



The Toyota Way and Supply Chain Management

Jeffrey K. Liker

Professor, Industrial and Operations Engineering
The University of Michigan
and Principal, *Optiprise, Inc.*

Presentation for OESA Lean to Survive Program
2005

Supplier Gap: Toyota vs Big-3

Supplier Improvement, 1990-96	U.S. OEM (Chrysler, Ford, GM)	Toyota
Defects (parts per million)	-47%	-84%
Sales/Direct Employee	+1%	+36%
Inventories/Sales	-6%	-35%

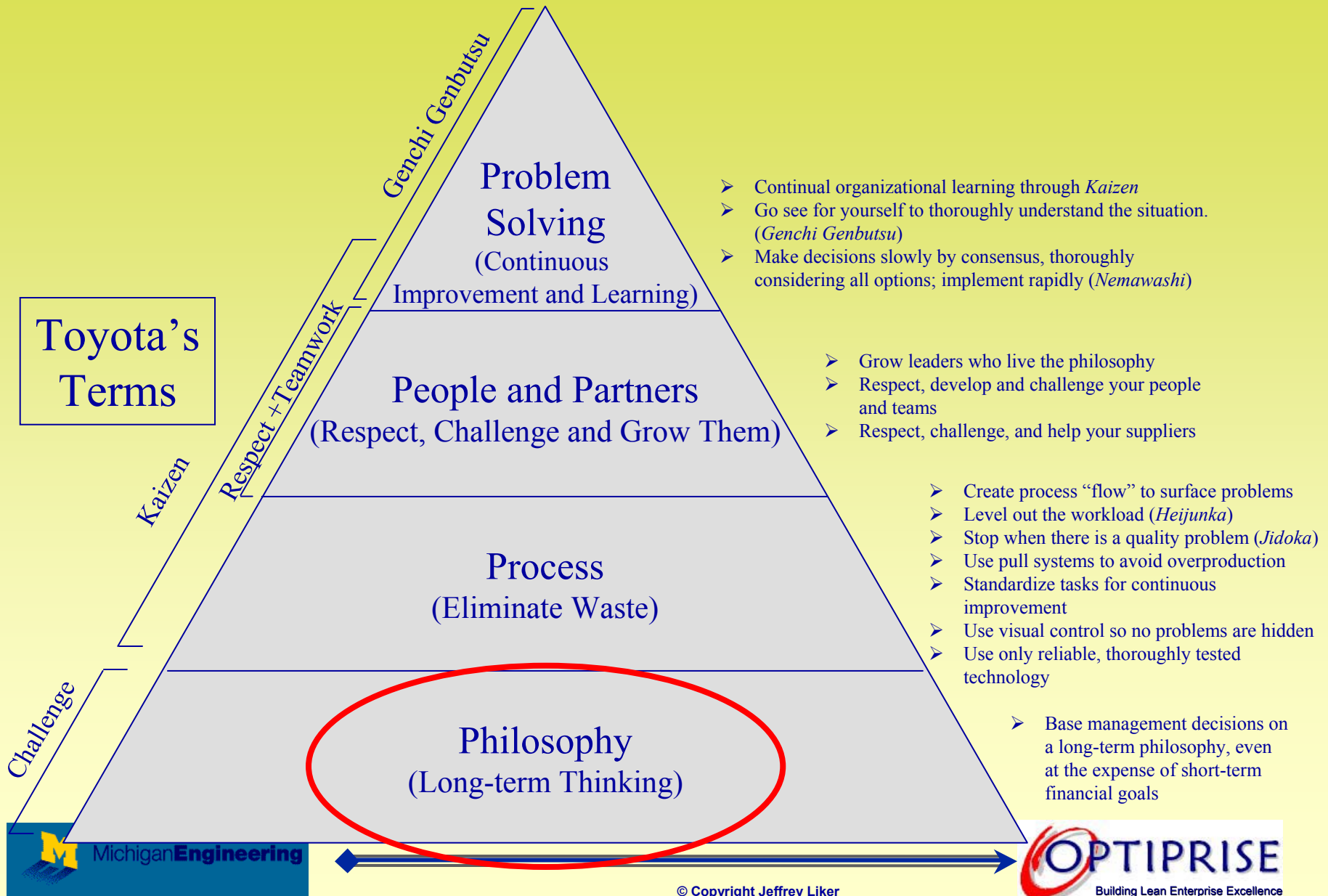
Toyota Supplier Advantage, 1996

PPM	35%
Inventories	-25%
Output/worker	10%

Source: Jeff Dyer, based on 39 supplier plants serving Toyota + U.S. OEM

“4 P” Model of the Toyota Way

Toyota's Terms



Philosophy: Company Foundation

Toyota Motor Manufacturing

MISSION

1. Add value to customers and society
2. As an American company contribute to the economic growth of the community and the United States
3. As an independent company, contribute to the stability and well-being of team members and partners.
4. As a Toyota group company, contribute to the overall growth of Toyota

