SOLVE FOR X.

How To Develop Modular, Scalable, Flexible Operational SOLUTIONS…

Presented by:

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KUECKER LOGISTICS GROUP

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Who we are:

Kuecker Logistics Group-

- **For over 35 years, have designed and implemented cutting edge supply chain solutions across North America and Internationally, providing end to end, turn-key implementations**
- **Experience in Direct to Consumer, Retail and Wholesale Distribution for various businesses and product lines (e.g. Pharmaceutical, Apparel, Cosmetics, Food and Beverage, 3PL, etc.)**
- **Provide a selection of MHE alternatives**
- **Supply Chain Systems – KeyChain WCS, WES, WMS**
- **Supply Chain Consulting including Strategy Assessment, Process Development, Facility Design and Engineering Services**

Speakers-

Daryl Bush (16 Years of Engineering and Operations Mgmt. Experience)
Rene Danler (26 Years of Industry and Consulting Experience)
Mani Krishna (35 Years of Industry and Consulting Experience)

WHAT ARE YOUR CHALLENGES? WHAT IS YOUR X?

- RETAIL AND ECOMMERCE BUSINESS ENVIRONMENT
- FOCUS TODAY
- CURRENT CHALLENGES
- INTERNAL BUSINESS PRESSURES
- LABOR AVAILABILITY
- BUSINESSES ARE EXPANDING THIS SEGMENT
- OFFERING VARIOUS SERVICES
- FUTURE E-COMMERCE LANDSCAPE AND EXPECTATIONS
- WHERE ARE YOU TODAY?
- CAN YOU HANDLE AND SUPPORT OR……?
- CAN YOU BE AN ENABLER FOR THE BUSINESS?

OUR FOCUS TODAY – SOLVE YOUR X

- WE WANT TO SHARE OUR EXPERIENCES ON HOW TO HANDLE - OUR CORE EXPERTISE
- SHOW YOU AN APPROACH ON HOW TO GET THERE
- A STEP BY STEP PROCESS AND ROAD MAP - TO SOLVE YOUR X
- A METHODOLOGY ON HOW TO DETERMINE PROCESSES, APPROPRIATE TECHNOLOGY, AUTOMATION, SYSTEMS, ETC.
- IMPORTANCE OF SCALABLE, MODULAR AND FLEXIBLE
- OUR EXPERIENCE SAYS “ONE SIZE DOESN’T FIT ALL”
- IMPORTANCE OF “JUSTIFIABLE AUTOMATION”
- AT THE END OF OUR PRESENTATION, WE HOPE THAT YOU WILL BE BETTER PREPARED TO FACE YOUR CHALLENGES

What are your objectives for 2017?

<u>From our experience, here is the ROAD MAP:</u>

1. **MISSION**
2. **KNOW**
3. **UNDERSTAND**
4. **DESIGN-**
    1. **DEVELOP**
    2. **ENABLE**
5. **IMPLEMENTATION**
6. **SUSTAIN**

1. MISSION

What are the obstructions in the path to your business's success?
What keeps you awake at night?

WHERE TO START?
WHICH DIRECTION?
WHAT IS THE MISSION?

- **AGING INFRASTRUCTURES/SYSTEMS**
- **CAPACITY LIMITATIONS**
- **SUPPORTING GROWTH**

1. MISSION

What are the external demands and where are they coming from?

- **MARKETING**
- **FINANCE**
- **SALES**
- **CUSTOMER**

What are the current solutions being discussed and evaluated to solve for X?

- **UPGRADES TO PROCESSES / TECHNOLOGIES / SYSTEMS / AUTOMATION**
- **NEW FACILITY BUILDOUT**
- **THIRD PARTY SOLUTIONS / CONSULTING**

2. KNOW Your Business

Are you aligned with the core requirements of your business?

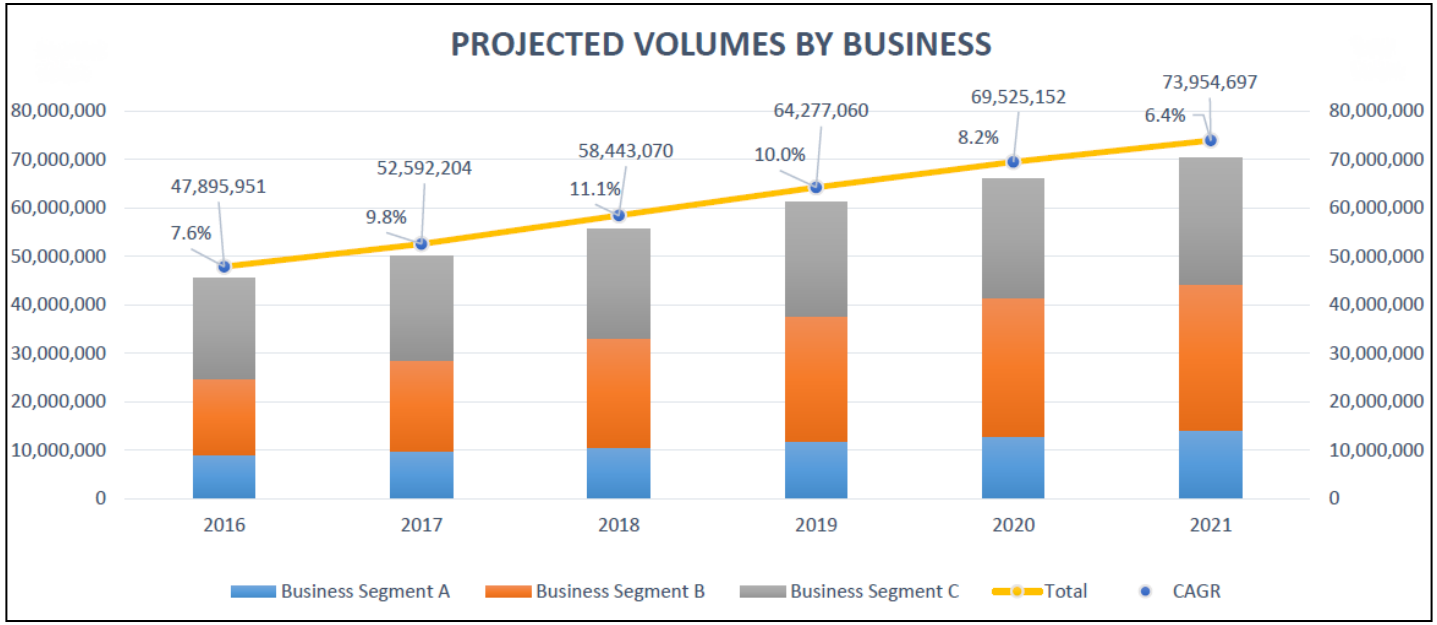
- **GROWTH PLAN**
  - **3-5 Year Volume Growth Profile**
  - **3-5 Year SKU Growth Profile**
- **CUSTOMER SERVICE EXPECTATIONS**
  - **Order to Ship Cycle Time**
  - **Order Pool Profile**
  - **Customer Feedback Tracking**

