Mapping Your Path – Using Value Stream Maps to Improve

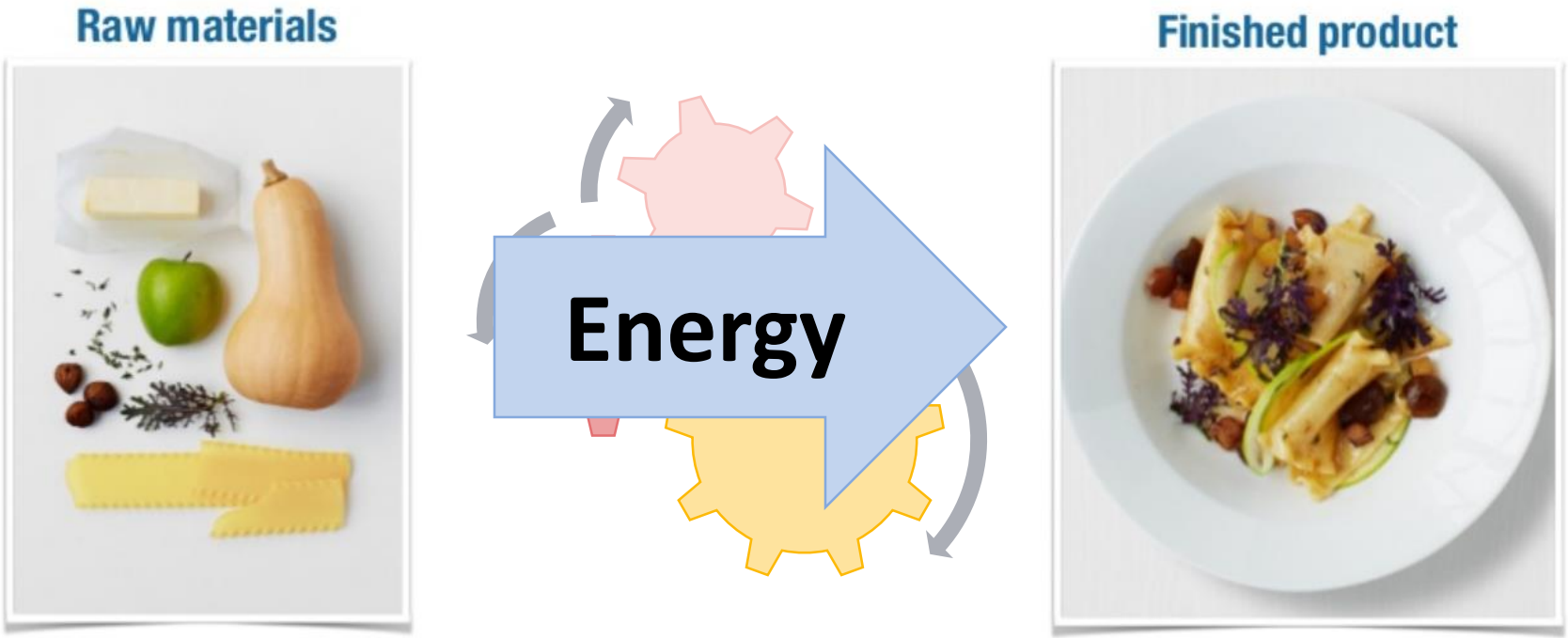
2020 Washington State Government Lean Transformation Conference

Washington State Department of Enterprise Services

Core Objectives

- Recognize and read a value stream map
- Describe the purposes of and differences between value stream and process maps
- Build and use value stream maps to improve

What is Lean?



It is WORK SCIENCE based on flow.

Goal: deliver maximum value to the customer using the least amount of energy.

Concept credit: Joanne Gaudet & France Bergeron

What is Flow?

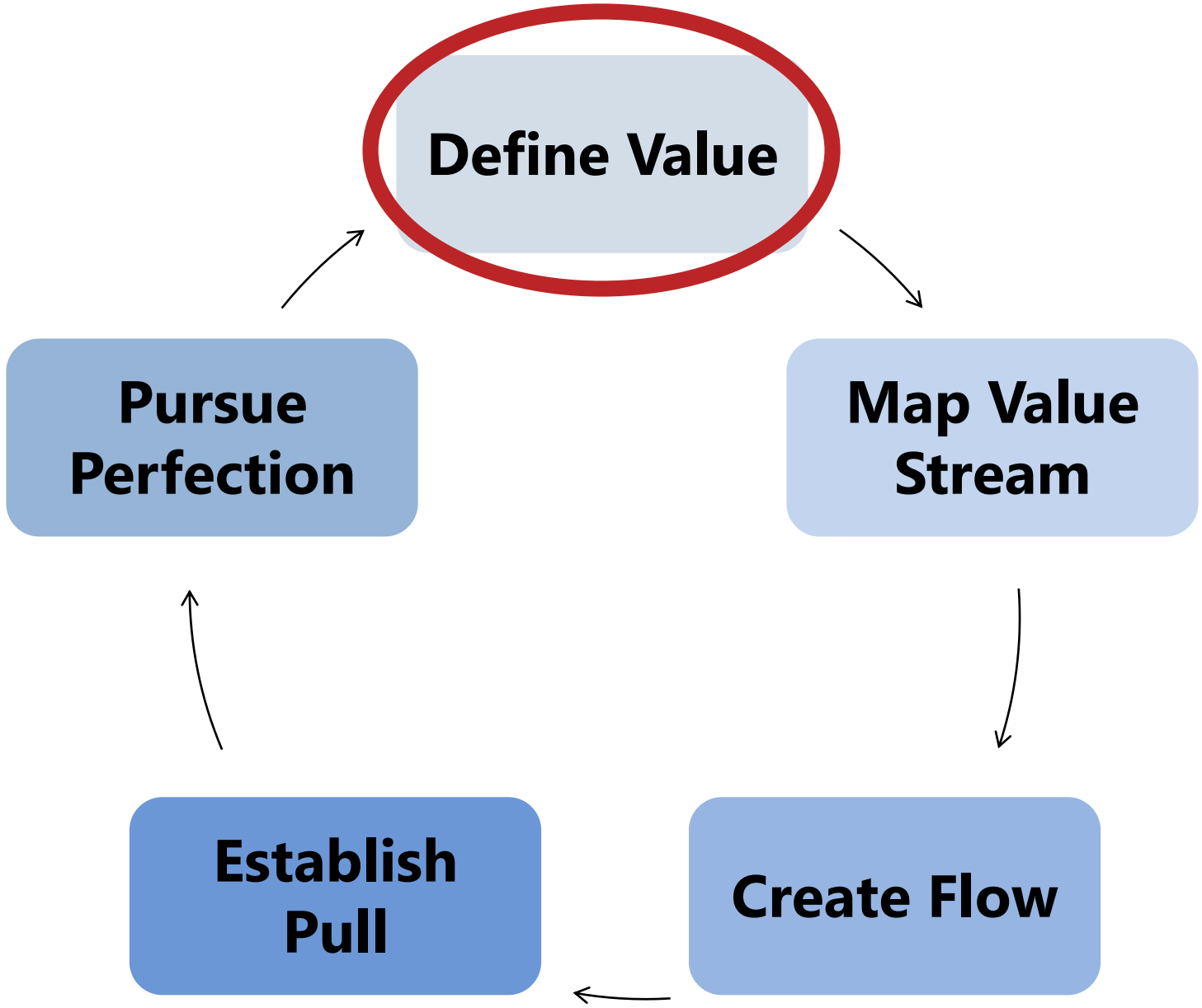
To flow means to move along in a steady, continuous, predictable fashion.

Many barriers to flow

Few or no barriers to flow

In Lean, we pursue continuous flow, where value reaches the customer by passing quickly and easily through a steady sequence of value-added activities.

