Using Data to Drive Process Improvement Initiatives In the Right Direction

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Disclaimers

I have no relevant financial or nonfinancial relationships to disclose, but wish to share the following:

- Portions of this presentation were gathered from a book chapter I wrote in <u>Outcomes in SLP</u> by Golper and Frattali.

- University of Wisconsin – Madison is a member of NCCI.

- I am a Founding Partner of the 3C Digital Media Network, LLC and write a blog called *lean*Hcare.

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Why?

Do we really need data to drive change?

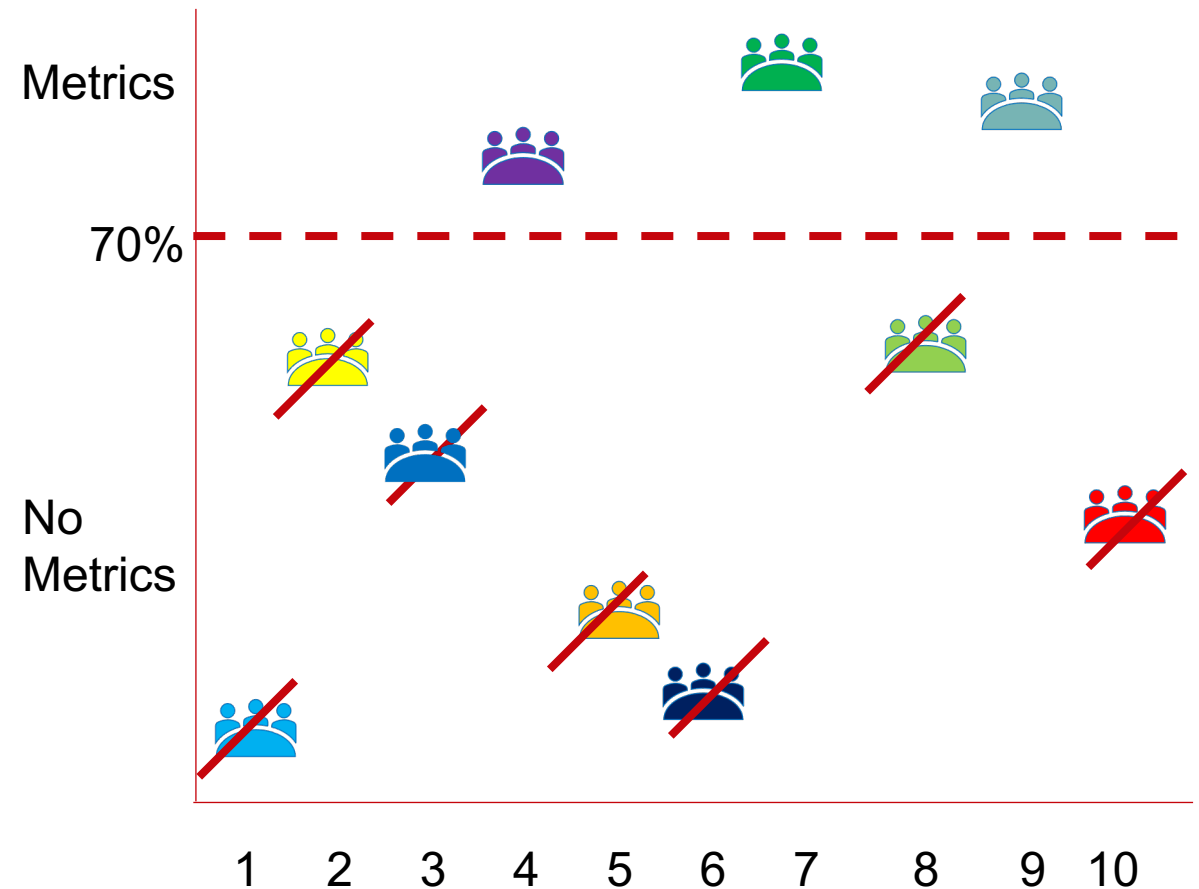# Which is Better?
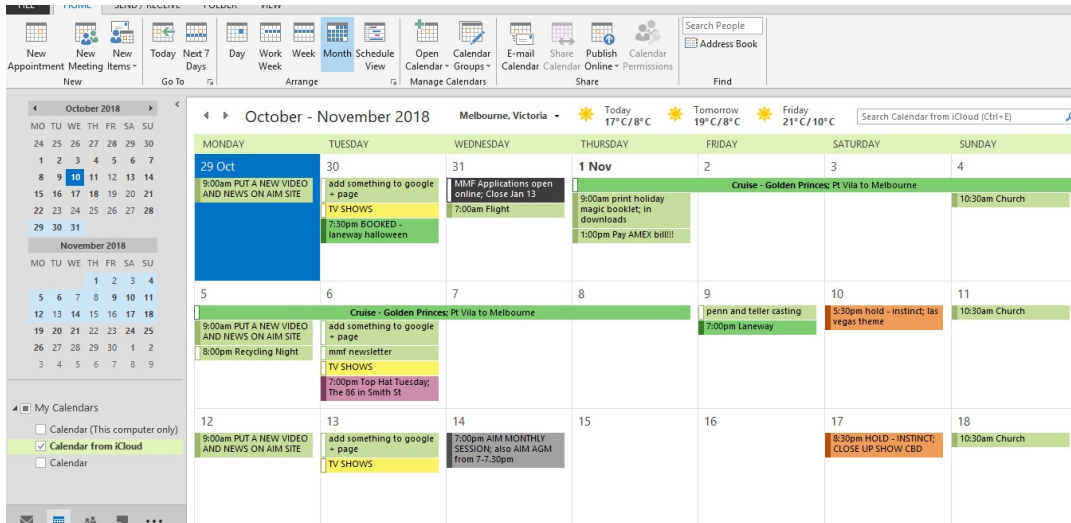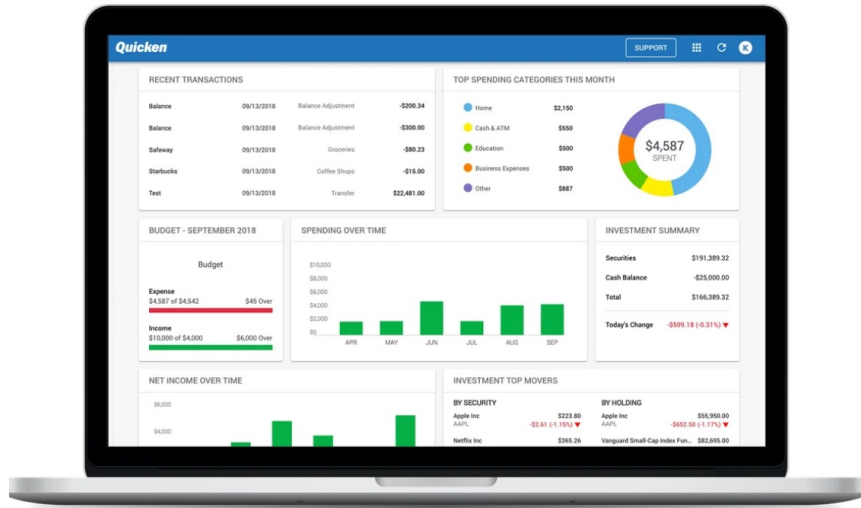
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Nearly 70% of change programs fail to achieve their goals. However, when we correctly utilize metrics and visual management systems, the opportunities to accelerate the behavioral change we want to enforce in our process improvement initiatives are endless.

