Value Stream Mapping

Better understand processes and identify improvements

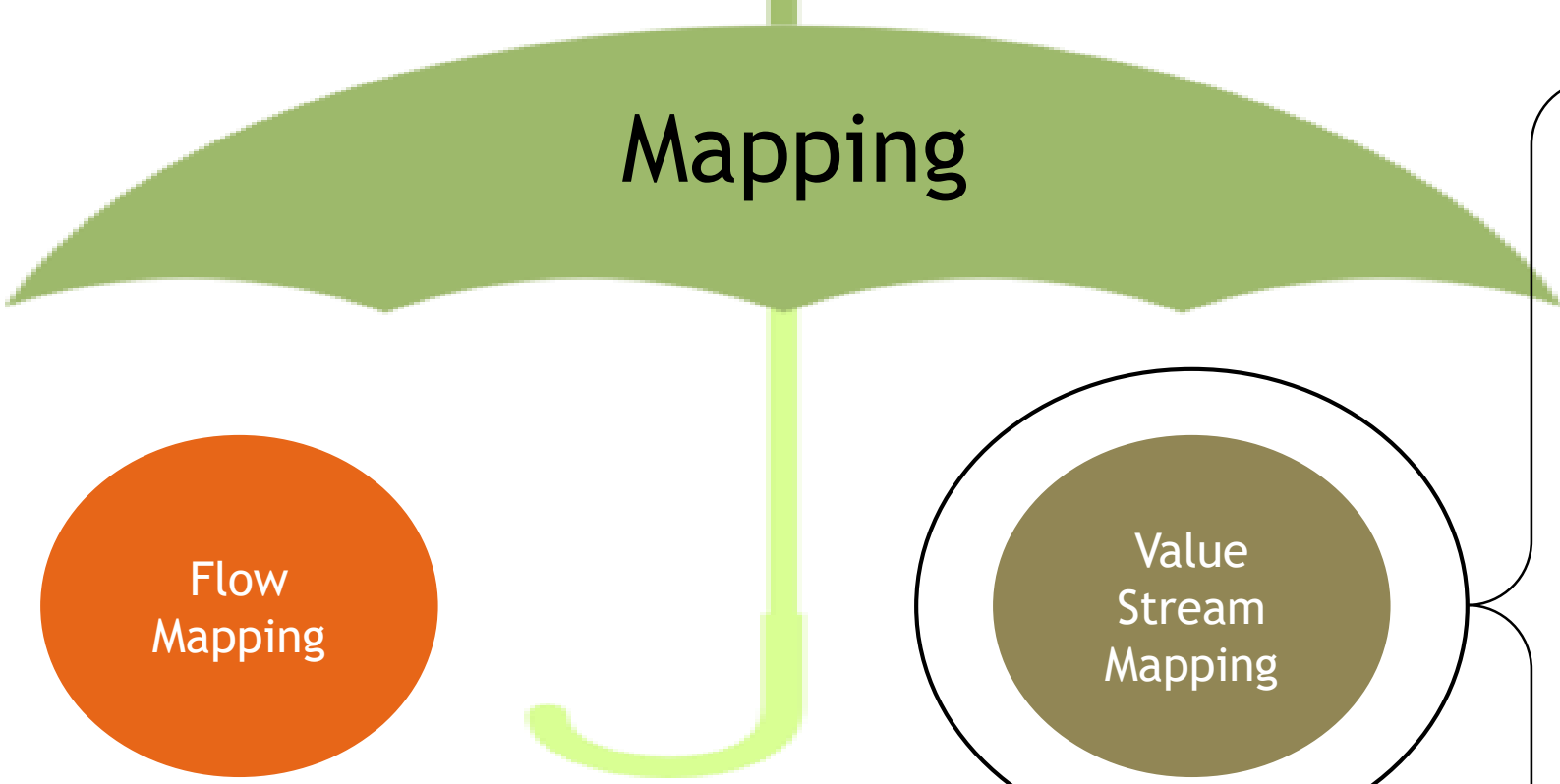
Janice Wilby, Continuous Improvement

January 2018

In this section, we will cover…

- The importance of VSM for understanding system flow.
- Relationship between time, waste and flow.
- Different types of waste and flow.
- Components of a Value Stream Map.
- Difference between lead time, cycle time, value add and non-value add time.
- Process Quantity Analysis (PQA) to analyze the process.

Mapping



Flow Mapping

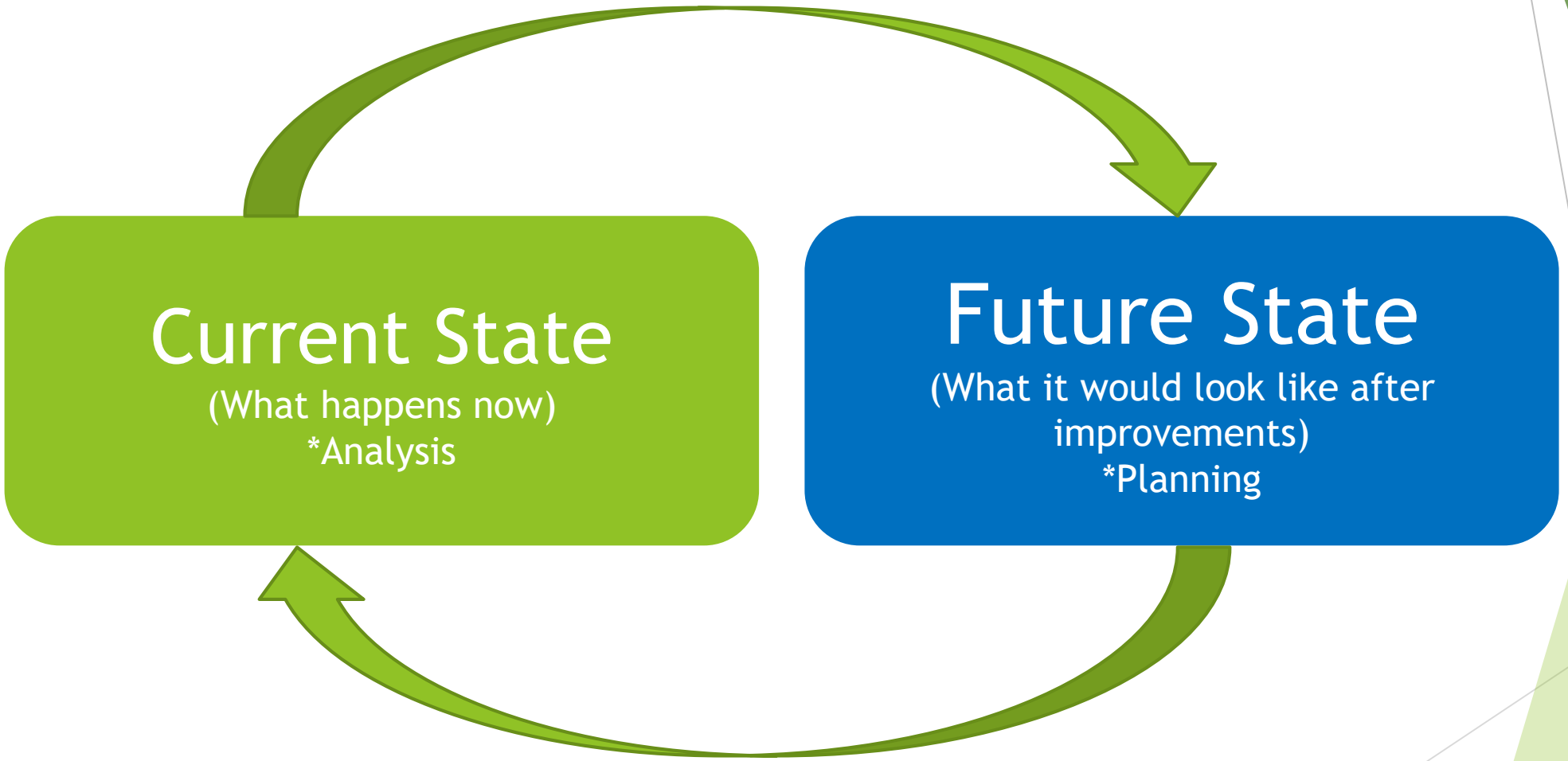
Process Mapping

Value Stream Mapping

Data Mapping

- Customer First
- Gather and displays a broad range of information
- Built at a high level (5-10 boxes)
- Built at a broad level (receiving raw materials to delivery of finished goods)
- Used to identify future projects, and improvement events