5 Lean Principles



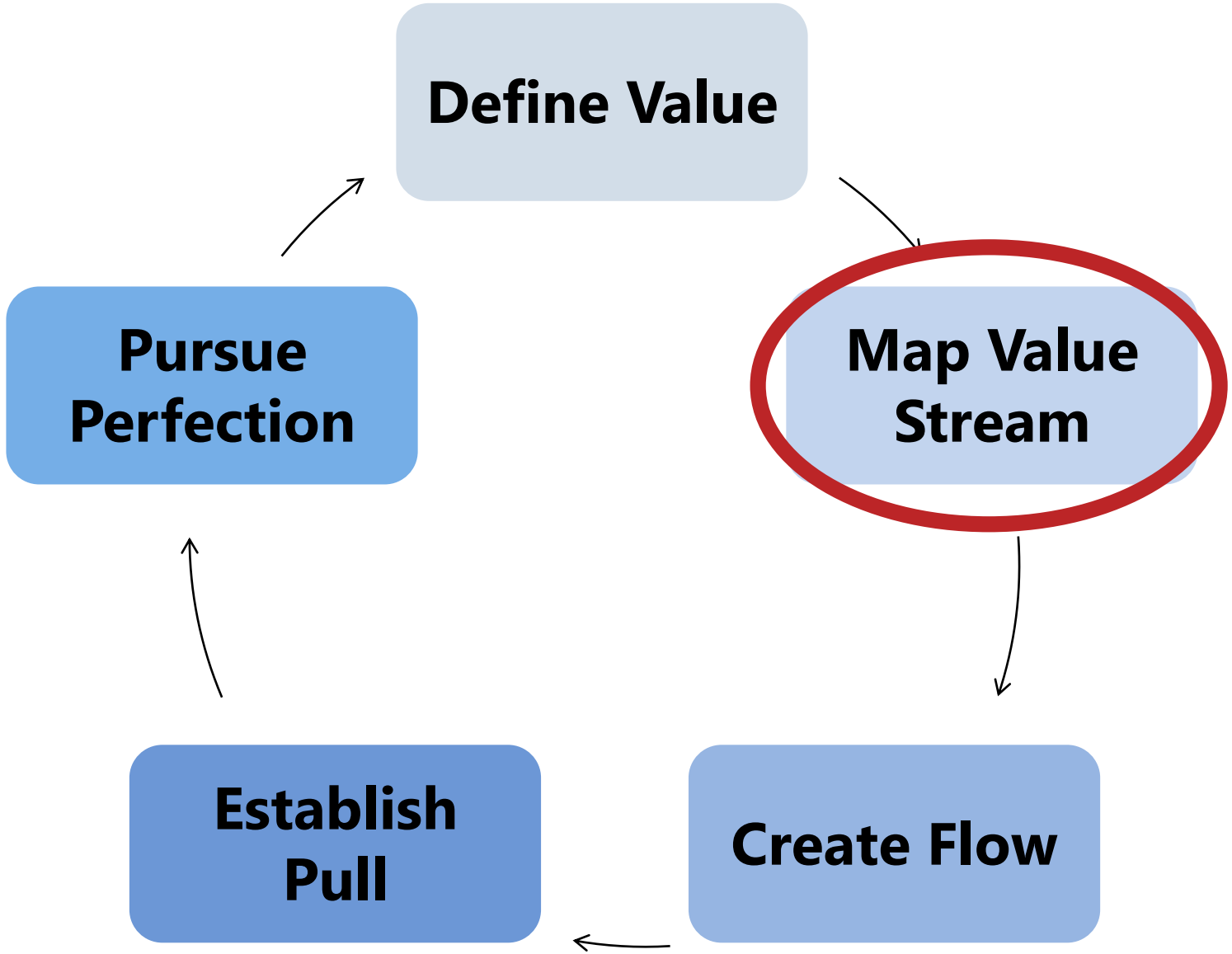
How to Define Value

1
Identify product

2
Identify end-users

3
Ask end-users to define value and product requirements

5 Lean Principles



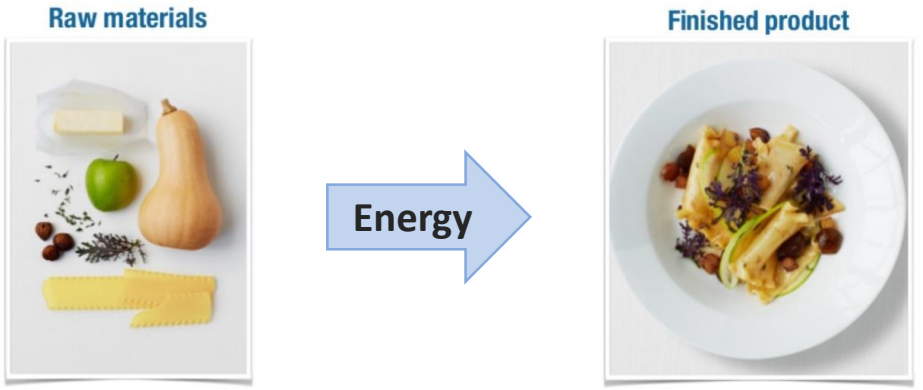
Poll

When it comes to value stream mapping, I would say:

- I’m here to learn what it is.
- I know about it, but haven’t experienced it.
- I’ve participated in it.
- I’ve facilitated it.

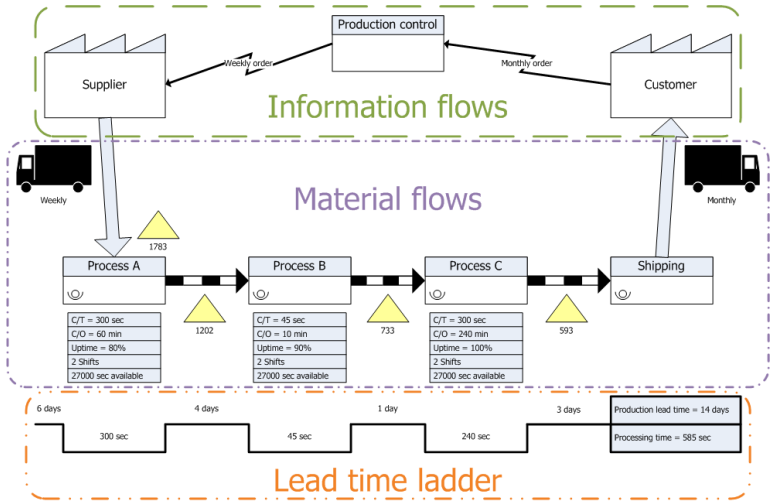
What is a Value Stream?

All the materials and work it takes to create and deliver a product to the customer.



What is a Value Stream Map?

A drawing that shows the flow of material and information through the production process.



Why Draw a Value Stream Map?

1. See flow across the system – to find & remove barriers
2. Share understanding – to make better decisions
3. Clarify value – to identify waste
4. Connect each function to the customer – to keep them in mind
5. Evaluate the work from objective and quantitative point of view – to measure performance and changes
6. Manage and continually improve the system of work – to stay in business

Value Stream Map vs. Process Map

Value Stream Maps

- High-level (zoom out)
- Product and information flow

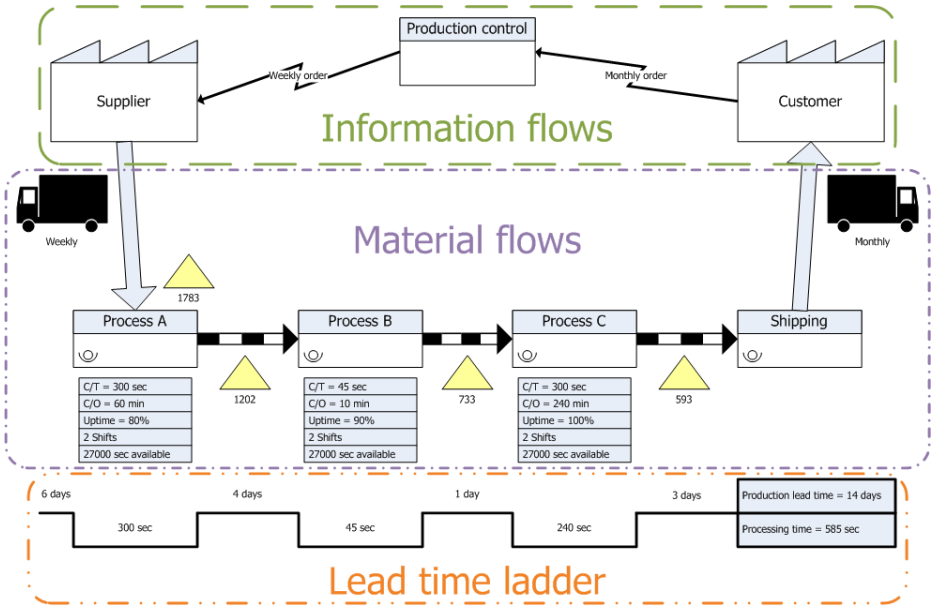


Image: https://upload.wikimedia.org/wikipedia/commons/9/99/ValueStreamMapParts.png (Daniel Penfield)

Process Maps (Flowcharts)

