Value Stream Mapping Purpose

- **Provide optimum value to the customer through a complete value creation process with minimum waste in:**
  - **Design (concept to customer)**
  - **Build (order to delivery)**
  - **Sustain (in-use through life cycle to service)**

STRIVE FOR PERFECTION!

Why ?

- Many organizations pursuing “lean” conversions have realized that improvement events alone are not enough
- Improvement events create localized improvements, value stream mapping & analysis strengthens the gains by providing vision and plans that connect all improvement activities
- Value stream mapping & analysis is a tool that allows you to see waste, and plan to eliminate it

What Is Value?

A capability provided to a customer,

- ✈ *of the highest quality,*
- ✈ *at the right time,*
- ✈ *at an appropriate price,*

as defined by the customer.

What Is Value?

- "Value" is what the customer is buying
- Always think first about the end-customer
  - Who is the customer?
  - What are they buying?
- Describe value using the customers' words

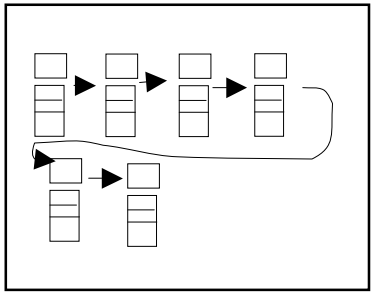
VSM Basics

- Current State
- Ideal State
- Future State

What Is Value Stream Analysis?