Source: McKenzie & Company (2015)

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Photos by Microsoft, Quicken, guardian.com, and Mike at Pexels.com

Why do we need data?

1. Transparency, Trust, and Learning
2. Build Resiliency instead of Resistance
3. Navigate the Improvement Roadmap
4. Measure Progress and Celebrate Wins
5. Identify Opportunities to Achieve Success

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Objectives:

- Identify types of measurements used in process improvement that help to identify which opportunities to prioritize for improvement efforts.

- Determine if the improvement efforts are leading to progress towards the goals.

- Implement a visual management system for shared communication within and across the institutions.

What are we trying to accomplish?

How do we know that a change is an improvement?

What change can we make that will result in an improvement?

Source: Langley, The Improvement Guide

Ignaz Semmelveis, 1840's

https://www.history.com/news/
hand-washing-disease-
infection

It Took Surprisingly Long for Doctors to Figure Out the Benefits of Hand Washing

It wasn't until the mid-19th century that doctors realized going straight from an autopsy to the maternity ward was not a good idea.
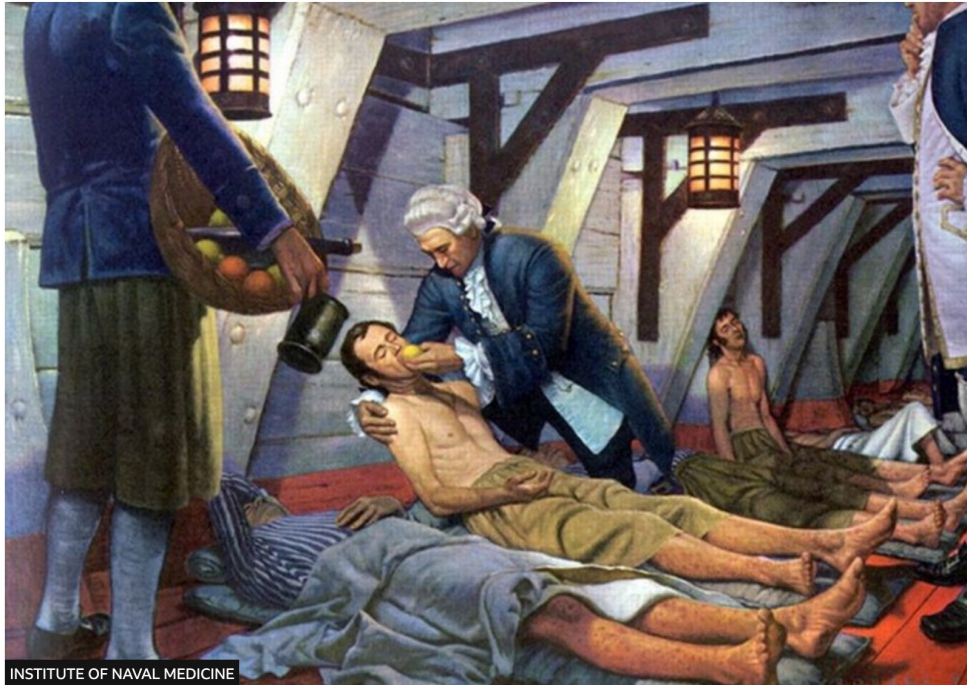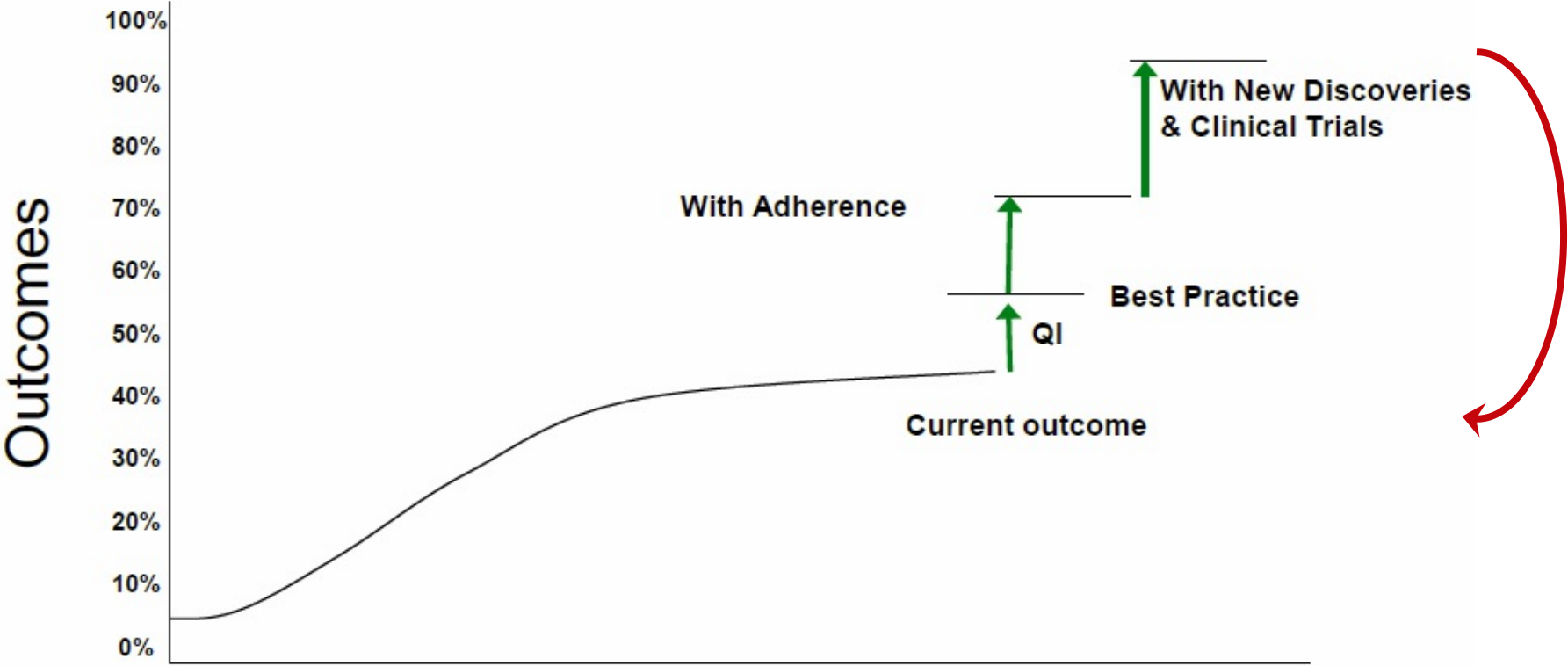