- Detailed (zoom in)
- Activities and decisions

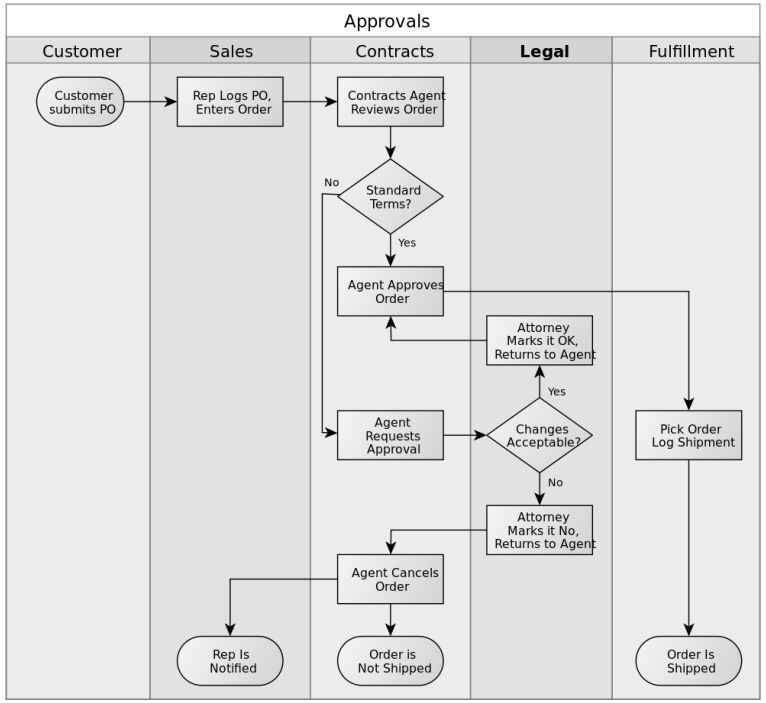


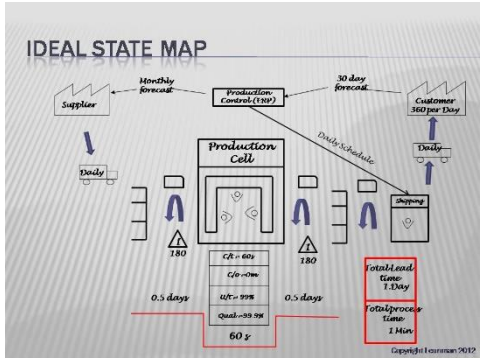
Image: https://en.wikipedia.org/wiki/Swim_lane#/media/File:Approvals.svg (Paul Kerr)

Value Stream Map vs. Process Map (Flowchart)

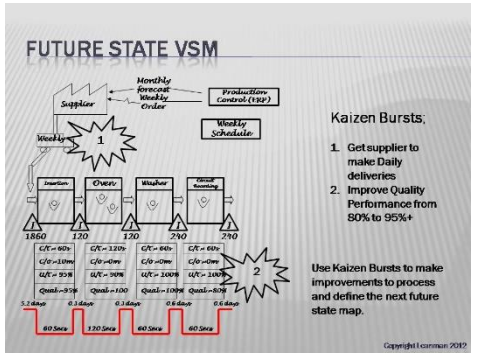
Map element	Value Stream	Flowchart
Activity/step	✓	✓
Who performs activity/step	✓	✓
Rework loops	✓	✓
Decision points		✓
Inventory & queue points	✓	
Defect rate	✓	
Time elements	✓	

