

# *Value Stream Mapping in the Office*

Lean Service Summit

June, 2004

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Beau Keyte, Branson, Inc.



# Course Agenda

## **1. Introduction**

2. Value Stream Focus

3. The Current State Map

4. The Future State Map

5. Planning Your Changes



# A Great Reference

- “The Complete Lean Enterprise” workbook due out this month from Productivity Press
- Patterned after “Learning to See” but includes:
  - distinct business issues
  - waste in office settings
  - new office metrics
  - functional area "lean thinking."



# Lean Thinking

- Fundamental Objective: To create the most value while consuming the fewest resources.
- Define value from the customer's perspective.
- Identify which process steps create value and which are only waste (*muda*).
- Work to eliminate the root causes of the waste and allow for continuous flow of work and tasks.



# Why Go Beyond Plant Level Improvements?

- Administrative activities are often a major percentage of the total throughput time
- Goal: 400% improvement in productivity over 10 years
- Modest opportunities on the plant floor; untapped opportunities off the plant floor



# How Does “Off the Plant Floor” Differ?

- Many functions are not well documented
- Many functions support several services without clear boundaries
- Harder to identify customer, product and customer value
- Waste in administrative processes is much harder to see - more entrenched and hidden



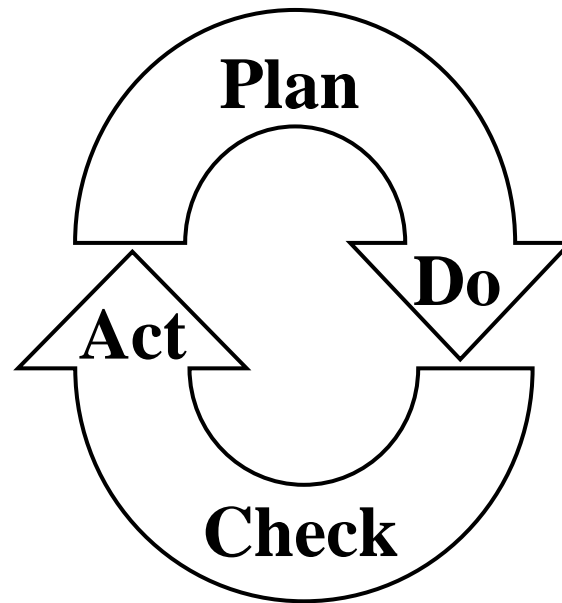
# If We Could Just Get to A Point Where We Have.....

- Activities aligned with our business strategy
- Efforts focused on NET improvements for the company
- Metrics supportive of fundamental change
- Simple, constant communication of enterprise plans and achievements



# How Do We Get There?

- Remember Deming!