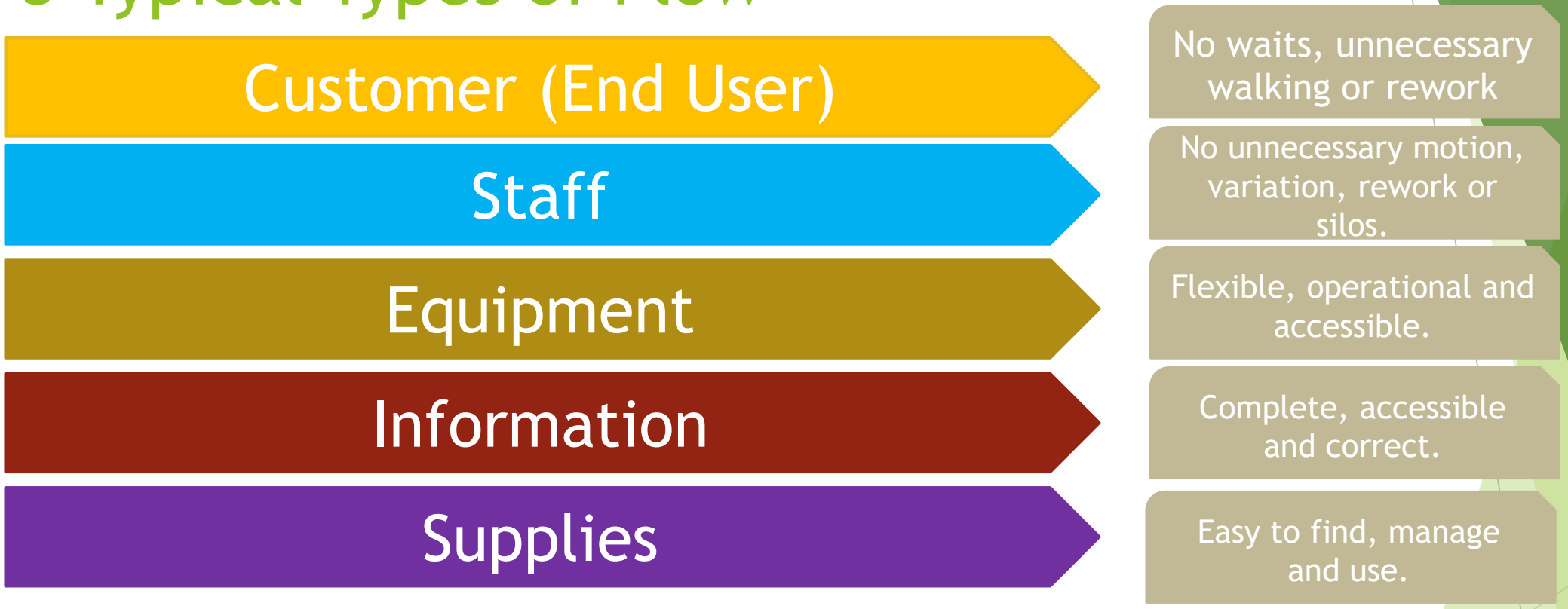
Two types of VSM



VSM Goal

- Optimize flow through a system
  - Eliminates ‘wastes’ or inefficiencies in processes
  - Improves teamwork and communication

5 Typical Types of Flow



Right Service

Right Place

Right Time

Waste

Prevents Flow

Defects
(mistakes that hit the customer)

Transportation
(movement of product)

Over-production
(making more than needed)

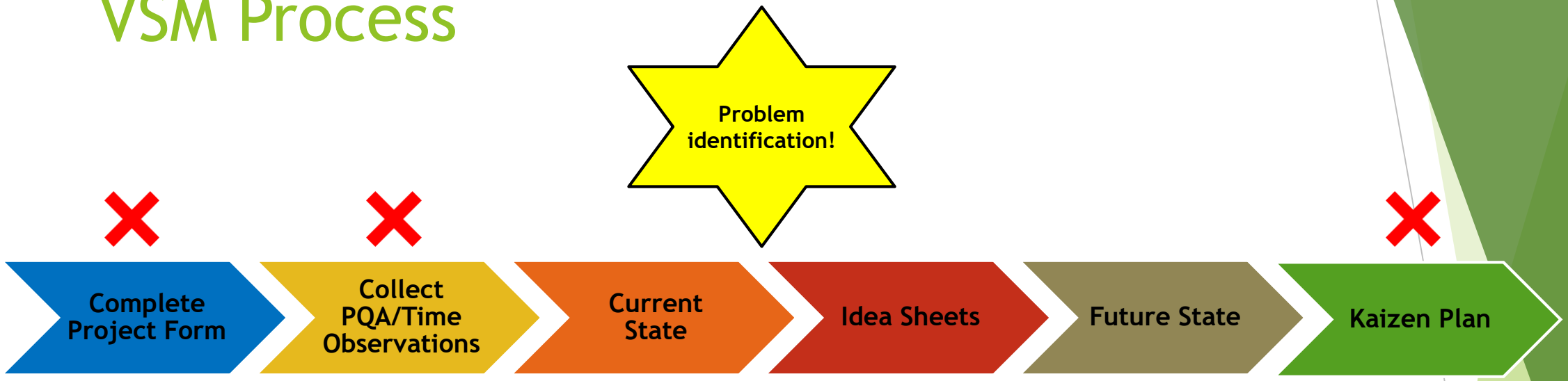
Inventory
(too much or too little)

Over-processing
(writing then typing i.e. rework)

Movement
(distance travelled by people)

Waiting
(i.e. waits for approval)

VSM Process



- Identify improvement opportunity
- Decide Stakeholders

- Gather data

- Map current state
- Identify problems

- Engage team members to provide solutions

- Map future state
- Ensure current problems are eliminated or mitigated

- Who does what by when

Project Form

Activity Type:
In Lean, there are several types of events/activities. You would list it here.

Improvement Event Title:
List the name of the process you are focusing on.

Report Out Date:
In this section, you would type a date in which you will present your findings to your executive.

Which organizational priority is this activity related to?
Many organizations have priorities. List which priority this activity is connected to.

Measurement:
In this section, you would articulate how you would measure your efforts. In Lean, we use Quality, Cost, Delivery, Safety and Engagement.

Current Situation:
Briefly state the issues felt by customers/users and staff in the process.