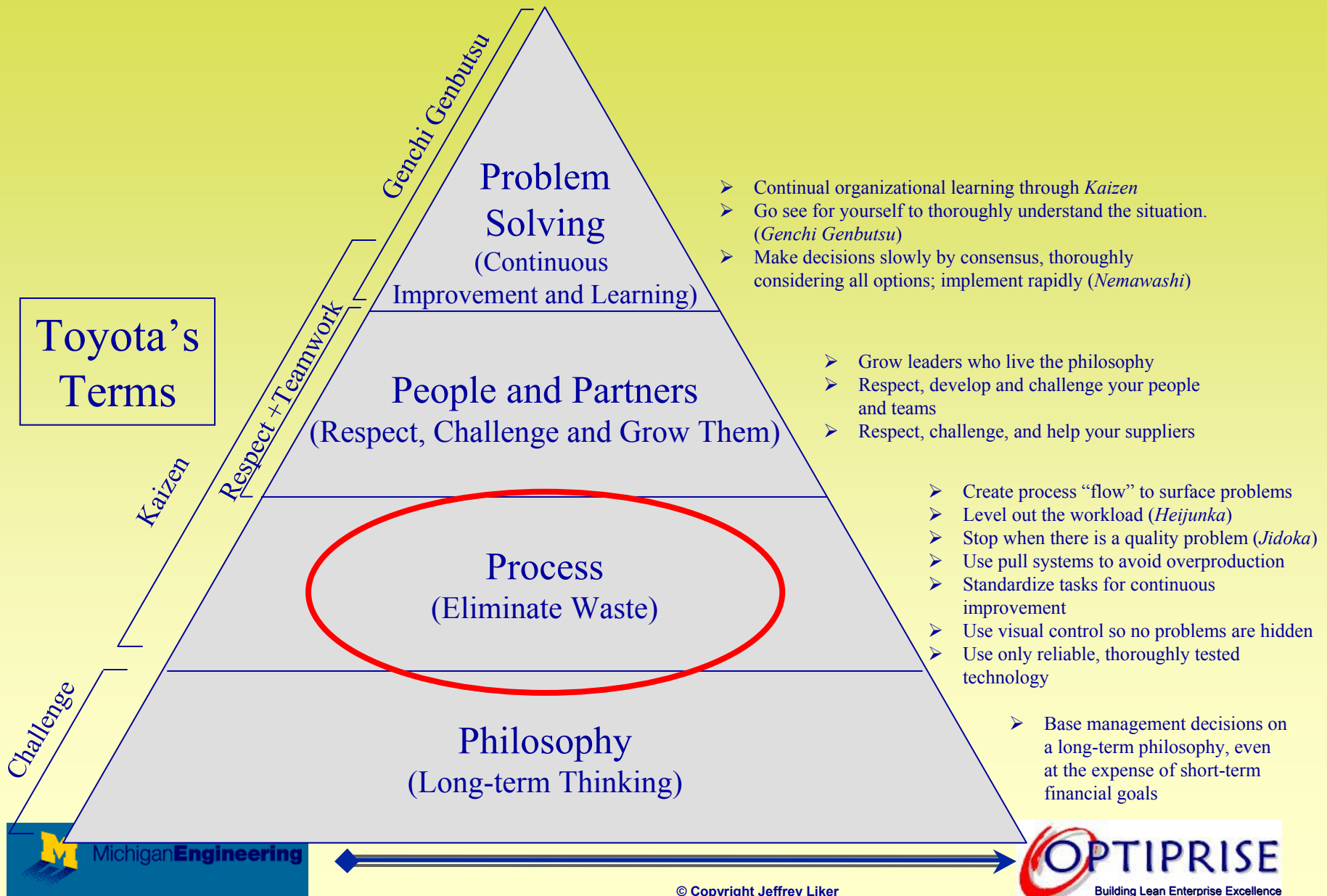
Ford Motor Company

MISSION

Ford is a worldwide leader in automotive and automotive-related products and services as well as in newer industries such as aerospace, communications, and financial services.

Our mission is to improve continually our products and services to meet our customer's needs, allowing us to prosper as a business and to provide a reasonable return to our stockholders, the owners of our business.

“4 P” Model of the Toyota Way





Definition of Waste

“Anything other than the minimum amount of equipment, space and worker’s time, which are absolutely essential to add value to the product.”

Fujio Cho
President, Toyota

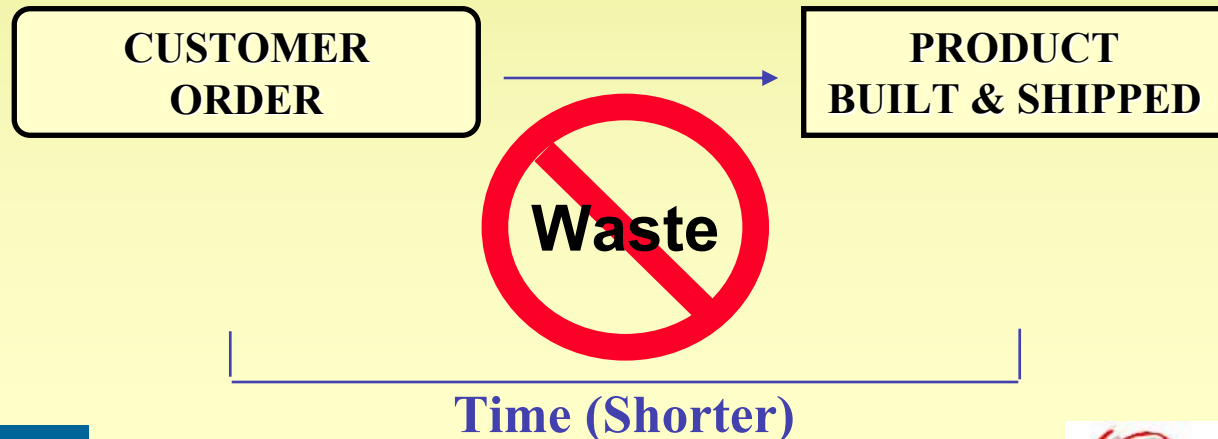
Lean Manufacturing

is a manufacturing philosophy which shortens the time between the customer order and the product build / shipment by eliminating *sources* of waste.