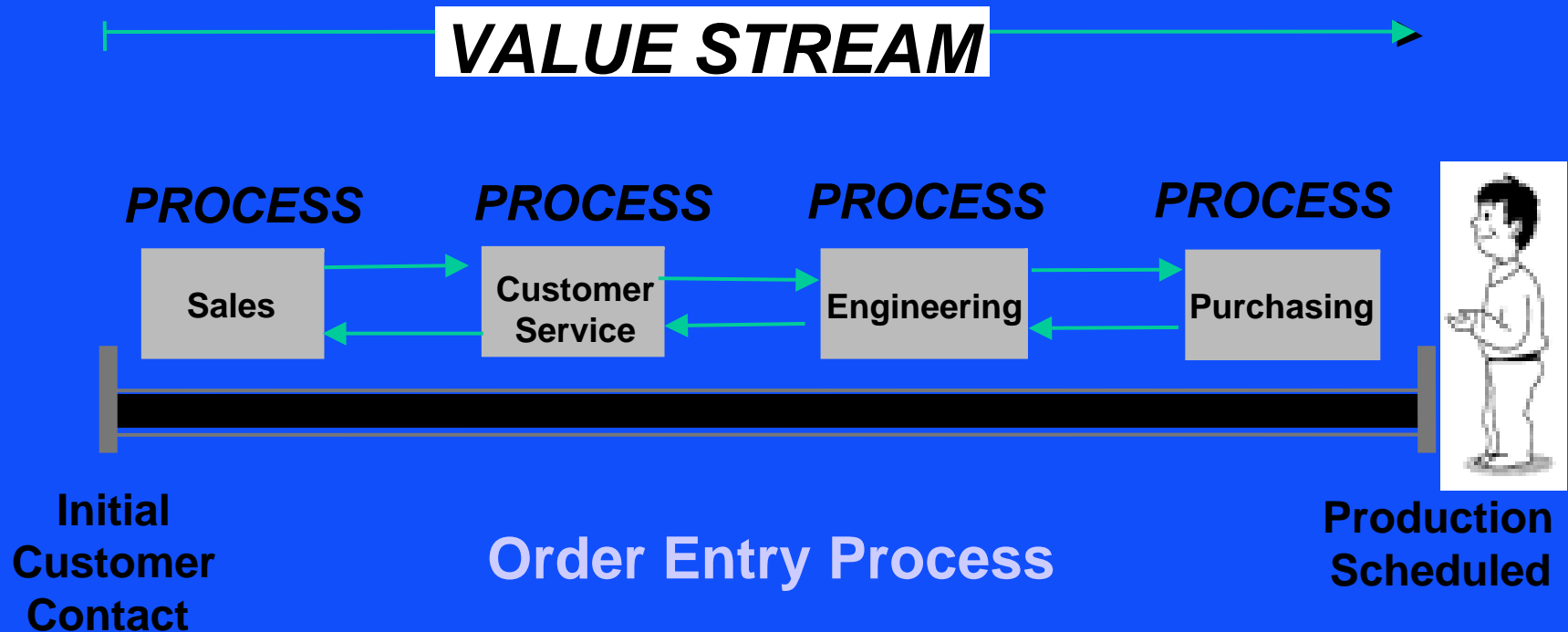


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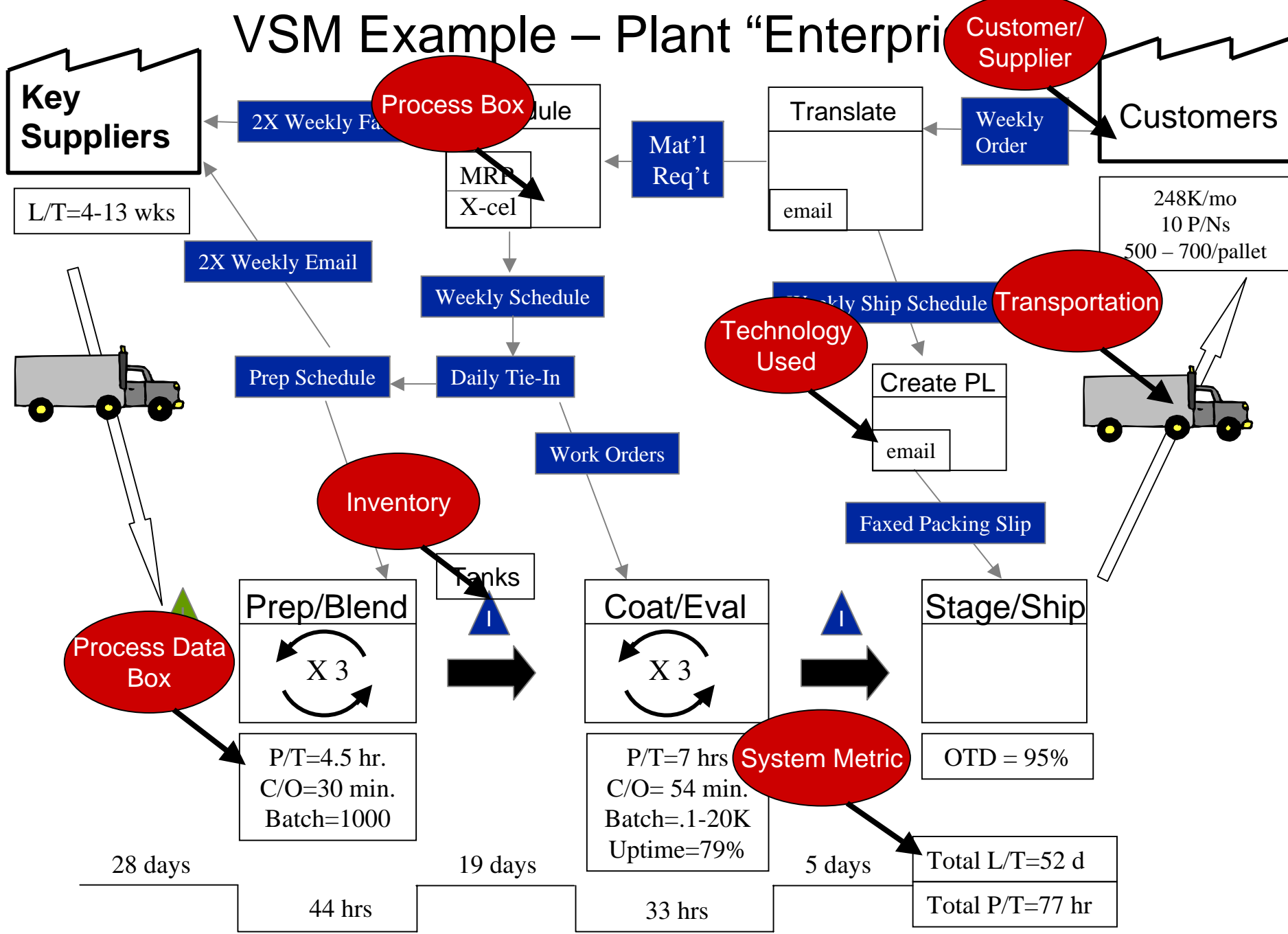
# Value-Stream Improvement vs. Process Improvement



Value Stream = ALL steps, both value added and non-value added, required to complete a service from beginning to end.