Sponsor:
Process Owner:
Co-Lead:
Audit Leader:
Support:
Coach:

Team Members:
1.
2.
3.

Other Department Contacts:
1.
2.
3.

PQA Data:
Gather data to support the problems "felt" by customers/users and staff in the process.

Scope:

From:
To:

Process Flow: *Fill the assumed process flow.*

Sponsor signature:
Process Owner signature:

Purpose:
One-pager business case

Process Quantity Analysis (PQA)

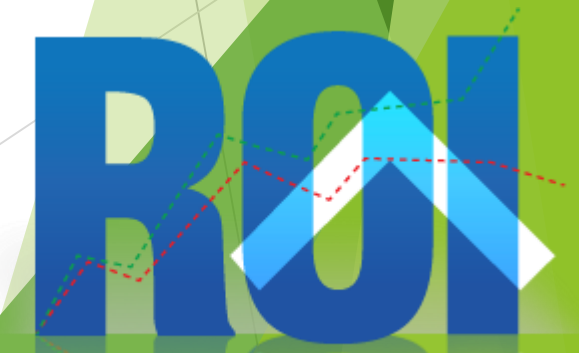
Purpose:
Data evidence of problems

- Helps put context to the value stream process.
- Helps you learn more about customer needs.
- Includes Supply and Demand data.
  - **Supply:** Hours of operation and number of staff to do the work.
  - **Demand:** Data to understand the volume of customers or services and defect rates (quantify the problems you are encountering).

Example: Service Desk

- **Supply:**
  - 15 staff cover phones/queues.
  - Work occurs between 8:00 a.m. – 5:00 p.m. Monday to Friday.

- **Demand:**
  - Average # of calls/day: 2,000.
  - Average # of escalated calls/day: 1,200 (60%).



Time Observations

- Document the steps and collect time observations.

- Walk the process and document steps as you see them. Think about:
  - What initiates the process?
  - What concludes it?
  - What are the steps in between?

Purpose:
Evidence of what is ***actually*** happening, not what we ***think*** is happening.

Example: Service Desk

1. Customer submits ticket
2. Ticket in queue
3. Ticket is analyzed
4. Ticket is escalated
5. Ticket sits in queue
6. Ticket is processed
7. Customer is notified

Time Observation Form

Pre-Kaizen or Post Kaizen

Process name: Service Desk				Observer name: Janice Wilby			Observation Date: January 11, 2018		Time: 9:00 a.m. – 11:00 a.m.
Step #	Description of step	1 0	2 0	3 0	4	5	6	Component Task Time	Remarks
1	Customer submits ticket	05:15	02:02	02:01				02:01	Hardcopy requests take longer – fill in form.
		05:15	02:02	02:01					
2	Ticket in queue	10:02	30:35	30:48				28:33	Emailed requests are automatically placed in a queue. Hardcopy tickets need manual data entry.
		04:47	28:33	28:47					
3	Ticket is analyzed	15:06	33:32	35:26				02:57	
		05:04	02:57	04:38					
4	Ticket is escalated	16:03	34:02	36:03				00:37	Immediate escalation within Service Desk. No wait between step 3 and 4, but needed to highlight the two steps.
		00:57	00:30	00:37					
5	Ticket sits in queue	36:03	49:08	46:28				15:06	
		20:00	15:06	10:25					
6	Ticket is processed	46:32	60:06	56:09				09:41	
		10:29	10:58	09:41					
7	Customer is notified	46:32	60:06	56:09				00:00	Ticket system automatically sends notification when closed.
		00:00	00:00	00:00					
	Time for 1 cycle:	46:32	60:06	56:09				58:55	

1

2

3

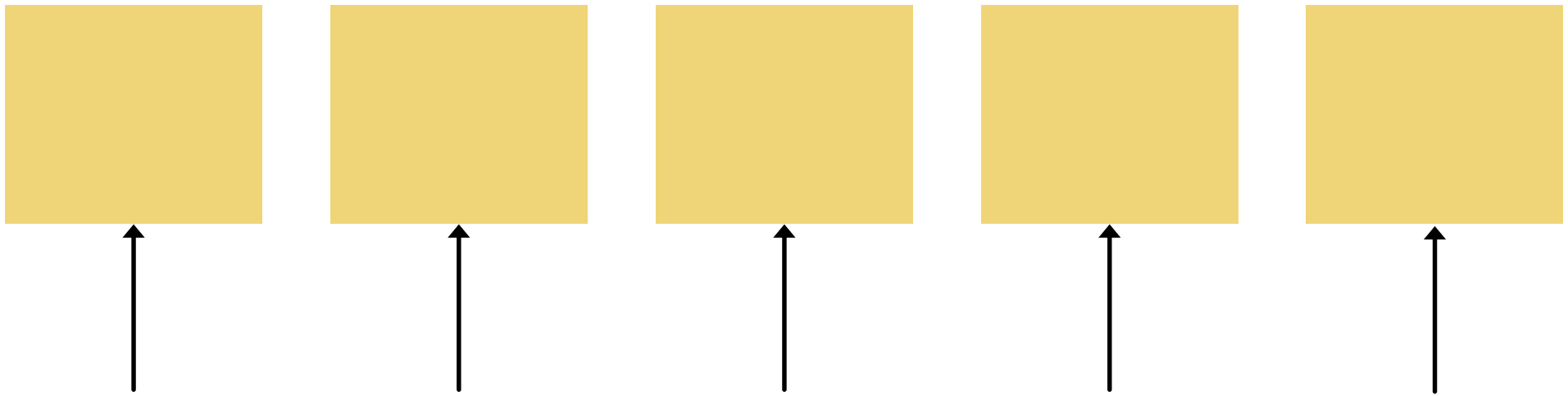
4

5 Find the "reasonable" time for each task

6 Add Component Task Times to get the final Cycle Times and Lead Time (total time)

Draw the Current State Map

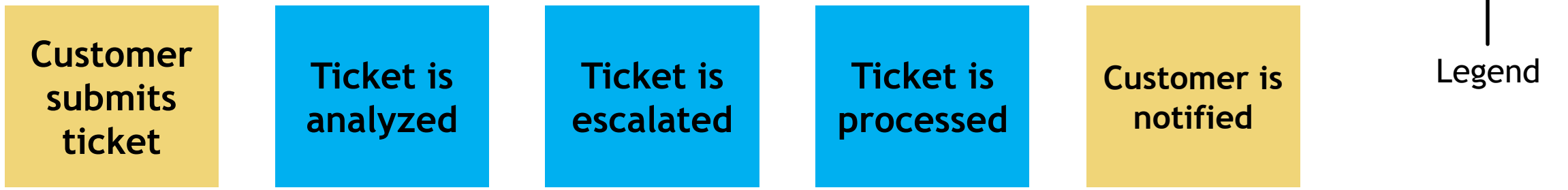
Example



Use sticky notes for each process step

Current State Map: Service Desk
From Customer submits ticket to customer's request completed

PQA:
Supply:
15 staff cover phones.
Phones are answered between 8:00 a.m. - 5:00 p.m. Monday to Friday.
Demand:
Average # of calls/day: 2,000.
Average # of escalated