How do you compare with your market competitors?
How do you stack up to industry standards?

2. KNOW: Growth Plan

Are you aligned with your Growth Plan for your business and able to support?

- **5-10 Year Growth Plan**



2. KNOW: What Should We Learn?

Results:

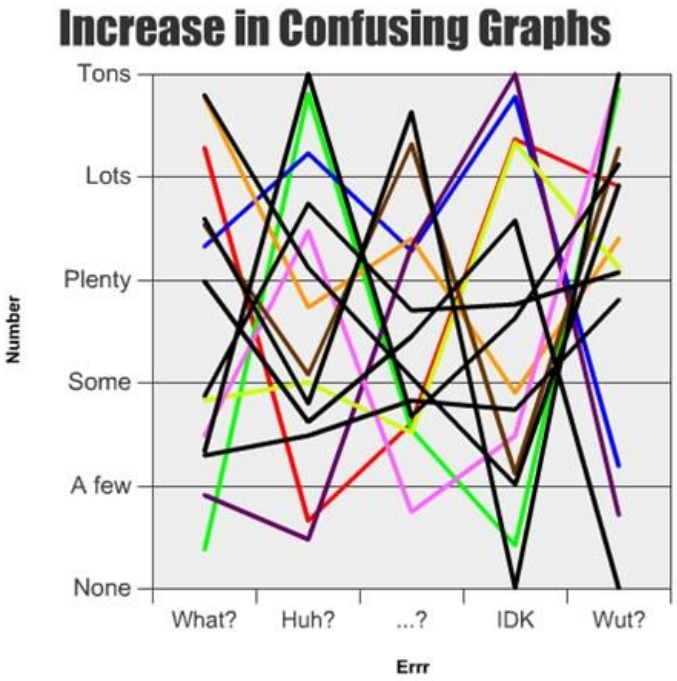
- **GAIN VISIBILITY OF GAPS**
- **FOCUS ON RIGHT PRIORITIES**
- **ESTABLISH BUSINESS DRIVERS**
- **EFFECTIVELY COMMUNICATE**

Tells you where you are and where you need to go!

3. UNDERSTAND

What is the DNA of your distribution operation? Do you know what is driving your current performance within your four walls?

- **RECEIVING**
- **STORAGE**
- **FULFILLMENT**
- **PACKAGING REQUIREMENTS**
- **SHIPPING**

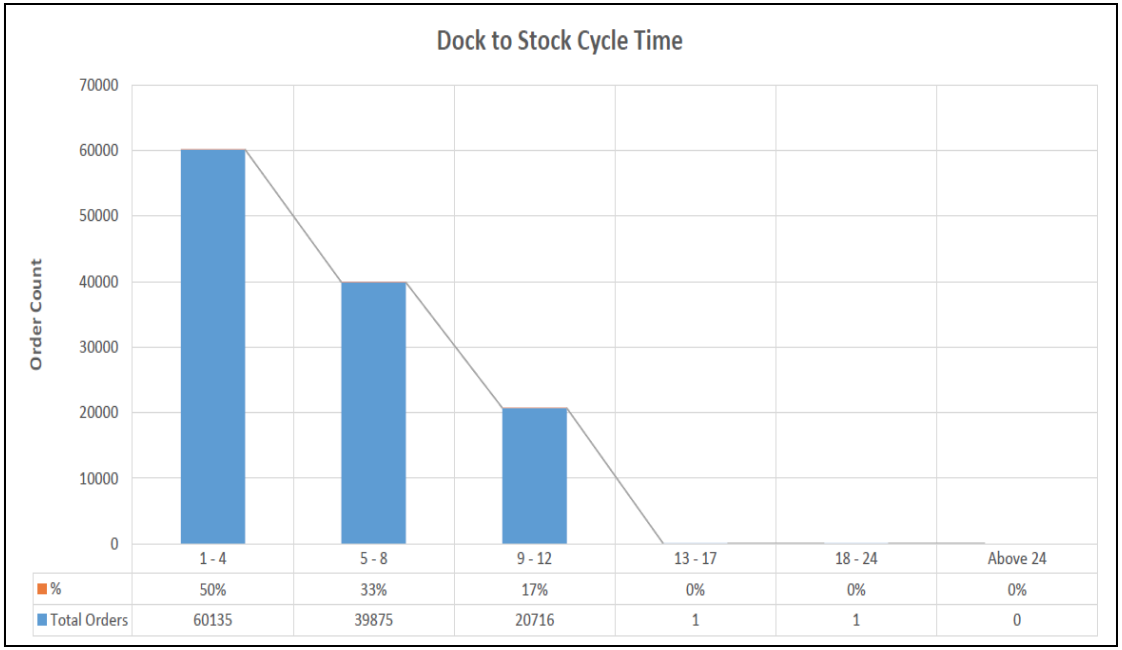


Determine the "Design Criteria" needed to build your solution

3. UNDERSTAND: Receiving

What is the importance of fast and accurate Receiving?

