



---

---

---

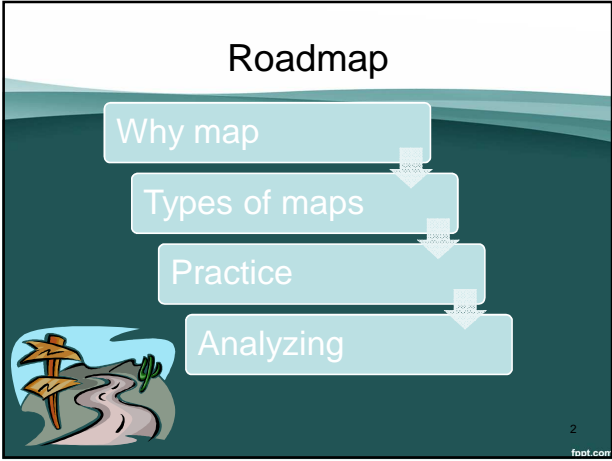
---

---

---

---

---



---

---

---

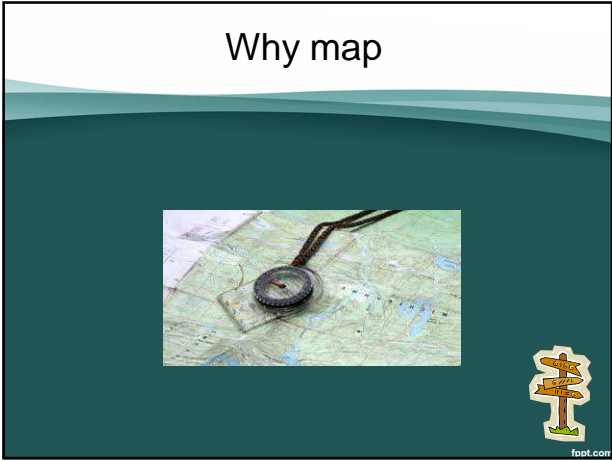
---

---

---

---

---



---

---

---

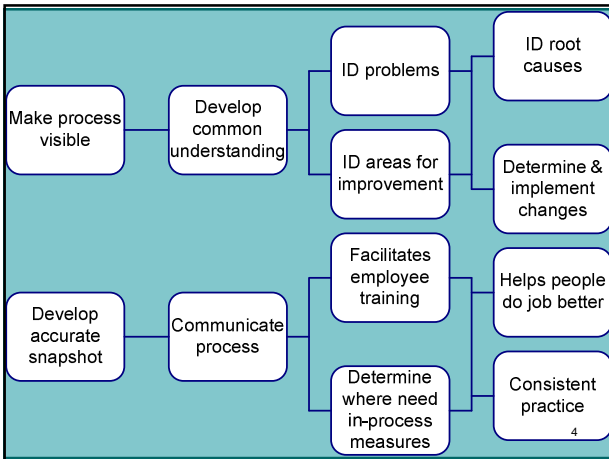
---

---

---

---

---




---

---

---

---

---

---

---

---

**A process**

A series of **sequentially-oriented**, repeatable tasks/steps/operations having both a **start and finish**, and which results in either a **product or service**

Jack B. ReVelle

5  
font.com

---

---

---

---

---

---

---

---

**Series** = A collection of two or more tasks

**Sequentially-oriented** = Tasks occur in virtually the same order each time the process occurs

**Repeatable** = Process happens more than once

6  
font.com

---

---

---

---

---

---

---

---

**Start and finish** = Specific, agreed upon process points

**Product** = Tangible process output  
(can see, taste, and/or touch result; e.g., piece of furniture)

**Service** = Intangible process output  
(cannot see, taste, and/or touch results; e.g., delivery of furniture)

7  
foot.com

---

---

---

---

---


---

---

---

### Maps

high-level vs. detailed



foot.com

---

---

---

---

---

---

---

---

### Focus

current      as-is

should-be      future

ideal

9  
foot.com

---

---

---

---

---

---

---

---

## Types of maps



- SIPOC
- Top-down
- Deployment (swim lanes)
- Detailed
- Value stream
- Work flow