Planning tool to optimize results of eliminating waste

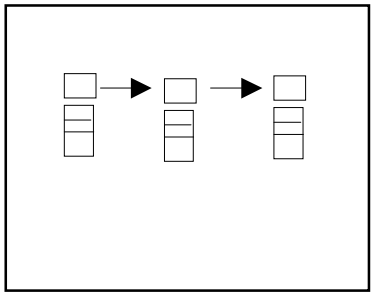
current state VSM



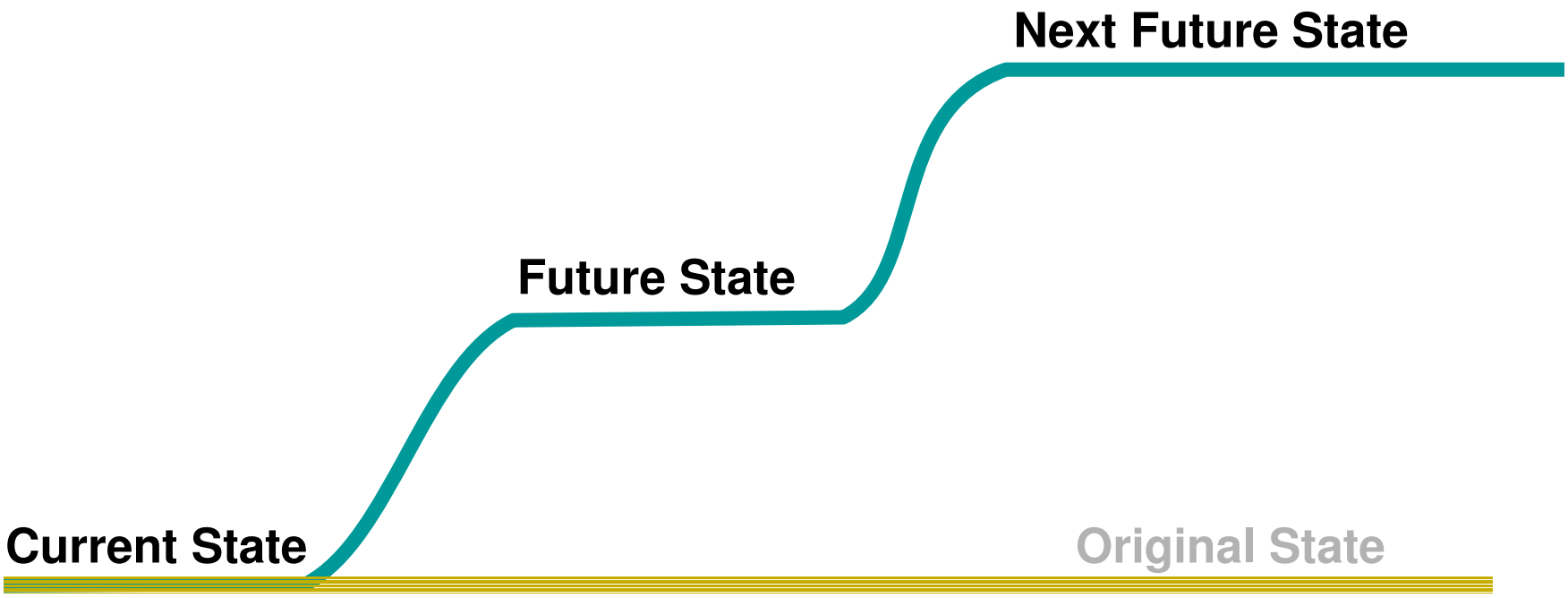
+

+ Lean Basics =

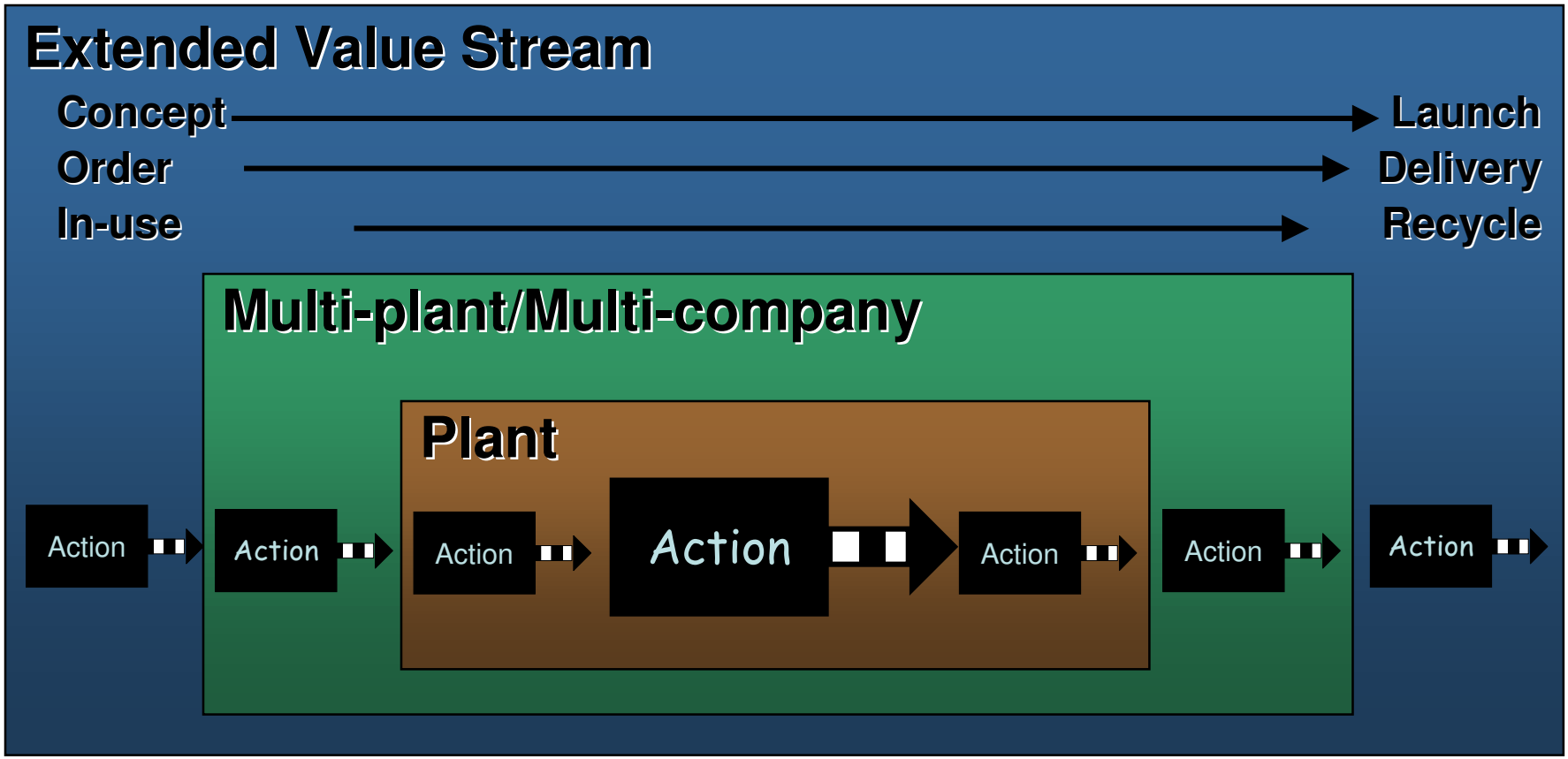
future state VSM



Value Steam Mapping Steps

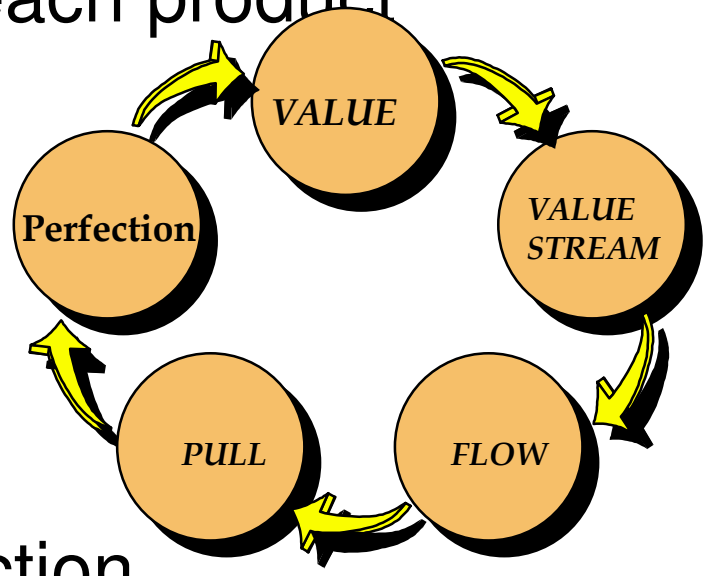


Value Stream Scope



Apply Five Simple Principles:

- Specify value from the standpoint of end customer
- Identify the value stream for each product family
- Make the product flow
- So the customer can pull
- As you manage toward perfection



What is the Value that Flows?

Specify value from the standpoint of the end customer

Ask how your current products and processes disappoint your customer's value expectation:

- price?
- quality?
- reliable delivery?
- rapid response to changing needs?
- ???

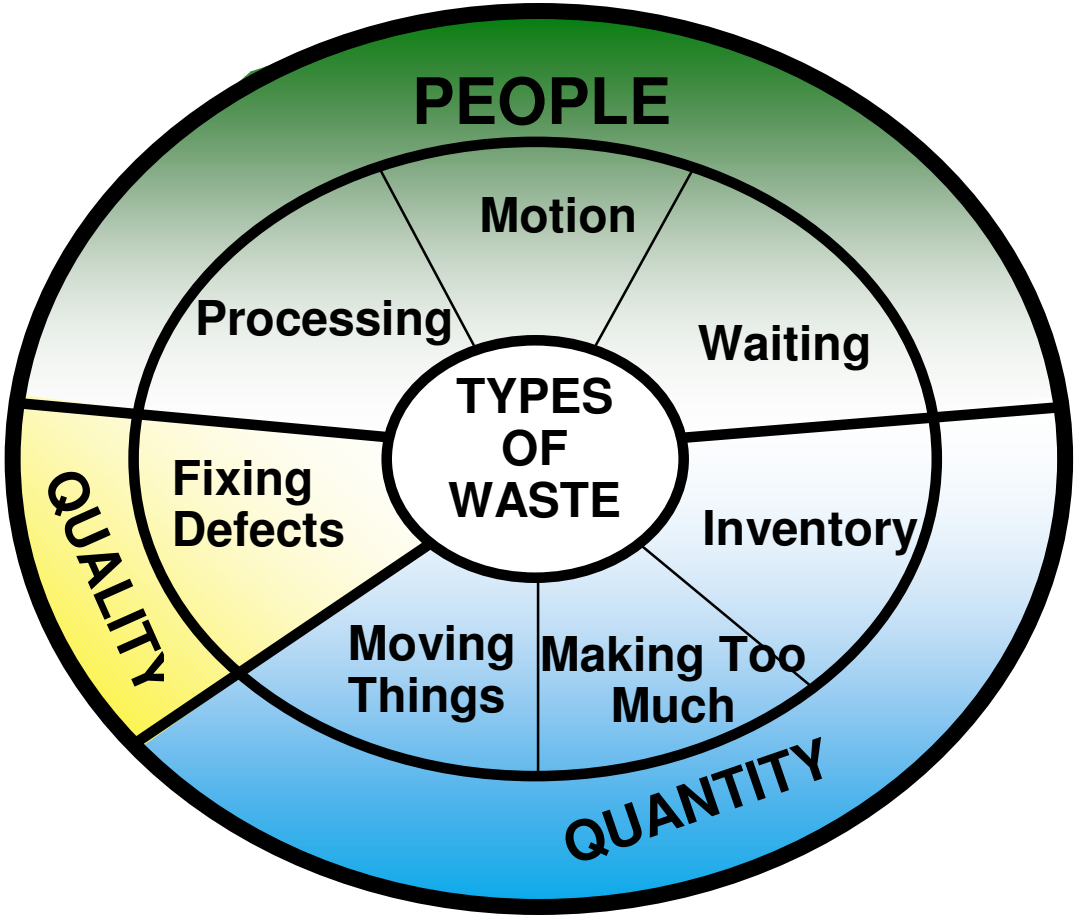
What Flows?