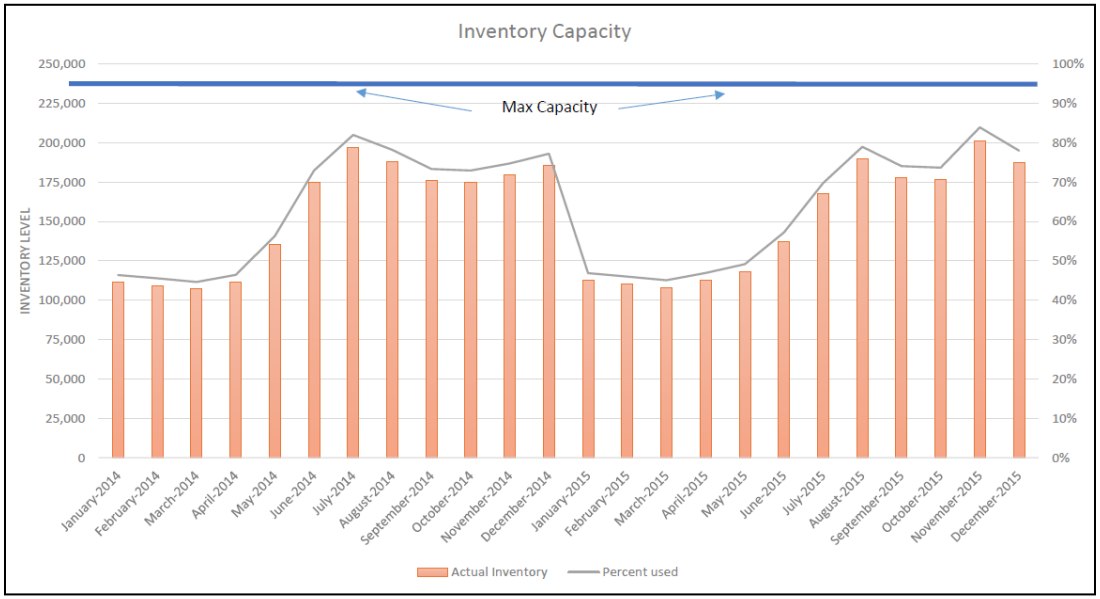
- **RECEIVING**
  - **Receiving Profile**
  - **Dock to Stock**
  - **Vendor Performance**
  - **Exception Handling**



3. UNDERSTAND: Storage

What is the DNA of your Business? Do you know what is driving your results?

- **STORAGE**
  - **Inventory Snapshot Profile**
  - **Space Utilization**



3. UNDERSTAND: Fulfillment

What is the DNA of your Business? Do you know what is driving your results?

- **FULFILLMENT**
  - **Order Profile**
  - **SKU Velocity Profile**
  - **Order Profile Distribution**
  - **Pick Short Rate**
  - **Pick Type Analysis (including labor and rate per type)**

3. UNDERSTAND: Fulfillment

Do you have a plan to leverage the potential efficiencies from your product velocities?

SKU VELOCITY PROFILE (12 months data)

Cumulative

Cumulative Range Of SKU's	Cumulative Units	Cumulative %	Avg. Units per Day
1 - 10	3,666,702	9.35%	14,550
1 - 20	5,818,257	14.83%	23,088
1 - 30	7,446,357	18.98%	29,549
1 - 100	14,121,648	36.00%	56,038
1 - 500	28,396,579	72.39%	112,685
1 - 1000	34,929,897	89.05%	138,611
1 - 1500	37,408,555	95.36%	148,447
1 - 2000	38,308,639	97.66%	152,018
1 - 3000	39,012,689	99.45%	154,812
1 - 4000	39,202,400	99.94%	155,565
1 - 4491	39,226,827	100.00%	155,662

Total %	SKU %
15%	<1%
74%	22%
9%	22%
2%	55%

Product types can drive automation, segregated inventory, additional fire safety requirements, additional shipping requirements, etc.

3. UNDERSTAND: Fulfillment

Does your current process have sufficient capacity for future growth?

Order Profile Distribution:
Analysis showing order line distribution–

Use for capacity levers

These distributions can guide you to developing different process channels that align best with your business.

3. UNDERSTAND: What Should We Learn?

Functional Operational Areas:

- RECEIVING
- STORAGE
- FULFILLMENT
- PACKAGING REQUIREMENTS
- SHIPPING

Baseline Data Gathered:

- Current Capacity Baseline + Growth
- Product Velocities
- Baseline Costs and Productivities
- Order Profiles and Distributions
- Gaps to Market and Industry

We've armed ourselves with the information we need to improve or build our processes.

4. DESIGN Your Processes

What are the steps needed to build efficient processes?