Types of Value Stream Maps

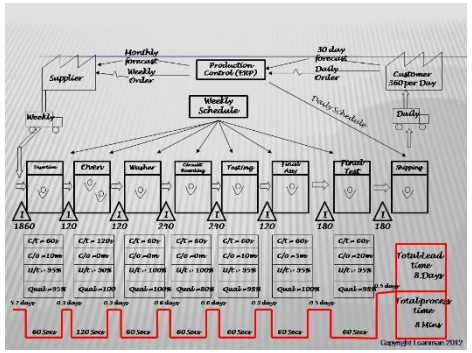
Ideal State



Future State

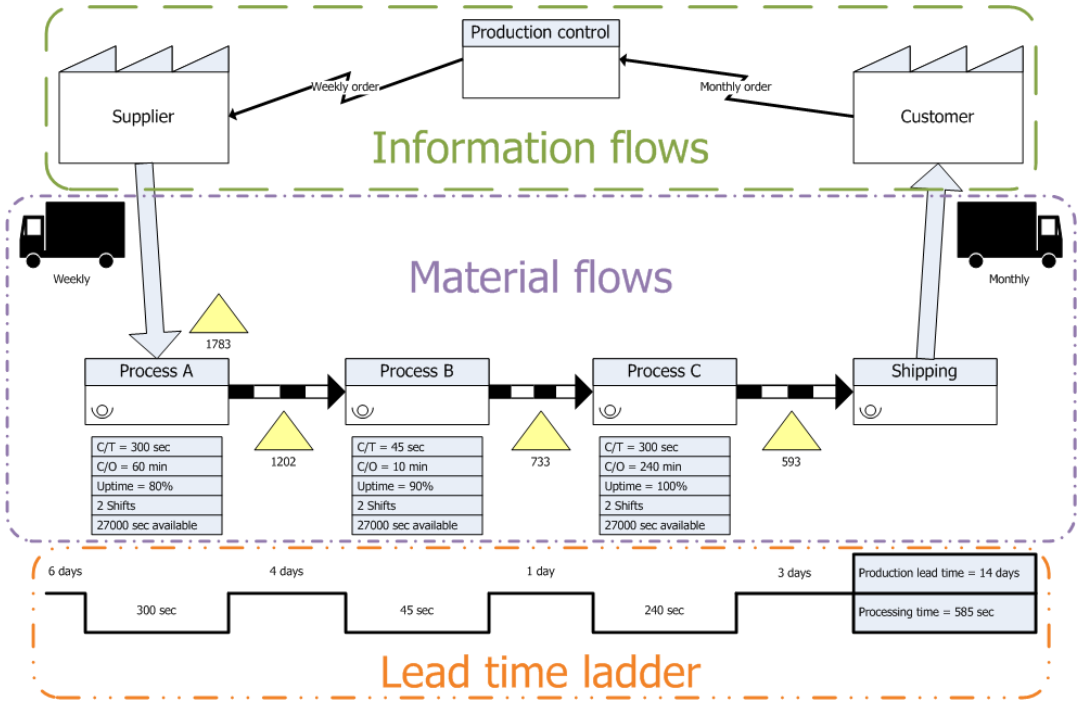


Current State

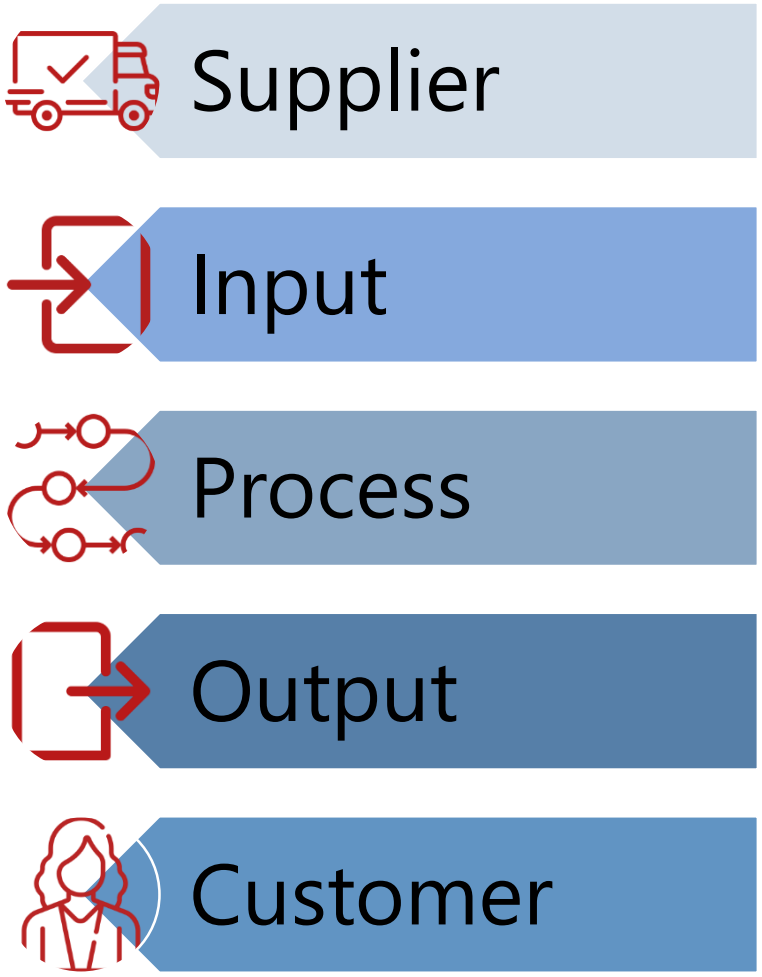


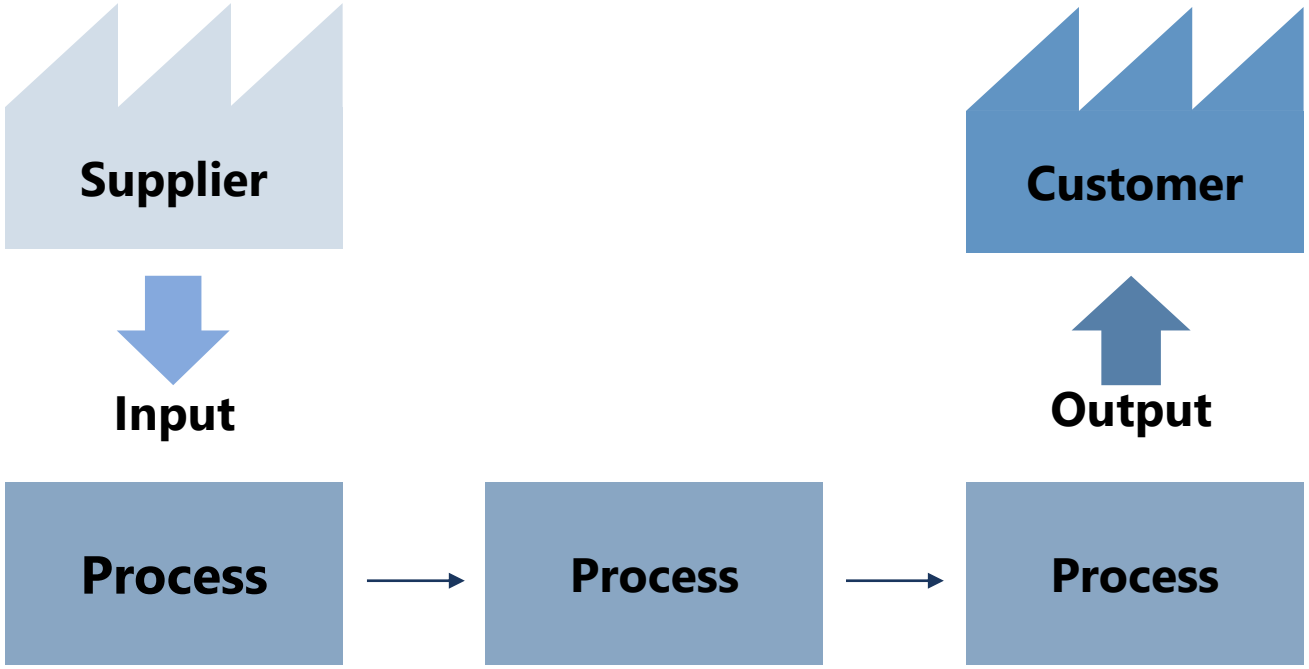
How to Build a Current State Value Stream Map

1. Map material flow
2. Map information flow
3. Add timeline and calculate process performance data

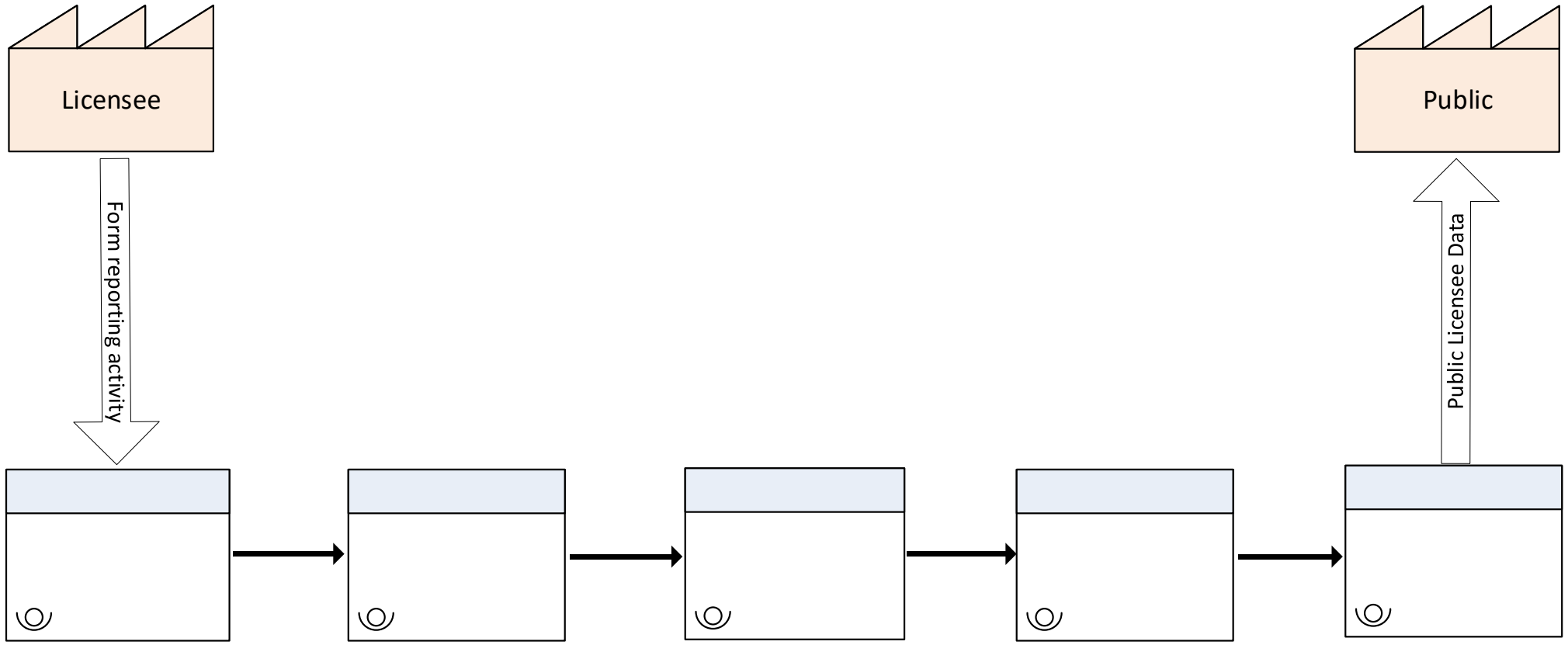


SIPOC Framework for Value Stream Maps



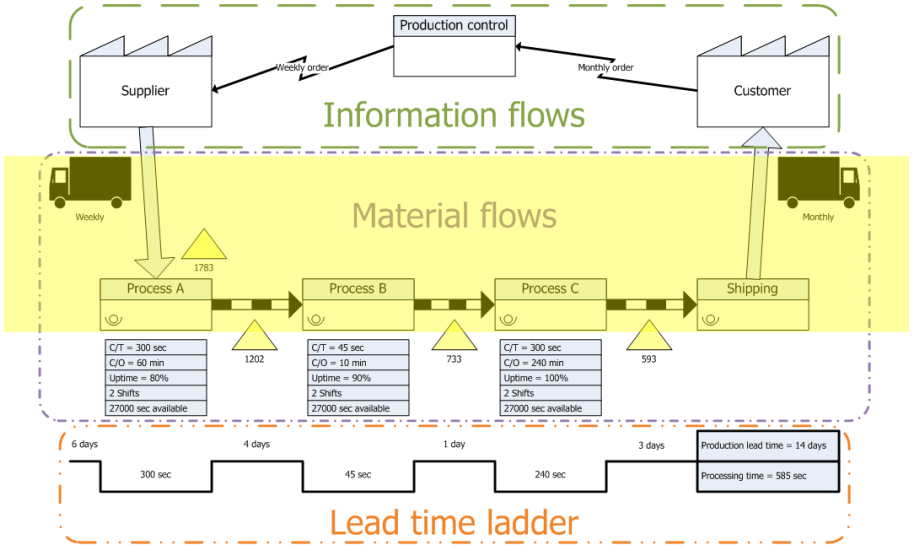


SIPOC Example: Licensee Data Entry

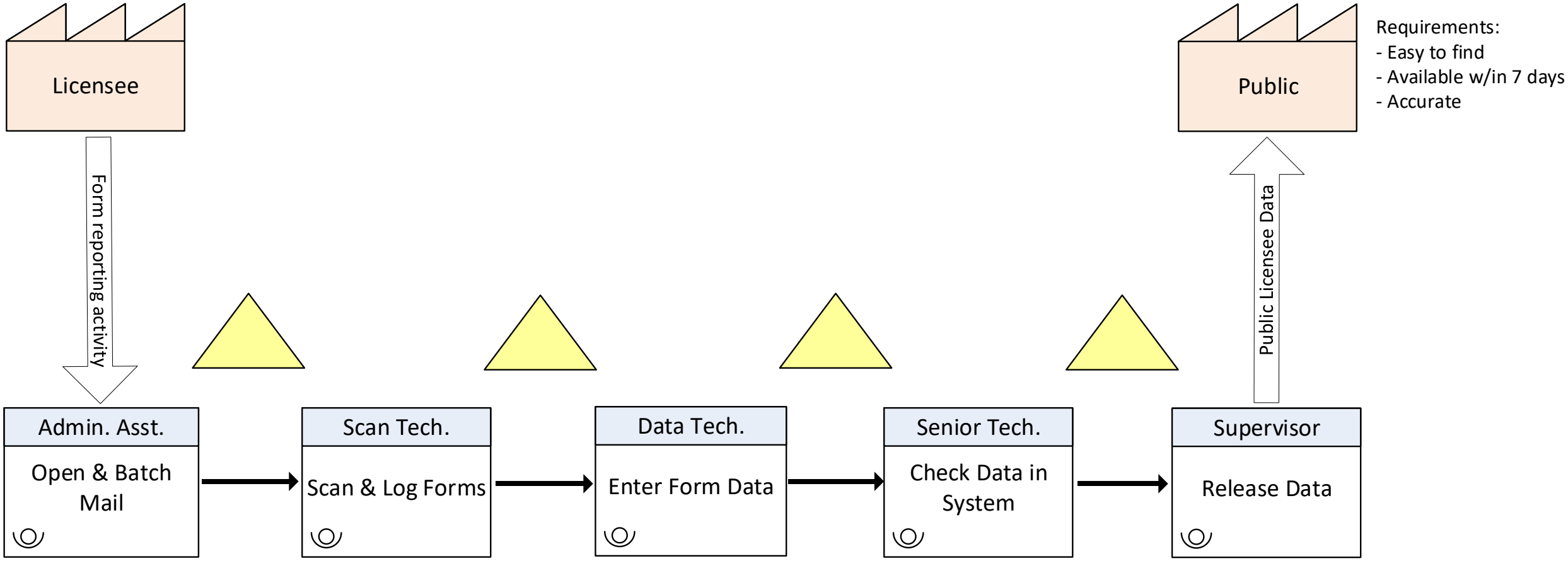


Map Material Flow

- Be the thing and walk the process – sketch reality
  - Identify major work activities: operator and process step
  - Identify inventory (inbox) queues

