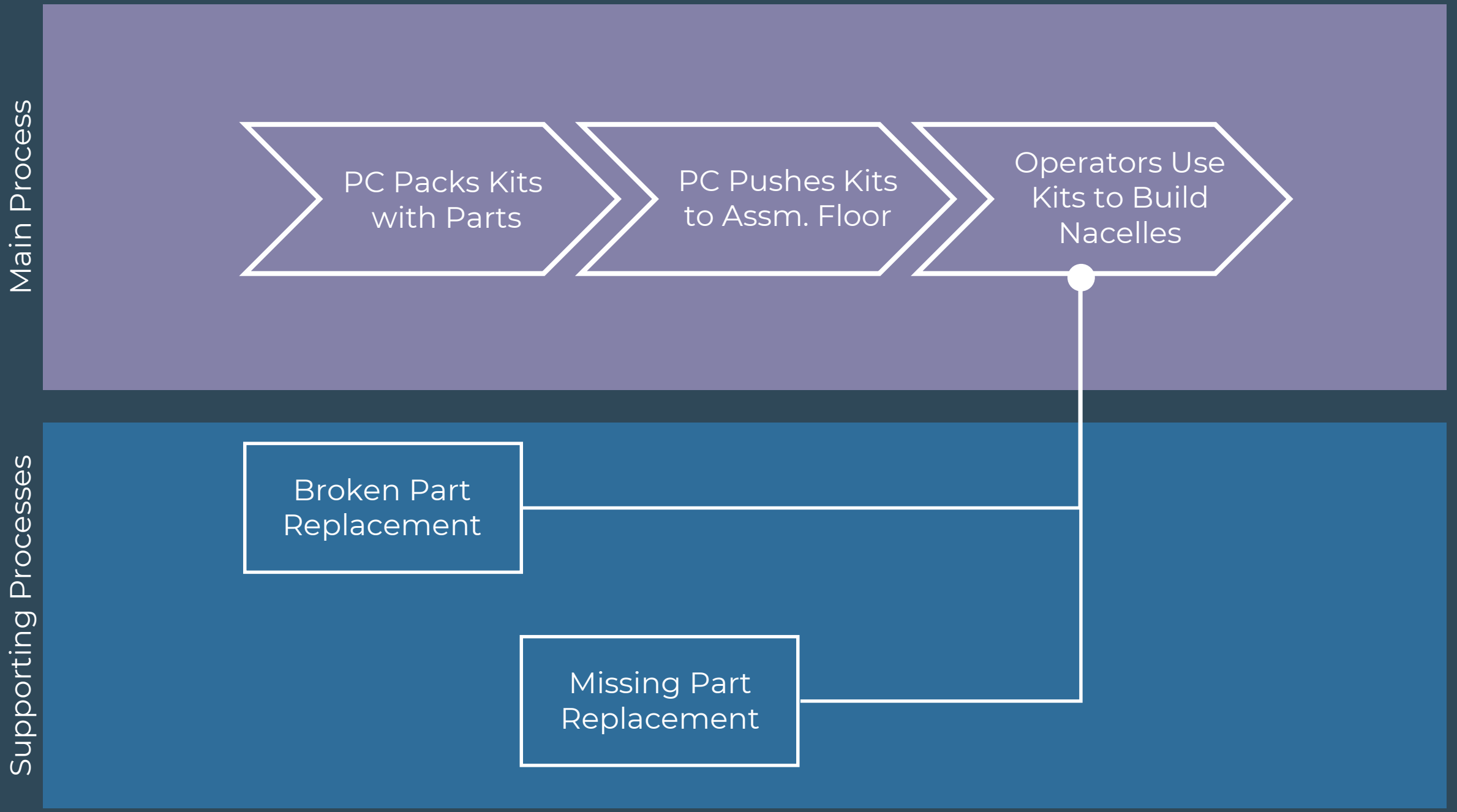
Stakeholders

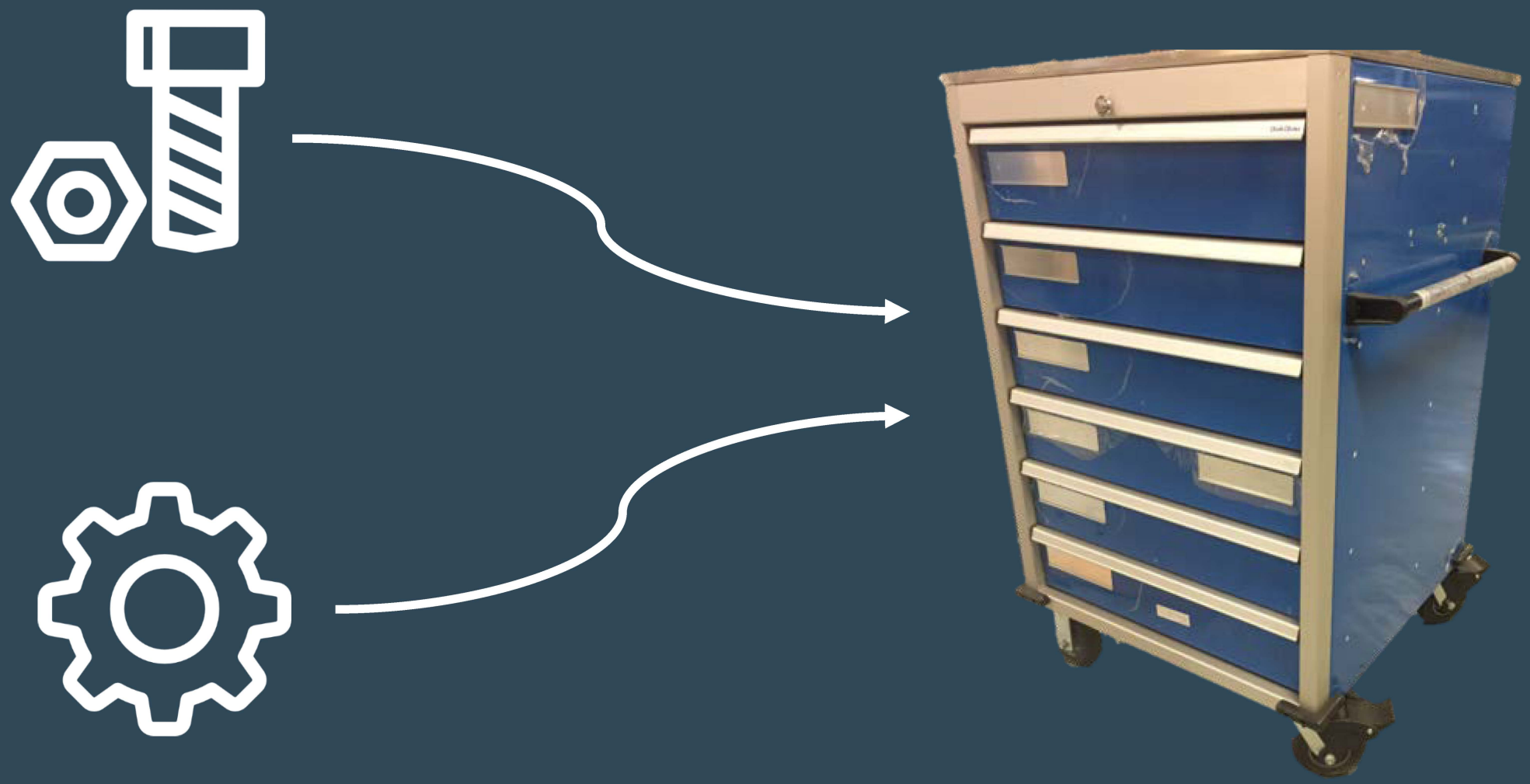

Supervisors

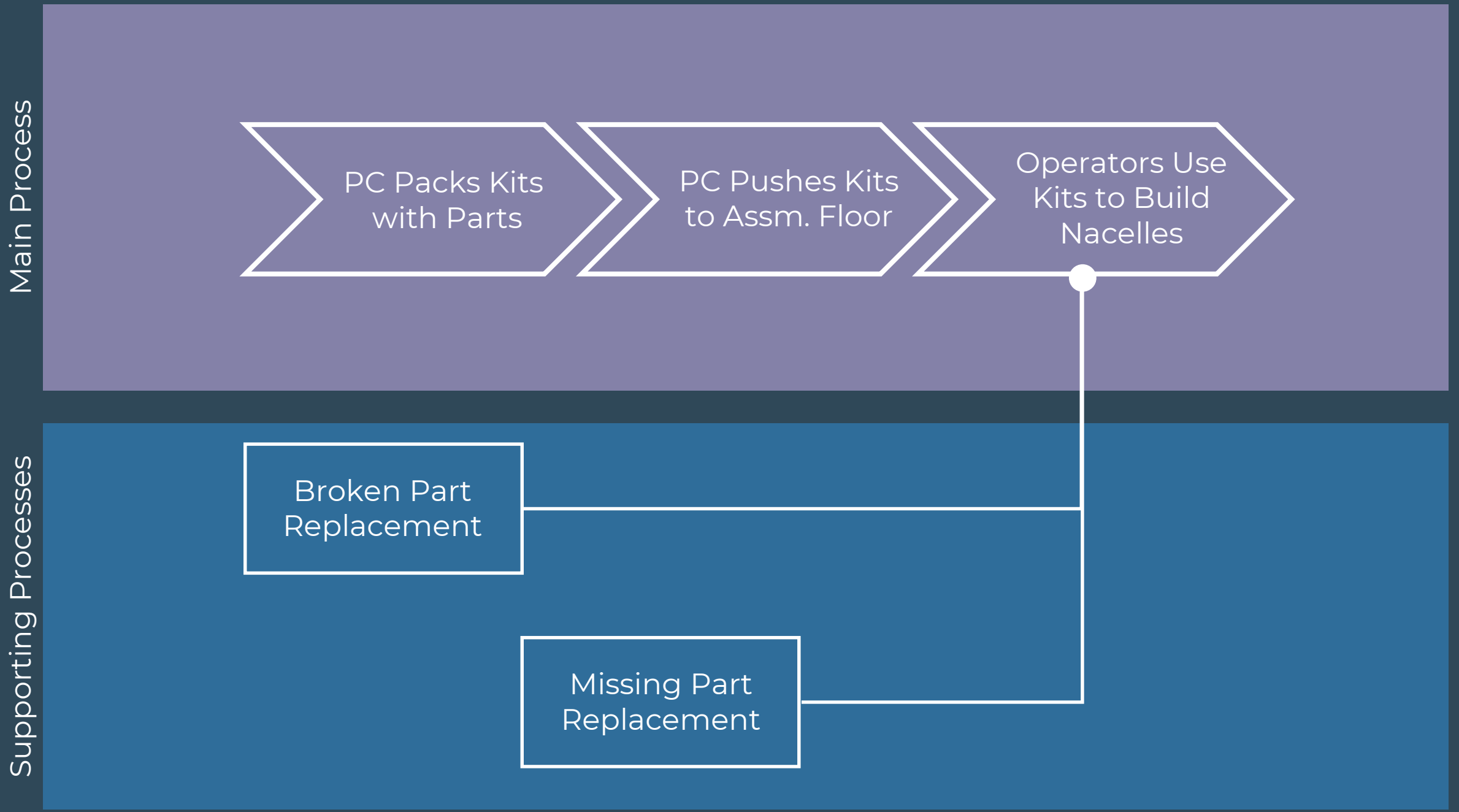

Management


Operators


Stock Keepers


Main Process
PC Packs Kits with Parts
PC Pushes Kits to Assm. Floor
Operators Use Kits to Build Nacelles
Supporting Processes
Broken Part Replacement
Missing Part Replacement