- **DEVELOP YOUR FOUNDATION**

- **ENABLE YOUR PROCESSES**
  - **TECHNOLOGY**
  - **AUTOMATION**
  - **SYSTEMS**

4.1 DEVELOP Your Foundation

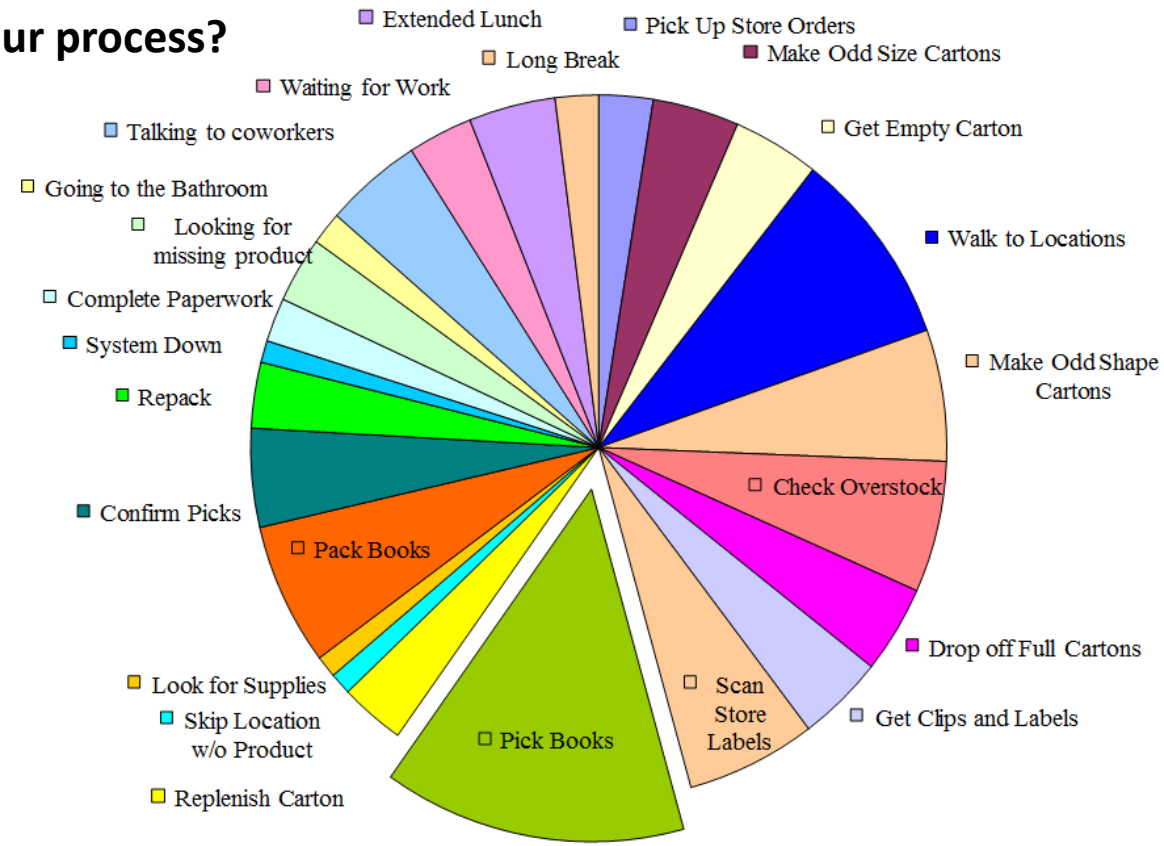
Your operation is only as strong as your foundation. These are the principles to build the processes that the rest of your business can rely on.

- **CORE ELEMENT ANALYSIS**
- PROCESS FLOW: STRAIGHT LINE, IN-LINE, ON-LINE
- ASSEMBLY LINE: BALANCED AND BUFFERED
- **STATION BASED – SYSTEM PACED**
- **MODULAR / SCALABLE / FLEXIBLE**
- TIME MANAGEMENT (7:02) / TOUCHES
- 24-7 ENABLED OPERATIONS
- PROFICIENCY VS. EFFICIENCY

4.1 DEVELOP: Core Element Analysis

What is the core element of your process?

Understand all the minutia an employee deals with each day.

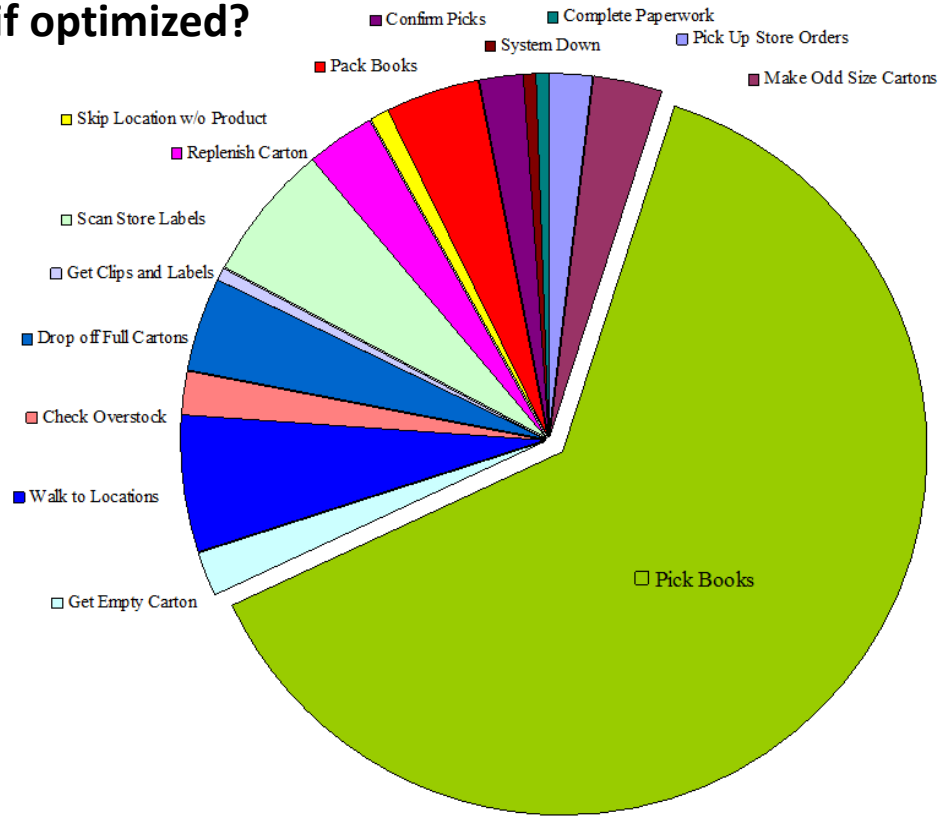


BEFORE- (ACTUAL STUDY)