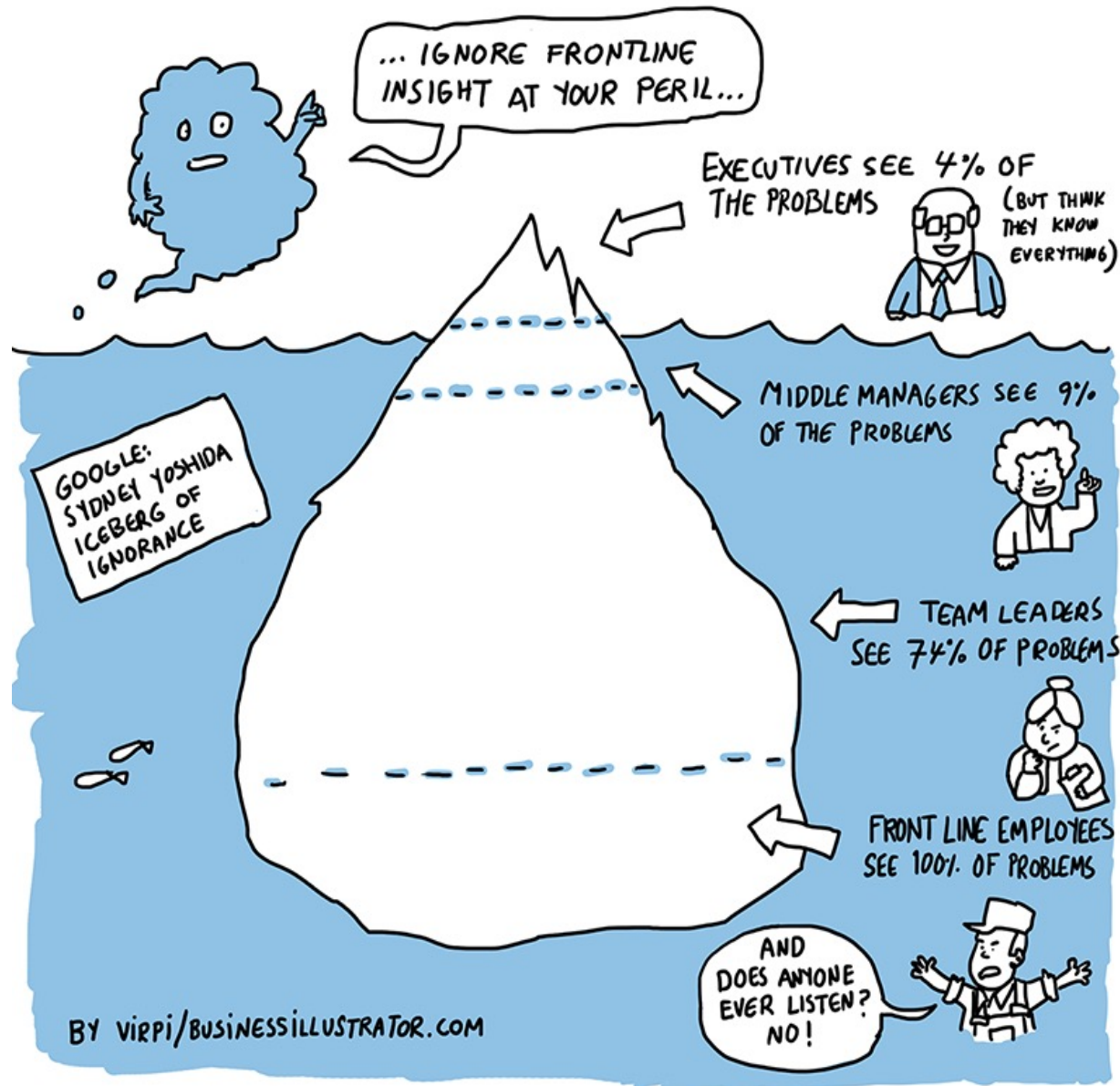INSTITUTE OF NAVAL MEDICINE

James Lind's experiment with citrus fruit was one of the first reported clinical trials in medicine

James Lind, 1740's

https://www.bbc.com/news/uk-england-37320399

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What are we trying to accomplish?

John Bucuvalas, Cincinnati Children's

Study Your Opportunity

This is probably the most important step! Learn as much as you can! Take your time!

What are we trying to accomplish?

How do we know that a change is an improvement?

What change can we make that will result in an improvement?

Source: Langley, The Improvement Guide

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Types of Measures

Outcome

- Wildly Important Goals
- Takes Time
- Lagging Measures
- Are we meeting our ultimate goal?

Process

- Small tests of change
- Leading Measures
- Are we doing the right things to get there?

Balance

- Ripple Effect
- Unintended Consequences
- Are the changes we are making causing any problems?