Business as Usual



Lean Manufacturing



INVENTORY HIDES WASTE

RAW MATERIAL

**FINISHED PRODUCT
TO CONSUMER**



Exposed Waste

“Make Problems Visible”

**FINISHED PRODUCT
TO CONSUMER**



SEA OF INVENTORY

**POOR
SCHEDULING**

**QUALITY
PROBLEMS**

**LONG
SET-UP
TIME**

**LINE
IMBALANCE**

**LACK OF
HOUSE KEEPING**

**MACHINE
BREAKDOWN**

**LONG
TRANSPORTATION**

**VENDOR
DELIVERY**

ABSENTEEISM

**COMMUNICATION
PROBLEMS**

The Toyota Production System

Best Quality - Lowest Cost - Shortest Lead Time - Best Safety - High Morale
through shortening the production flow by eliminating waste

Just-In-Time

“Right part, right amount,
right time”

- Takt time planning
- Continuous flow
- Pull system
- Quick changeover
- Integrated logistics

People & Teamwork

- Selection
- Ringi decision making
- Common Goals
- Cross-trained

Jidoka

(In-station quality)

“Make Problems Visible”

- Automatic stops
- Andon
- Person-machine separation
- Error proofing
- In-station quality control
- Solve root cause of problems (5 Why?)

Continuous Improvement

Waste Reduction

- Genchi Genbutsu
- Eyes for Waste
- 5 Why's
- Problem Solving

Leveled Production (*heijunka*)

Stable and Standardized Processes

Visual Management

Toyota Way Philosophy

The Toyota Production System

Best Quality - Lowest Cost - Shortest Lead Time
through shortening the

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Continuous Improvement

Waste Reduction

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- 5 Why's
- Eyes for Waste
- Problem Solving

**The focus of
Most lean
programs**

Safety - High Morale
Minimizing waste

Jidoka

(In-station quality)

“Make Problems Visible”

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Leveled Production (*heijunka*)

Stable and Standardized Processes

Visual Management

Toyota Way Philosophy



JIT Logistics Systems



"The more inventory a company has...

...the less likely they will have what they need."

Taiichi Ohno



Keys to Logistics Performance

**1. Packaging: Mixed box sizes, same pallet.
Stackability of mixed pallets same truck.**

2. Dedicated transportation service.

3. Consistent daily routes; periodic route revisions.

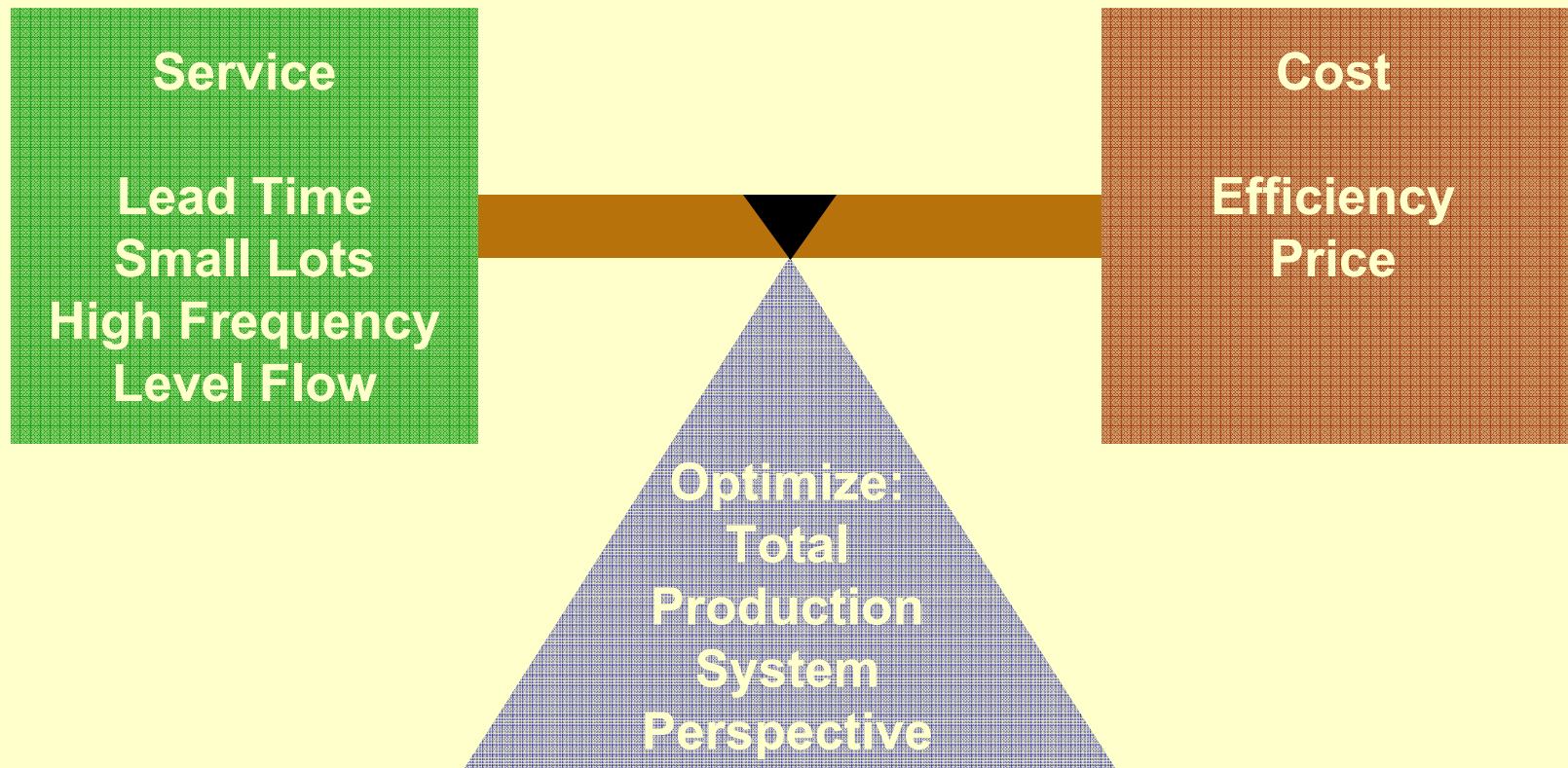
**4. Good timing at all connection points.
(Crossdock, yard, dock, flowrack.)**