4.1 DEVELOP: Core Element Analysis

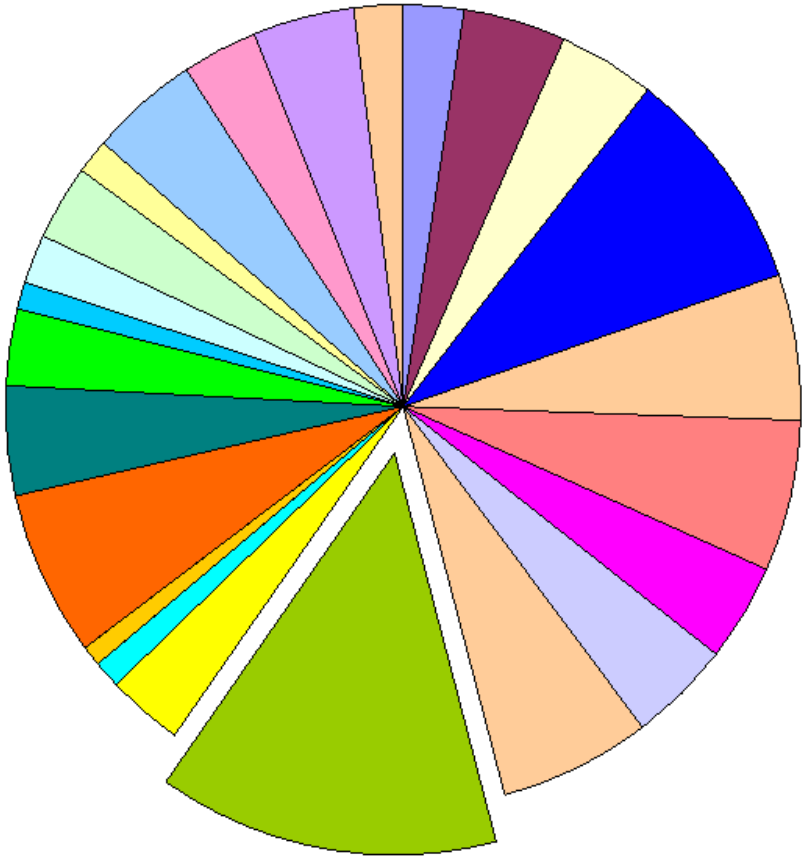
How much capacity can be gained if optimized?

Graph shows a simplified process focusing the employee on maximizing the core element of their job.

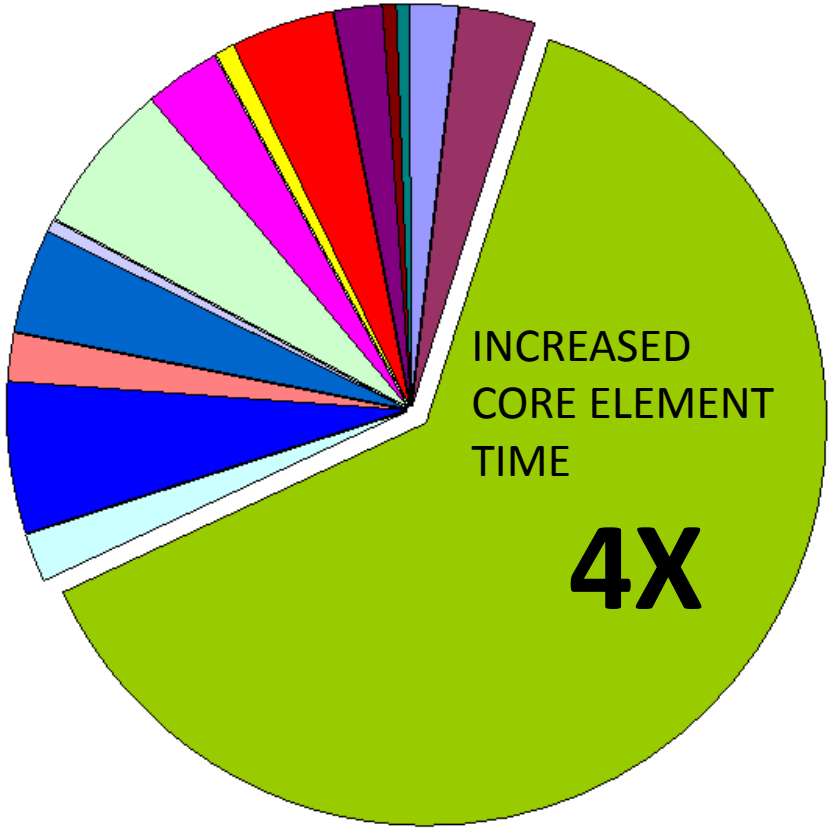


AFTER - (ACTUAL STUDY)

4.1 DEVELOP: Core Element Analysis



Manual Pick Pack (Before)



MANUAL PICK PACK AFTER

4.1 DEVELOP: Station Based – System Paced

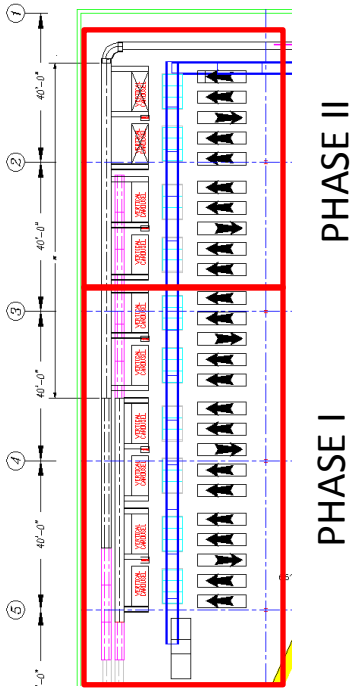
How do you make you work stations efficient and maximize worker productive time?

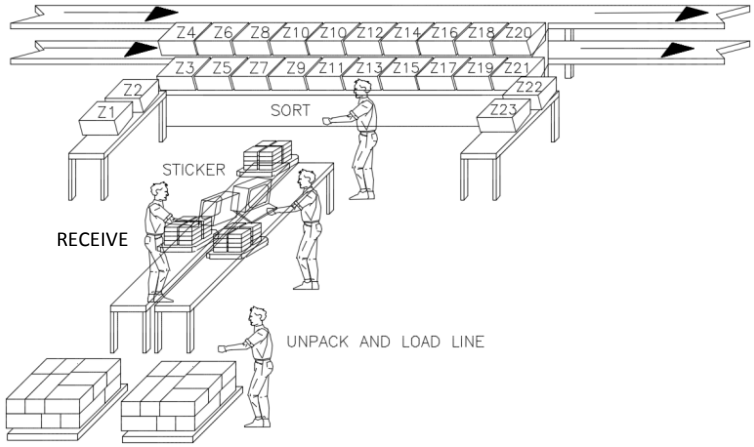
Minimizing tra[illegible]c tasks that drive productivity will simplify training and create a rhythm for the employee.