# VSM Example – Plant “Enterprise”

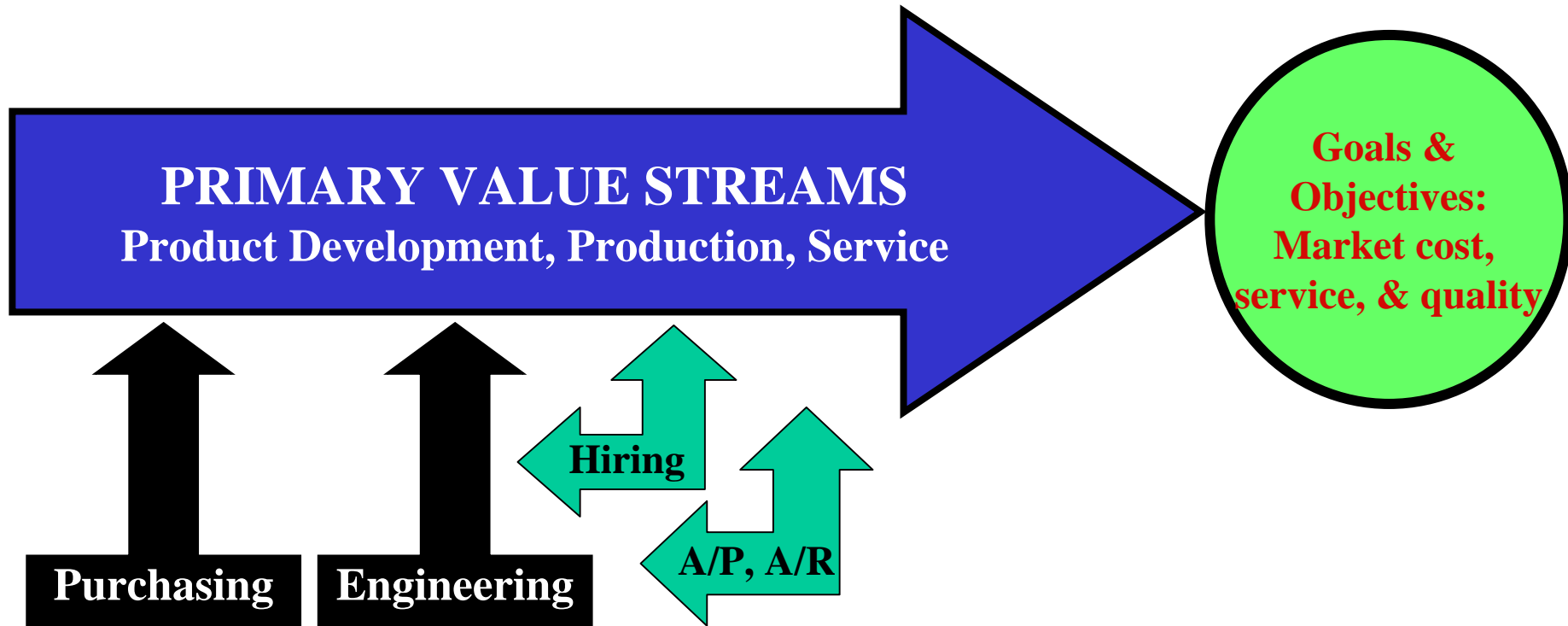


# Value Stream Maps Enable a System View

- Starts with a Focus on the Customer
- Links process steps and information flow
- Reveals problems with flow
- Documents performance of the process
  - Customer Expectations
  - Process metrics
  - Visibility of progress and quality
- Reveals waste
- Establishes a common language
- Provides a blueprint for improvement
- Gets People involved in creating the future