**5. Order fluctuation allowance built into
route capacity plans.**

**6. Strategically placed crossdocks performing as
true flow through facilities.**

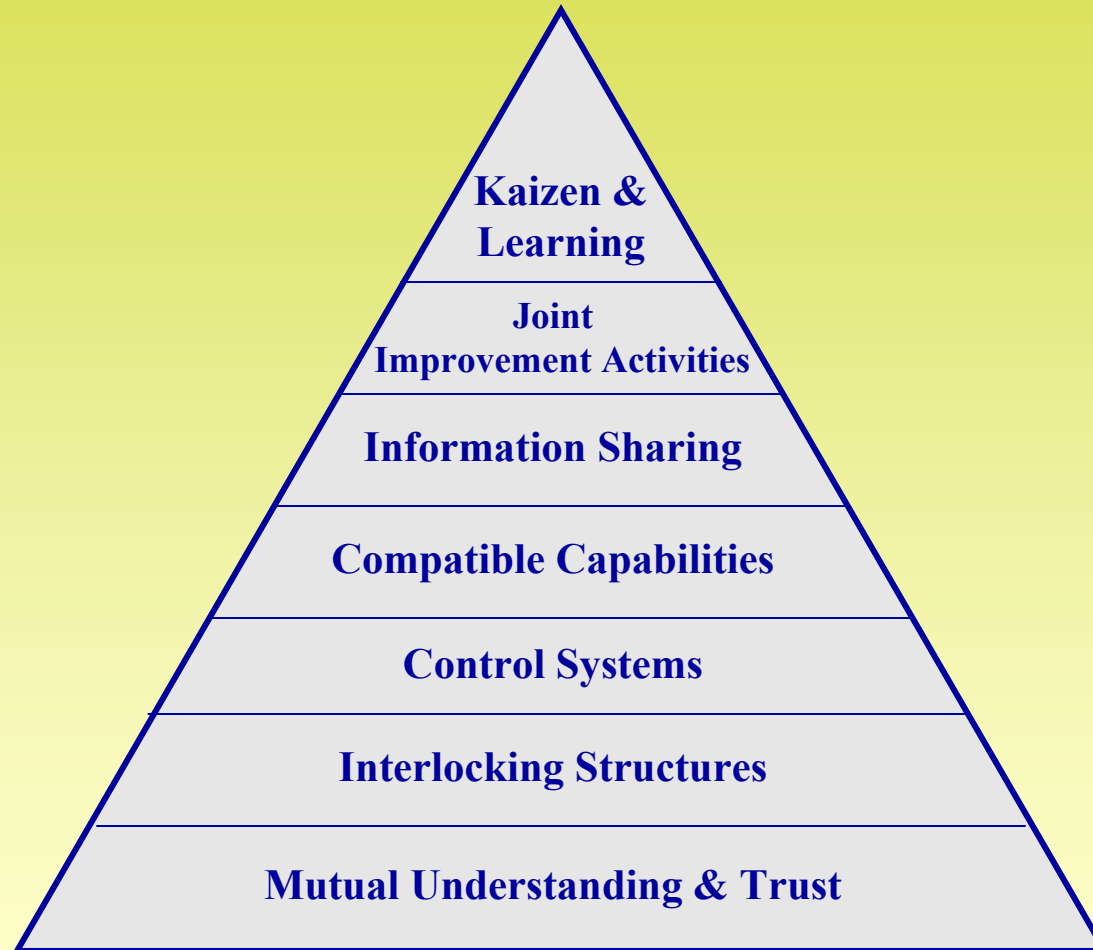
Source: Toyota

Logistics Performance Objective