4.1 DEVELOP: Modular / Scalable / Flexible

How do you design processes that can adapt to a disruptive and ever changing environment?

- **MODULAR**
- **SCALABLE**
- **FLEXIBLE**





4.2 ENABLE Your Processes

Do you have the infrastructure to overcome the obstacles to your business's success?

- TECHNOLOGY
- **AUTOMATION**
- **SYSTEMS**

placeholder

4.2 ENABLE- Automation

What level of automation fits?

Guideline for Determining Appropriate Automation

SKU Velocity				ORDER LINES PER HOUR											
A	B	C	D	0	100	200	300	400	500	600	700	800	900	1000	COST
X	X	X								AUTOMATION- SORTATION, SHUTTLE, ETC					HIGH
X	X	X	X				VERTICAL / HORIZONTAL CAROUSELS								MED-HIGH
X	X	X				PICK TO LIGHT									MED-HIGH
X	X	X			VOICE PICKING										LOW-MED
X	X	X			VISUAL PICKING										LOW-MED
		X	X	RF PICKING											LOW-MED
		X	X	PAPER PICKING											LOW
TYPICAL MHE				RACKING - CARTS/PJs			PICK MODULE / CONV			AUTOMATED SYSTEMS					

Picking Method Comparison

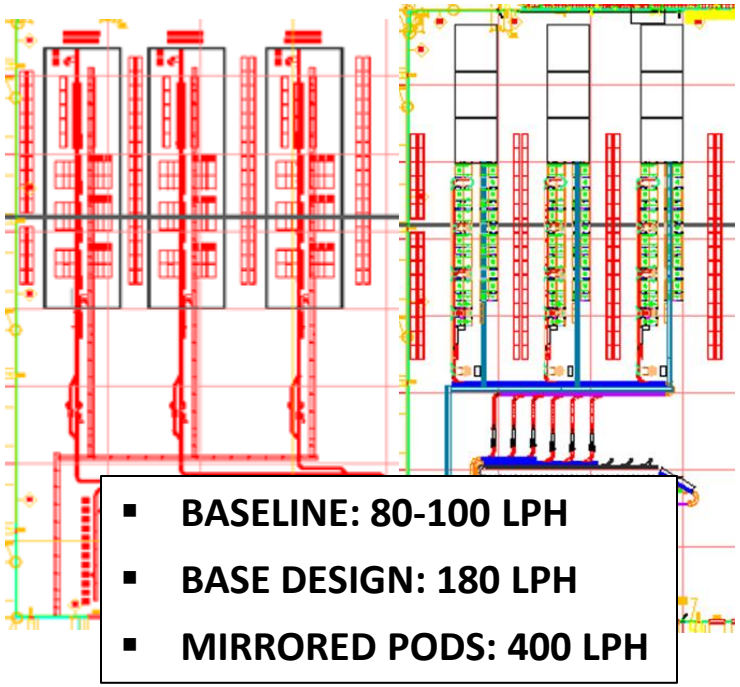
	RF	Visual	Pick to Light	Voice
Productivity Speed	2	3	5	4
Accuracy	3	5	4	5
Data Tracking	5	5	2	2
Flexible	5	5	3	2
Hands Free	1	1	4	5
Ease of Training	1	2	4	3
Cost	2	3	5	4

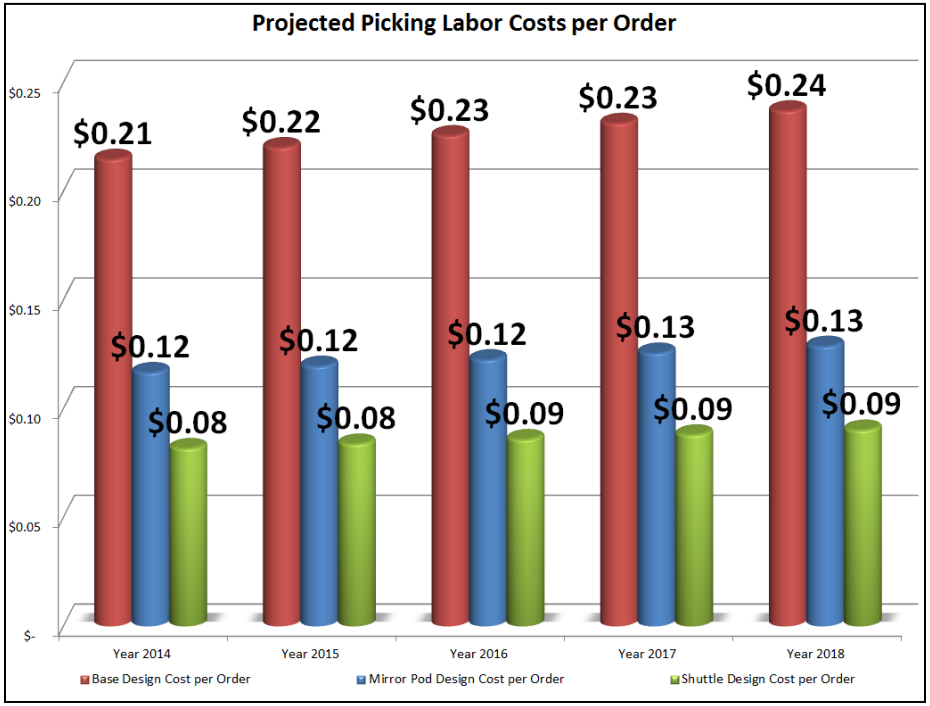
Rating
1 **Lowest**
5 **Highest**

These graphs give you a flavor of possible alternatives to evaluate.

4.2 ENABLE- Automation

Example of applying appropriate Automation to business requirements –





Payback for the 1st alternative was 7 mos vs. 4.5 yrs for the 2nd alternative
Speed of implementation was also a factor – 4 mos vs 12

4.2 ENABLE- Automation

Example of applying appropriate Automation to business requirements –

LARGE SKU BASE- 55K

- **RF pick and pass**
- **Voice**
- **Pick to Light**

PRODUCTIVITIES

- **BASELINE: 120 LPH**
- **ACTUAL: 200-225 LPH**

4.2 ENABLE- Systems

Are your current systems an enabler to your process development or a constraint?