Team Members:
Darin
Janice
Tim
Michelle
John

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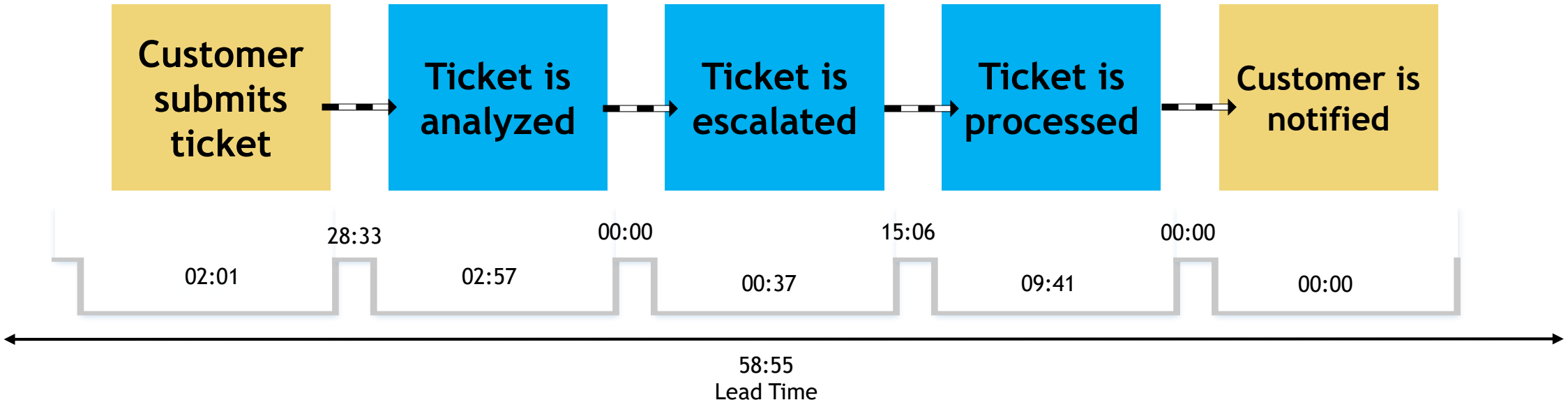
Customer

Service Desk



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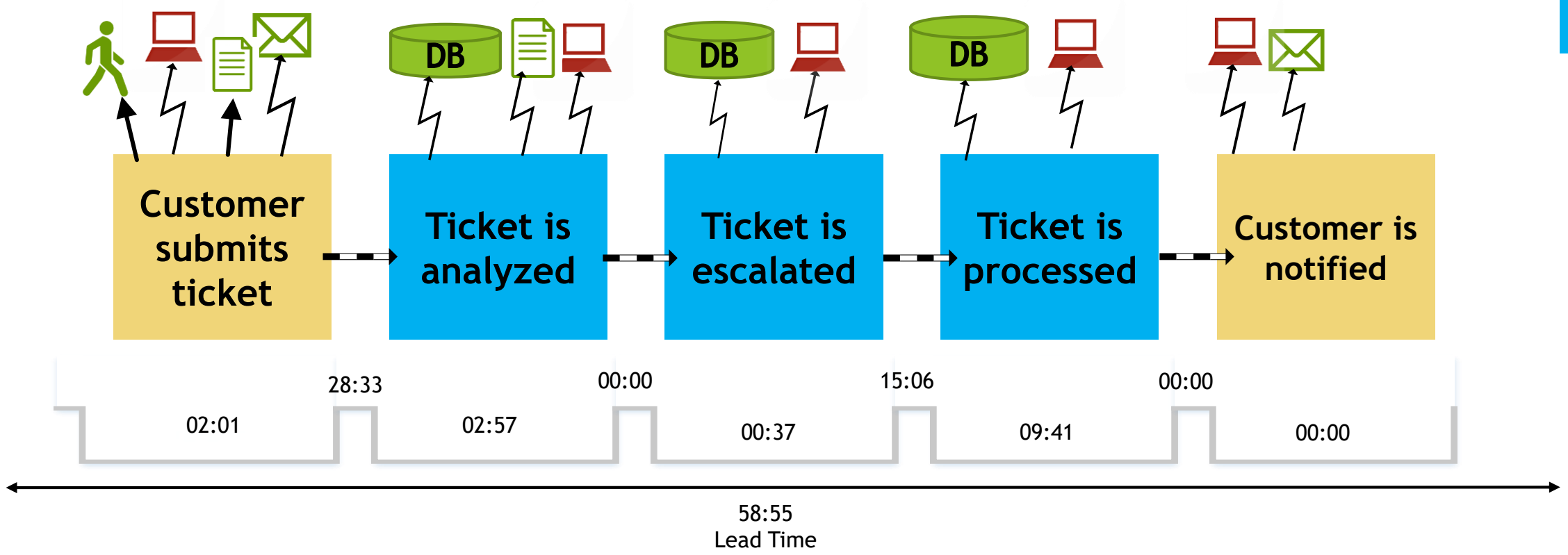
Service Desk



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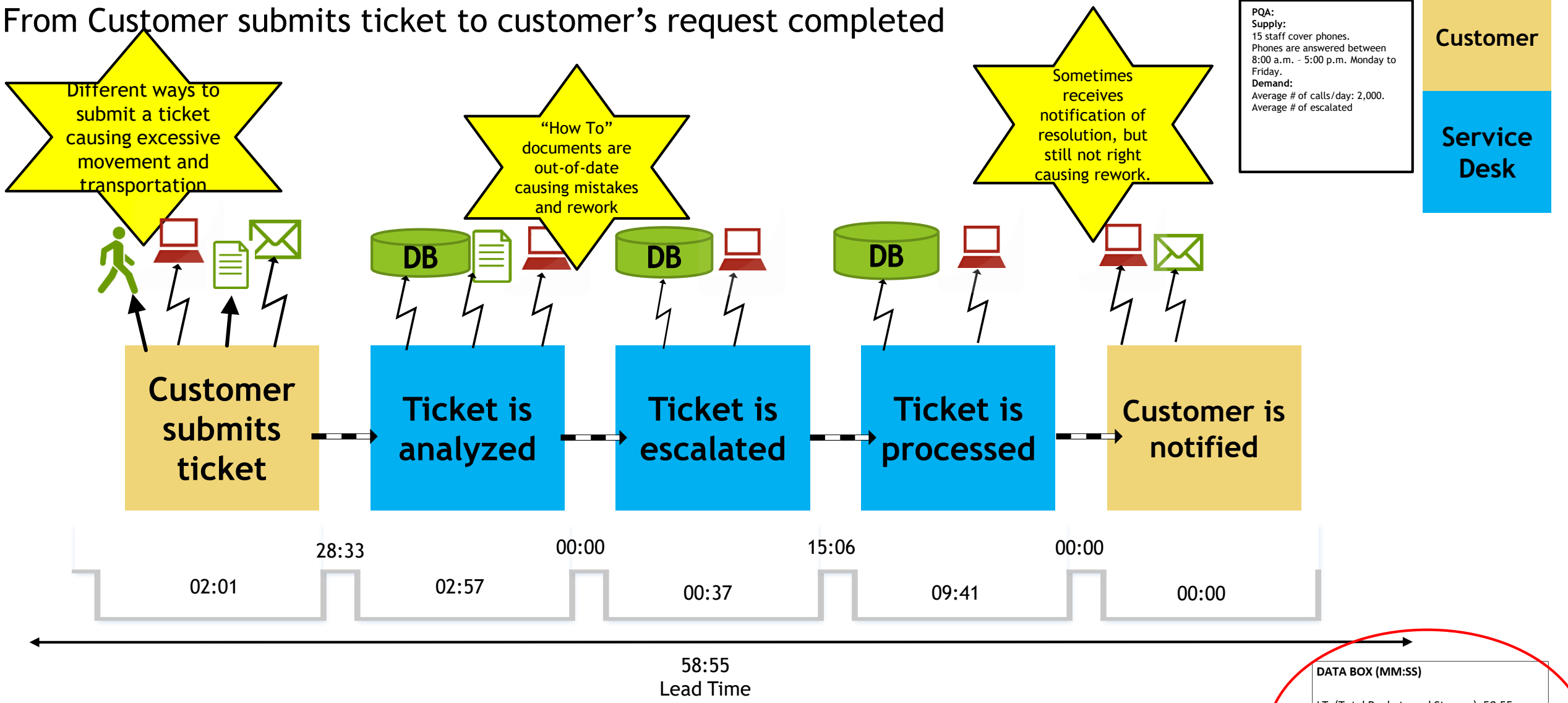