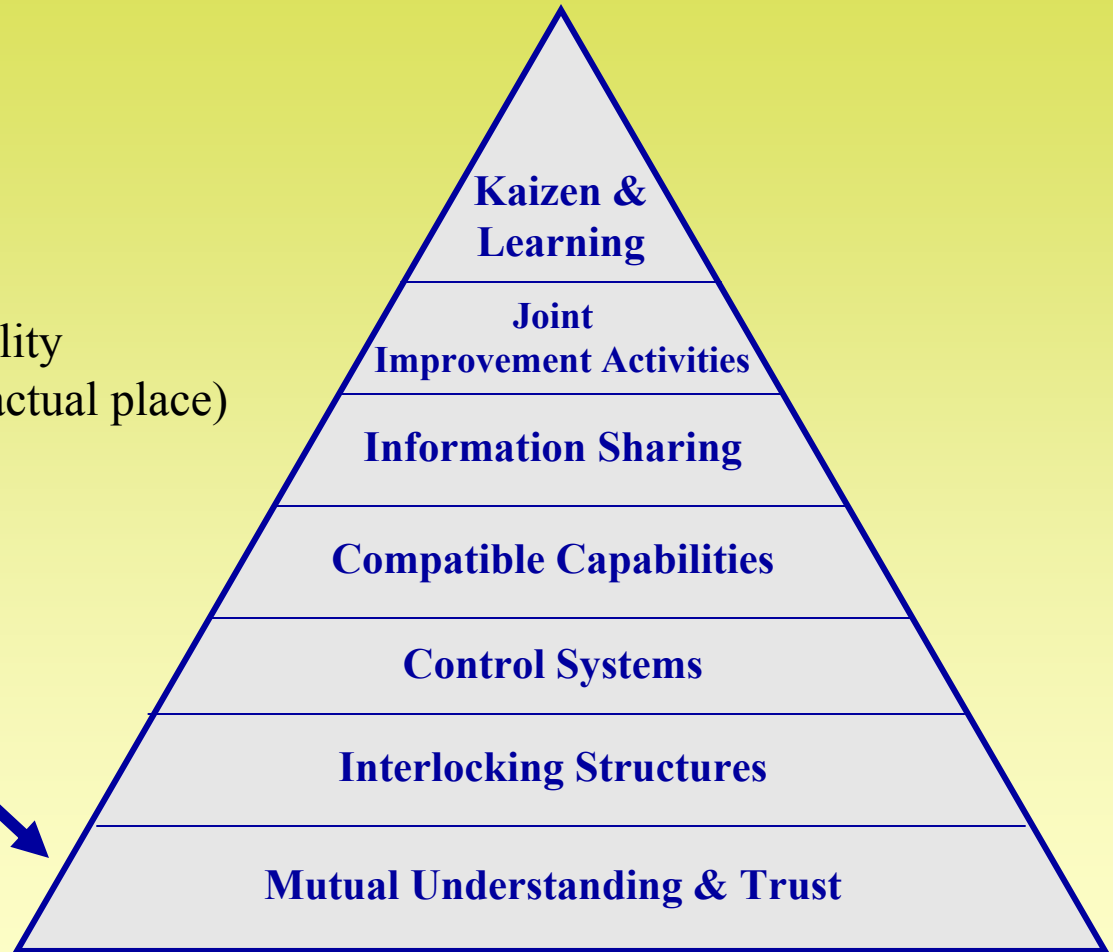
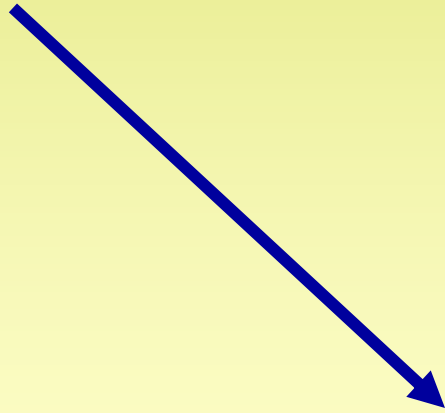
Source: Toyota

Supplier Partnering Hierarchy



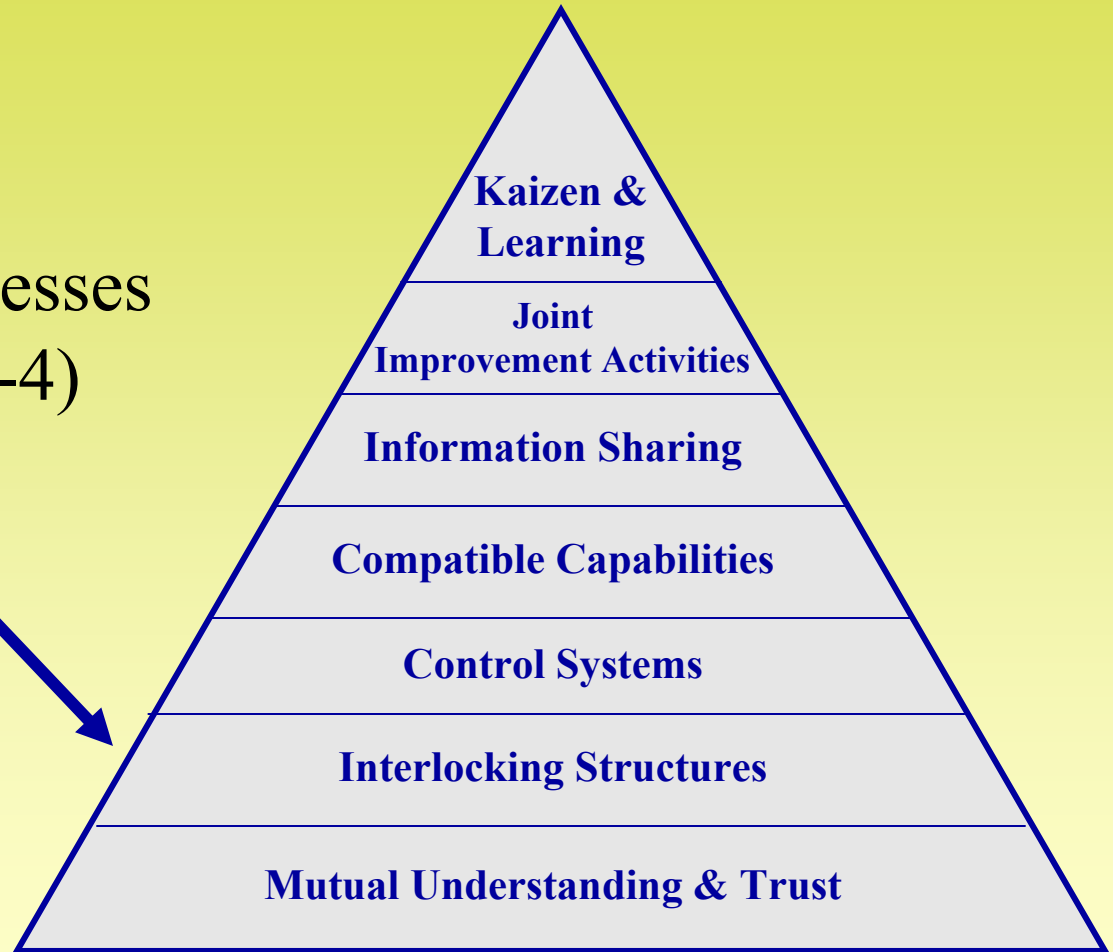
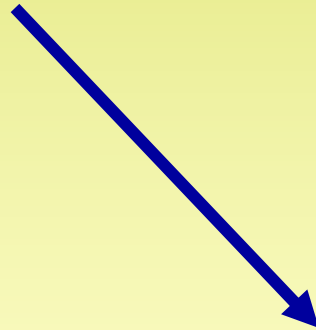
Supplier Partnering Hierarchy