"ITEMS" flow through a value stream

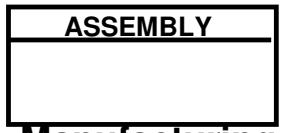
- In manufacturing, *materials* are the items
- In design & development, *designs* are the items
- In service, external *customer needs* are the items
- In admin., Internal *customer needs* are the items

Analysis begins with part of a total value stream,
That part of the value stream has customers too

7 Forms of Waste

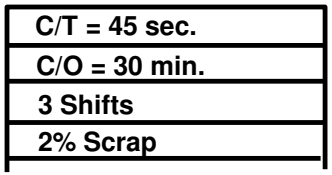


Material Flow Icons

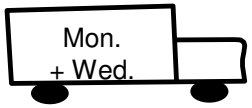


Manufacturing Process

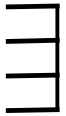
Outside Sources



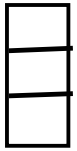
Data Box



Truck Shipment



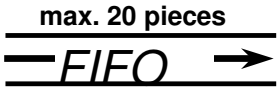
Supermarket



Buffer or Safety Stock

300 pieces
1 Day
Inventory

Finished Goods to Customer

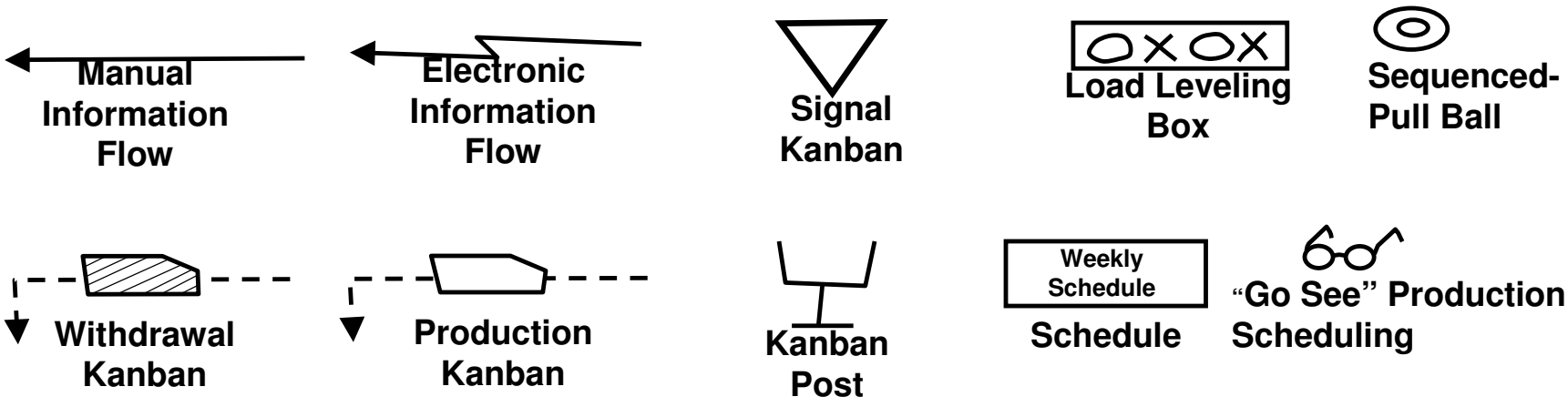


First-In-First-Out Sequence Flow

Physical Pull/Withdrawal

PUSH Arrow

Information Flow Icons



General Icons

Kaizen Lightening Burst

Operator

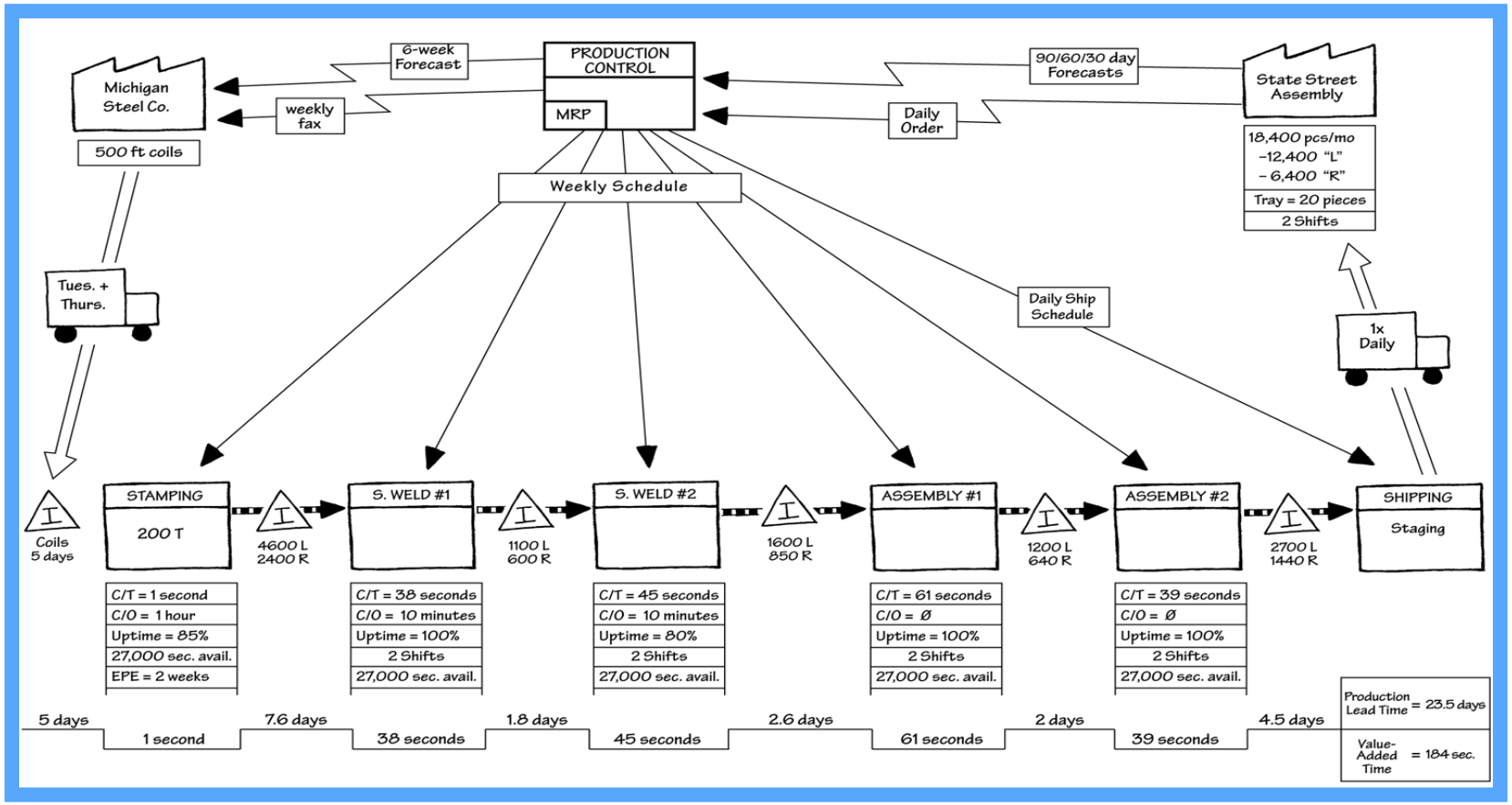
TAKT TIME

$$\text{Takt Time} = \frac{\text{Effective Working Time per Shift}}{\text{Customer Requirement per Shift}}$$