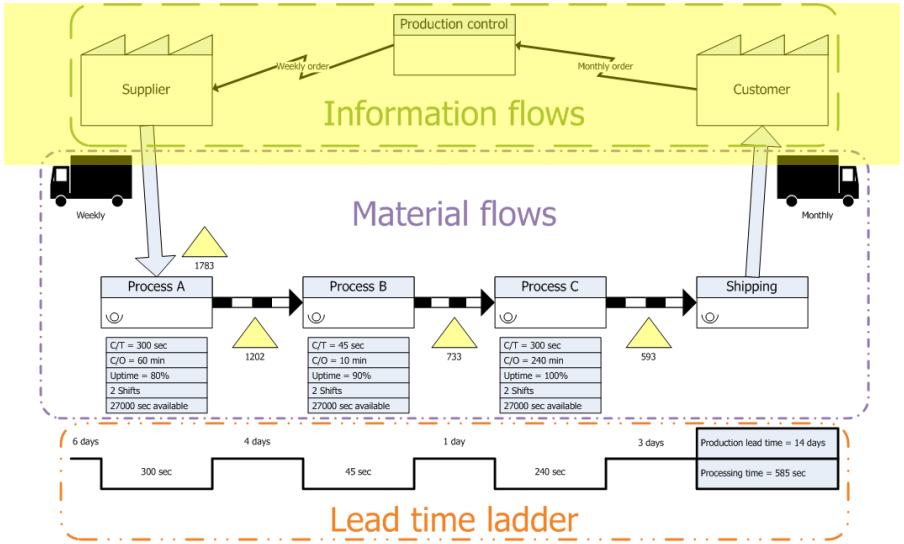


Material Flow Example: Licensee Data Entry

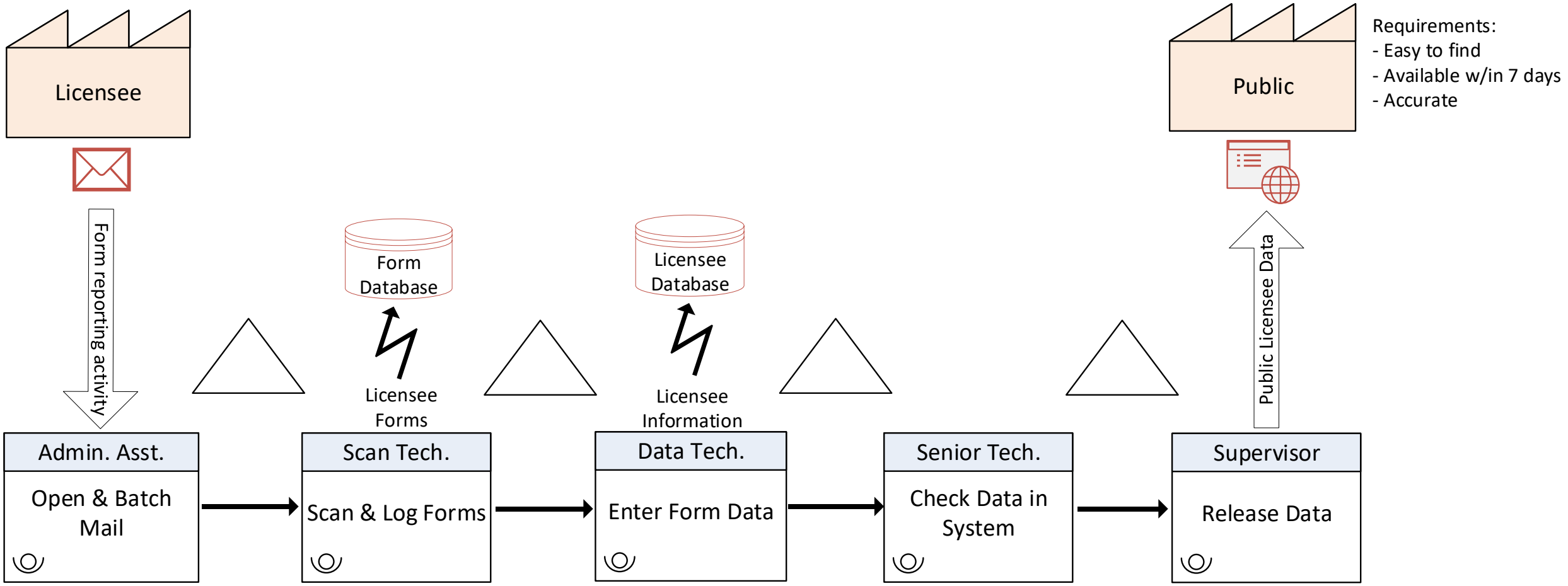


Map Information Flow & Capture Data

- Be the thing and walk the process – try in reverse
  - Specify how the input is supplied
  - Identify electronic systems used to capture/transfer info.
  - Capture who gets information, how, and how often