- Trust
- Commitment to Co-prosperity
- Respect for each other's capability
- Genchi Genbutsu (actual part, actual place)



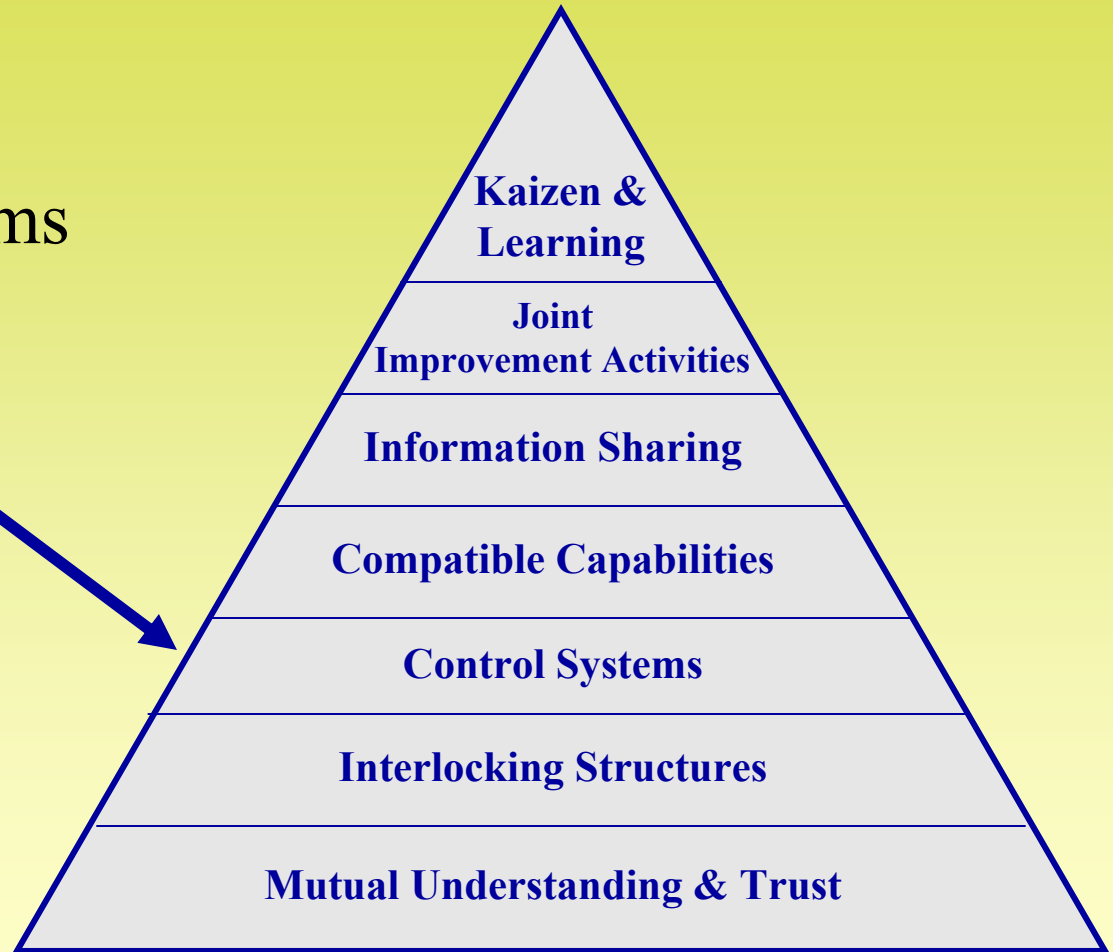
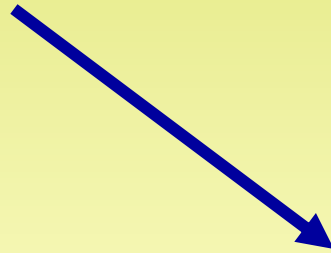
Supplier Partnering Hierarchy

- Alliance Structure
- Interdependent Processes
- Parallel Sourcing (2-4)