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Identifying Opportunities

Opportunities	Definition	Examples
Overproduction	An activity is not needed or implemented earlier than schedule	• Too many handouts • Unbalanced teaching loads • Course schedule is heavy on a specific day
Over-processing	The category of waste that occurs in the design or implementation of higher education processes.	• Variability of courses • Non-strategic alignment • Ineffective activities • Repeating unnecessary tasks
Waiting	Delay of a process or source	• Waiting for an empty classroom from the previous user/multimedia system to begin lecturing • Waiting for repairs/maintenance • Awaiting permission or approval • Looking for books, papers, documents, etc.
Movement	Unnecessary movements	• Movement of lecturer/staff/students from classrooms or from one campus location to another • Excessive movement of equipment

Identifying Opportunities

Opportunities	Definition	Examples
Transportation	Excessive movement material/ object.	• Routing administrative documents for approval • Transporting lecture material (hard copies of material, books, etc.) between classes
Inventory	Availability of supplies or goods needed.	• Storing records longer than needed • Too much inventory • Too many photocopies of agendas, notes, etc. • Inefficient use of building spaces, storage
Defect	Every aspect that is inappropriate according to standards/needs.	• Correcting data errors • Schedule errors • Rework
People	Underutilized human resources skills/abilities due to inappropriate work allocation.	• Educators do not teach based on expertise • No time for research or scientific activities • Unnecessary bureaucracy • Misalignment of goals
Information	Waste that occurs when the available information does not support the university process.	• Information lost during delivery • Irrelevant or inaccurate information • Mistakes due to misunderstanding and communication problems

Using *Outcome*, *Process*, and *Balance Measures* in process improvement helps to build a learning culture built on trust and transparency.

Categorizing opportunities for improvement help to *prioritize efforts* that can be quantified and shared with others.

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Printers

Problem: *Printer/Copier/Faxing management* for faculty, staff, and students is causing excessive *waste, confidentially* concerns, and negative *environmental* consequences.

Aim: Reduce the number of different types of printers/copiers/faxing machines and maintenance agreements from 1015 to 20 by the end of the academic year.

Photo by Andrea Piacquadio, Pexels.com

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How do we know if the change is an improvement?

Awesome job!

Photo by Jeff Miller / UW-Madison

Photo by Photo by Bryce Richter / UW-Madison

Measure it!

Outcome: Waste reduction

**Process: Inventory reduction
Ink cartilages
Paper
Servicing (i.e., repairs)**

**Balance: Timeliness of printing
Duplication printing**

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What are we trying to accomplish?

How do we know that a change is an improvement?

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Measurement Plan

- How will you collect data?
  - Check sheet
  - Checklist
  - Questionnaire
  - Rating Scale

- When will you collect data?
  - Day of the week
  - Month of the year
  - Time of day

- Who will collect the data?
  - Manager, Team lead, Chair, Peer

- How much data?
  - One day, One person, One class
  - Historic data
  - Real time data
  - Sampling or All data

- Have you established validity of the data?
  - Addressed bias
  - Variations

- How will you share the data?
  - Visual management system

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Tell the story using your data