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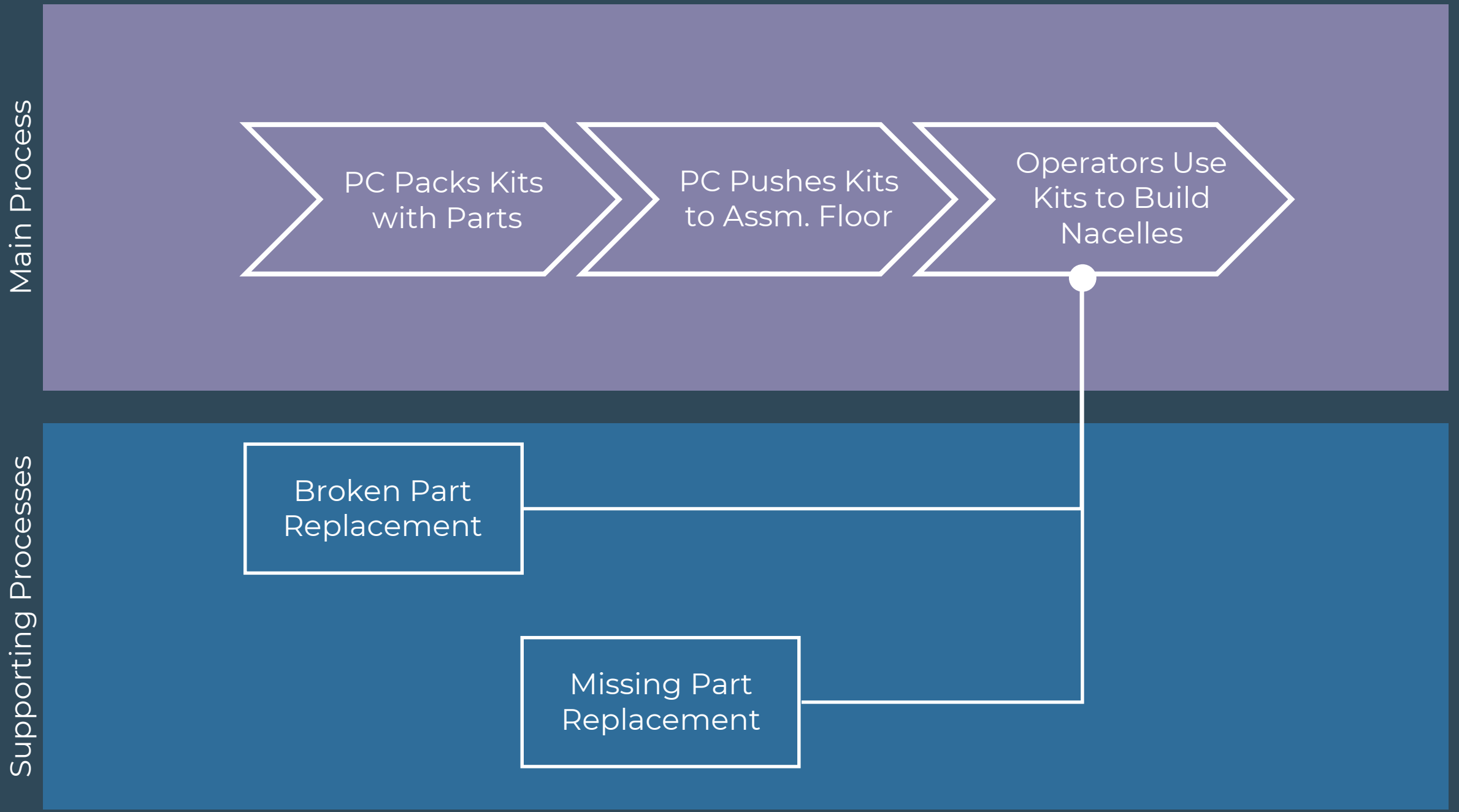
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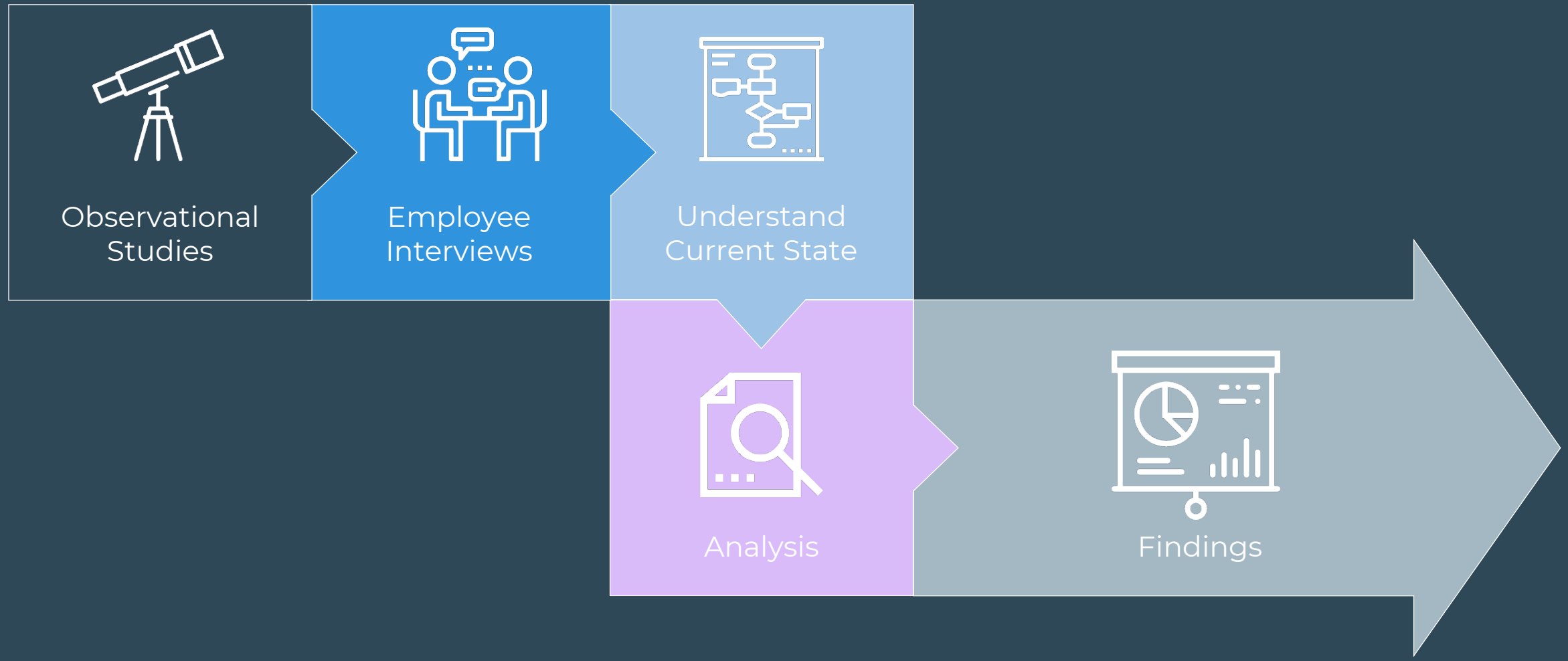
Methods


Observational Studies
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Findings

Push kits to floor as soon as they are ready

When issues arise, Operators need to find Management

Multiple Processes for new parts

Lead To:

Findings

Push kits to floor as soon as they are ready

When issues arise, Operators need to find Management

Multiple Processes for new parts

Lead To:

Unsupervised inventory on the floor

Findings

Push kits to floor as soon as they are ready

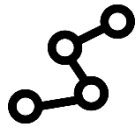
When issues arise, Operators need to find Management

Multiple Processes for new parts

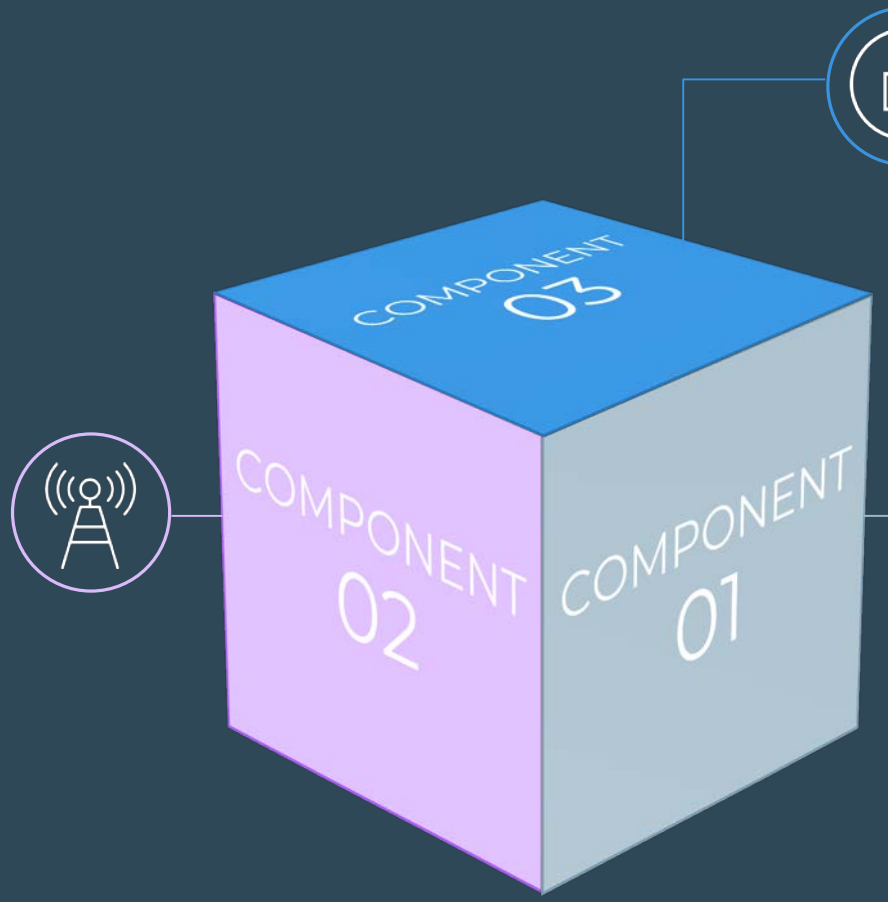
Lead To:

Unsupervised inventory on the floor

Time loss when searching for assistance

Findings	Push kits to floor as soon as they are ready	When issues arise, Operators need to find Management	Multiple Processes for new parts
Lead To:	 Unsupervised inventory on the floor	 Time loss when searching for assistance	 No comprehensive system for missing parts