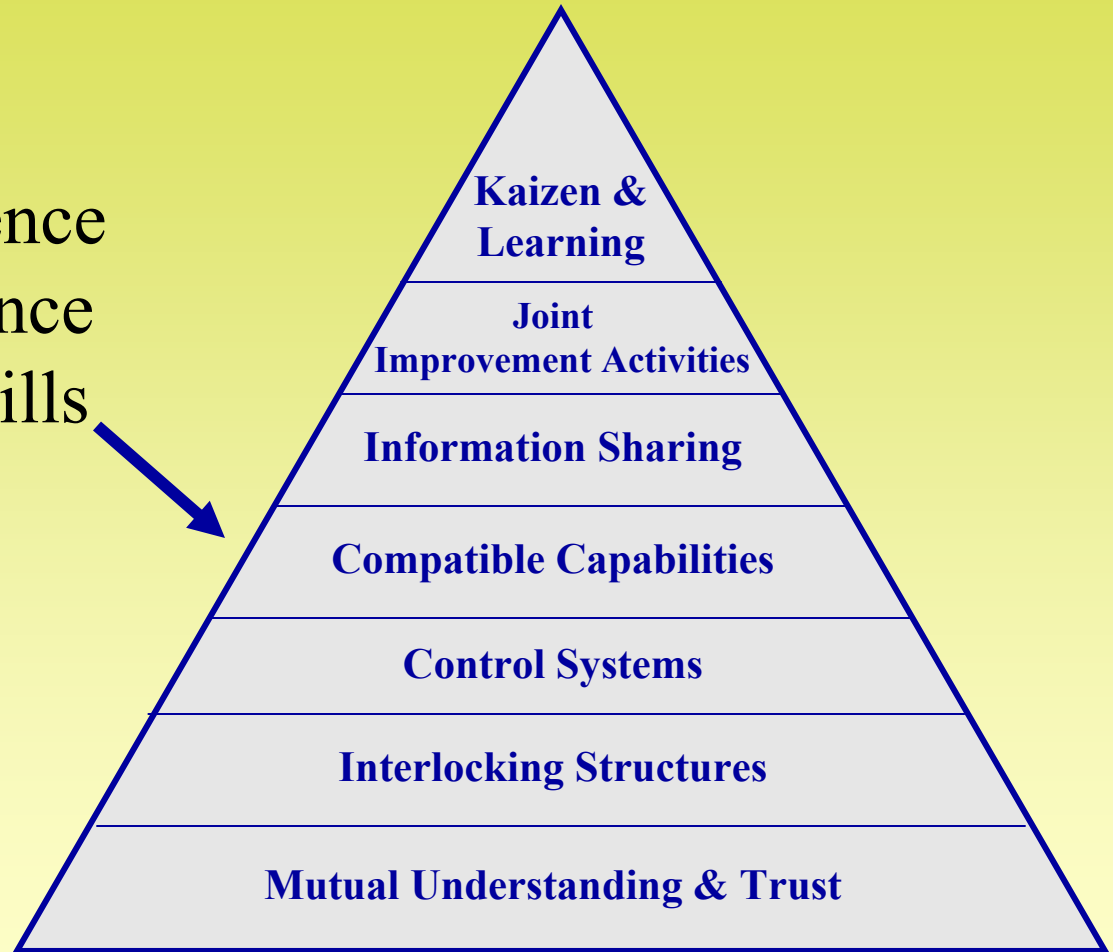
Supplier Partnering Hierarchy

- Measurement Systems
- Feedback
- Target Pricing



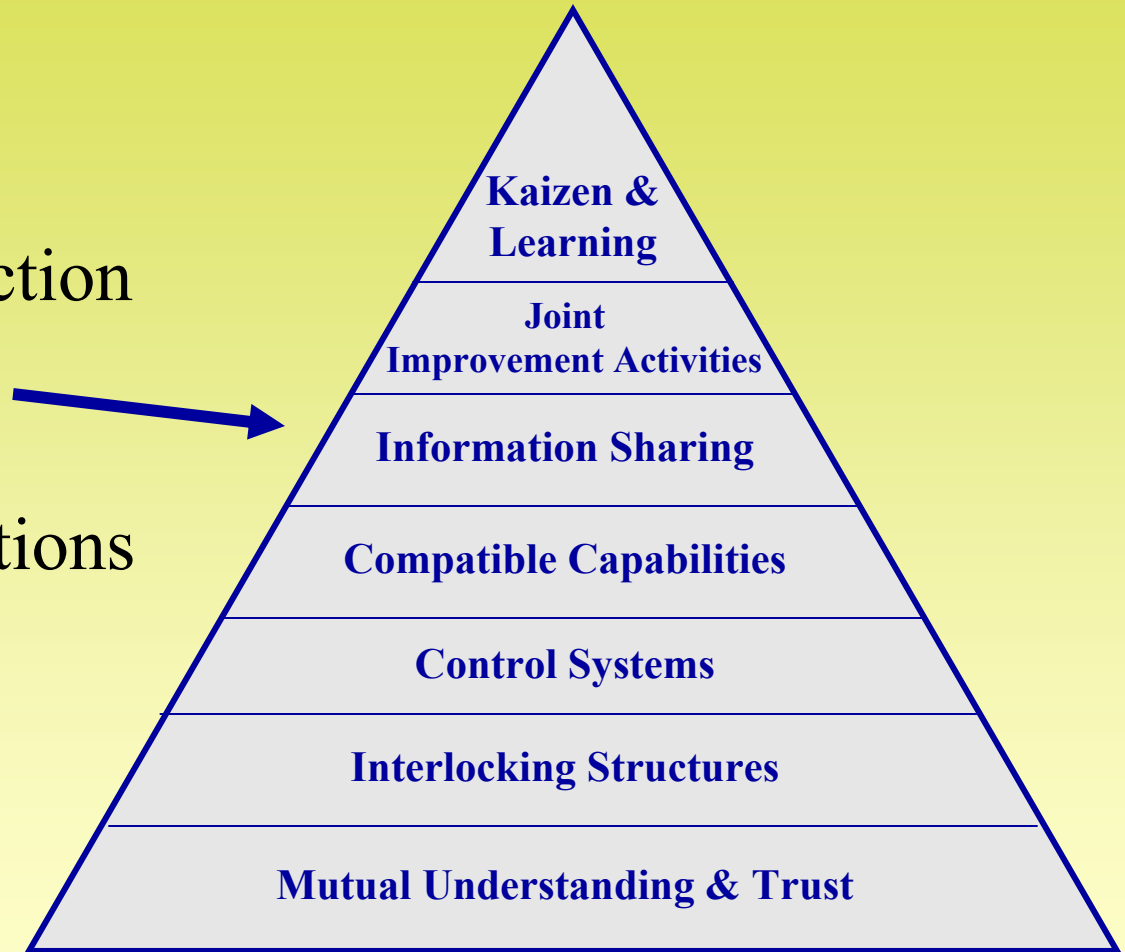
Supplier Partnering Hierarchy

- Engineering Excellence
- Operational Excellence
- Problem Solving Skills



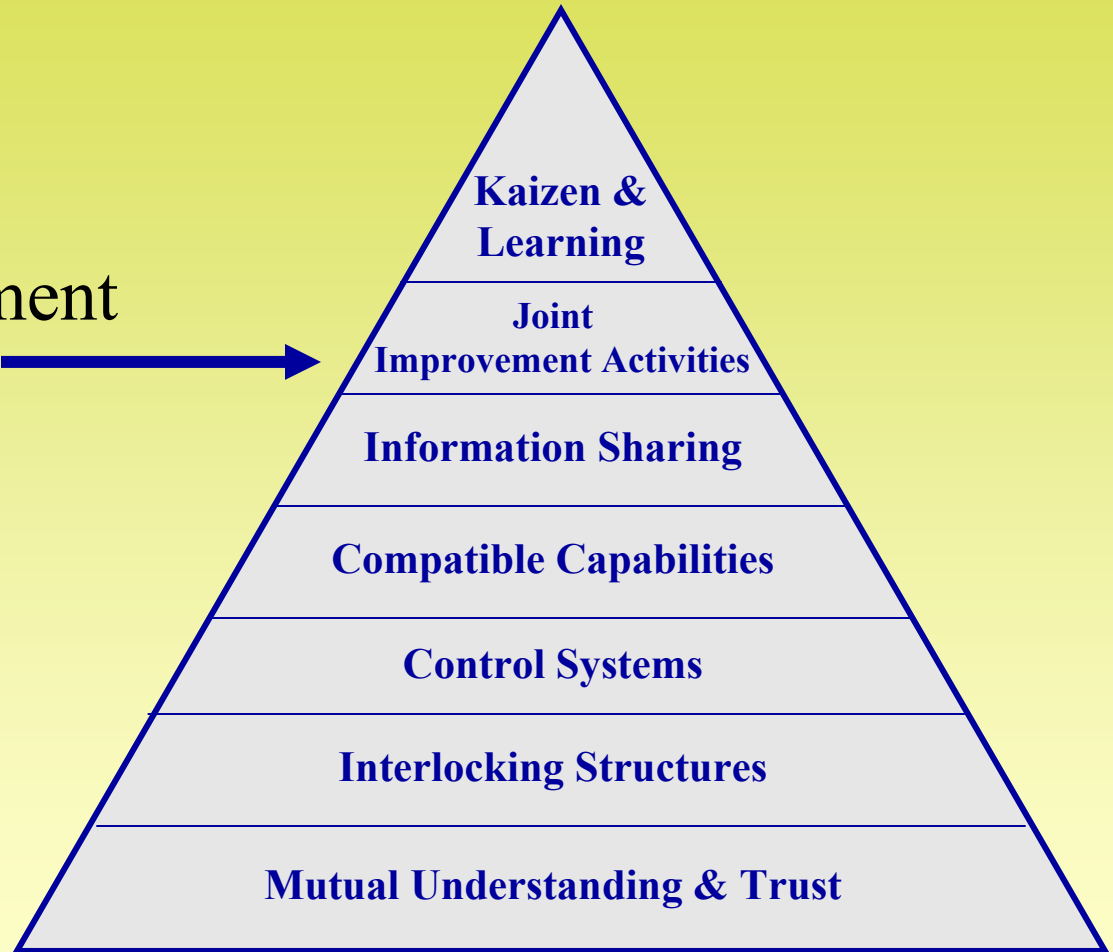
Supplier Partnering Hierarchy

- Accurate data collection and dissemination
- Common language
- Timely communications



Supplier Partnering Hierarchy

- VA/VE
- Supplier Development
- Study Groups



- Plant Development Activity (voluntary study groups)
 - *1997: 55 suppliers tiered by TPS skill level*
 - *4-6 suppliers per group work on projects moving from plant to plant*
 - *About 5 TPS experts in purchasing assigned to PDA*
- Blue Grass Manufacturers Association--BAMA (supplier association, 97 suppliers in 1997)
- Quality Assurance Division (separate from purchasing, includes supplier quality--TPS knowledgeable)
- Toyota Supplier Support Center (separate subsidiary outside of business relationship)
- Toyota Motor Sales (TPS supplier support group for parts suppliers for options installed after factory)

Toyota Supplier Support Center (TSSC)

- Toyota subsidiary in 1992 (by design separate from purchasing)
- Dual Purpose:
 - *Create lean suppliers to Toyota*
 - *Spread TPS in U.S. (philanthropic? politics?)*
- Model=Operations Management Consulting Division inside Toyota in Japan
- Goal: Transform plant/manufacturing philosophy
- Create model TPS line in supplier plants: “Just do it!”
- 4-6 month commitment of resources (approx.) + followup of 1-2 years