- **Typical Issues found with legacy systems**
  - **FLEXIBILITY**
  - **COST**
  - **LEAD TIME TO IMPLEMENT CHANGES**
  - **SUPPORT-**
    - **EXTERNAL**
    - **INTERNAL RESOURCES**

An answer to many of these issues can be found in a WES/WCS solution.

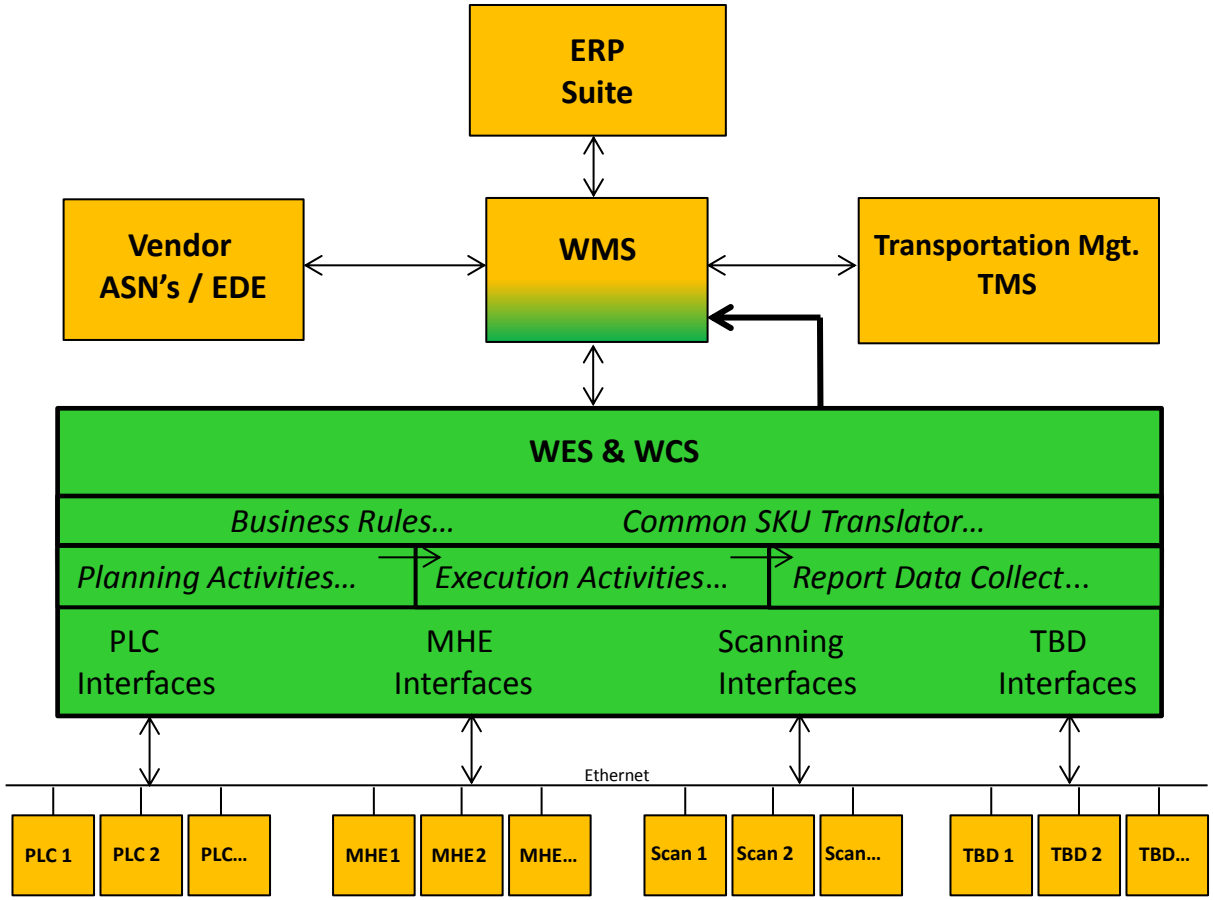
4.2 ENABLE – Systems

What is a WES / WCS?

- **Warehouse Execution System / Warehouse Control System**
- These systems **COORDINATE ACTIVITIES** between your Automated Material Handling Equipment (MHE) & Personnel that work on the Distribution Center Floor with your Office Business Transaction Systems that manage your Customers, Orders, Inventory Management & Accounting Systems etc.
- Early on, the WCS focused more on the coordination of the lower level MHE plant floor automation. More recently, the evolution is moving towards the WES which is expanding its influence / functionality into the lower portions of the Warehouse Management Layer (WMS). ***See Possible System Architectural Hierarchy Slide***
- Growth of the **E-Commerce Fulfillment channels is** one of the major factors that is **driving this WES expansion**. **E-Commerce requires much more speed & agility** in these systems which typically a WMS cannot handle as well.

4.2 ENABLE – Systems

Possible System Architectural Hierarchy:



4.2 ENABLE – Systems

Why do you need a WES / WCS?

- The WES / WCS is the ***Senior Resource Scheduler & Coordinator*** of the Distribution Floor Activities. It ensures efficient load balancing throughout the DC.
- Implementing a Full Featured WES / WCS **reduces and in some cases eliminates the need for more costly ERP / WMS customizations**.
  - ERP / WMS customizations are costly and take longer to implement…
  - ERP / WMS customizations complicate the process of release upgrades…
  - ERP / WMS customizations impact more people and are more risky…
- **WES / WCS systems** are typically designed around a **Narrower** and more **Specific** set of **industrial features and functions** than ERP & WMS Systems which are typically focused on a much Broader and more Universal set of industrial features & functions.
- *Thus the WES / WCS layer is a **BRIDGE** that **spans the functionality gap** between key systems AND **allows for a more agile and cost effective evolution** of these systems WHILE **preserving your WMS & ERP investments for longer durations!***

4.2 ENABLE – Systems

How do you decide which WES / WCS is best?