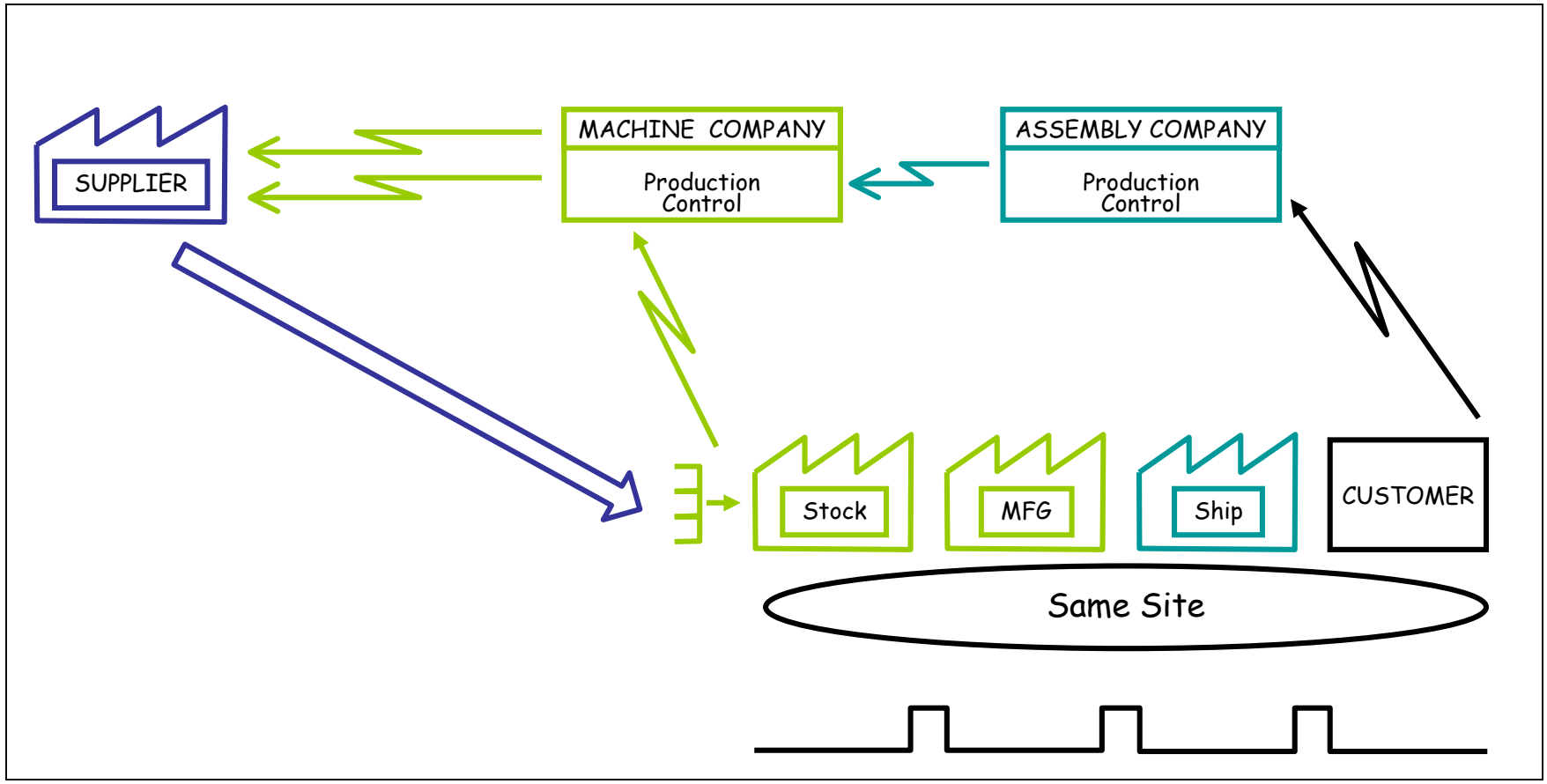
Synchronizes pace, evenly applying customer demand across the work day.

Takt Time is "Beat Time"? "Rate Time" or “Heart Beat" Lean Production uses Takt Time as the rate or time that a completed product is finished. If you have a Takt Time of two minutes that means every two minutes a complete product, assembly or machine is produced off the line. (http://www.isixsigma.com/dictionary/Takt_Time-455.htm)

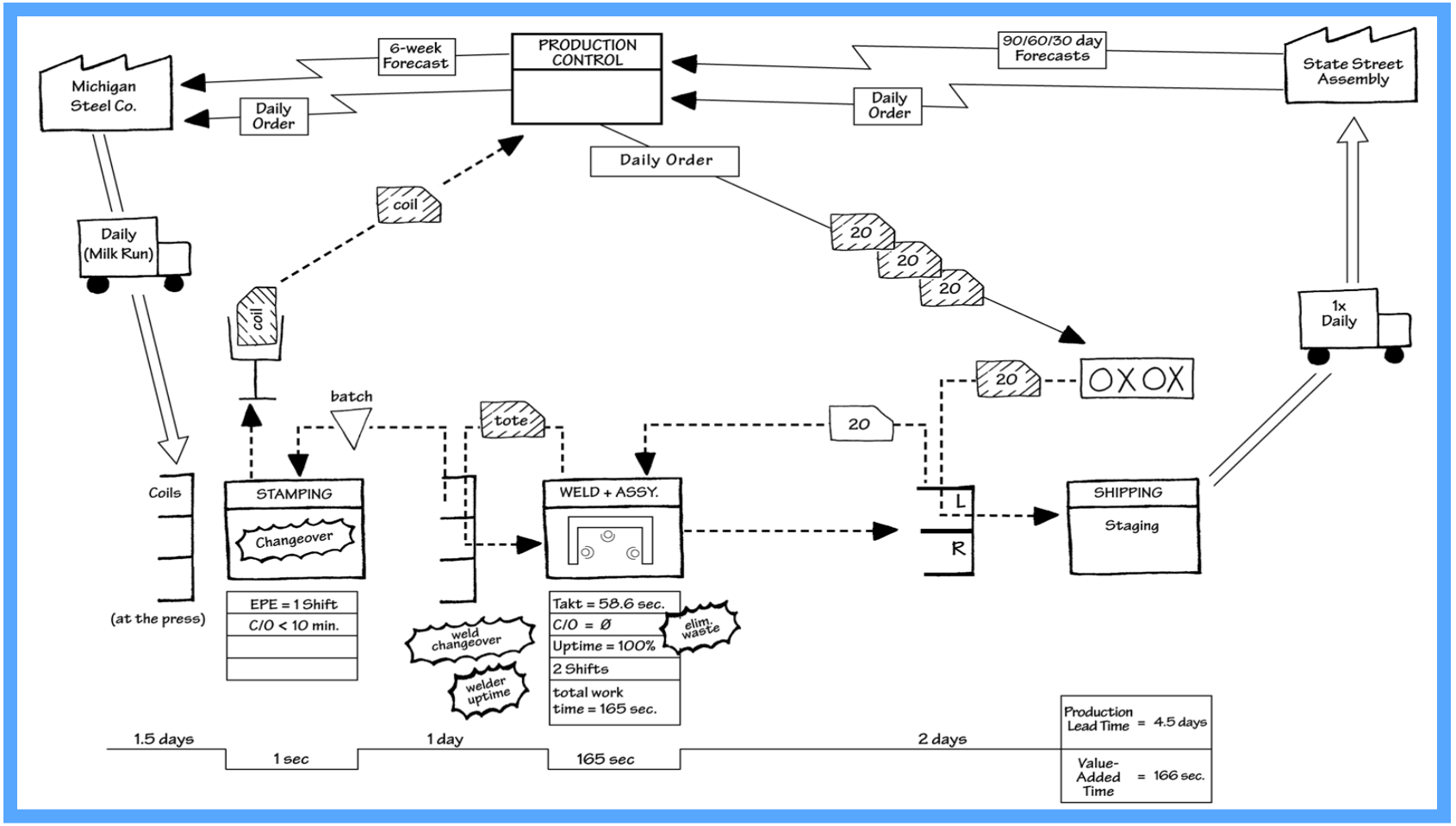
Current State- (Manufacturing)