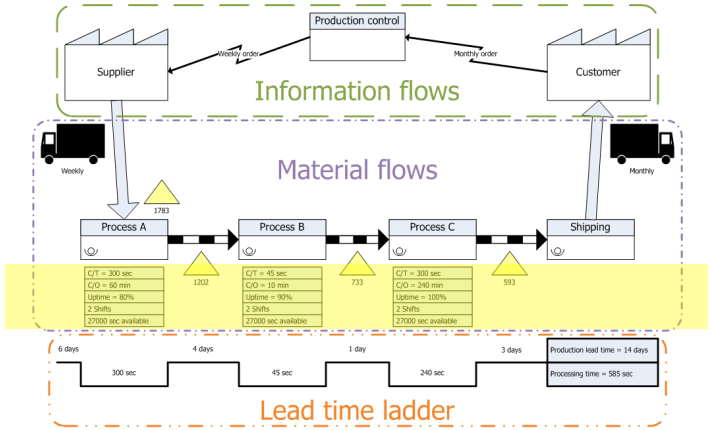


Information Flow Example: Licensee Data Entry

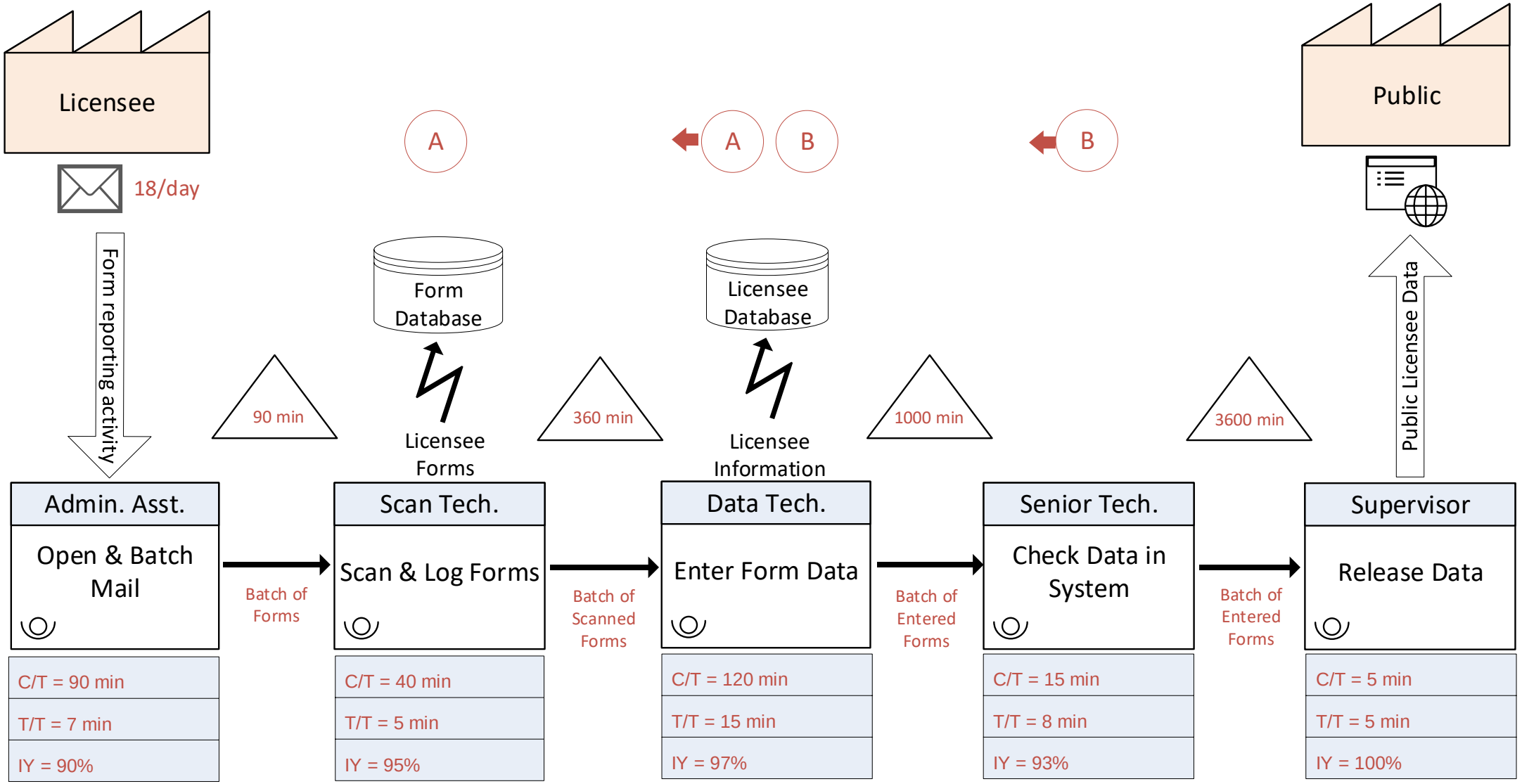


Map Information Flow & Capture Data – cont'd

- Measure what's happening
  - Capture data about time, quality, and customer demand
  - Note inventory and number of operators at workstations
- Identify quality issues and rework loops
- Optional: label the product between workstations

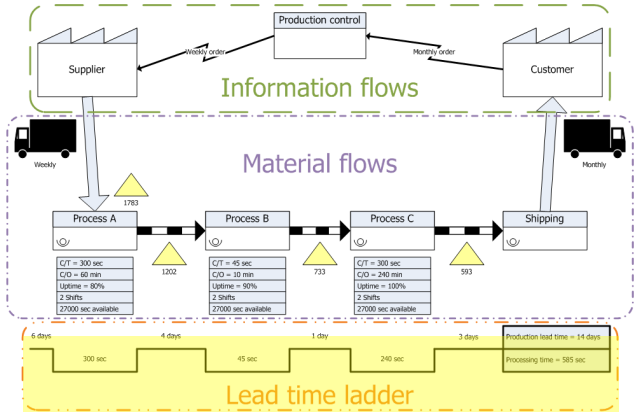


Data Example: Licensee Data Entry

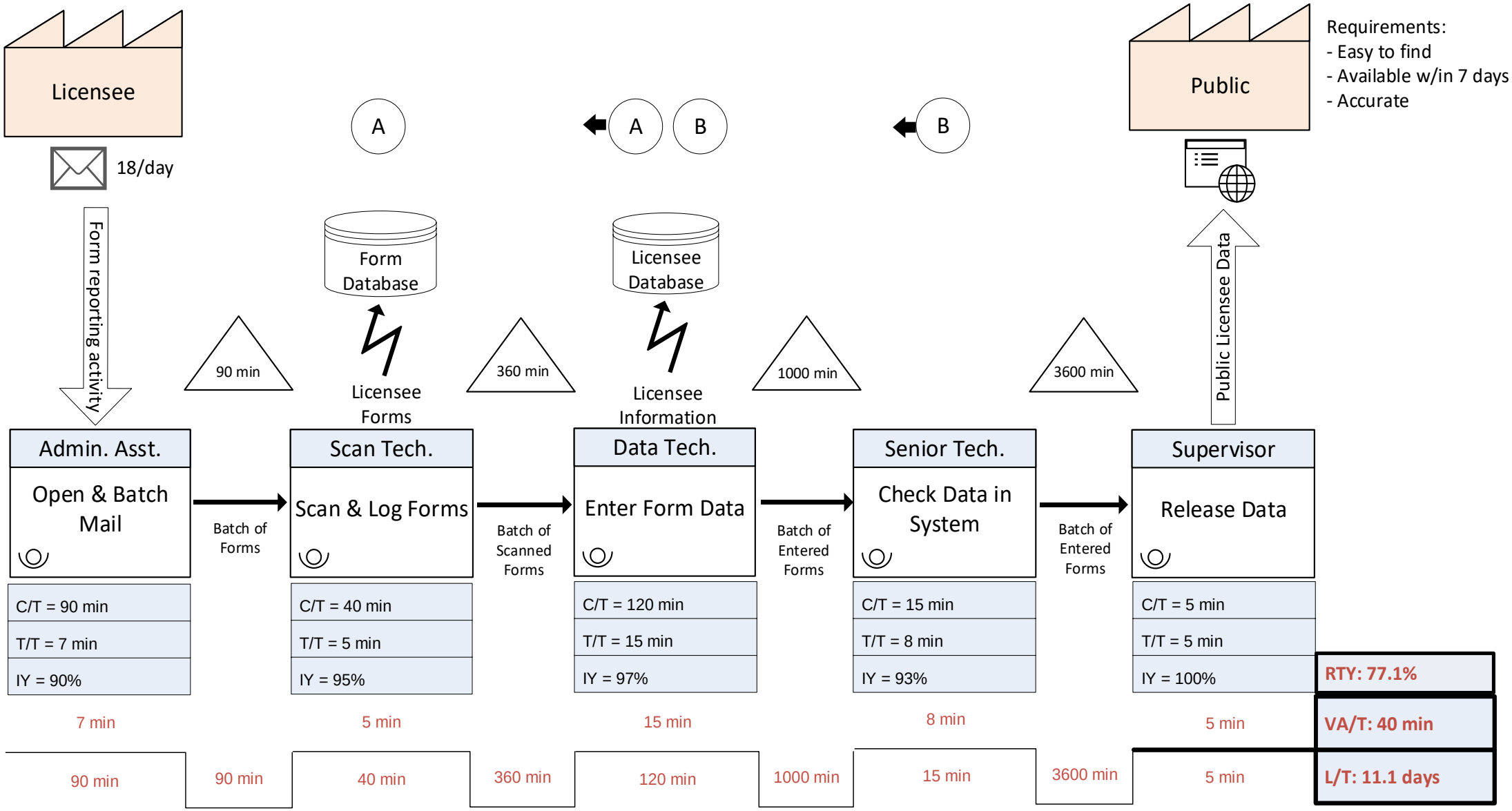


Add Timeline & Calculate Performance Data

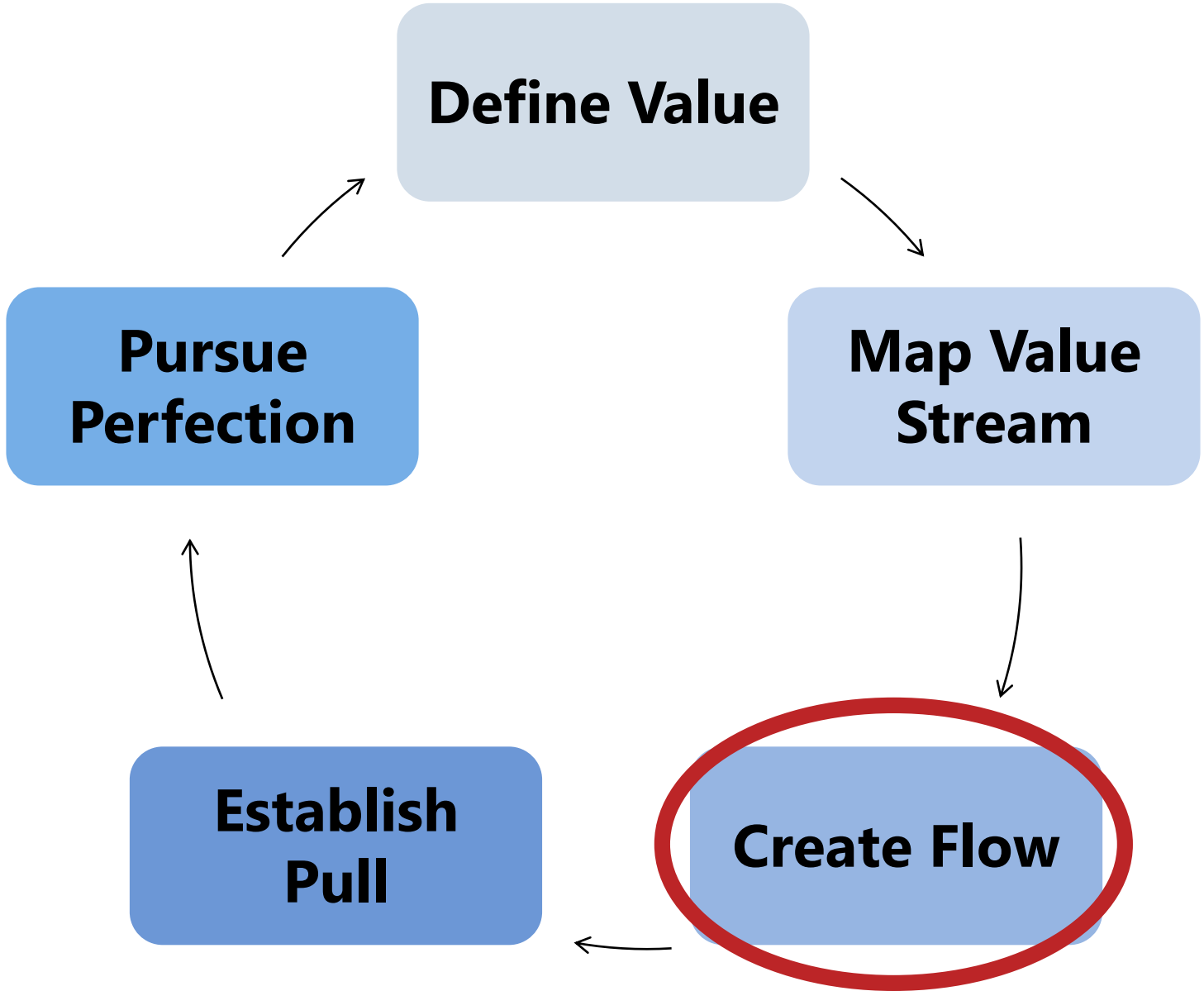
- Draw timeline along bottom
  - Calculate process performance metrics:
    - Lead (total production) time: Cycle Time + Wait Time
    - Value-added time: Sum of value-adding Touch Time
    - Rolled throughput yield: Product of all Incoming Yields