10

foot.com

---

---

---

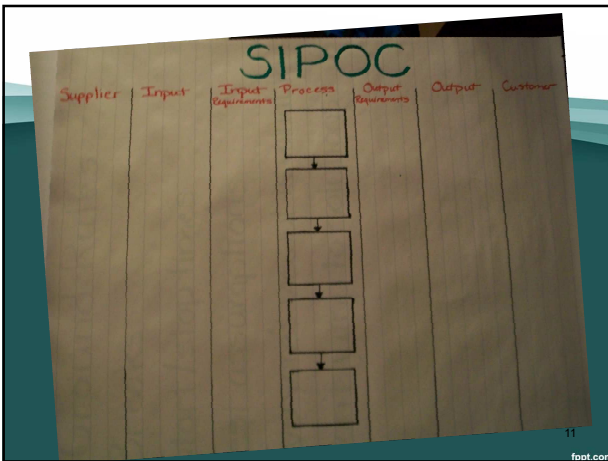
---

---

---

---

---



11

foot.com

---

---

---

---

---

---

---

---

## What SIPOC does

Clarifies core processes at a **high level**

Identifies 4-7 key steps

Provides broad view of key process elements

12

foot.com

---

---

---

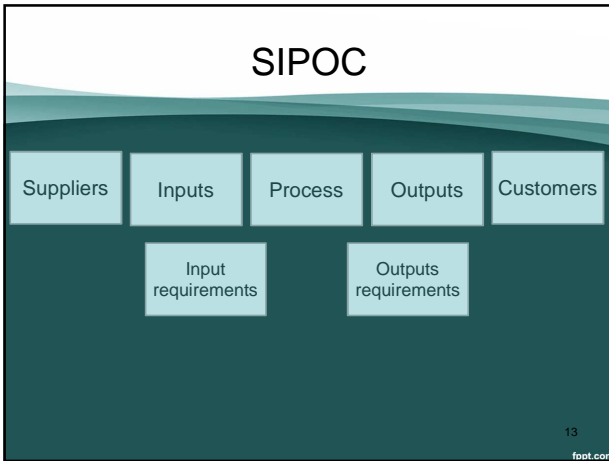
---

---

---

---

---




---

---

---

---

---

---

---

---

- ### How to do it
1. Define process and boundaries
  2. Identify outputs
  3. Identify requirements of outputs
  4. Identify inputs for all outputs  
Input = previous output
  5. Identify requirements of inputs
  6. Identify internal and external customers
  7. Identify internal and external suppliers for each input
  8. Verify with those involved in process
- 14  
foot.com

---

---

---

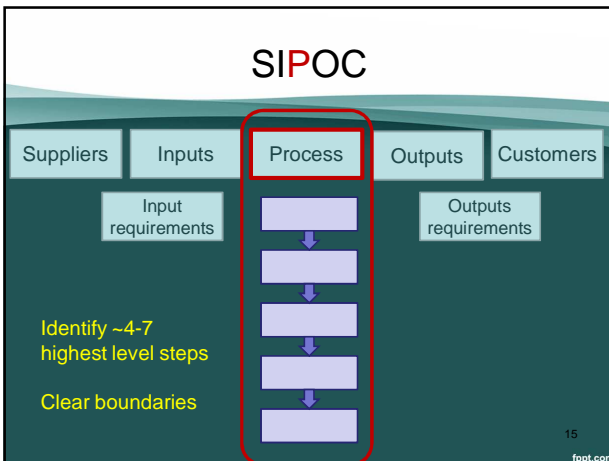
---

---

---

---

---




---

---

---

---

---

---

---

---

## SIPOC

Suppliers | Inputs | Input requirements | Process | **Outputs** | Customers

Output or deliverable for a given step

- Hardware, software
- Service
- Data
- Information
- System

16  
foot.com

---

---

---

---

---

---

---

---

## SIPOC

Suppliers | Inputs | Input requirements | Process | **Outputs requirements** | Customers

Preliminary requirements/must-haves (and measures) for respective output for given step

- Timely (e.g., within two hours)
- P&P XYZ

17  
foot.com

---

---

---

---

---

---

---

---

## SIPOC

Suppliers | **Inputs** | Input requirements | Process | Output requirements | Outputs | Customers

Inputs to the process step  
(to obtain the intended output)  
Examples: People, materials, information