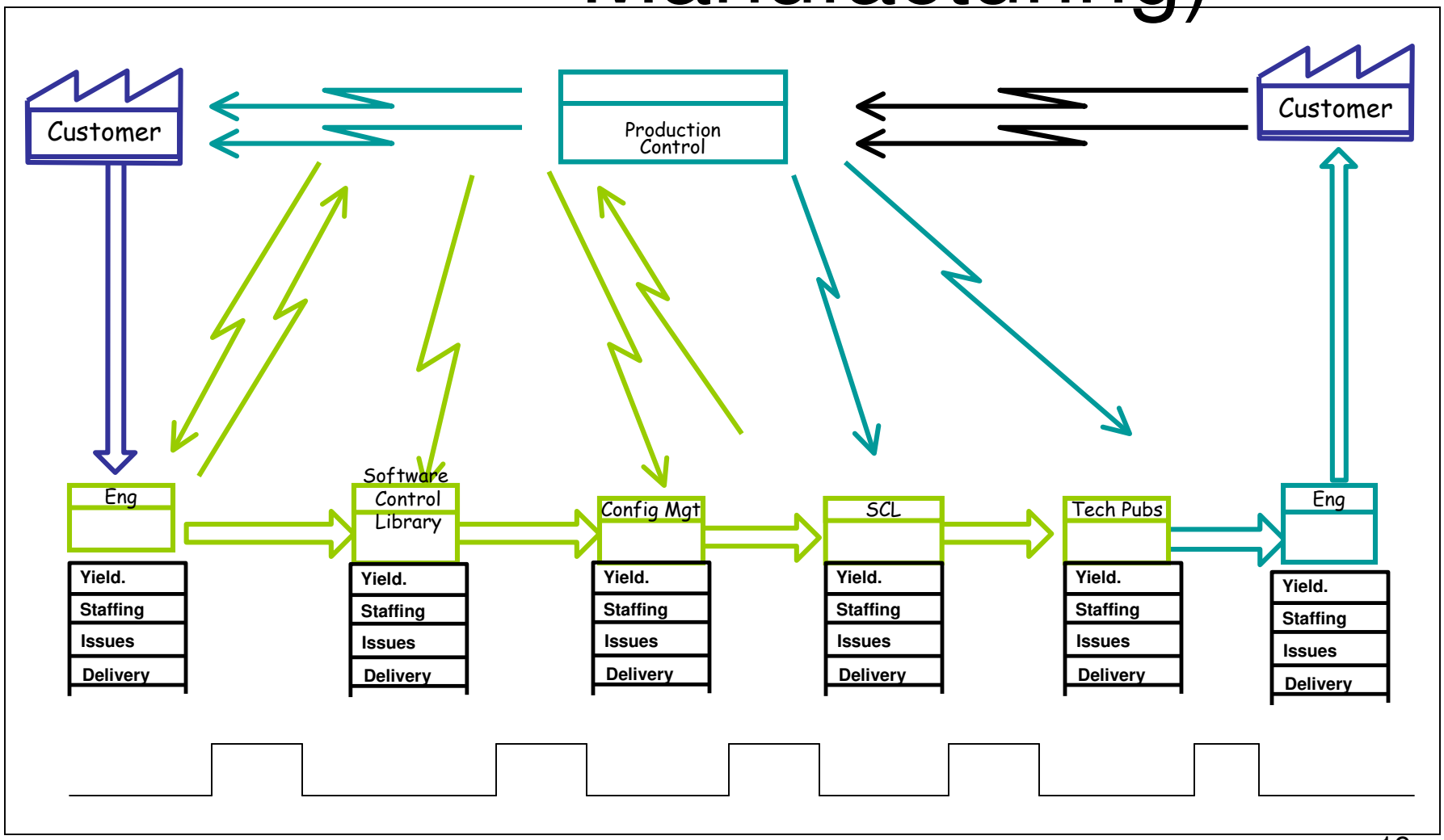
Ideal State- (Manufacturing)



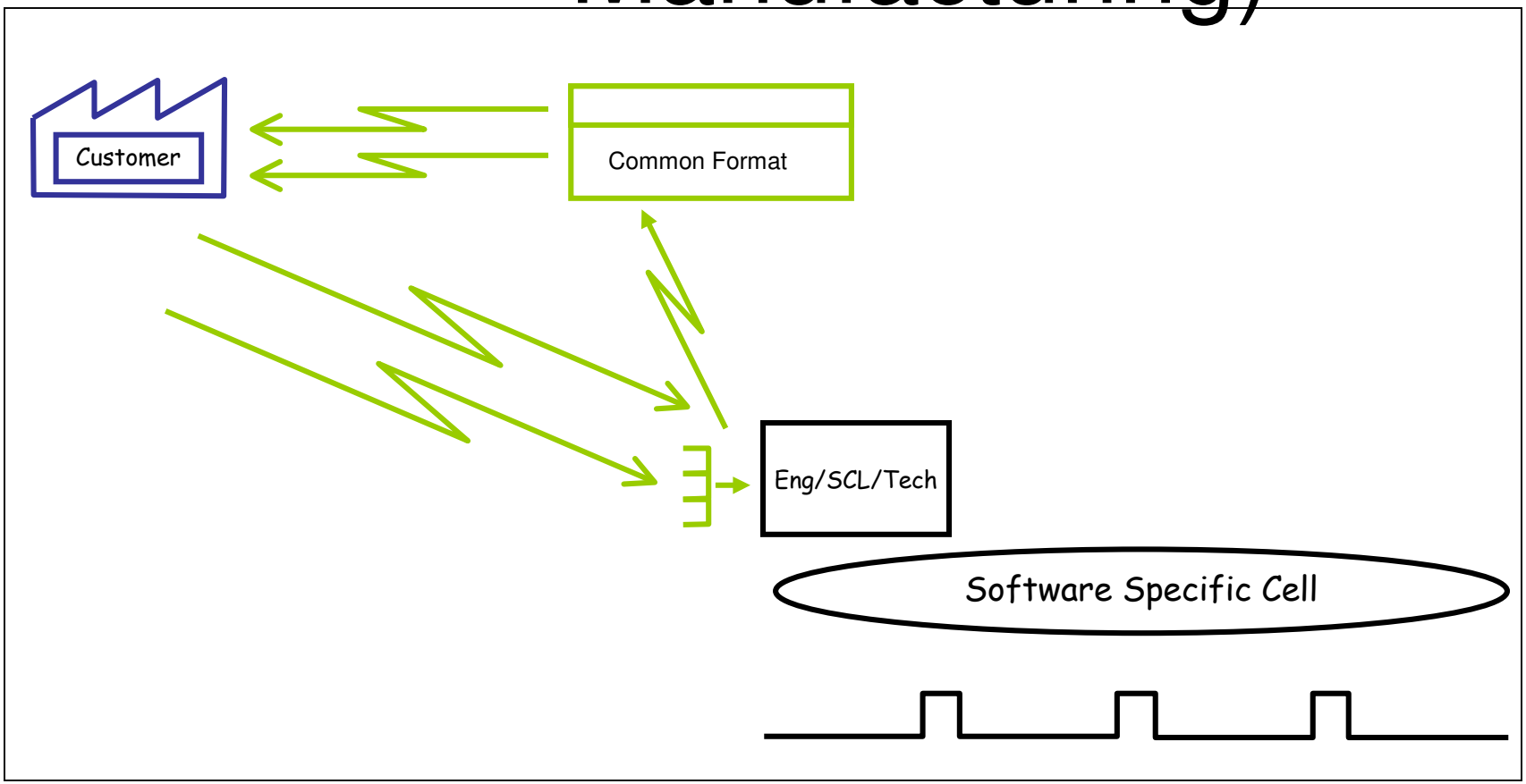
Future State - (Manufacturing)