Recommendations



03
Production
Control
Access Point

02
JIT Visual
Signaling System

01
Shortage Notice
Tracking System

Current State

Intensive part return process

Unstructured shortage notices

Current State

Intensive part return process

Unstructured shortage notices

01

Shortage Notice Tracking System

Current State

Intensive part return process

Unstructured shortage notices

01

Shortage Notice Tracking System

Traceability

Actionable Data

Cause Identification

Current State

Intensive part return process

Unstructured shortage notices

01

Shortage Notice Tracking System

Future State

Efficient part return

Vendor & Worker trends

Fewer misreported shortages

Traceability

Actionable Data

Cause Identification

Current State

Operator down time

Miscommunication

Current State

Operator down time

Miscommunication

02

Visual Signaling System

Current State

Operator down time

Miscommunication

02

Visual Signaling System

Just-In-Time Signaling

Improved Communication

Current State

Operator down time

Miscommunication

02

Visual Signaling System

Future State

Faster supervisor response time

Increased operator efficiency

Just-In-Time Signaling

Improved Communication

Current State

Unsupervised inventory

Unknown kit status

Current State

Unsupervised inventory

Unknown kit status

03

Production Control Access Point

Current State

Unsupervised inventory

Unknown kit status

03

Production Control Access Point

Token System

Monitored Inventory

Current State

Unsupervised inventory

Unknown kit status

03

Production Control Access Point

Future State

Controlled inventory

Less time checking kits

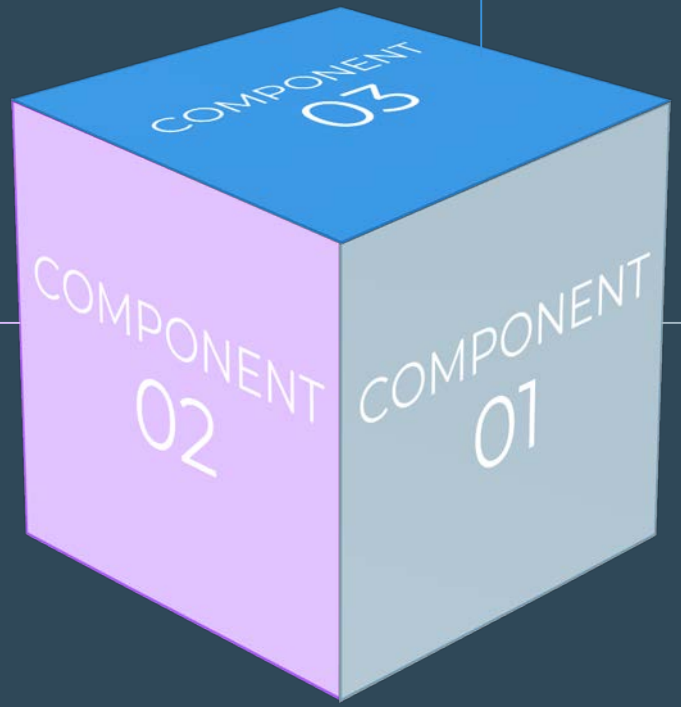
Fewer misreported shortages

Token System

Monitored Inventory

03
Production
Control
Access Point

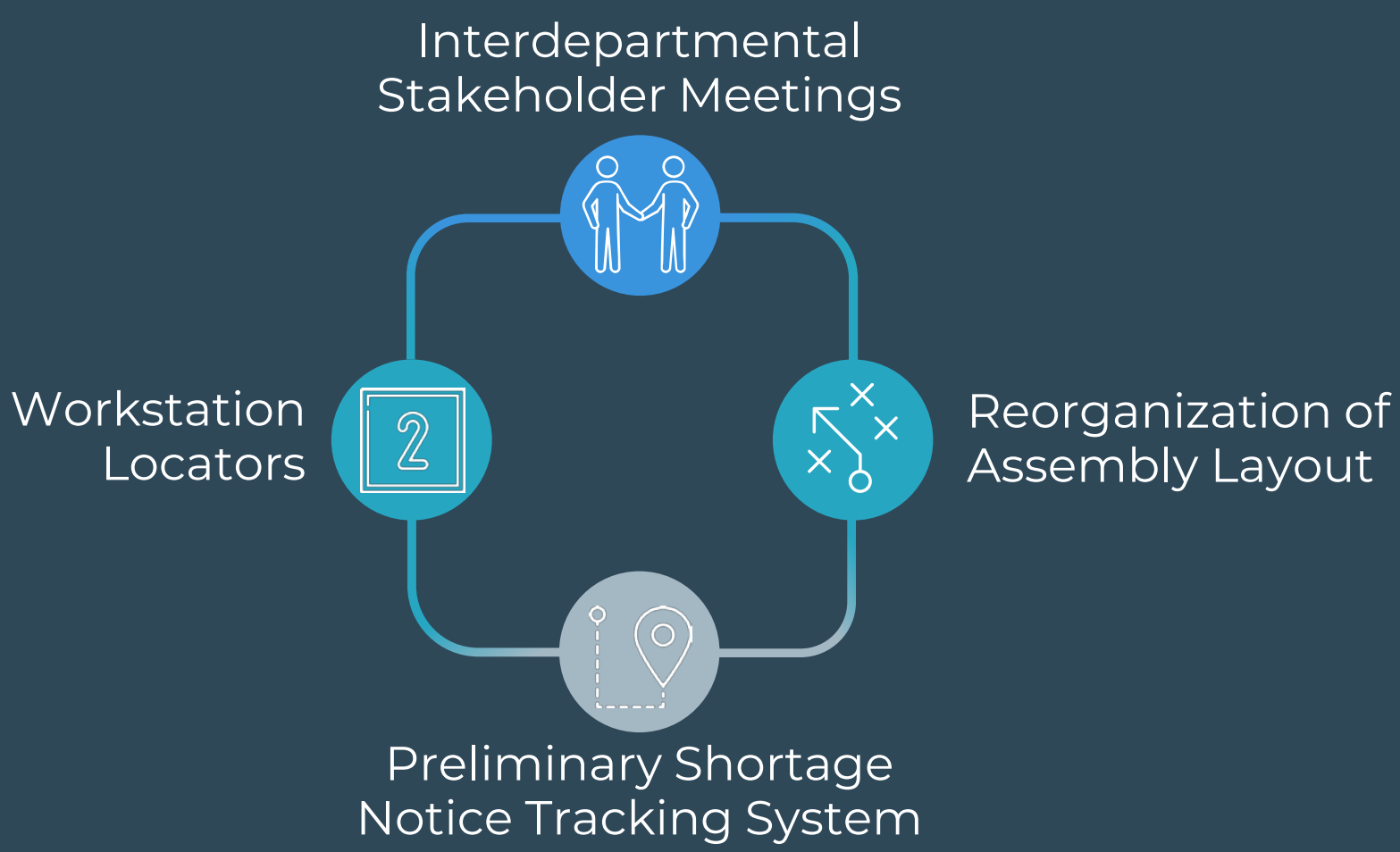
02
JIT Visual
Signaling System



01
Shortage Notice
Tracking System

Impact

Current Initiatives



Communication

Increase collaborative communication

Assembly Floor