- Pareto Chart
  - Compass
- Run Chart
  - Guides you before you get on the interstate
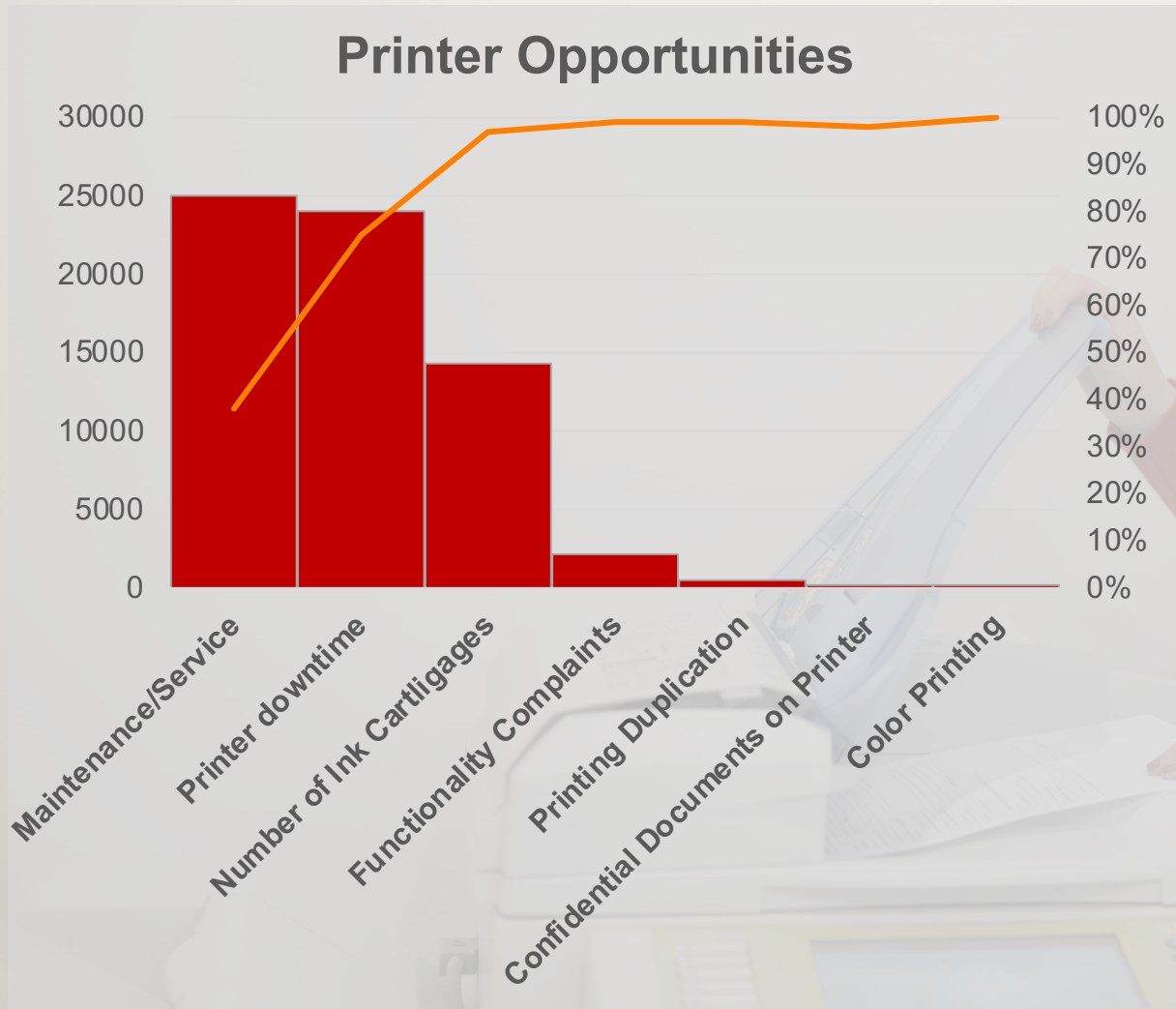- Control Chart
  - Cruising along

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Printers

Printer Opportunities

Photo by Andrea Piacquadio, Pexels.com

Printers

Maintenance and Service

- Over 3,000 printers in storage
- Service contracts on ~30% printers
- No printer/copier/fax SOP
- Different accounting systems
- Different functionality
- Minimal tracking of usage, servicing on non-contracted printers

Photo by Andrea Piacquadio, Pexels.com
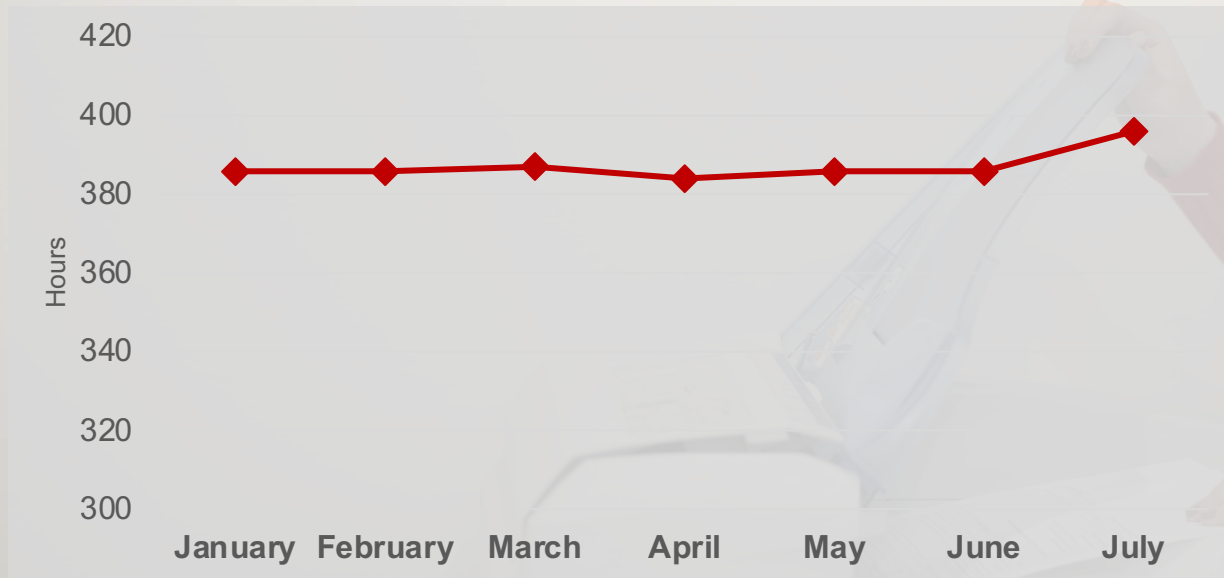
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Visual Controls & Visual Management System

Simple & Intuitive

Andon Alerts

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Visual Management Board Example

- Should be simple, intuitive

- Easy to understand

- Focuses on the right problems

Visual Management Board Example

- Establish the purpose of the board

- Visibility leads to actions and problem solving

- Enhances trust through transparency and communication

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Key Driver Diagram Example

- Goal
  - To test a hypothesis
  - To show a causal relationship
  - Living document used to accelerate learning in an improvement project

- Outcome
  - The What! What do we want to improve?