- Consultants=Associates from Toyota U.S. plants (20)
- Supported 53 supplier projects, 1992 - 1997
- No cost reduction sharing for TSSC

Average Results

(31 complete projects by 1997)

Productivity improvement 124%

Inventory reductions 75%



Managing Suppliers



- Suppliers are extensions of Toyota (more than “buying parts”)
- Select with same care as own associates
- Develop like own associates
- Long-term partnership
- Tier structure: Levels of responsibility
- Strict cost targets and timing
- Integrated systems (JIT, product development systems)

Toyota CC21 Purchasing Challenge

- Normal expectation: 3-4% price reduction per year after model year launch
- Challenge by Toyota N.A., V.P. of Purchasing (Tsugio Kadawaki)
- Challenge: Meet best prices in world with Toyota quality
- TrimMaster Goal: 30% price reduction for new vehicle launch
- TrimMaster Approach:
 - *Work with Toyota engineers through value engineering*
 - *Hoshin Planning so every function involved in cost reduction*

TrimMaster Hoshin Planning





Fundamentals of Toyota Way



- Philosophy: Long-term philosophy of adding value to associates, partners, customers, and society
- Process: The right process will produce the right results + passion for eliminating waste
- People: Add value to the organization by challenging your people and partners to grow
- Problem solving: Continuously solving root problems drives organizational learning throughout the enterprise.



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liker@umich.edu