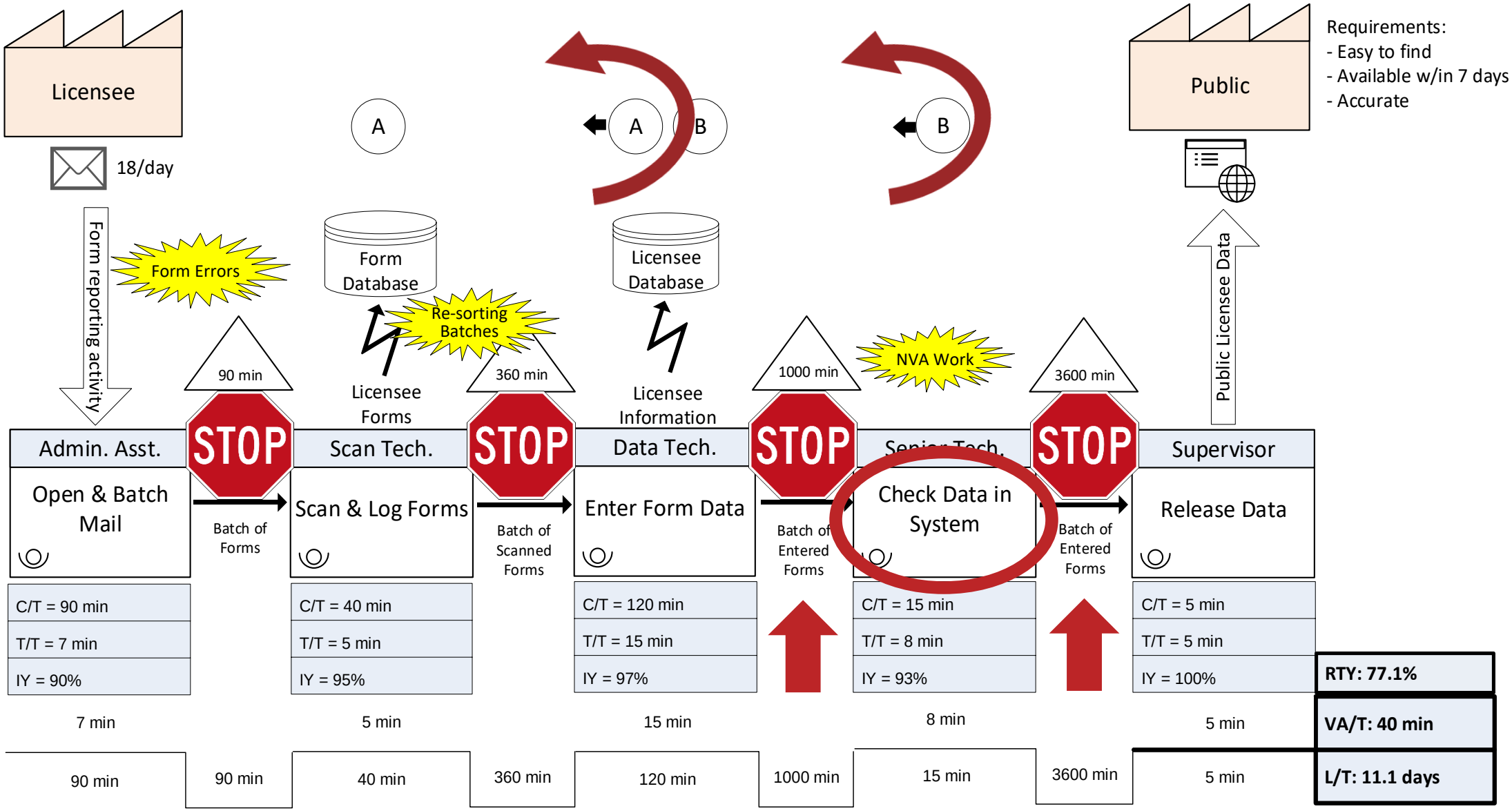
Timeline Example: Licensee Data Entry



5 Lean Principles

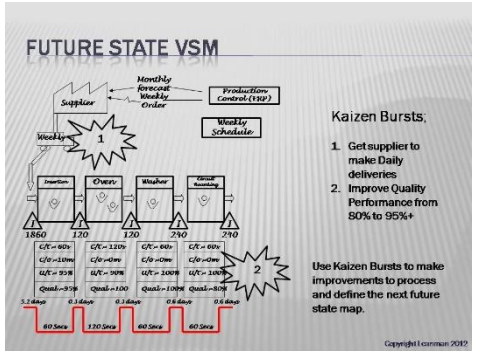


Flow Analysis Example: Licensee Data Entry



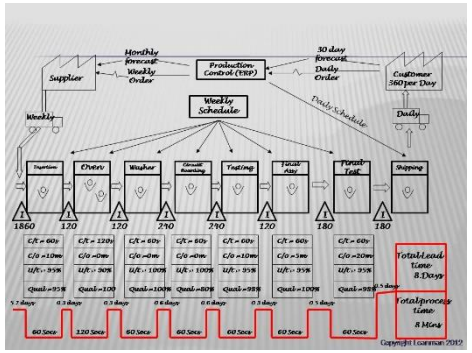
Solve Problems to Achieve Future State

Future State

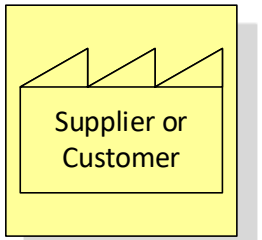


- Produce to takt
- Eliminate waste

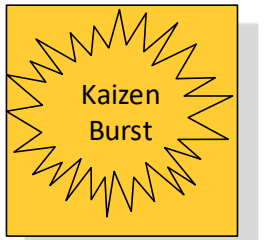
Current State



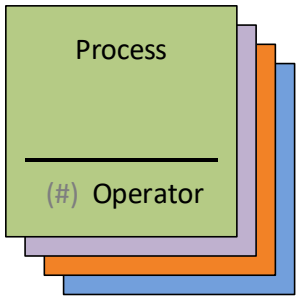
Common Value Stream Mapping Symbols



Start and end of process



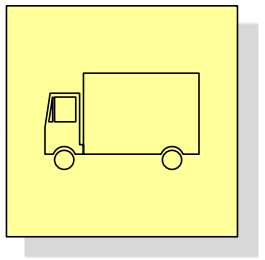
Problem/source of waste and idea to improve



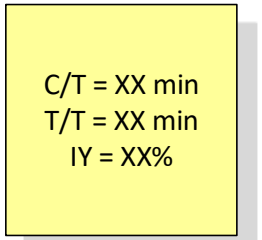
Process Step: Action taken

Operator: Role that performs this process step. List the number of operators if more than one.