# Where Do We Start?

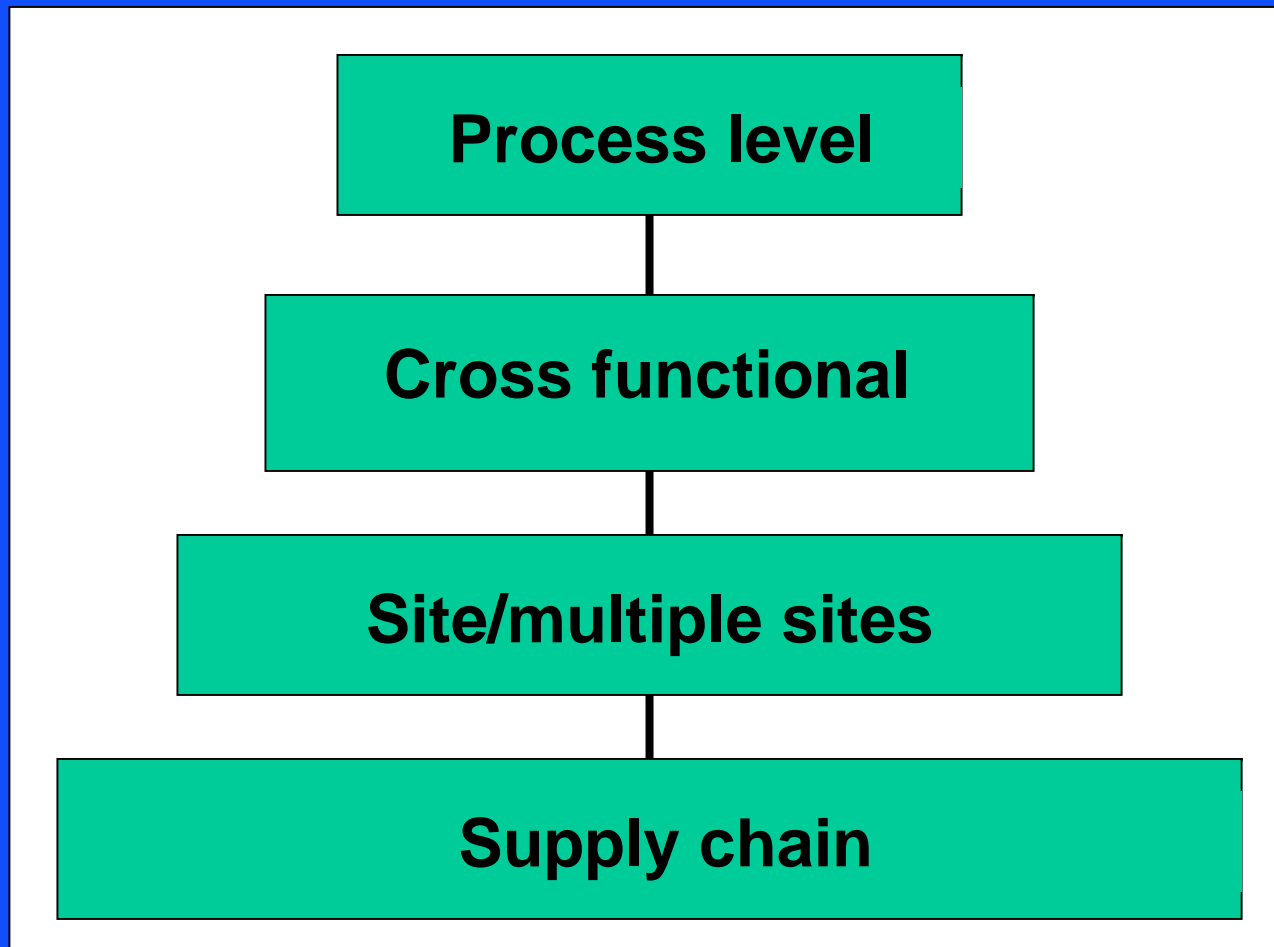


# Getting Started: Business Objectives & Management Support

- What is the customer telling you in terms of the cost, service, and quality of your products/services?
- What objectives and goals have been established by your company to address market needs?
- What processes immediately impact the performance of these products and services?
- Who needs to support this effort?
- How can the business objectives be used to garner support? How would you position VSM?



# Levels of a Value Stream



# What's the Right Level for You?

- Are you struggling with alignment in the supply chain or challenging how to position your organization in the supply chain?
- Have you tied your business objectives to the operating strategy and know where to begin?
- Have you already made significant strides in the manufacturing area?



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# Current State Map

- Completed in a day
- Performed by a cross functional team of middle managers responsible for implementing change
- Resulting in a picture (and team observations) of what we “see” when following the product/service



# Office Metrics

- Process time
- Available time
- Setup time
- Lead time/turnaround time
- Typical batch size (EPEI)
- % Complete and Accurate information (% C&A)
- Rework/revisions (e.g. design changes)
- Number of people involved
- Reliability (e.g. system downtime)
- “Inventory” – queues of information (e.g. electronic, paper)



# Michigan Steel Case Study

Michigan Steel processes and distributes steel coils and sheets to customers within Southern Michigan. One of its customers, Acme Stamping, recently did some “lean thinking” and has asked Michigan Steel to increase the deliveries of steel from twice a week (Tuesdays and Thursdays) to once a day. This case study deals with the order entry and processing of information before any shop order scheduling and delivery takes place.

## Order Processing

Michigan Steel’s current order processing includes receiving a fax on a weekly basis and processing it within an order entry process. Acme is asking them to receive a daily phone order and deliver the order the following day.

Michigan Steel wants to have only one way to process orders for all customers, as opposed to a special one for Acme Stamping. And, it must process orders quickly to ship steel out the next day. They receive about 46 orders per day from all of their customers. The front office is paid to work an 8 hour day and is allowed two 10 minute breaks. Lunch is unpaid. The order entry function is as follows:

Orders are received by customer service by walking to the fax machine and returning with the fax to the work station. The faxed orders are batched and sent to accounting to check the credit through the finance system. Once the credit is approved, the orders are then sent back to customer service where the order information is reviewed and entered into the MRP system. The MRP system determines the shipping requirements for the orders (i.e., what goes on Tuesday vs. Thursday), and flags any partial loads or over loads. A report of these shipping problems is generated and printed in Customer Service. Customer Service then reconciles the report against the customer needs. The customer then receives a confirmation phone call, and the order is then finalized for scheduling by Customer Service in the MRP system. The order is then ready to be scheduled by Production Control.