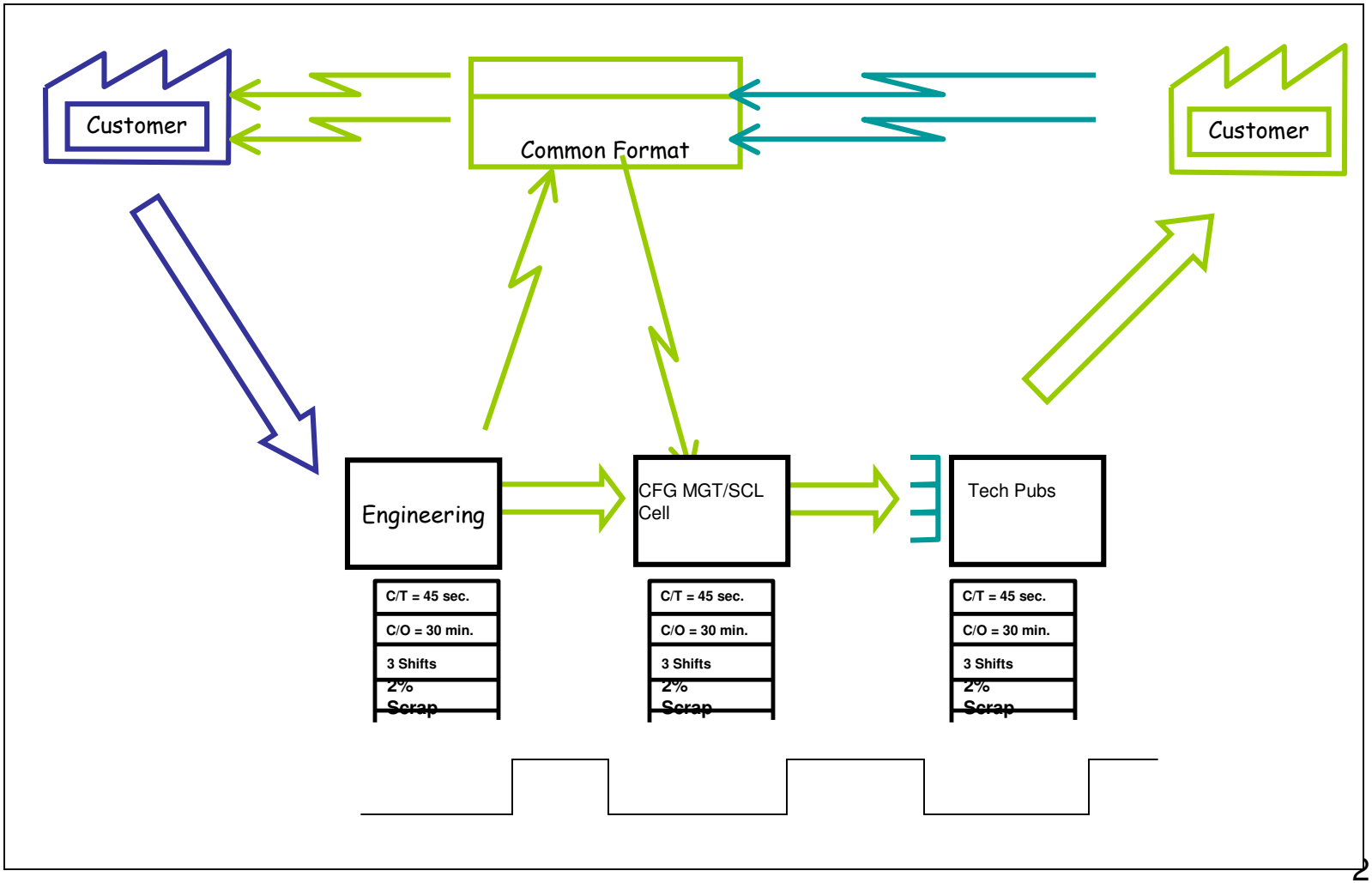
Current State (Non-Manufacturing)



Ideal State- (Non-Manufacturing)



Future State- (Non-Manufacturing)



Quoting example
Introduction

Example - Quoting
VSM&A Prep Worksheet

CASE FOR CHANGE:

- Only 10 % of quotes are “won”
- Many quotes not considered due to long response time
- Quotes inaccurate

ITEM(S):

Customer requested quote

DEMAND:

2 per week

Example - Quoting
VSM&A Prep Worksheet

SCOPE:

Supplier:

Sales Force

Inputs:

Request for quote from customer

Outputs:

Quote
(including price delivery, and service necessary to meet customers need)

Customer:

Sales representative

Example - Quoting
VSM&A Prep Worksheet

VALUE STATEMENT:

End customer:

Depends on functionality of item being quoted.

Intermediate customer:

An accurate statement requirements necessary to meet customer needs, including price and delivery. Available when needed (within 1 week)

KEY REQUIREMENTS:

Must meet customer specifications.