Optimization of layout to better integrate lean principles

Shortages

Increase traceability of inventory

Proposed Implementation Timeline

Phase 1 | *Phase 2* | *Phase 3* | *Completion*

01 S/N Tracking System

02 Signaling System

03 Production Control Access Point

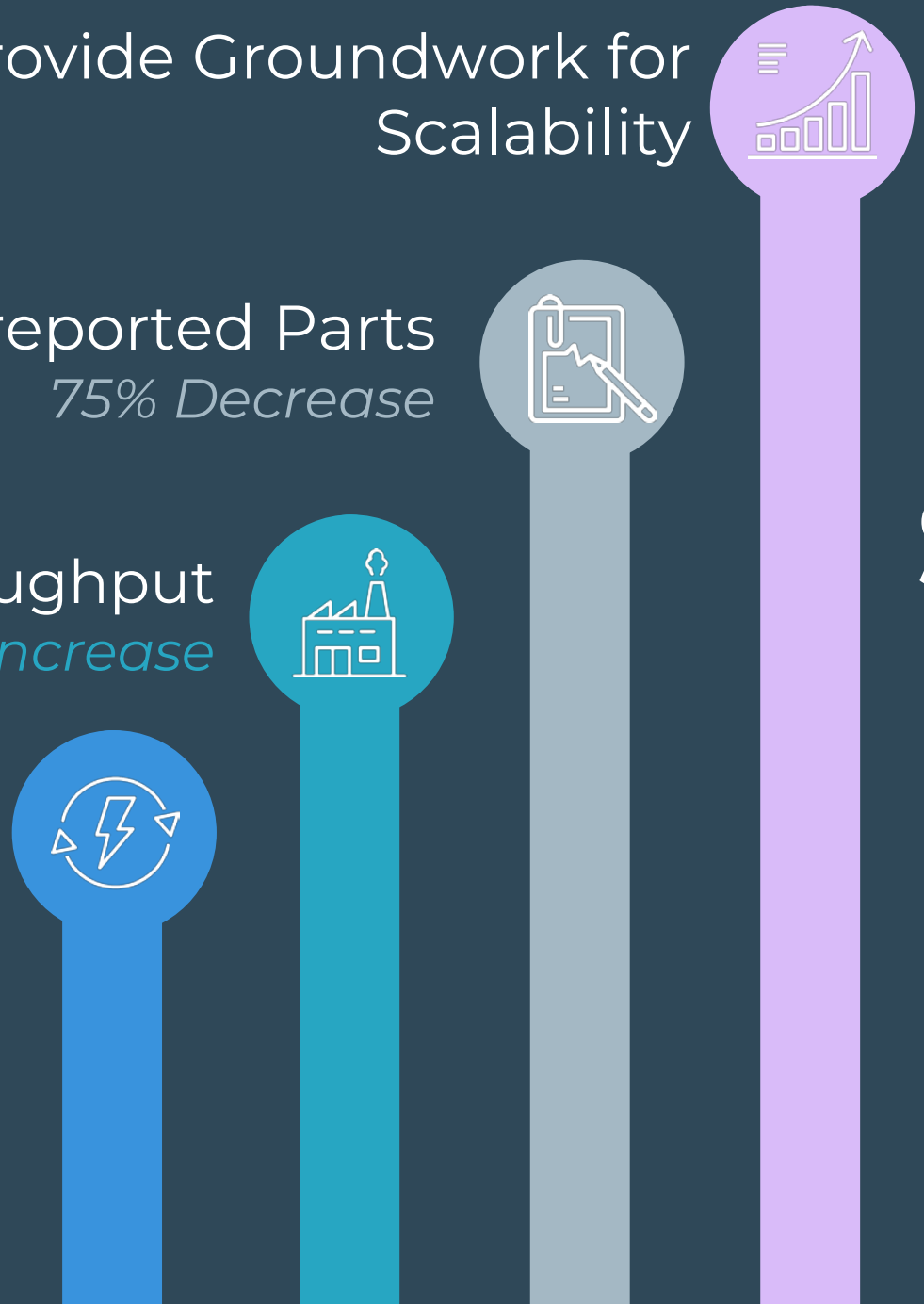
Total System Impact

Provide Groundwork for Scalability

Misreported Parts
75% Decrease

Shipset Throughput
50% Increase

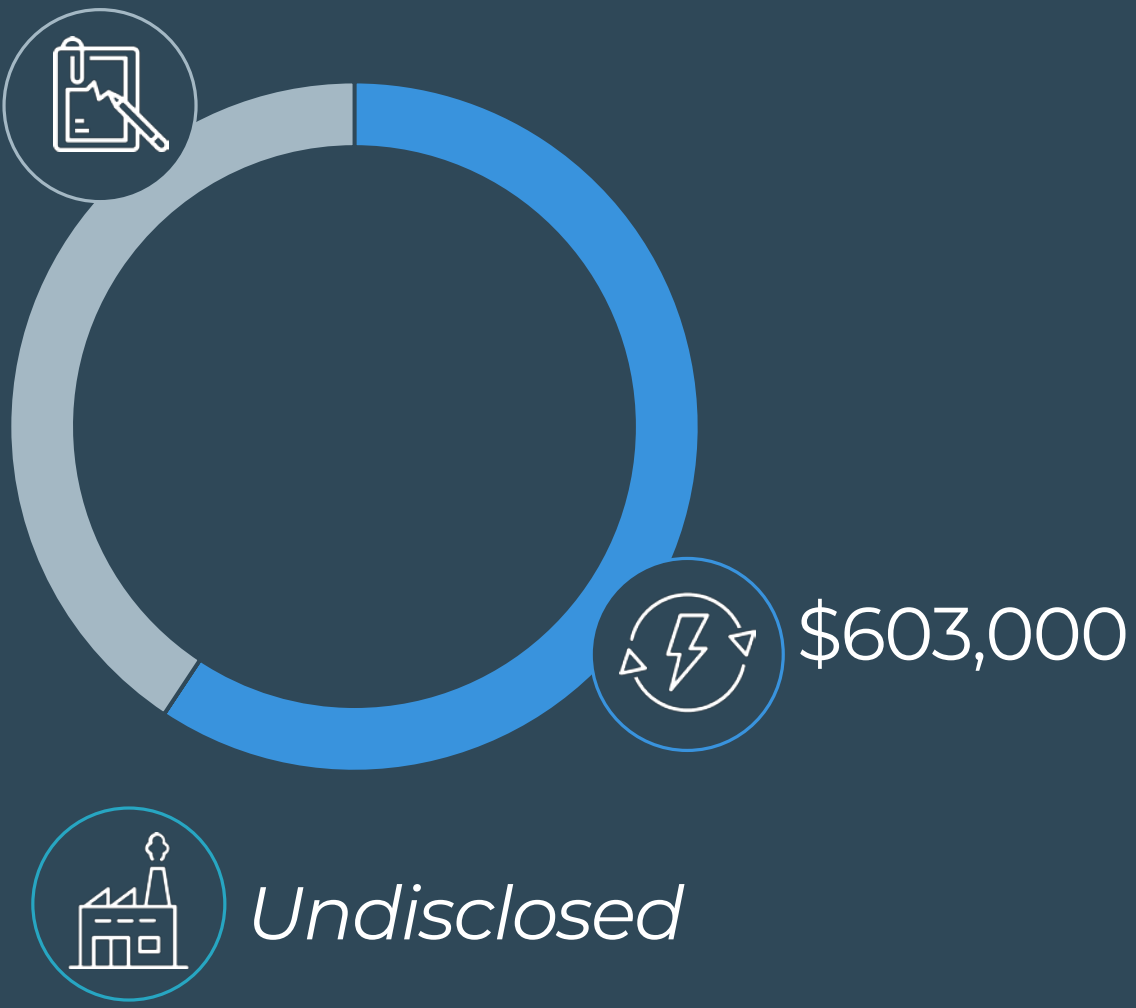
Employee Efficiency
37% Increase



$1 Million+

Annual Value Created

Value Creation Distribution



01 Labor Cost Savings

02 Increased Throughput

03 Inventory Savings

Daily Time Savings

Operator

13,400

Annual Labor Hours Saved

Stock Keeper

100+
Parts/Kit

Average
Part Cost:
$1,100

Most
Expensive
Part:
$88,000

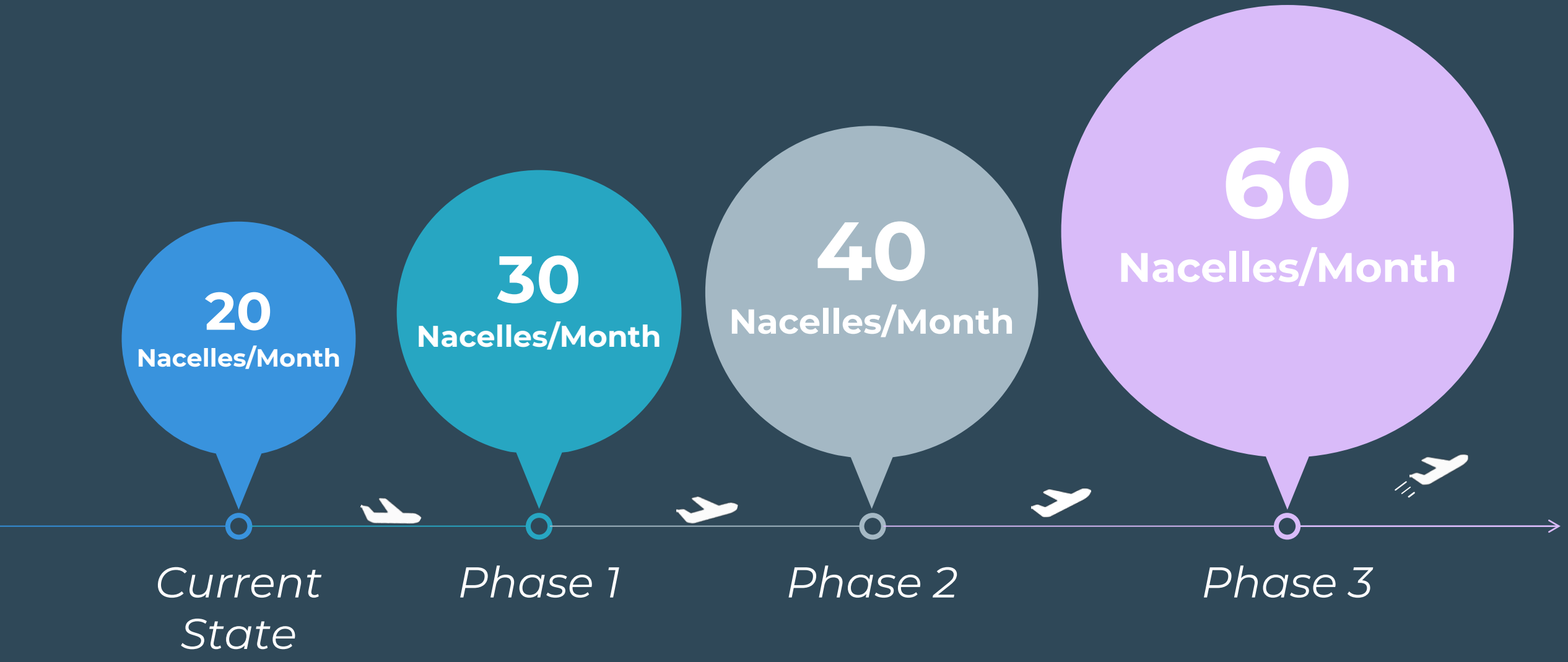
$414,000

Annual **Decrease** in Missing Parts

75% Reduction
in Missing Parts

99.7% Conformance
Relative to Output

Production Goal Timeline

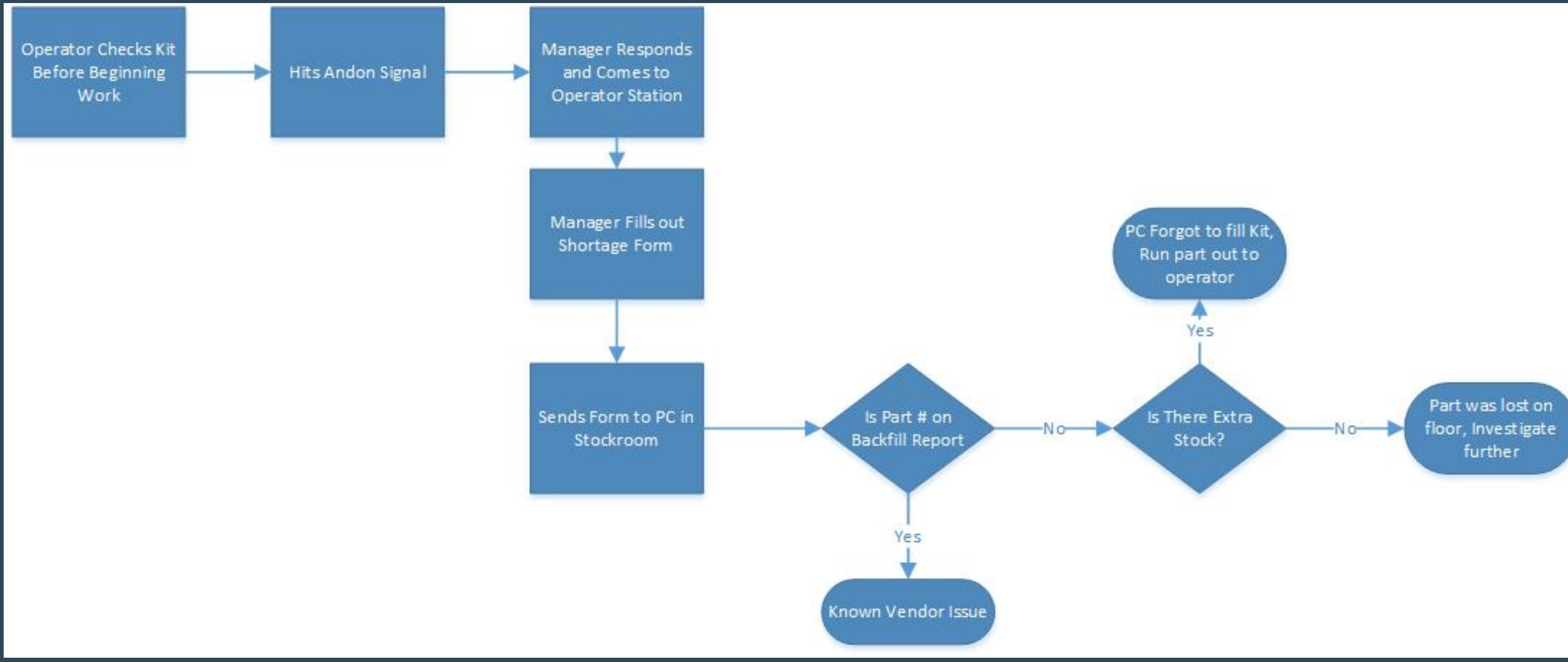



Questions?