- Does the WES / WCS vendor **UNDERSTAND** your business DNA?
- Does the WES / WCS vendor have significant **INDUSTRY EXPERIENCE**?
- Does the WES / WCS vendor have the **STAFF EXPERIENCE** and depth of staff to design, install, commission & support you for the long term?
- What is the **PROCESS** the WES / WCS vendor uses to **DEFINE** the project?
  - The disciplined use of a **Functional Design Specification process is a MUST…**
  - The periodic use of **Conference Room Pilots is a MUST…**
- Can the WES / WCS vendor **EXPLAIN & DEMONSTRATE** that their systems are constructed in a **MODULAR & SCALABLE** fashion…?
  - *This requires a good deal of Q & A around **HOW** they will handle your specific needs now and in the future and **HOW LONG IT WILL TAKE** and **HOW MUCH IT WILL COST** for them to meet these needs. The longer & more expensive it is **may indicate** a **LESS MODULAR & SCALABLE** system…*

4.2 ENABLE – Systems

WES / WCS Implementation Best Practices:

- Successful Implementations: **ASSIGN & DEPLOY** – ***Cross Functional Project Teams***
  - Sales, Operations, Finance, Maintenance, Technical…
- Successful Implementations: **COMMIT** – ***Executive Sponsorship***
  - The Project Team & Vendor must **FEEL the presence of the Executive Sponsors**
- Successful Implementations: **UNLEASH** – ***Project Champions***
  - ***The Project Champions need to TRUST that they are supported 100%***
- Successful Implementations: **DEFINE** – ***Clear Performance Metric Objectives***
  - ***Metrics must be established and measured hourly, per shift, daily, weekly…***
  - ***Your WES / WCS should automatically measure and report on these metrics…***
- Successful Implementations: **REQUIRE & COMMIT** to Continuous Training Programs
  - Workforce training significantly **improves the performance of the system & ROI**
- Successful Implementations: **ESTABLISH SECURE SYSTEMS…**
  - No longer a "nice to have" - It is a **REQUIREMENT FOR ALL WES / WCS Systems**

4.2 ENABLE – Systems

WES / WCS Final Thoughts:

- Defining and implementing a SUCCESSFUL WES / WCS solution:
  - This is a **ENGINEERED PROCESS** – no different than any Engineering Project
  - It is **NOT** – ***Have it designed and built and then pick up the keys at the end!***
  - ***Your vendor should help you define the "Fit, Form & Function" of the WES / WCS***
- ***"The gap between the BEST software engineering practice and the AVERAGE practice is VERY WIDE. Perhaps wider than in any other engineering discipline"*** Quote by Fred Brooks - Notable Computer Scientist…
- All software projects are about RISK and RISK mitigation:
  - ***One good way to mitigate risk is to establish CLEARLY DEFINED REQUIREMENTS that are MEASUREABLE…***
- You likely **won't see** any WES / WCS Vendor's sponsoring Super Bowl Commercials:
  - This is because these vendors are typically smaller and have a more focused market. However – these systems are **EQUALLY IMPORTANT** to your business as the upper tier more well known ERP and WMS Systems are.

4. DESIGN: What Should We Learn?

How do we get where we want to go?:

- **ESTABLISH CORE PRINCIPLES OF PROCESSES**
- **LEVERAGE TECHNOLOGY TO DRIVE IMPROVEMENTS**
- **APPLY APPROPRIATE LEVELS OF AUTOMATION TO PROCESSES**
- **IMPLEMENT FLEXIBLE SYSTEMS THAT CAN ADAPT TO A DISRUPTIVE BUSINESS ENVIRONMENT**
- **BUILD PROCESSES THAT FIT YOUR REQUIREMENTS FOR A COMPETITIVE ADVANTAGE IN YOUR INDUSTRY**

Processes are not one size fits all. They should be as custom fit to your business demands with the ability to adapt and expand quickly in today's environment.

5. IMPLEMENTATION

Where do you start once you have determined the right solution?

- **Many great designs have failed due to poor execution**
  - **Capital Investment Plan- Phased to spread**
  - **Project Scheduling - Created by Professionals and validated by Professionals**
    - **Typically one of the most overlooked constraints- PERMITTING**
  - **Project Team- Built with Top Level Sponsors that drive results**
  - **Communication- Effective and timely with only valuable details**
  - **Insurance?**

6. SUSTAIN – CULTURE OF CHANGE

Once you are on a path towards your goal, how do you keep from getting side tracked?

- **Once your processes are fundamentally solid, how do you optimize? Are there tools that can help ensure that we continue to improve?**
  - **LEAN METHODOLOGIES**
  - **SIX SIGMA**
  - **LABOR STANDARDS**
  - **ACCURACY / QUALITY**

To create a culture of change, there has to be a commitment from the leaders to the floor.

6. SUSTAIN – Continuous Improvement

How do you maintain control of changes made ?

- **Do you have the right infrastructure in place?**
  - **TRAINING**
  - **SUPPORT**
  - **CULTURE DRIVERS**

To create a culture of change, there has to be a commitment from the leaders to the floor.

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X MARKS THE SPOT! FIND YOUR SOLUTION.

Follow the Roadmap for the Steps toward SUCCESS!

1. **MISSION**
2. **KNOW** your business
3. **UNDERSTAND** your data
4. **DESIGN-**
    1. **DEVELOP** your processes- Leverage Guiding Principles
    2. **ENABLE** appropriate Automation, Systems and Technology, to enable your processes
5. **IMPLEMENTATION** map areas of opportunity and execute
6. **SUSTAIN** a culture of change

CLOSING

What have we learned?

- **DO YOU UNDERSTAND YOUR BUSINESS?**
- **ARE OUR OPERATIONS OPTIMIZED?**
- **ARE YOU LOOKING TO APPLY SOLUTIONS TO THE RIGHT PROBLEMS?**

<u>The question everyone must answer…</u>

ARE YOU AN ENABLER TO YOUR BUSINESS'S SUCCESS OR ARE YOU A CONSTRAINT?

Marketing, Finance or Sales, all want to be unfettered by constraints.

NEVER COMPROMISE ON THE SERVICE YOU PROVIDE TO YOUR CUSTOMERS

?'s

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