Example - Quoting
VSM&A Prep Worksheet

MEASUREMENTS:

Current:
% of quotes won

actual $ vs. bid $

Planned:
response time
(cycle time)

IDEAL STATE:

ON DEMAND	DEFECT FREE	ONE BY ONE	LOWEST COST
Quotes are generated immediately at the customers location	Quote always meets the customers needs	Quotes are processed immediately (I.e. sales force does not wait until Friday to send all from week)	All duplication and other waste is eliminated from the process

GATHER DATA

(create the current VSM)

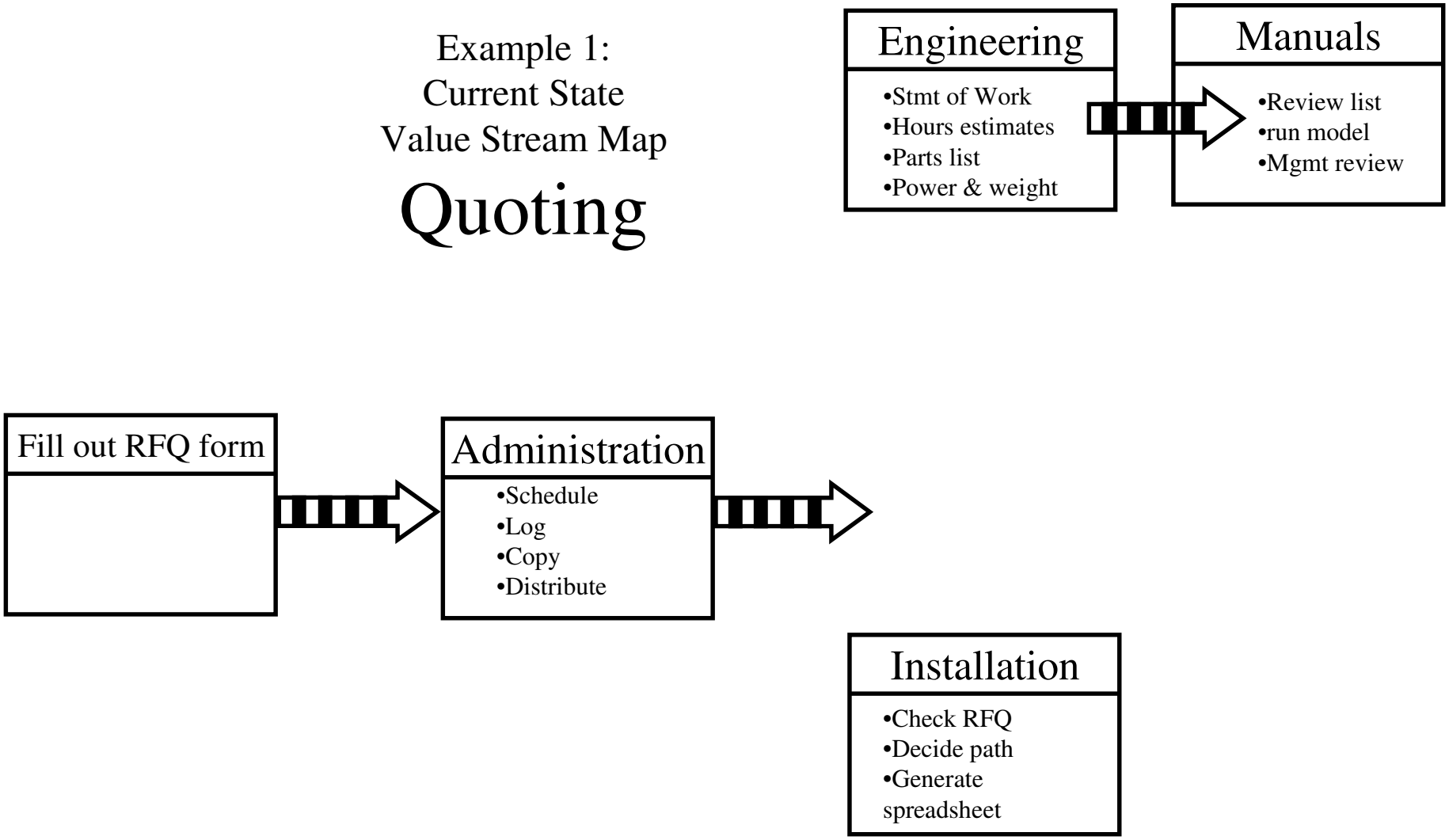
1. Observe and gather data

- Walk the value stream - see the actual work place
- Follow and make notes about “item” and information flow
- Gather data for each step in the flow
  - Trigger/done actual lead time output
  - Actual cycle time on time delivery staffing
  - Defect rate batch sizes overtime
  - Quality variations work in process

• 2. Map the flow of items

Example 1:
Current State
Value Stream Map

Quoting



GATHER DATA

(create the current VSM)

3. Map the flow of information

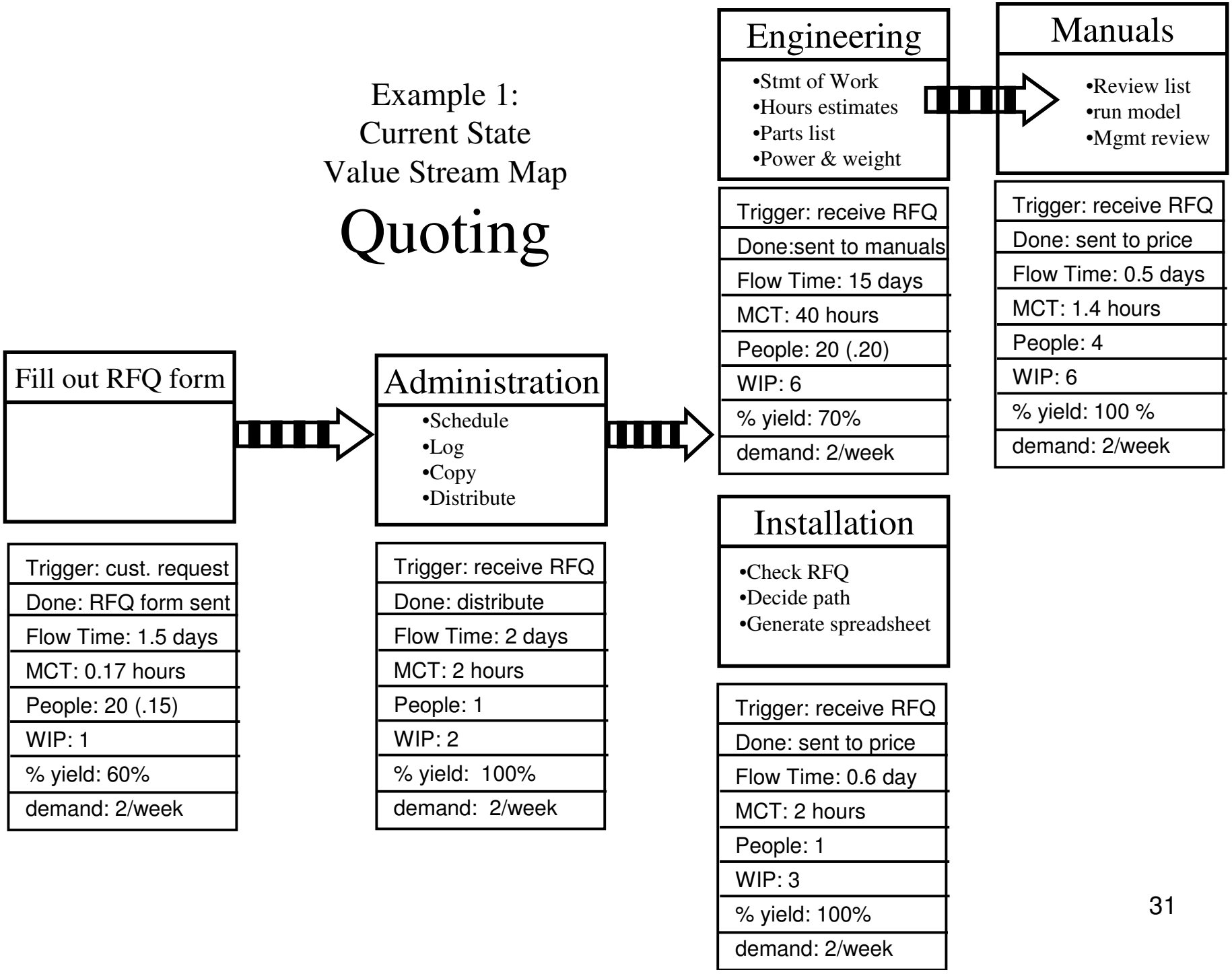
GATHER DATA

(create the current VSM)