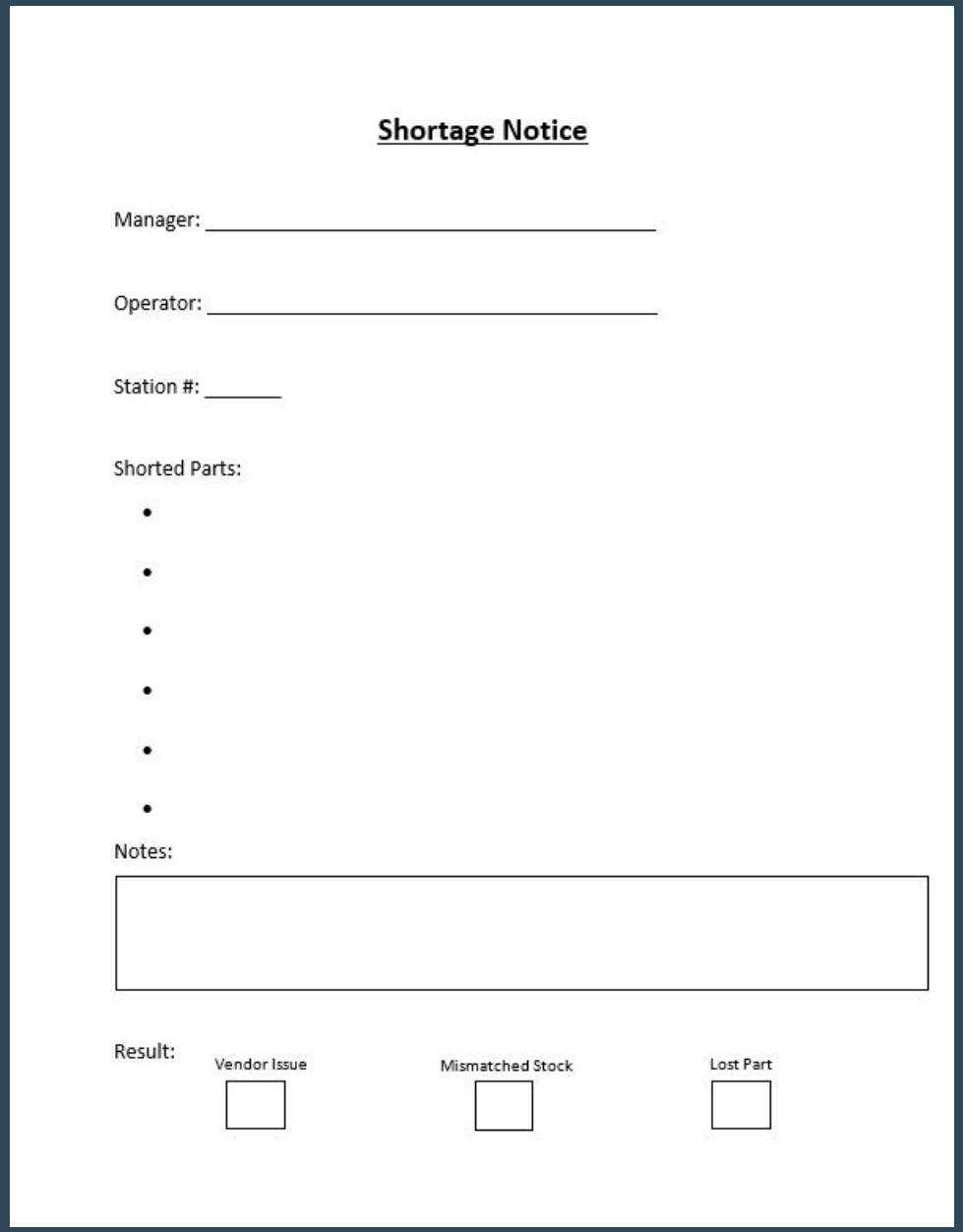
Appendix A: Production Control Access Point

Appendix B: Andon Signal

Appendix C: Shortage Notice Process



Appendix D: Shortage Form Information



Shortage Notice

Manager: _____

Operator: _____

Station #: _____

Shorted Parts:

-
-
-
-
-
-

Notes:

Result:

Vendor Issue ☐ Mismatched Stock ☐ Lost Part ☐

Appendix E: Labor Savings

Labor Rate 45 /hr

Function	Activity	Time (Minutes)	Goal	Time Saved	Frequency per Day	Time Saved for All Employees	Time Saved per Employee per Day
Assembler	Finding cart	3	1	2	1	32	2
Assembler	Check for shorted parts	5	5	0	1	0	0
Assembler	Shortage notice	5	2	3	1.5	72	4.5
Assembler	Time to receive parts	180	60	120	1.5	2880	180
Assembler	Push cart back	2	2	0	1	0	0
PC	Checking all carts for ba	30	5	25	2	50	50
PC	Retrieving old carts	25	5	20	3	60	60

186.5	3.108333333	39%			Sum	3094	Total Minutes Saved Per Day	
			6.675	37.08%	Sum in Hours	51.57	Total Hours Saved per Day	13407.33
					Labor Rate	$2,320.50	Total Labor Cost Saved per Day	
110	1.833333333	23%			Yearly Labor Savings	$603,330	Total Labor Cost Saved per year	(260 work days)

16 # of Operators

1 #of Stockkeepers

Appendix F: Inventory Savings

Total lost parts	$1,000,000
A320 lost parts (75%)	$750,000
Intentionally Misplaced (50%)	$375,000
Our Solution Reduces by 50%	$187,500

A320 Revenue (July-March)	$179,965,245				
A320 Scrap	$827,840	0.46%	of Revenue is Scrapped		0.23%
A320 Lost	$413,920.06	50%	of Scrap is Lost parts		0.06%
Reduce by	$310,440	75%	Reduction		
Our Goal	$103,480			0.288%	99.713%

0.058%

A320 Revenue (July-March)	$179,965,245	% of Prev	Annualing Factor	
A320 Scrap	$827,840	0.46%	1.333333333	$1,103,786.84
A320 Lost	$413,920	50.00%	1.333333333	$551,893.42
Reduce by	**$310,440**	**75.00%**	**1.333333333**	**$413,920.06**
Our Goal	**$103,480**		**1.333333333**	**$137,973.35**