Team Members:
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DATA BOX (MM:SS)

LT: (Total Buckets and Stumps): 58:55
CT (Buckets): 15:16
VA (Buckets): 15:16
NVA (Stumps): 43:39
VA% (VA/LTx100): 26%
NVA%: (NVA/LTx100): 74%

Data Box

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Current State Map: Service Desk

1

From Customer submits ticket to customer's request completed

2

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Customer

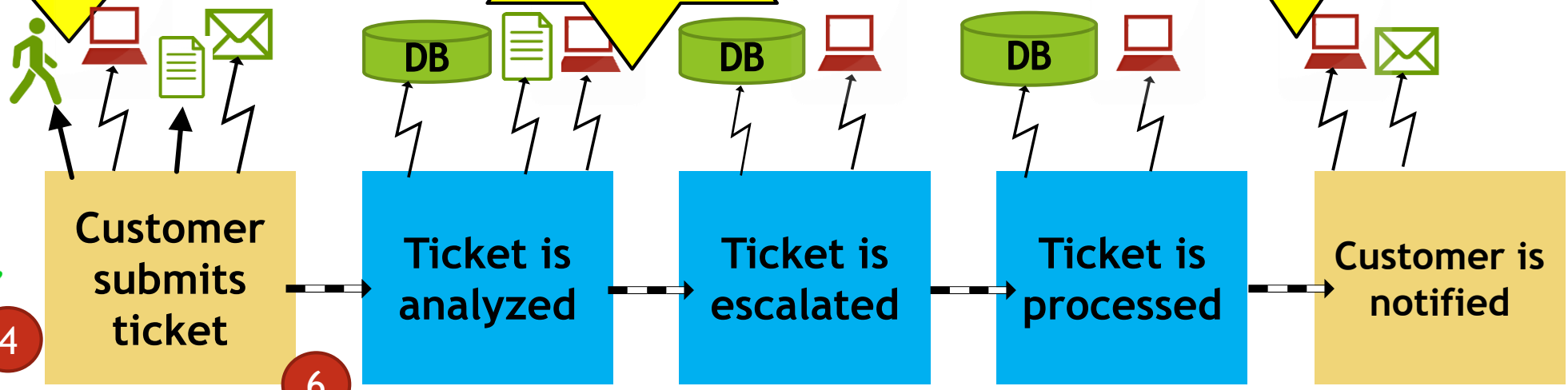
Service Desk

Different ways to submit a ticket causing excessive movement and transportation

3

"How To" documents are out-of-date causing mistakes and rework

Sometimes receives notification of resolution, but still not right causing rework.



4

6

28:33 | 00:00 | 15:06 | 00:00

5

02:01 | 02:57 | 00:37 | 09:41 | 00:00

7

58:55
Lead Time

8

DATA BOX (MM:SS)

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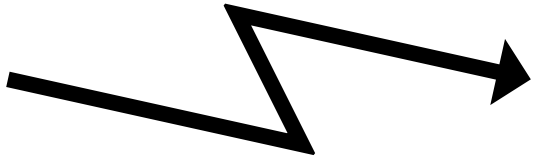
9