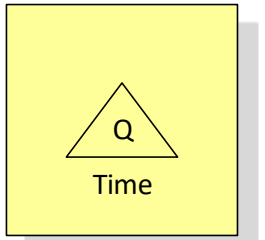
(Colors represent different roles involved)



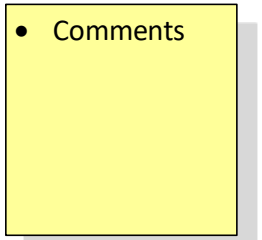
Shipment



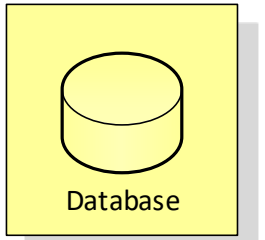
Data Boxes:
Cycle Time: Total time required to complete a process step (includes touch time).
Touch Time: Time a product is actually being worked on.
Incoming Yield: Percent of time that product from previous step is fit for use in current step (complete and accurate).



Queue (waiting) time for product or service to enter next process

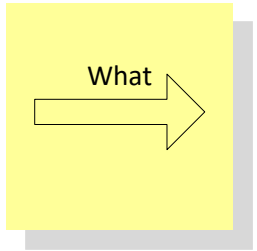


Additional information related to process

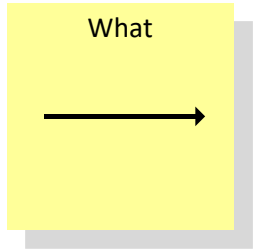


Name of system that information flows to and/or from within value stream

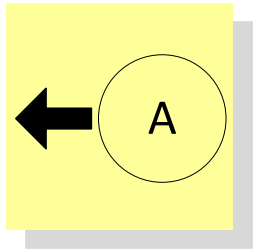
Common Value Stream Mapping Symbols



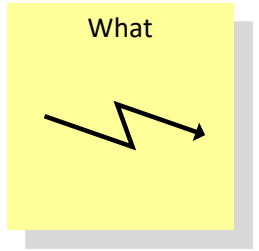
Material flow to Customer or from Supplier



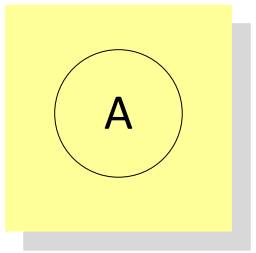
Physical flow (what)



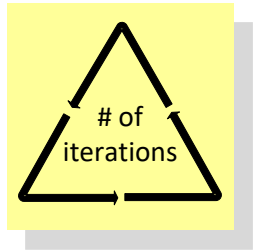
Rework (location where defect detected)



Electronic flow (what)



Rework (location where defect starts rework)



Iteration loop (between two processes or within one process)

Summary Metrics

Lead Time (LT): The total time a customer must wait to receive a product after placing an order (or initiating the process).

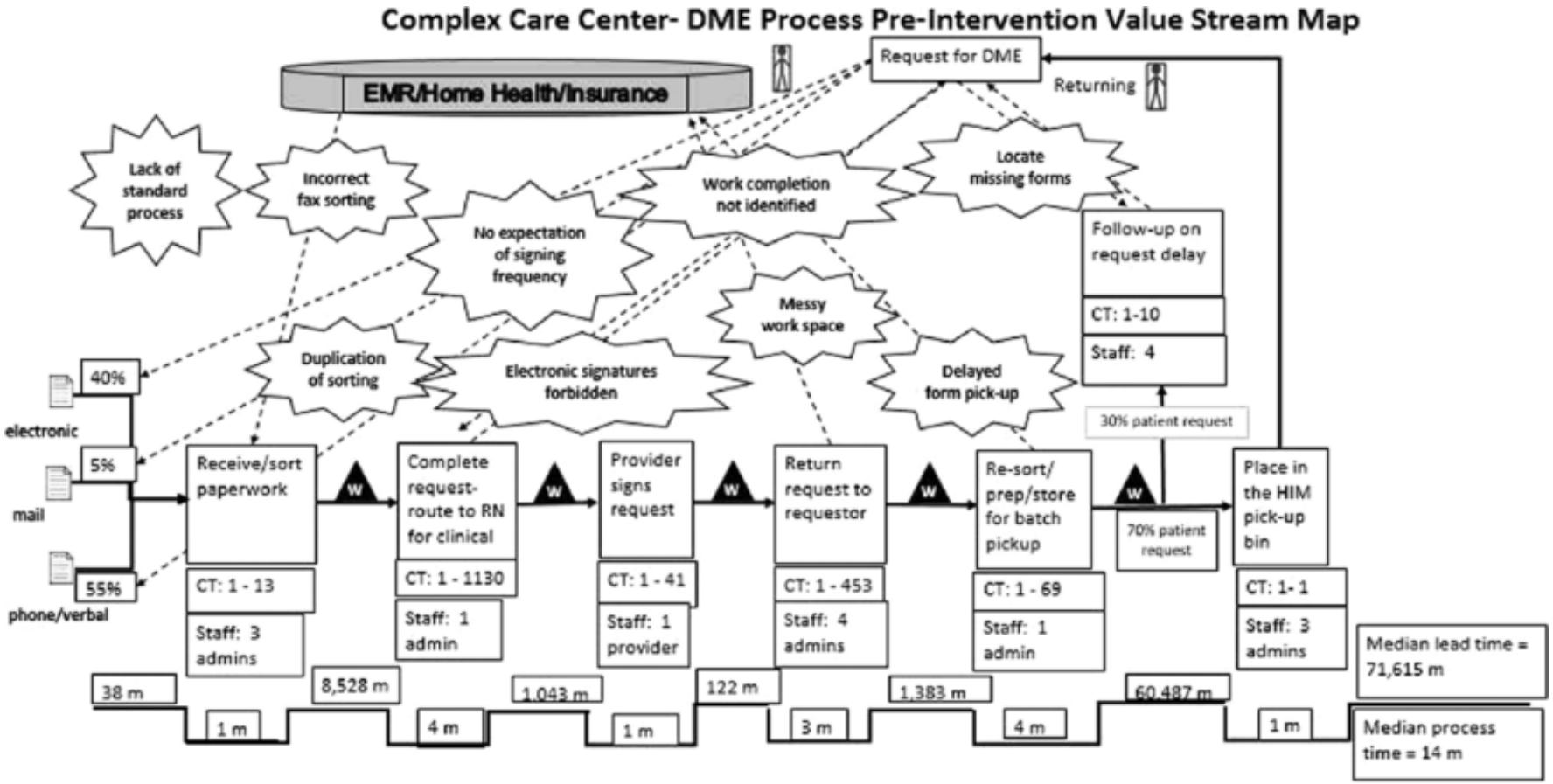
Rolled Throughput Yield (RTY): The probability that a single unit can pass through a series of steps free from defects. To calculate, multiply the IY for each step.

Handoffs: The number of time a product changes hands in a process on its way to being completed.

Rework Loops: When a work product contains errors (incomplete or inaccurate) and must be sent back upstream to be fixed.

Value Added : Non-Value Added (VA/NVA): For an activity to be value-added, it must meet all three of these criteria:
1)The customer must care about it.
2) It must change the fit, form, or function.
3) It must be done right the first time.
A Non-Value Added step is anything that does not meet these three criteria.

Example



Key

CT = cycle time is the range of time in minutes per request that were completed during a one hour period
DME = durable medical equipment
EMR = electronic medical reocrd
HIM = Health Information Mangement
hr = hour
m = minutes
Lead time = the total time it takes from the time the request is received until it is sent to HIM
Process time = the time it takes to complete each step in the process
RN = registered nurse

Symbol Key

Kaizen = continuous improvement opportunity

W — Wait time = the time between processes

10 Mapping Pitfalls & How to Avoid Them

It's a mistake to:

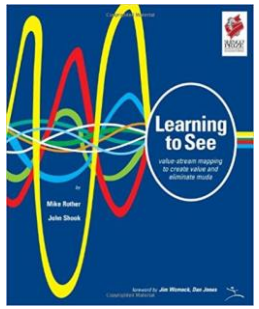
- Map only in a conference room
- Draw what supposedly happens
- Dive too deep into details (tasks)
- Follow operators
- Correct operators
- Jump to solutions
- Skip metrics
- Map solo or "stitch" maps together
- Stop at mapping
- Focus on making a beautiful map using technology

So, instead:

- Go and see firsthand
- Capture reality
- Think "high-level handoffs"
- Follow the product
- Observe, inquire, and seek to understand
- Note problems (pain)
- Measure what happens
- Map whole process together as a team
- Use maps as launch pad for action
- Draw – in pencil – the messy truth, and keep it dynamic (change it as you learn)


Q&A

Additional Resources



- ***Learning to See*** by Jim Womack and Dan Jones

- **"Value Stream Mapping – Helping Your Team See the Future State"**
  - 2012 Lean Conference Presentation by Sarah Stuart, Impact Washington
  - Link to YouTube video:
    - https://www.youtube.com/watch?v=27OBzSEjHzA&feature=player_embedded
  - Link to slides:
    - https://results.wa.gov/sites/default/files/Value%20Stream%20Mapping%20-%20Helping%20Your%20Team%20See%20the%20Future%20State.pdf

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