18  
foot.com

---

---

---

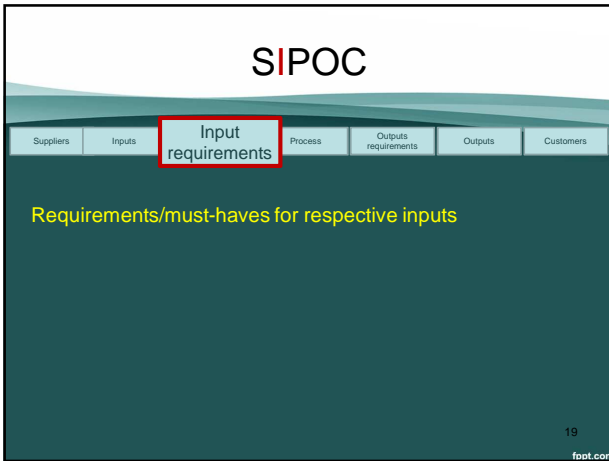
---

---

---

---

---




---

---

---

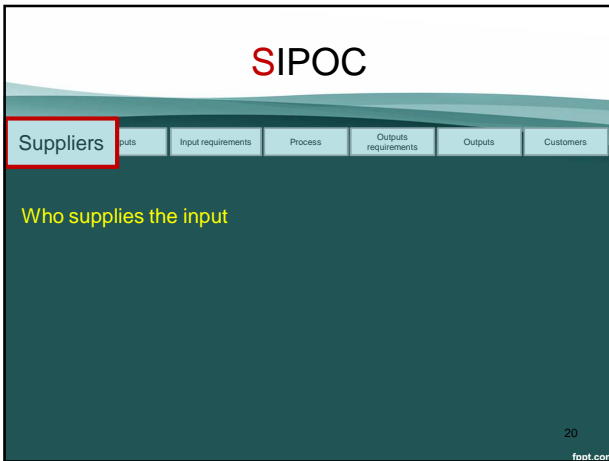
---

---

---

---

---




---

---

---

---

---

---

---

---

Supplier	Input	Input Requirements	Process	Output Requirements	Output	Customer
Employee	Travel / event request	Fed travel regs FS-P-008 FS-P-013	Travel/event arrangement	Meet schedule; cost limitations	Travel/event arranged; receipts	Employee
FS/QCentral Airline, Vendor	Exp rept/ receipts/ agenda	Printed receipts & agenda	Compile exp rept/submit	Include all exp info & receipts, time frames	Completed exp rept	Supervisor
Employee	Approved exp rept & receipts	Required receipts & documents; time frames	FS processes/ pays emp	Correct payment, pre-paid tracking	Processed rept emp paid	Employee
Airline, Conference, Hotel	Travel, event	Occurs as advertised/ planned	Travel/event occurs	Meets expectations; original hotel, boarding passes	Completed trip or event; receipts & documents	Employee; external customer
Employee	Exp rept & receipts	Required receipts FS-P-008	Compile exp rept/submit	Include pre-pays & actual expenses	Completed exp rept	FS
FS	Exp rept & receipts	GAAP FS-P-008 Fed travel regs	FS processes/ pays emp/ expenses/ charges	Correct payment, correct docs	Processed rept payment; acct doc	Employee; FS; External auditors

21  
foot.com

---

---

---

---

---








---

---

---



**Flowchart symbols**

-  Denotes beginning & ending steps  
One arrow in OR out
-  Denotes a task or activity performed in process  
One arrow in AND out
-  Denotes decision point:  
Yes/No; Go/No Go; Pass/Fail  
One arrow in & two out
-  Shows the direction or flow of the process  
Connects all symbols
-  Denotes delay due to wait
-  Bridge when one flow line crosses another
-  Assist

---

---

---

---

---

---

---

---

### Using symbols

- Keep sizes same
- Align horizontally and vertically
- Uniform space between symbols
- Diamonds: Phrase as short question with two answer options
- Who does: Use titles or departments (not individual names)
- Swim lanes: Keep lanes with greatest number interactions together, if possible (limit connector length)

---

---

---

---

---

---

---

---

### Using connectors

- Maintain consistent directions
- Avoid cross-overs
- Interchange yes/no to avoid cross-overs
- Join symbols/boxes at same point
- Reduce number of bends