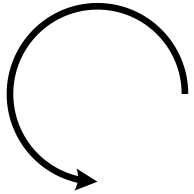
VSM Symbols



Electronic Information Flow

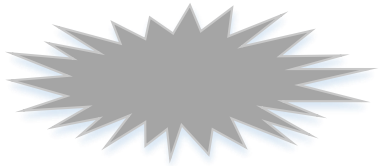
Manual Information Flow

Push the work system

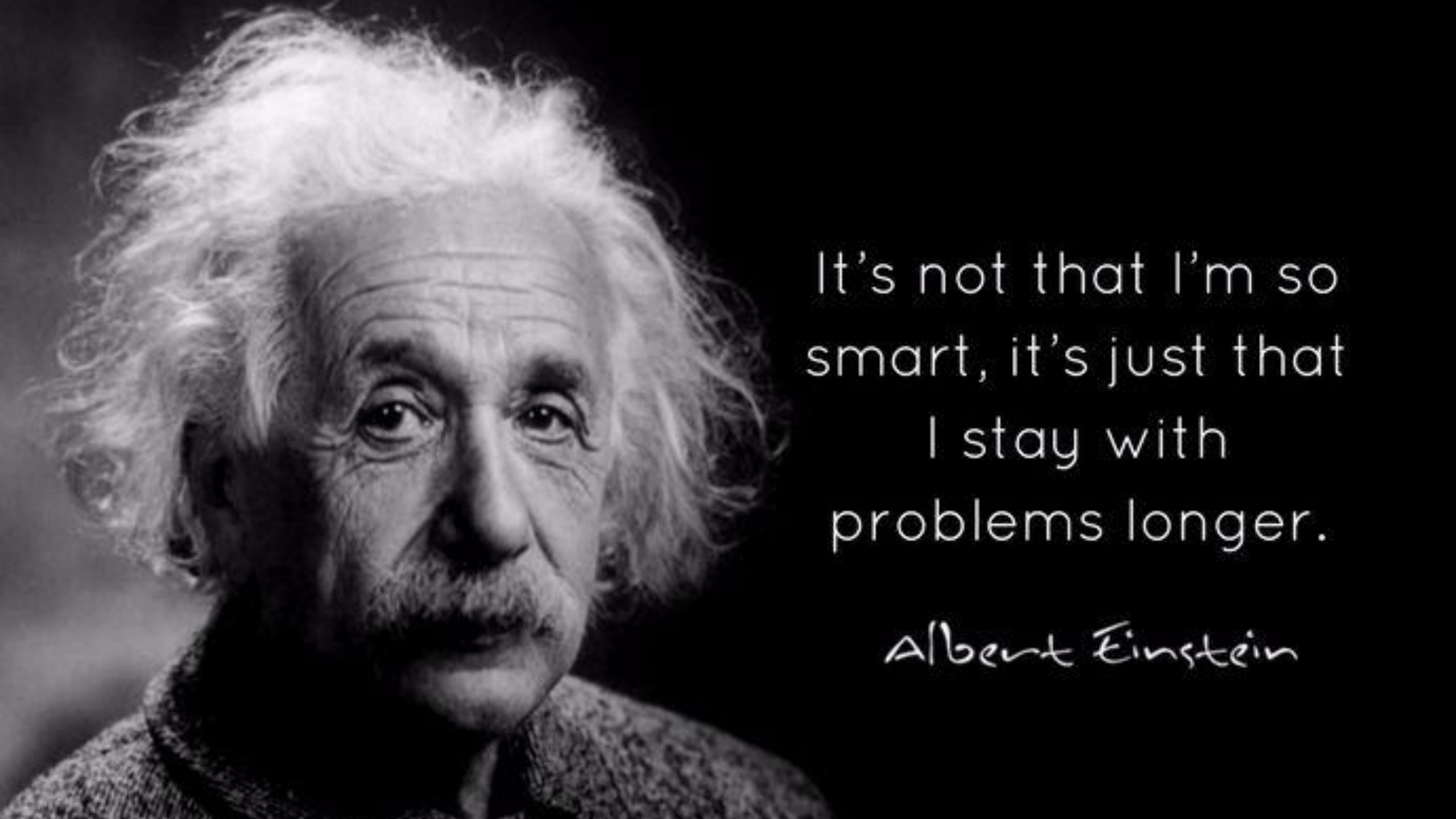


Pull the work system

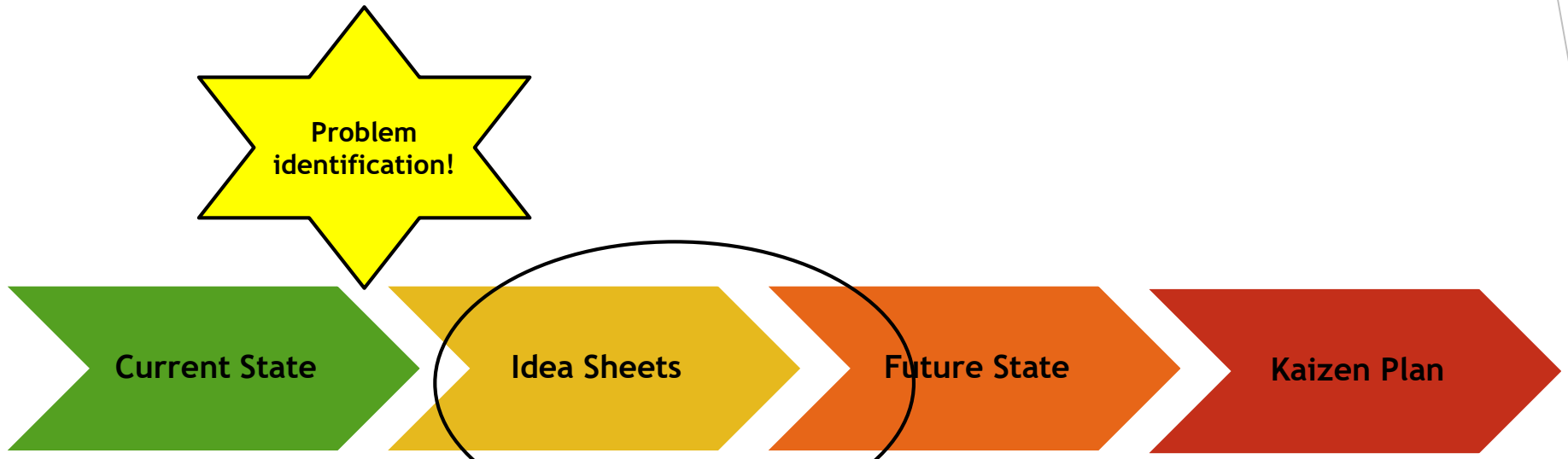
Process Step



Kaizen Burst (problem)


It's not that I'm so smart, it's just that I stay with problems longer.
Albert Einstein

VSM Process: Where are we?



- Map current state
- Identify problems

- Engage team members to provide solutions

- Map future state
- Ensure current problems are eliminated or mitigated

- Who does what by when

Future State Mapping

In this section, we will…

- Analyze the current state to identify problems (Kaizen Bursts).
- Recommend improvements for future state using problems (Kaizen Bursts) and Idea Sheets.

Future State…what is it?

- A visual of the improved flow
- An end goal to work towards
- Used to inform implementation plans

How do I build a Future State?

- Keep the customer's preferred experience top of mind.
- Use Idea Sheets to garner solutions for the issues outlined in the Kaizen Bursts (from the Current State Map).
- Theme Idea Sheets into topics (derived from the process step that the idea sheets have clustered around).
- Use Idea Sheets as decision items to develop the Future State Map.

Idea Sheets

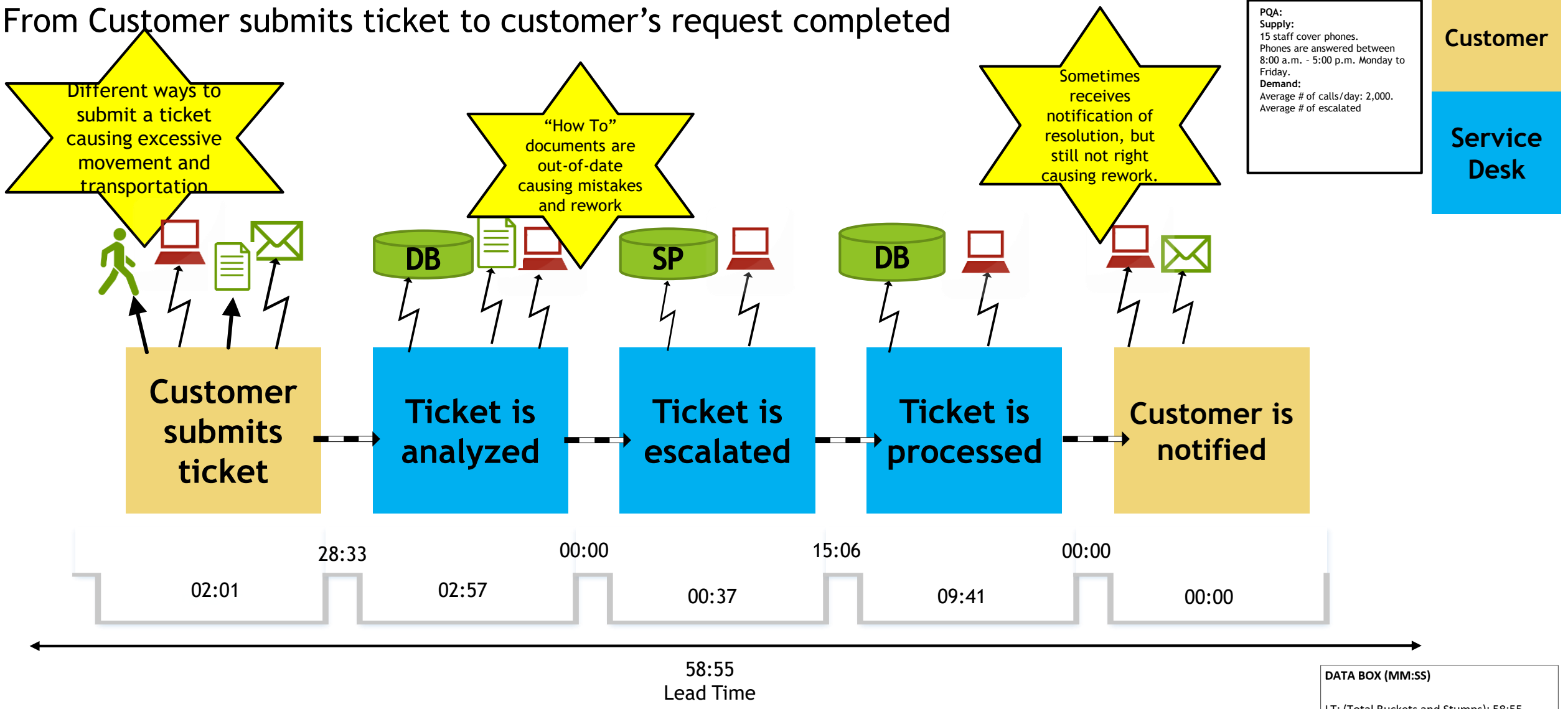
- Look at a Kaizen Burst…What is the problem?