# Michigan Steel Data Set

## Receive Order

- Process time: .5 minutes
- Batch size = .5 days
- Technology used: Fax

## Check Credit

- Process time: 1 minute
- % of orders with acceptable credit: 90%
- Batch size = .5 days
- Technology used: Finance System

## Review and Enter Order

- Process time: 10 minutes
- % of orders Complete and Accurate: 60%
- Batch size = 1.6 hours (5x/day)
- Technology used: MRP

## Reconcile Order

- Process time: 1 minute
- % of orders Correct and Accurate: 75% (not requiring reconciliation)
- Batch size: 1.6 hours (5x/day)
- Technology used: MRP

## Confirm Order

- Process time: 7 minutes
- % of orders Correct and Accurate: 85%
- Batch size: 2 hours
- Technology used: Phone

## Finalize Order

- Process time: 5 minutes
- Batch size: 1 day
- Technology used: MRP



# Michigan Steel Data Set

- **Work Time**
- 20 days in a month
- One 8-hour shift, excluding an unpaid lunch
- Two 10-minute breaks



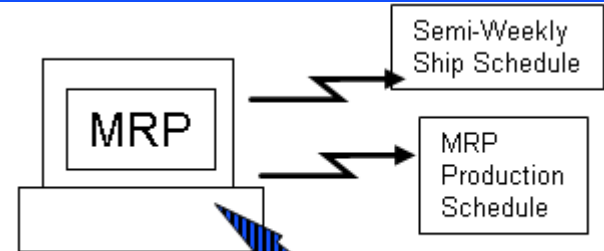
# Typical Steps for Administrative Current State Mapping

- Document customer information & need
- Identify main processes (in order)
- Select process metrics
- Perform value stream walk through and fill in data boxes, including “inventory” and resident technology
- Establish how each process knows what to process next (how they prioritize)
- Calculate lead-time (e.g. batch sizes) vs. process time, First Pass Yield and/or other Value Stream summary metrics

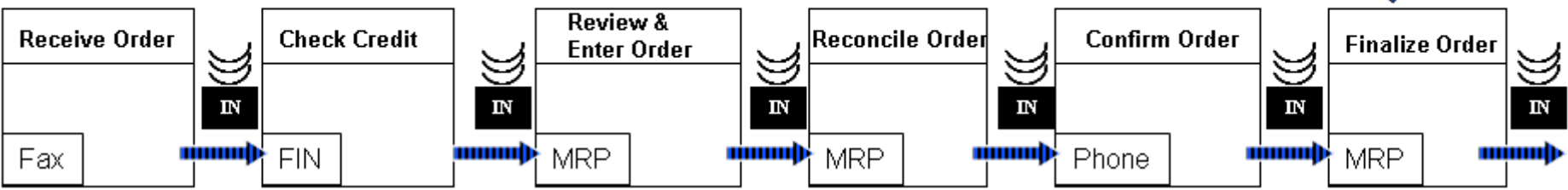




Michigan Steel Order Entry Process  
Current State - May, 2004



Weekly Fax



P/T = ½ min  
Batch = 4 hours

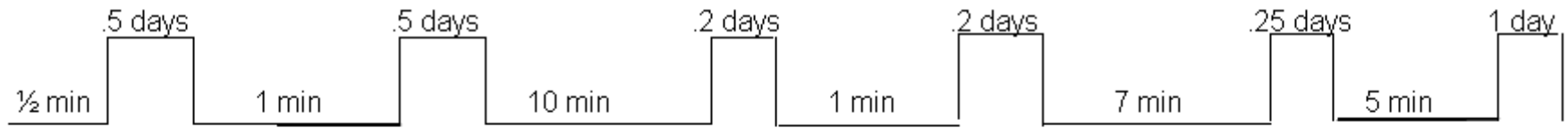
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P/T = 1 min  
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Batch = 1.6 hours

P/T = 7 min  
%C&A = 85%  
Batch = 2 hours

P/T = 5 min  
Batch = 1 day



Total Lead Time = 2.65 days  
Total Processing Time = 24.5 min  
First Pass Yield = 34.4%



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# Future State Map

- Completed in a day with the same team
- Focused on:
  - Creating a flexible, reactive system that quickly adapts to changing customer needs
  - Eliminating waste
  - Minimizing handoffs and silos
  - Triggering resources only when needed



# Future State Questions

- What does the customer really need?
- How often will we check our performance to customer needs?
- Which steps create value and which are waste?
- How can we flow work with fewer interruptions?
- How do we control work between interruptions?
- Is there an opportunity to balance the work load and/or different activities? How will work be prioritized?
- What process improvements will be necessary?



# What Does the Customer Really Need?

- What “service level” does the customer need?
  - Desired response or turnaround time
  - Expected quality level of the output
- What is the demand for the process?
  - Expected demand rate
  - Expected variation in the demand rate
  - Required resources to meet demand rate(s)



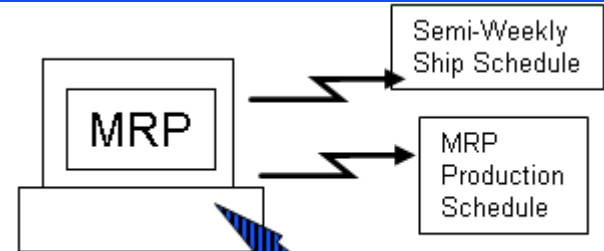
# How Often Will We Check Performance?