---

---

---

---

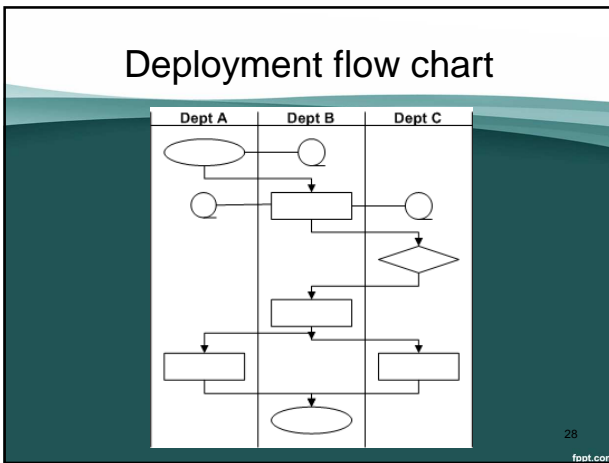
---

---

---

---

## Deployment flow chart



28  
foot.com

---

---

---

---

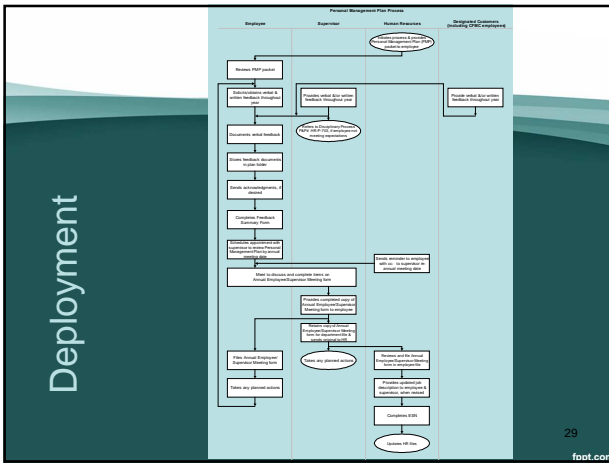
---

---

---

---

## Deployment



29  
foot.com

---

---

---

---

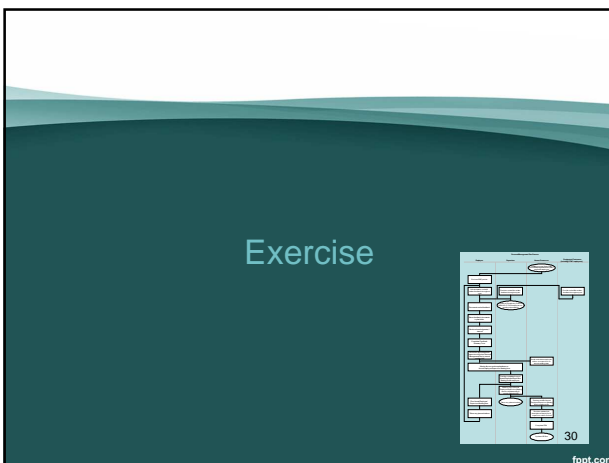
---

---

---

---

## Exercise



30  
foot.com

---

---

---

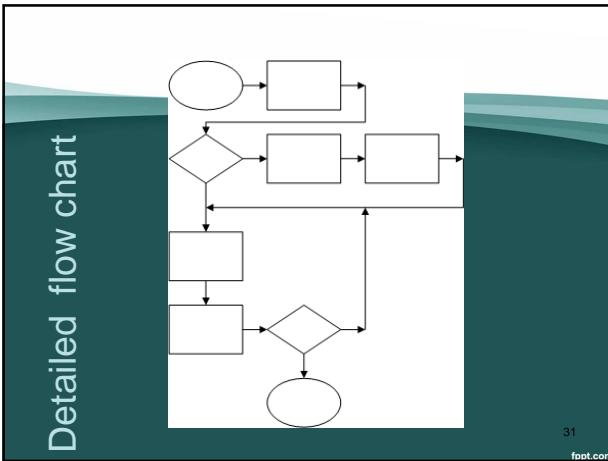
---

---

---

---

---




---

---

---

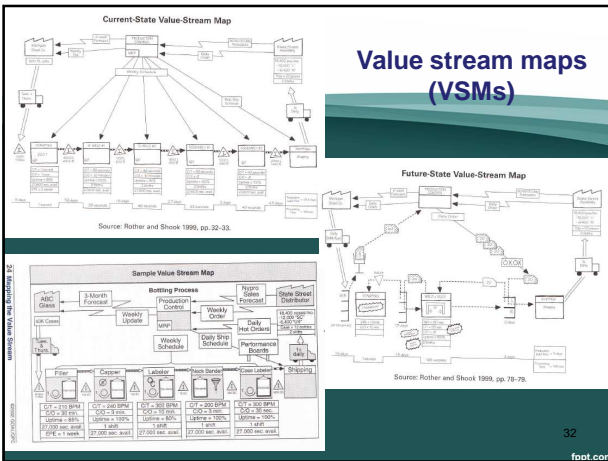
---

---

---

---

---




---

---

---

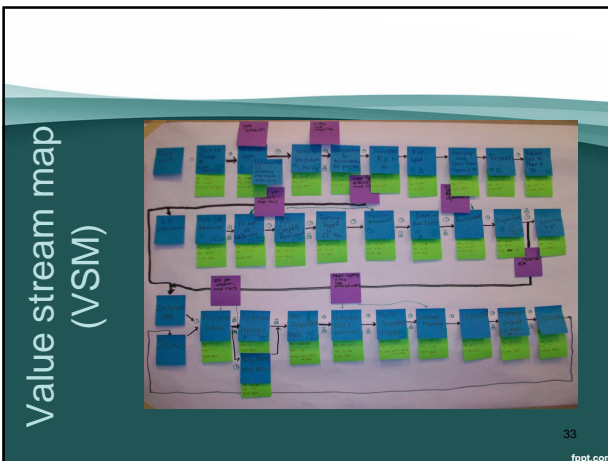
---

---

---

---

---




---

---

---

---

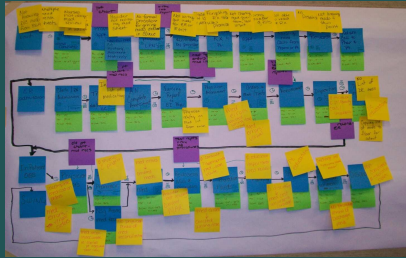
---

---

---

---

## VSM: current state with problems identified



34

foot.com

---

---

---

---

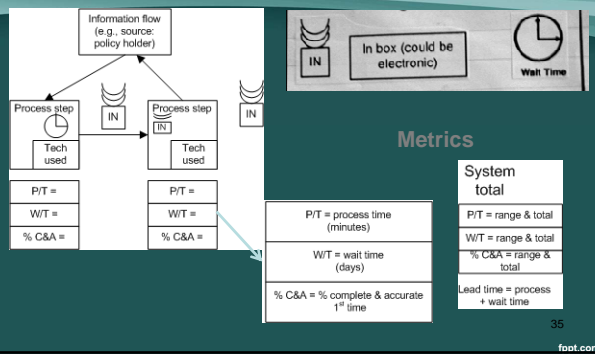
---

---

---

---

## Icons & metrics



35

foot.com

---

---

---

---

---

---

---

---

### Process time

- Actual time to complete task assuming no interruptions (touch time). May display as a range.

### Wait time

- Time work delayed or interrupted, between or inside step due to handoffs, waiting, queue, in-box. Work waiting, not operator waiting.

### % Complete & accurate (1<sup>st</sup> time)

- Estimate how frequently work coming into step is not reworked, revised, or corrected due to errors, omissions.

36

foot.com

---

---

---

---

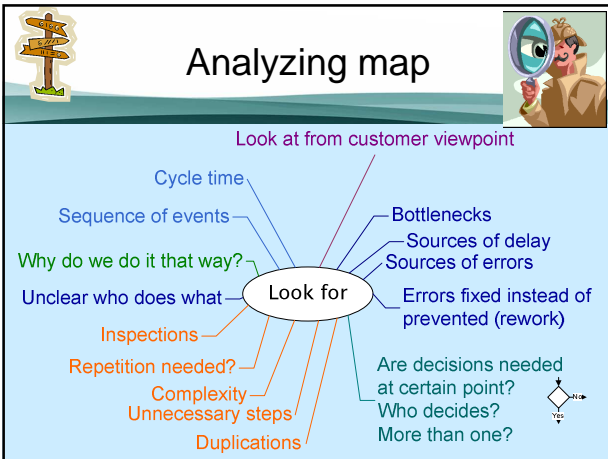
---

---

---

---