- Fill in an Idea Sheet with a proposed solution (one problem/solution per Idea Sheet)

Idea Sheet

Participant Name:	Kaizen Burst Problem:	Solution:	Benefit to staff/customer:
Identifies who wrote the idea.	Same as Kaizen Burst *Problem	What is the proposed solution?	How is this better for staff/customer?
Using stick figures, draw a picture showing what things look & feel like right now.		Draw another picture here to show how things would look & feel like if your solution was implemented.	

Current State Map: Service Desk
From Customer submits ticket to customer's request completed



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Demand:
Average # of calls/day: 2,000.
Average # of escalated

Customer

Service Desk

Team Members:
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Janice
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John

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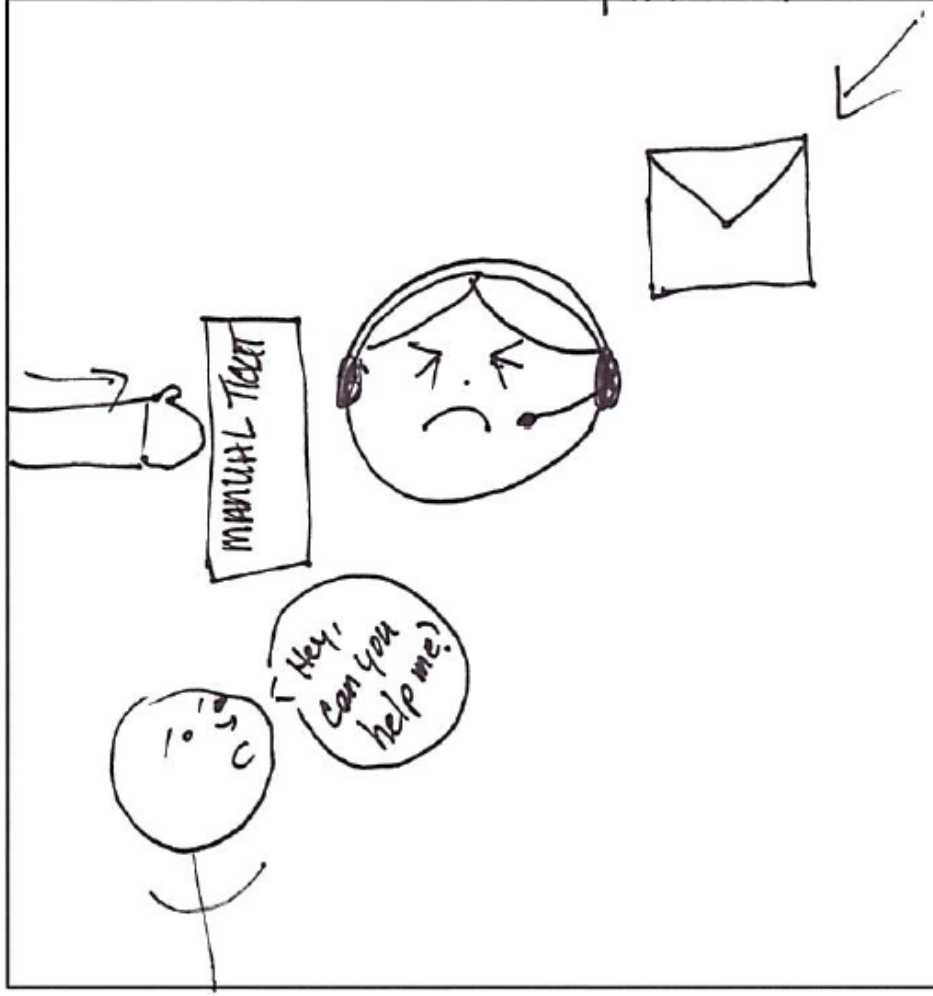
Idea Sheet

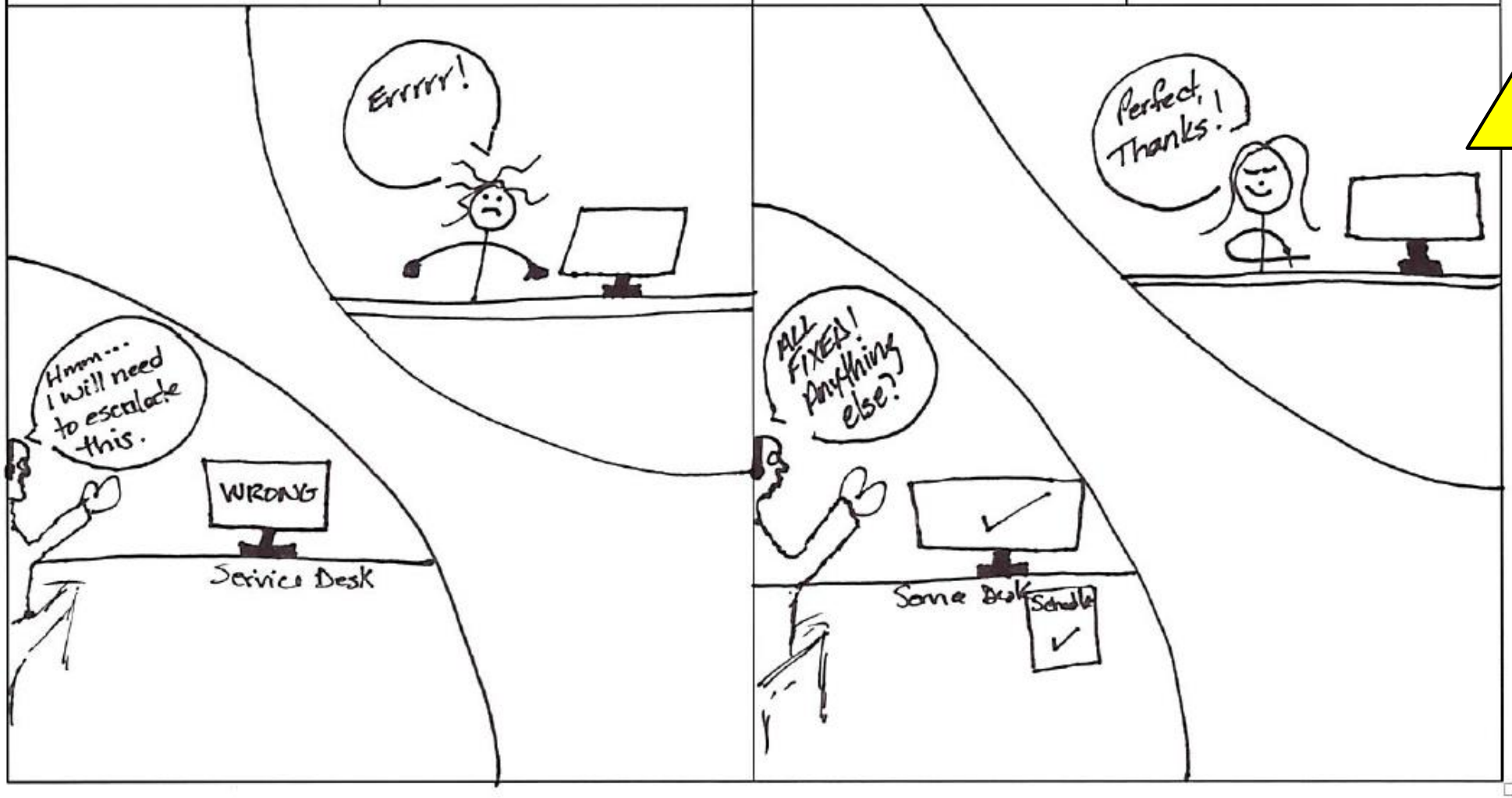
Participant Name:	Kaizen Burst Problem:	Solution:	Benefit to staff/customer:
Jane Doe	Different ways to submit a ticket causing excesive movement + transportation	Only allow for tickets via email	No extra data entry. Faster service.