- At what frequency will the system be reviewed to verify it is satisfying customer needs and the desired cycle time or service level?
  - Example: Six Sales Orders an hour will be processed, with all orders processed within 1 hour of receipt.
- How will we check the progress?
  - Example: A visual means to determine the “age” of an order will be provided.

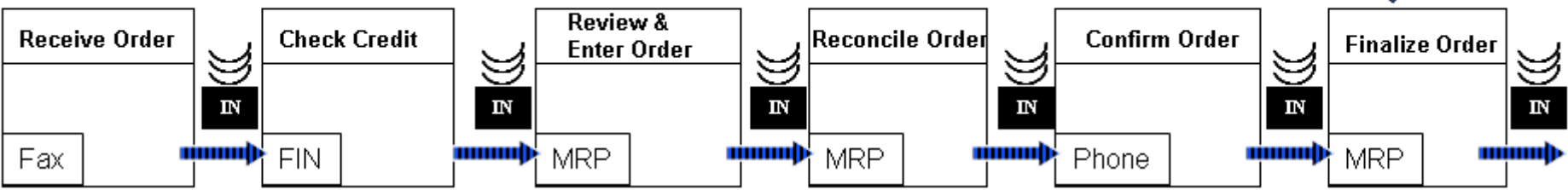




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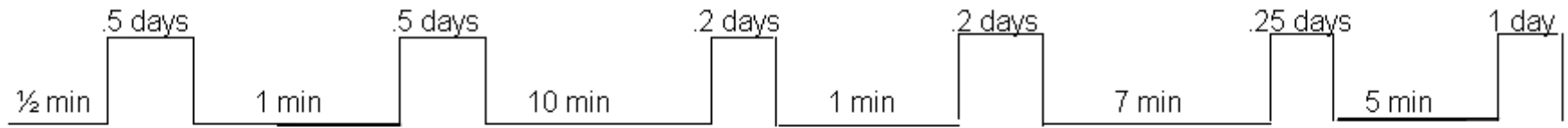
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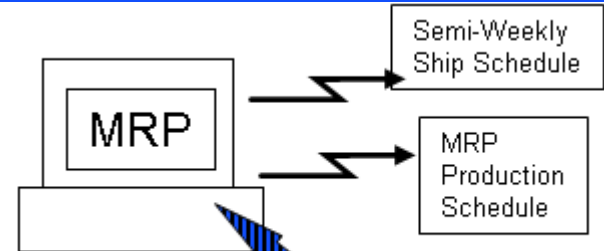
# What Steps Create Value and Which are Waste?

- Challenge every step – ask the following:
  - What is really needed by the customer?
  - Why are the current steps performed?
  - What can be done differently or not at all?
  - Is the order of steps creating waste? Where should decisions be made?
  - What assumptions underlie the current process?
  - Are existing controls and administrative guidelines appropriate?
  - What knowledge and skills are truly required to perform the step(s)?

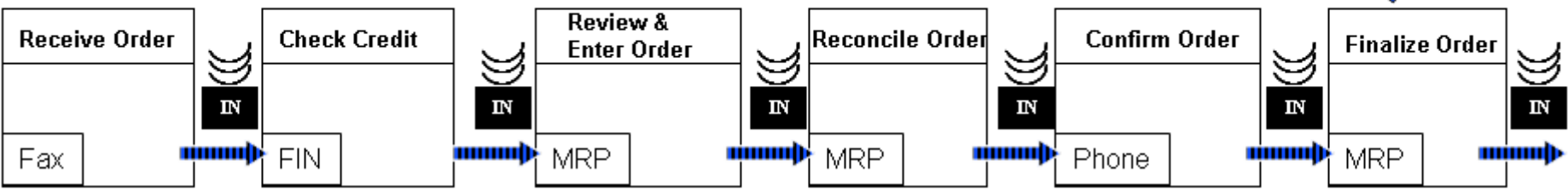




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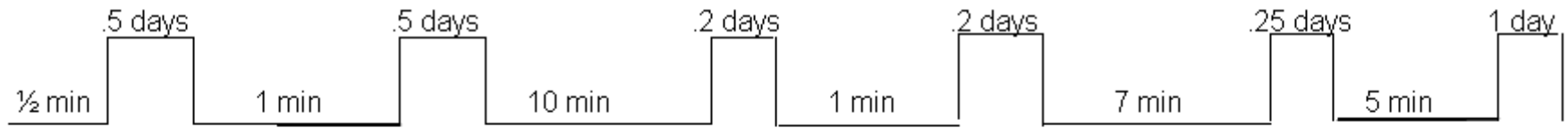
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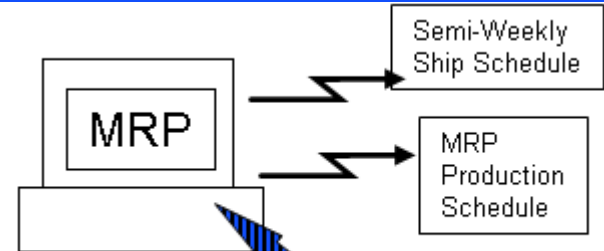
# Where Can We Flow Work Without Interruption? (Continuous Flow)