- Aim Statement
  - SMART

- Primary Driver
  - A set of factors or improvement areas that we believe must be addressed to achieve the desired outcome
  - The How's!
  - Consider "Structure, Processes/Workflow, and Operating Norms/Written and Unwritten Rules"
  - Statement/Noun

- Secondary Drivers
  - Specific areas where we plan changes or interventions
  - Secondary drivers will contribute to at least one or more primary driver
  - The How To's!
  - Action/Verbs

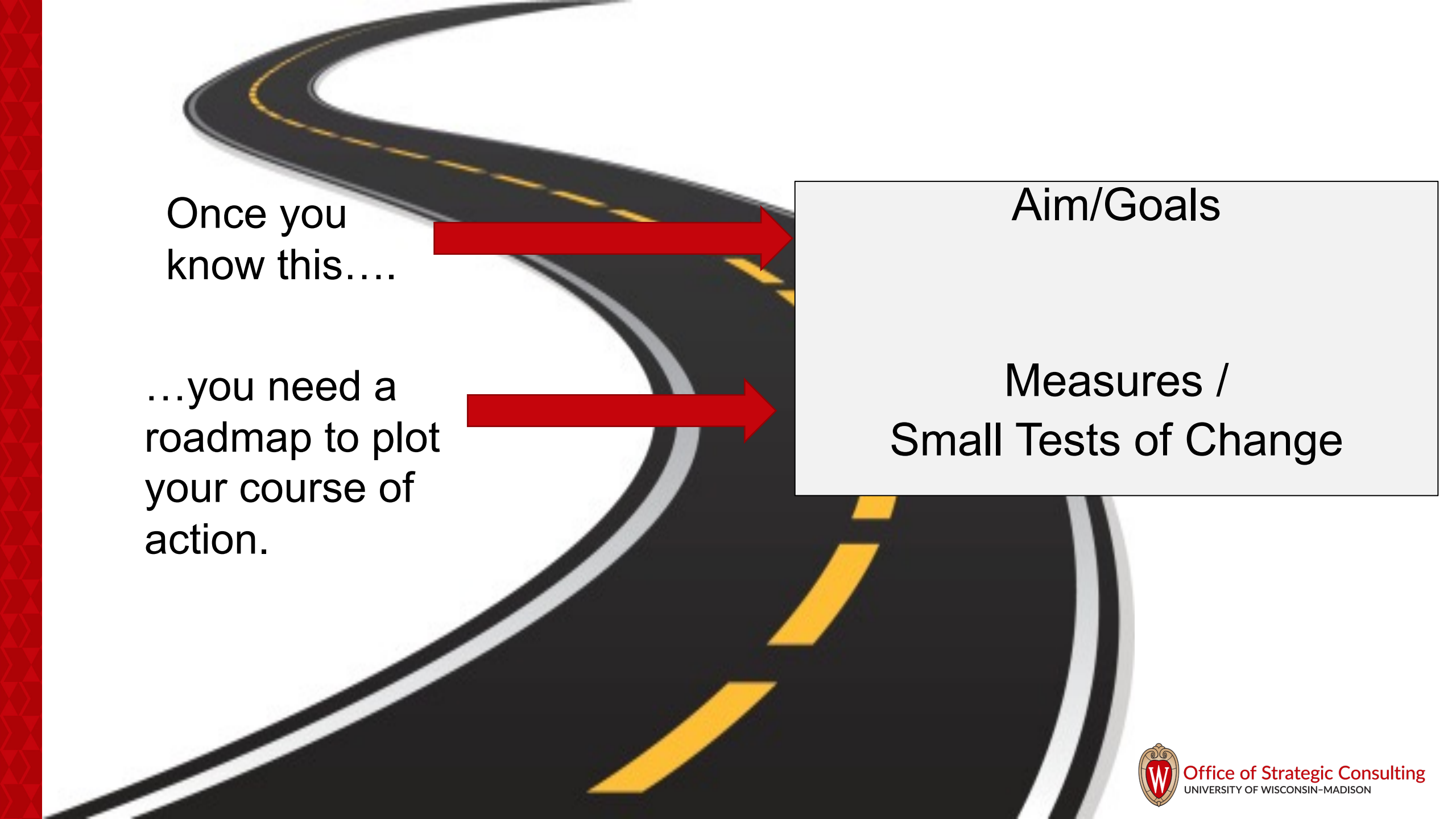# Key Driver Diagram - Printers

Problem: *Printer/Copier/Faxing management* for faculty, staff, and students is causing excessive *waste, confidentially* concerns, and negative *environmental* consequences.