Different ways to submit a ticket causing excessive movement and transportation

Idea Sheet

Participant Name:	Kaizen Burst Problem:	Solution:	Benefit to staff/customer:
Jane Doe	"How To" documents are out of date causing mistakes + rework.	Develop a schedule to regularly review "How To" documents	Staff do not make mistakes. Customer gets the right service the first time.



"How To" documents are out-of-date causing mistakes and rework

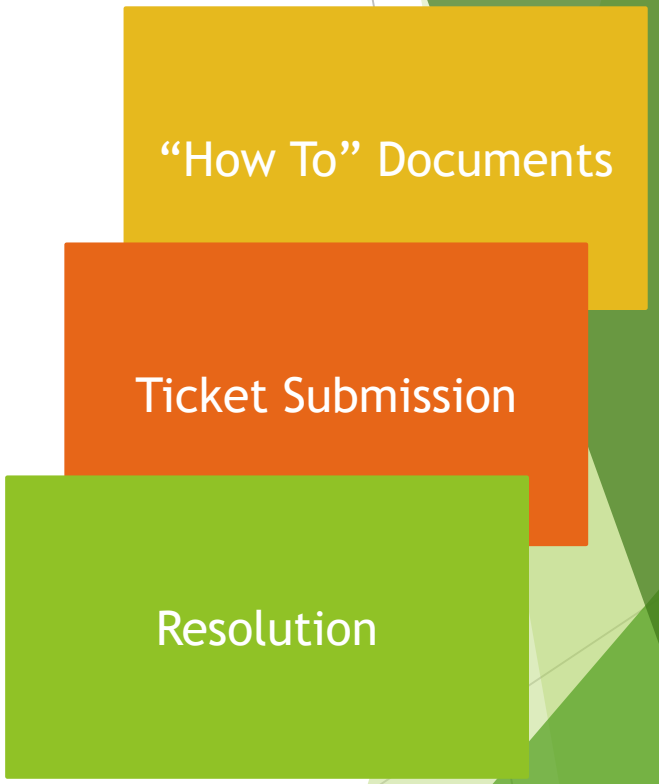
Idea Sheet

Participant Name:	Kaizen Burst Problem:	Solution:	Benefit to staff/customer:
Jane Doe	Sometimes cust. receives notification of resolution but still not right causing rework.	Check with customer to ensure an issue is fixed befor closing + notifying.	No rework. fixed the 1st time.

Sometimes receives notification of resolution, but still not right causing rework.

Theme Idea Sheets

- Group the Idea Sheets into themes
- Themes could be created from:
  - Similar ideas
  - Ideas around a specific process step
  - Ideas around a specific flow



Future State Map: Service Desk ✓
From Customer submits ticket to customer's request completed

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Demand:
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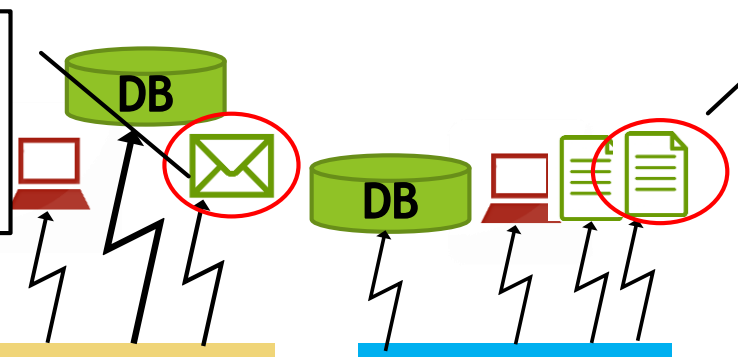
Average # of escalated

Customer

Service Desk

Email ticket submission
Waste eliminated:
- Customer movement.
- Ticket (product) transportation.

Maintenance Schedule/removed escalation step
Waste eliminated:
- Staff over-processing/rework.
- Defects.



✓ **Customer submits ticket** → **Ticket is analyzed** → **Ticket is processed** → **Customer is notified**

Now, check with customer that issue is fixed before closing ticket.
Waste eliminated:
- Staff rework.

*Right Service, Right Place, Right Time.

02:01	28:33	02:57	07:33	09:41	00:00	00:00

50:45
Lead Time

No Kaizen Bursts on Future State!

Team Members:
Darin
Janice
Tim
Michelle
John
✓

DATA BOX (MM:SS)

LT Total Buckets and Stumps: 50:45
CT (Buckets): 14:39
VA (Buckets): 14:39
NVA (Stumps): 36:06
VA% (VA/LTx100): 29%
NVA% (NVA/LTx100): 71%

Business Area: _____

Kaizen Plan (Implementation Plan)

Date Last Updated: _____

	VSM Kaizen Burst solution	Action Needed (event type)	Lead	Team	Begin work by	Complete work by	% Complete (25/50/75/100)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							

Overall Recap

- The importance of VSM for understanding system flow.
- Relationship between time, waste and flow.
- Different types of waste and flow.
- Components of a Value Stream Map.
- Difference between lead time, cycle time, value add and non-value add time.
- Process Quantity Analysis (PQA) to analyze the process.

Questions?

Terms

- **Current State Value Stream Map:** Visual representation of what is actually happening. Used for analysis.
- **Future State Value Stream Map:** Visual representation of what the process would look like after improvements. Used for planning.
- **Optimal Flow:** Improving flow and ensuring quality (Right Service, Right Place, Right Time). Five typical flows.
- **Waste:** Activities that do not add value for the customer. Seven types of waste.
- **Project Form:** One-pager business case.
- **Process Quantity Analysis (PQA):** Helps put context to the value stream process. Helps you learn more about customer needs. Includes Supply and Demand data.
- **Time Observations:** Document the process through observation. Provides evidence of variation and actual process. Used to develop the Current State.
- **Kaizen:** Change for the better.
- **Kaizen Burst:** Problems.
- **Idea Sheet:** Possible solution to a problem (Kaizen Burst).
- **Lead Time:** Time it takes for the entire process to occur.
- **Cycle Time (also Value-Add Time):** Time it takes to do the actual task.
- **Non-Value Added Time:** Wait times in the process.
- **Data Box:** Calculation of Lead Time, Cycle Time, Value-Added Time, Non-Value Added Time, Value-Added Time %, Non-Value Added Time %.
- **Kaizen Plan:** Implementation Plan.