---

---

---

---

---

---

---

---

Be clear about intent

Goal ≠ eliminate employment or downsize

Maintain customer focus

ID beginning and end of process

Involve those involved in process

Name the process

Use post-it notes

Don't need to use software

Limit detail on high level maps

Validate map with those in the process

Think about...

41  
foot.com

---

---

---

---

---

---

---

---

Questions? Comments?  
Thoughts? Ideas?

42  
foot.com

---

---

---

---

---

---

---

---

## Resources

- Brook, Q. (2006). *Six sigma and Minitab: A complete toolbox guide for all six sigma practitioners*. QSB Consulting Ltd: UK.
- MacInnes, R. L. (2002). *The lean enterprise memory jogger*. GOAL/QPC: Salem, NH.
- Munro, R.A., Maio, M.J., Nawaz, M.B., Ramu, G., Zrymiak, D.J. (2008). *The certified six sigma green belt handbook*. Quality Press: Milwaukee, WI.
- ReVelle, J. B. *Essential quality tools: Process flowcharts and maps*. ASQ webinar, July 1, 2010.
- Rother, M. and Shook, J. (2003). *Learning to see*. The Lean Enterprise Institute: Cambridge, MA.
- Tague, N. R. (2005). *The Quality Toolbox*. Quality Press: Milwaukee, WI.

43

font.com

---

---

---

---

---

---

---

---

---

---

Beth A. Katzenberg, EdM, MBA, CPHQ, CCEP  
Colorado Foundation for Medical Care  
303.784.5702  
[bkatzenberg@cfmc.org](mailto:bkatzenberg@cfmc.org)

44

font.com

---

---

---

---

---

---

---

---

---

---