Reduce the number of different types of printers/copiers/faxing machines and maintenance agreements from 1015 to 20 by the end of the academic year.

Standardize multifunctional printers

All-inclusive cost per page structure

Centralized Support

Benefits align with University Strategic Plan

Minimal downtime

Identify user requirements

Determine the right equipment based on needs

Complete the RFP to have an all inclusive pricing structure for paper, toners, services, etc.

Create policies and SOPs

Automate help ticket requests

Automate toner replacements

Key:
Green – Completed
Orange – In progress
Red – Have not started

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SUMMARY

Measures:

This is how we know if the changes we are making are actually leading to improvement!

- Types of measures:
  - **Outcome measures** – what is the ultimate result?

  - **Process measures** – are we doing the right things to get there?

  - **Balancing measures** – are the changes we are making to one part of the system causing problems in other parts of the system?

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Visual Management System Example

	Printers	Student Recruitment	Employee Retention
Problem Worth Solving/ Background	Too many different styles of printers	Staffing college fairs	Turnover rate
Aim/Goal	↓ printers types/agreements	↑ # of college fairs attended	Retain high quality staff and faculty
Outcome Measure	# of printers from 1015 to 20	# of high quality, diverse students applying to college	Retain staff and faculty for 2 years from hire date
Process Measures	• Printer to person ratio 10 to 1 • Color printing • Tracking system	• Interest forms • Student visits to booth • Student sign-ups for more information • Students apply to college	• Onboarding • Peer partner • Startup package
Balance Measures	Printing time Confidentiality printing	Time away from office	--
Updates	500 printers	Attended 10 fairs	75% retention
Wins/Milestones	# of the 7 colleges have been updated	Two new college fairs	Peer partner program
Barriers	Status symbol if printer in office	Brochure missing key information	--
Est. End Date	End of academic year	February, 2023	Ongoing

The Value of "Failed" Tests

"I did not fail one thousand times; I found one thousand ways how not to make a light bulb."

Thomas Edison
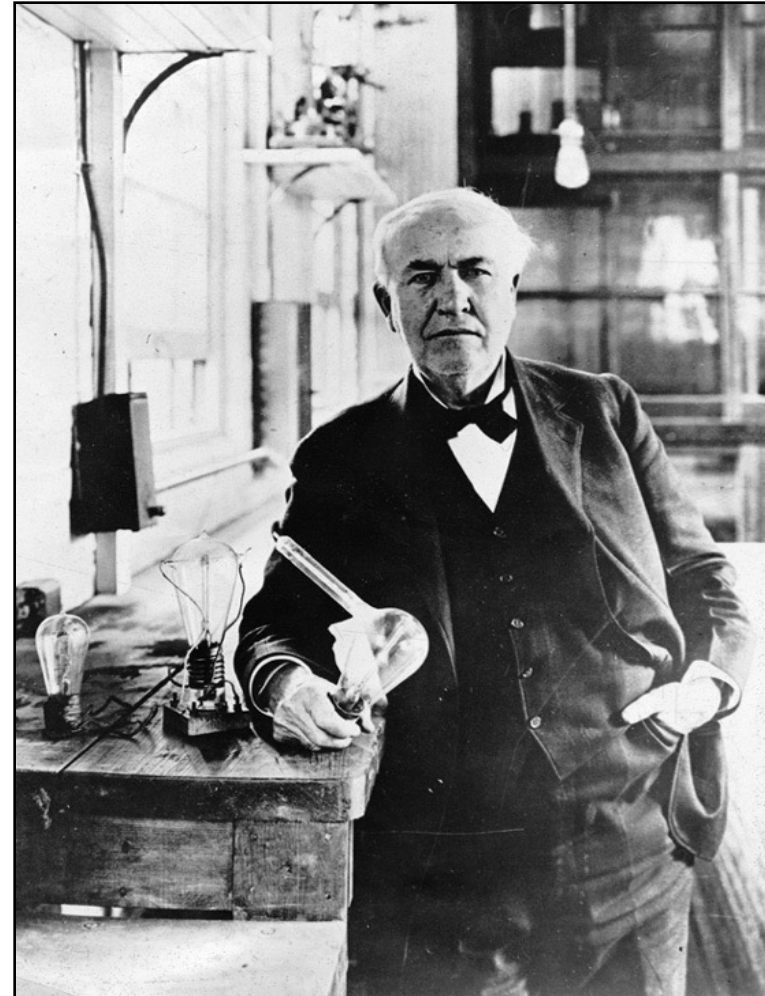
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Thank you for being here today!

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