- Non-production examples:
  - Customer Service (e.g. from Order to Invoice)
  - Order Processing (e.g. Design-to-Order)
  - Product Design (e.g. Concurrent Engineering)
  - Bidding and Proposal Teams
  - Warehouse and Distribution
  - Contract Administration

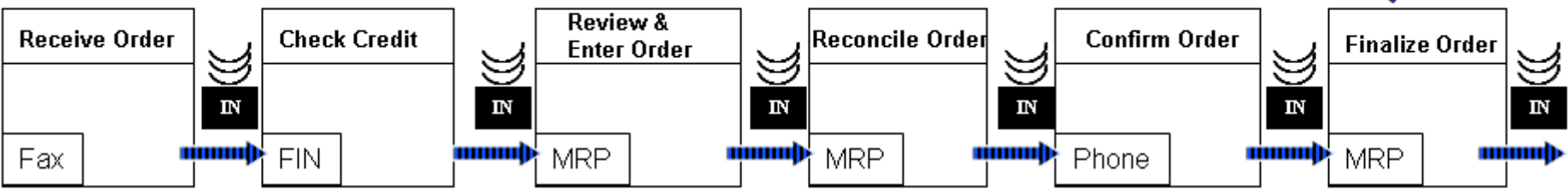




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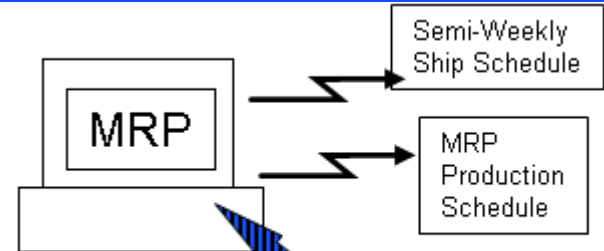
# Controlling/Organizing Work Between Interruptions

- Prioritizing the in-box
- Reorganizing to keep work in the hands of one group
- Minimizing delays!

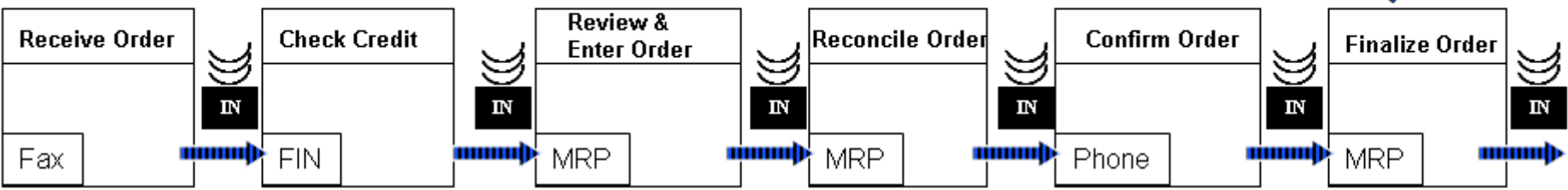




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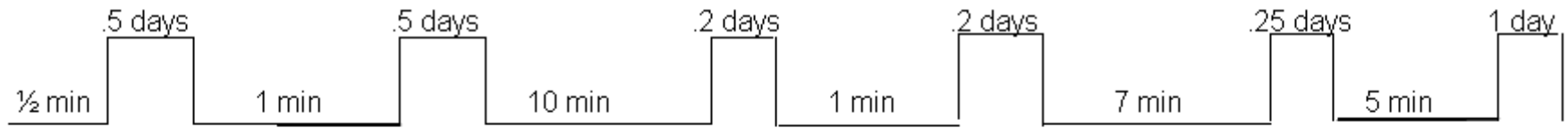
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# Balancing the Work Load and/or Activities

- Does the “mix” (e.g. order type) impact the ability of the system to flow, or impact the responsiveness of particular steps in any way?
  - Example: Rush vs. Standard Orders
- Does the “volume” (e.g. demand variation) impact the system in any way?
  - Example: Month-end phenomena



# What Process Improvements Will Be Necessary?

- Identify all process improvements that will be necessary to implement the future state