4. Add Data and Highlights

Example 1:
Current State
Value Stream Map

Quoting



CREATE VISION & PLANS

1: Go Back to the Garage

- Pick a few items that flow through the value stream
- Pretend you are your smallest competitor
  - You're in a garage with almost no money
- Develop the smallest, lowest capital value stream

CREATE VISION & PLANS

2: Choose Natural Groups

- Review the items that flow through the value stream
  - What factors make items similar or different
  - Group similar items together
  - Set aside items that complicate the groups
- Choose a target takt time for the whole value stream
  - What factors drive the process cycle times
  - How many parallel flow paths do you want
- Choose natural groups of items (add "miscellaneous")
  - Examples (like processing steps, like customers, like functionality)

CREATE VISION & PLANS

3: Develop Ideal State Map

- Assume that anything is possible
- Avoid shared resources
- Create an ideal state value stream map
- Add obstacle removal to strategic plans
  - Start key R&D projects
  - Start "right-sized equipment" projects

CREATE VISION & PLANS

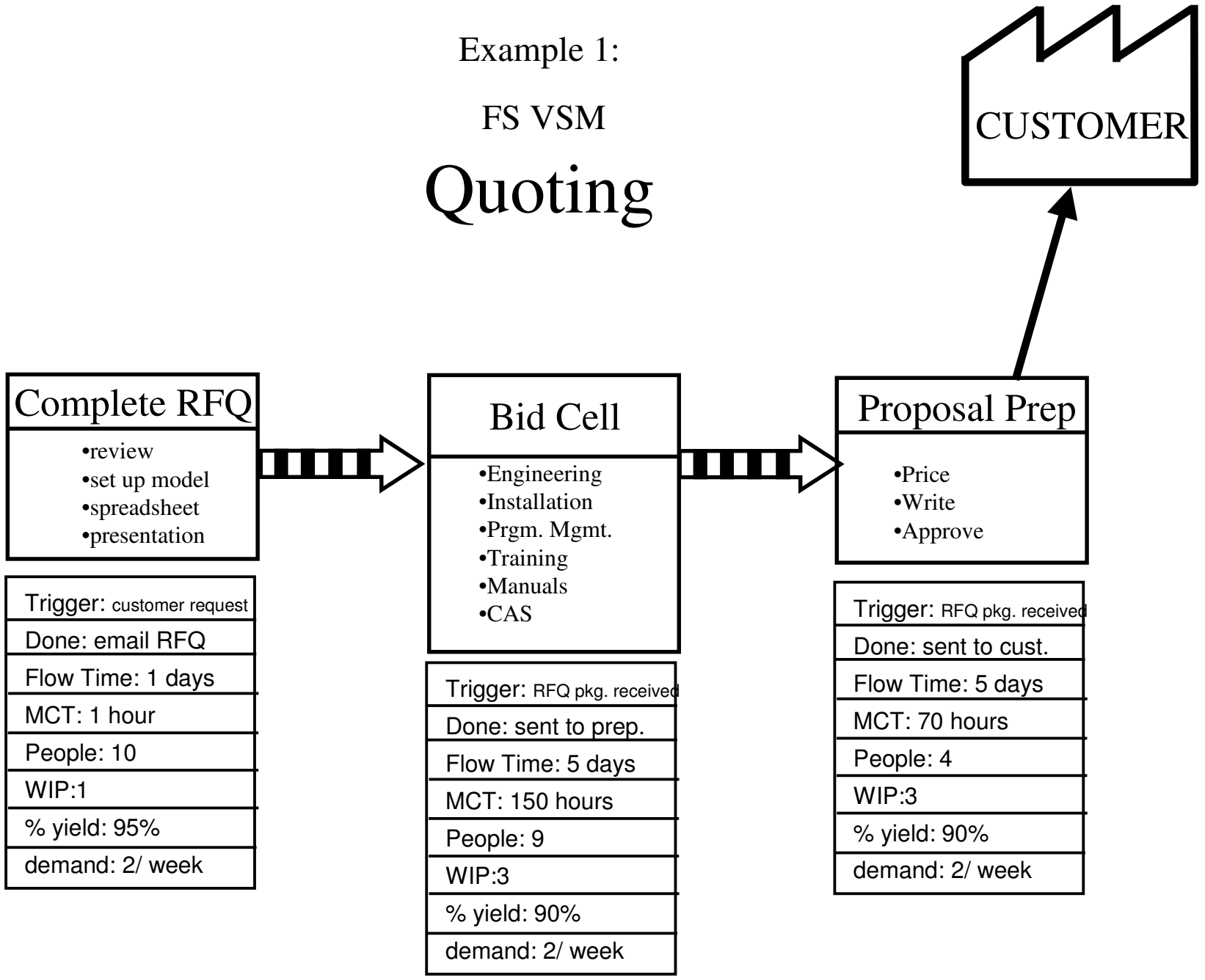
4: Develop Future State Map

- Identify the first "complete" flow path you will create
  - What waste have you eliminated?
- Draw future state map of what will be achieved in the next 12 months
- What will the metrics look like?

Example 1:

FS VSM

Quoting



CREATE VISION & PLANS

5: Develop Action Plans and Tracking

- Review the future state map you just created, brainstorm possible action items
- Focus an action plan (month by month)
- Establish tracking
  - For measurements vs. targets
  - For action plans

Example -
Quoting Value Stream Action Plan

Imp events	Projects	Do Its	What
		X	**Define basic measurements for the business unit and value stream (measure & track)**
		X	**Communicate "Lean" initiative, why & how to all employees in impacted value stream**
X			**Quality – write standard work for RFQ's, increase accuracy/completeness to 95%**
X			**Engineering – reduce cycle time by 50%, Increase first time yield to 90%, write std. Work.**
X			**CAS – reduce cycle time by 50%, write std. Work.**

EXECUTE

- Communicate
  - Current & future VSMs
  - Action plan
  - Measurements vs. Targets
- Execute your action plan
- Be involved
  - A successful lean conversion depends upon the active involvement of all members at all levels. This is critical to creating a culture that becomes a competitive advantage.

ALIGN

- Conduct alignment reviews quarterly
  - Evaluate progress against targets
  - Implement corrective action if improvements not sustained
  - Re-evaluate “future state” value stream map (is it still valid?)