**Paperwork  
Redesign**

**System  
Uptime**

**Change  
Authority Levels**

**New Technology**



**Acme Stamping Orders**

**On-Line Order Entry**

**Phone/Web**

**Link Finance And MRP**

**Finance cross-train**

**Receive/Credit/  
Reconcile/Confirm**  
  
MRP/FIN

Takt = 10 minutes  
P/T < 10 minutes  
% accept = 90%  
Batch = 1 order

**Implement Kanban**

**MRP**

**Schedule Production via FG Kanban**

**Direct-schedule shipping**

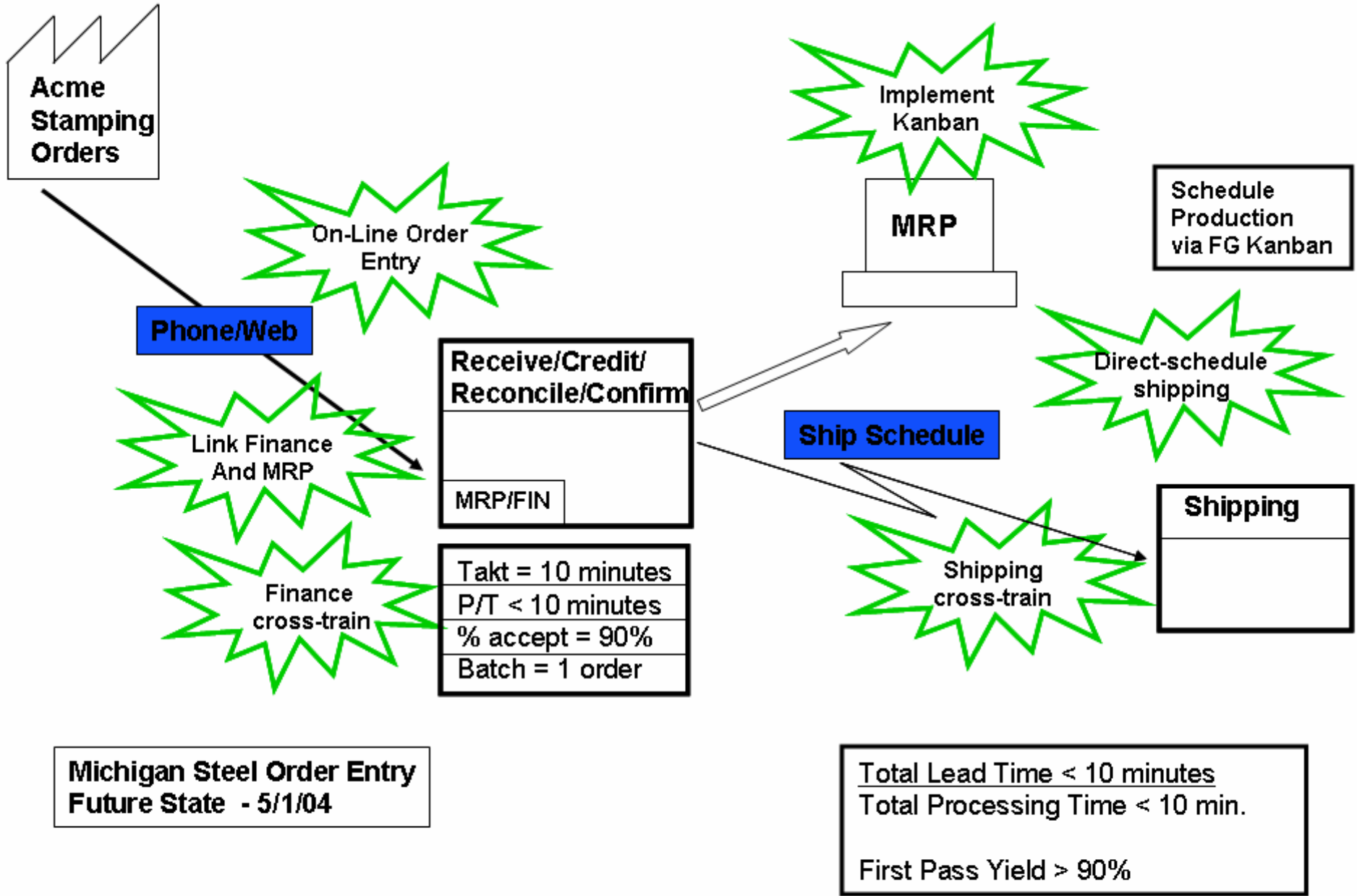
**Ship Schedule**

**Shipping cross-train**

**Shipping**

**Michigan Steel Order Entry  
Future State - 5/1/04**

**Total Lead Time < 10 minutes  
Total Processing Time < 10 min.  
First Pass Yield > 90%**



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# Implementation Now Begins!

- Devote up to a day to develop detailed plans for all the improvements, including tasks, people, and timelines
- Manage the implementation a la PDCA
  - Frequent checks
  - Look for “cries for help”
  - Develop countermeasures



# Value Stream Management

- Use your strategic plan as a guide
- Find the gaps in necessary performance
- Improve value streams to meet the performance
- Create new metrics to support new ways of thinking and acting
- Understand true product family costs
- Manage operations by the value stream data
- Always have a future state



# Value Stream Mapping Preparation – Page 1 (what do we map)

Corporate Business Objectives and Goals:

Division/Department Business Objectives and Goals:

Value Stream to be Mapped:

Necessary Management Support:



# Value Stream Mapping Preparation – Page 2 (what's the scope)

Value Stream Manager:

Cross Functional Team Members:

What services will be consolidated into this specific service family? What types of work (transactions) will be in/out of bounds?

What is the full scope/boundary of your initial value stream assessment?  
Where does it begin and end?



# Value Stream Mapping Preparation – Page 3 (how will we measure success?)

Overall objective & goal for the future value stream (3-6 month timeframe)

Selected initial value stream metrics:

