

# BUILDING A LEAN MANAGEMENT SYSTEM

**Daniel T Jones**

**THE LEAN  
ENTERPRISE  
ACADEMY**



# The Toyota Example

Toyota created a **unique synthesis** of three improvement streams: -

**Process thinking** – organising the flow of work

**Learning** – by doing and reflecting

**Quality** – using the scientific approach

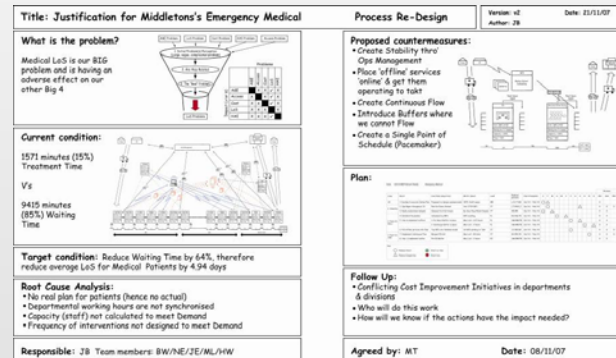
Out of this came many new **tools** and techniques

The lean **principles** for designing value streams

And a different **way of managing** and leading

# Starting Point

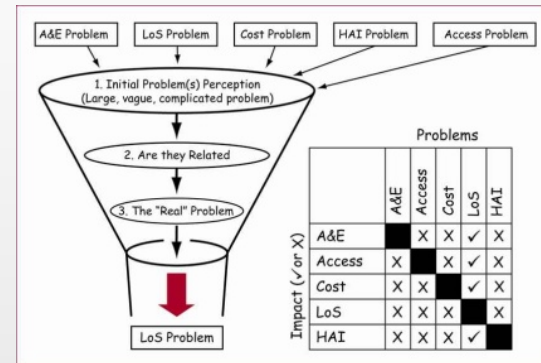
- Hunger!
- A common language and way of thinking



- A shared visual context for dialogue and decision making

# What is Important?

- Strategic objectives – their interrelationship – and the significance of time



- Understanding the dynamics of your organisation as a system – deep causes of variation
- See the performance gaps that could be closed – and actions to turn these into financial results

# What Problems?

- Agree which gaps are most important
- Dialogue down the organisation to translate gaps into actions
- Give someone the end-to-end responsibility to gain agreement to act – and to agree the resources
- Then to deselect the less important

# Which Actions?

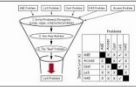

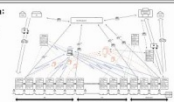

- First step is to create stability – by addressing common cause variability
- Develop a visual hub to see deviations from plan – root cause analysis – escalation processes – Gemba management



- Develop and A3 plan for the subsequent countermeasures to get to the Future State

# Build Knowledge

- Through well chosen controlled experiments – creating examples
- Developing a mentoring infrastructure for A3 thinking

Title: Justification for Middleton's Emergency Medical		Process Re-Design	Version: v2	Date: 21/11/07
<b>What is the problem?</b> Medical Lock is our BIG problem and is having an adverse effect on our other Big 4.		<b>Proposed countermeasures:</b> <ul style="list-style-type: none"><li>• Create Stability thru Opt Management</li><li>• Place all finer services inline &amp; get them operating to task</li><li>• Create Continuous Flow</li><li>• Introduce Buffers where we control Flow</li><li>• Create a Single Point of Schedule (Pacemaker)</li></ul>		
<b>Current condition:</b> 1571 minutes (95%) Treatment Time		<b>Plan:</b> 		
<b>Vs</b> 9415 minutes (95%) Waiting Time		<b>Follow Up:</b> <ul style="list-style-type: none"><li>• Conflicting Cost Improvement Initiatives in departments &amp; divisions</li><li>• Who will do this work</li><li>• How will we know if the actions have the impact needed?</li></ul>		
<b>Target condition:</b> Reduce Waiting Time by 64%, therefore reduce overall LOS for Medical Patients by 4.94 days		<b>Agreed by:</b> MT	<b>Date:</b> 08/11/07	
<b>Root Cause Analysis:</b> <ul style="list-style-type: none"><li>• No real plan for patients (hence no actual)</li><li>• Departmental working hours are not synchronized</li><li>• Capacity (staff) not calculated to meet Demand</li><li>• Frequency of interventions not designed to meet Demand</li></ul>				
<b>Responsible:</b> JB Team members: BW/NE/ZE/ML/HW				

- Capturing and sharing knowledge and experience – communities of practice – recognition - intranet

# BUILDING A LEAN MANAGEMENT SYSTEM

**Daniel T Jones**

**THE LEAN  
ENTERPRISE  
ACADEMY**

# *TMS*

## *Toyota Management System*

**Takashi Tanaka**  
**Sharon Tanner**

# History of Toyota

## Sales

- New Leader set vision & clear target
- Visualization & Oobeya
- Globalization
- Quality into Process
- Multi skilled engineers

Worked and developed tools

Increase outside of Japan

TPS

Lean introduced in Western corporations

1950

1990

2010

1700

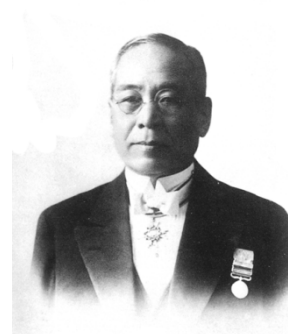
1800

1900

2000



Ninomiya Kinjiro (1787-1856 )



Toyoda Sakichi (1867-1930 )



Ohno Taiichi (1912-1990 )



Famous governor  
J.F. Kennedy  
respects

Uesugi Youzan (1751-1822)

**Toyota Way**

**Show them, tell them, have them do it,  
and then praise them.  
Focus on people.**

## Toyota Way

### 豊田綱領

豊田佐吉翁の遺志と体し

- 一、上下一致、至誠業務に服し、産業報国の実を挙ぐべし。
- 一、研究と創造に心を致し、常に時流に先んずべし。
- 一、華美を戒め、質実剛健たるべし。
- 一、温情友愛の精神を發揮し、家庭的美風を作興すべし。
- 一、神仏を尊崇し、報恩感謝の生活を為すべし。

## Continuous Improvement

- Challenge
- Improvement
- Genchi, Gembutu

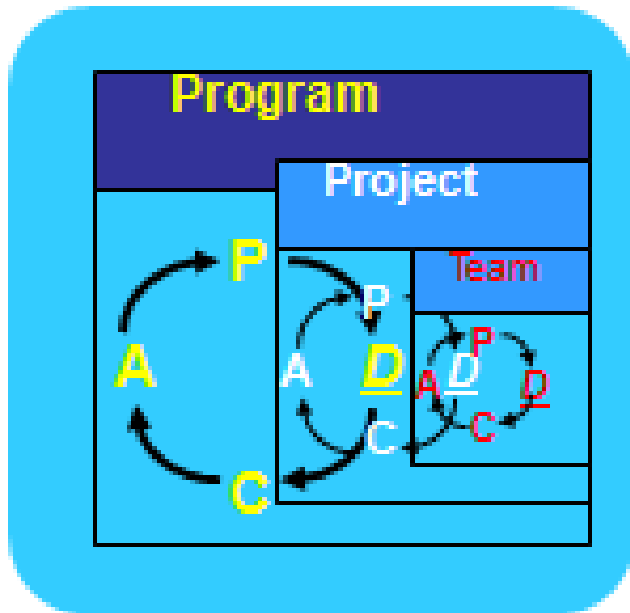
## Respect for People

- Respect
- Teamwork

- Externalized Rule and Principle of Toyota in 2001
- Preparation for more globalization

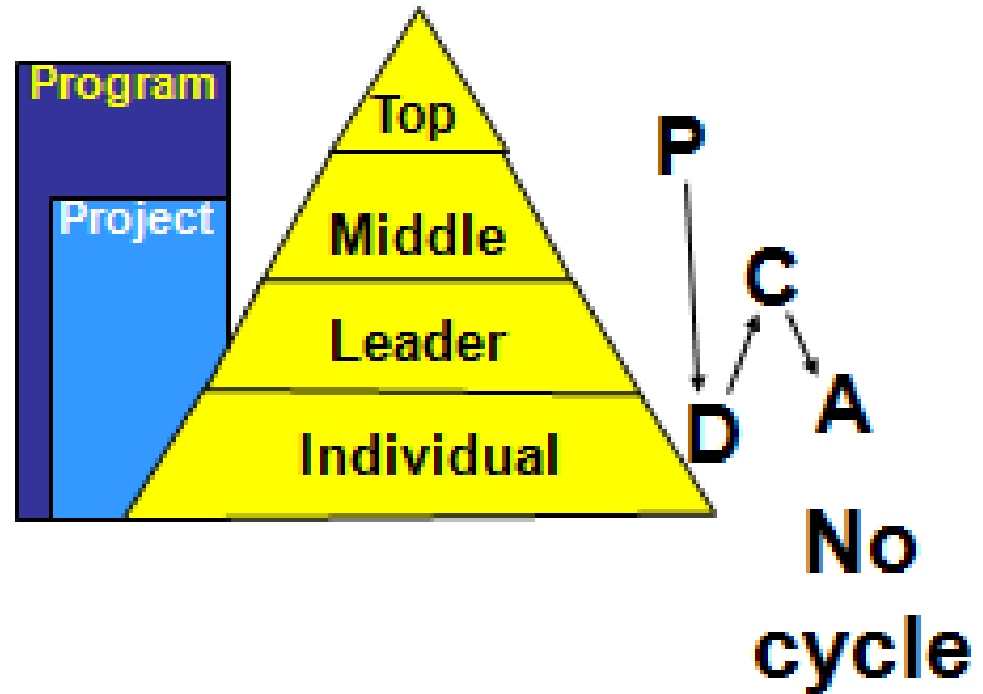
- Lean principles introduced in Western factory in the 1980s; Dan Jones' books follow within a decade
- Lean principles for the Knowledge Workers area followed much later (some companies have not yet started!)

## Toyota PDCA Cycle




Small cycle is turing around Do.

## Typical Western PDCA



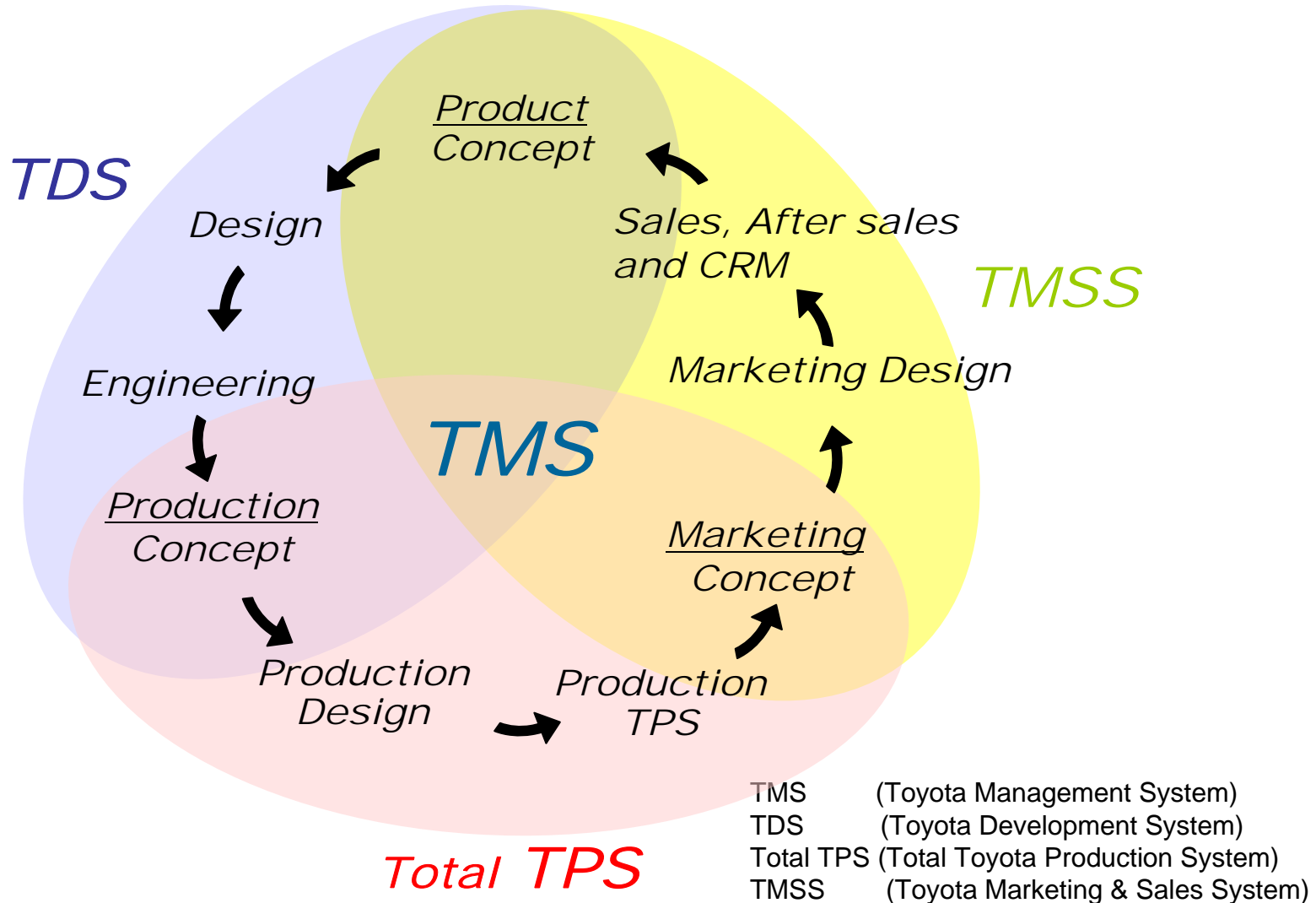
$$\text{Output} = \sum_{i=1}^n (\text{Person})_i \times (\text{Ability})_i \times \text{Motivation}_i$$



By the improvement activity

Total number of employees  $n = \text{Workers} + \text{Staff}$

# Toyota Management System



# TMS Tools

Category	Contents	Activity
<b>TMS</b> Management System	1. Corporate management	1-1. Capital of senior management
		1-2. Policy deployment
		1-3. Organizational power
		1-4. Improvement effort
		1-5. Audit
		1-6. Customer relation
	2. Finance (Financial accounting)	2-1. Financial income
		2-2. Financial strength: Stability
		2-3. Financial strength: Growth
		2-4. Profit control: Short term
		2-5. Profit planning: Mid & long term
		2-6. Management structure
	3. Cost planning (Management accounting)	3-1. Current cost
		3-2. Cost planning
		3-3. Capital investment
		3-4. Budget control
3-5. Purchasing		
3-6. Cost competitiveness		
4. Globalization	4-1. Global strategy	
	4-2. Education	
	4-3. Local company	
	4-4. Support organization	
	4-5. Export competitiveness	
	4-6. Global purchasing	
5. Pull planning	5-1. Pull planning	
	5-2. Organization product development	
	5-3. Oobeya (Project management room)	
	5-4. Gyaku RE (Resident Engineer)	
	5-5. Quality assurance standard	
6. Design review (DR)	6-1. DR with competitor	
	6-2. DR for concept	
	6-3. DR for products	
	6-4. DR for components	
	6-5. DR for drawing	
	6-6. DRBFM	
7. Design to cost	7-1. Cost planning	
	7-2. VE/VA	
	7-3. Parts commoditization, Module	
	7-4. Weight planning	
8. Feedback system	8-1. Feedback sheet	
	8-2. Design process & process	
	8-3. Design check sheet	
9. Technical know-how	9-1. Design standard	
	9-2. Technical standard	
	9-3. Technical report	

**Oobeya**

Category	Contents	Activity
<b>Total TPS</b> Production System	10. Production planning	10-1. Target setting
		10-2. Production planning
		10-3. Long-term factory plan
		10-4. Project plan, oobeya
		10-5. Technical member, Oobeya
		10-6. Organization and role
	11. Quality management	11-1. Quality assurance
		11-2. Quality into process
	12. Process & Production Design	11-3. QA Network
		12-1. Target setting
12-2. Process design review (DR)		
12-3. Cost planning		
12-4. Pre-production check sheet		
13. Production and TPS	12-5. Supplier management	
	13-1. Basic concept of TPS	
	13-2. Total TPS Overview	
	13-3. 5S	
	13-4. Quickening personnel, workshop	
	13-5. Process improvement	
	13-6. Process improvement training	
	13-7. Logistics improvement: Kanban	
13-8. Kanban: Training		
14. Product and brand	14-1. Global top	
	14-2. Competitors	
	14-3. Brand power	
	14-4. Customer expectation	
	14-5. Customer claim and complain	
15. Product planning	15-1. Organization & meeting structure	
	15-2. Market needs	
	15-3. Evaluation of own products	
	15-4. Forecast demand	
16. Sales planning	15-5. SE activity with development	
	16-1. Organization & meeting structure	
	16-2. Sales planning	
	16-3. Promotion	
	16-4. Sales exhibition	
17. Internal organization	16-5. Price setting	
	17-1. Sales	
	17-2. Used car	
	17-3. Service & maintenance	
	17-4. Dealer support	
18. External organization	17-5. Education plan	
	18-1. Global sales ratio	
	18-2. Subsidiary	
	18-3. Organization	
		18-4. Logistics

**TMSS**  
Marketing & Sales System

# TMS and Corporate Management

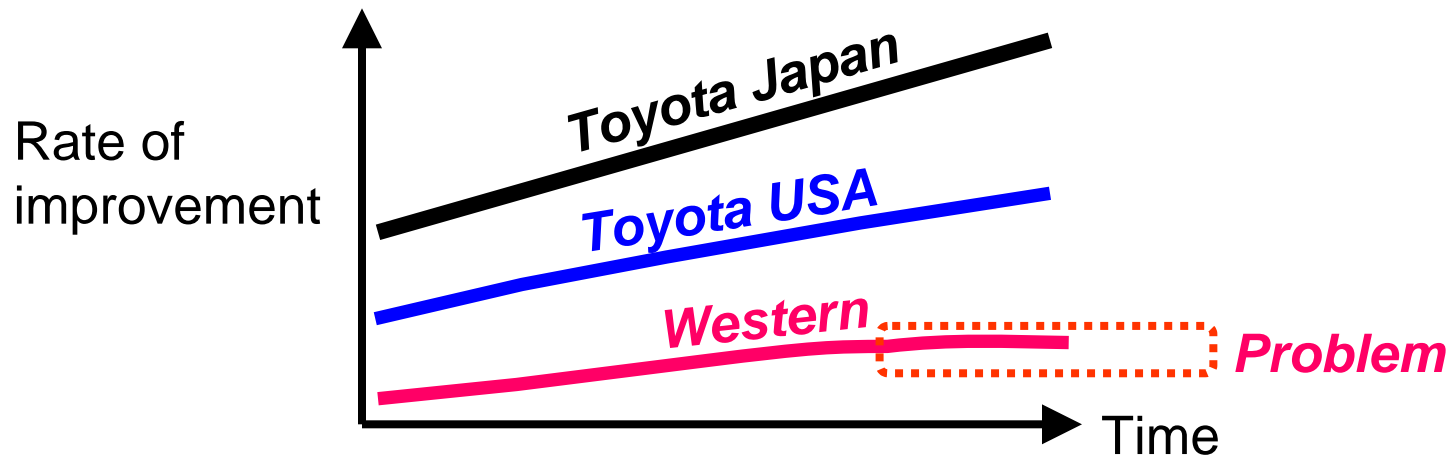


- 1. Corporate Management
- 2. Finance
- 3. Cost Planning
- 4. Globalization

Content	Activity	Focus	
<b>1. Corporate management</b>	1-1. Capital of senior management	1-1-1. Vision	1-1-4. Decision making
		1-1-2. Leadership	1-1-5. Existence of key person
		1-1-3. Ability	
	1-2. Policy deployment	1-2-1. Corporate policy	1-2-4. Standardization
		1-2-2. Divisional policy	1-2-5. Active atmosphere
		1-2-3. Daily management	
	1-3. Organizational power	1-3-1. Organizational structure	1-3-4. Power of middle management
		1-3-2. Collaboration with vice president	1-3-5. Adequate cost center
		1-3-3. Collaboration among organizations	
	1-4. Improvement effort	1-4-1. Reduction of fixed cost	1-4-4. Commitment for target profit
		1-4-2. Debt	1-4-5. Drastic cost reduction activity
		1-4-3. Productivity	
	1-5. Audit	1-5-1. Attitude of top management	1-5-4. Creation of ability for audit staff
		1-5-2. Working structure	1-5-5. Risk management
		1-5-3. Function and role	
	1-6. Customers	1-6-1. Target achievement	1-6-4. Countermeasure for daily customer expectation
		1-6-2. Price adjustment for customer	1-6-5. Recognition from customer
		1-6-3. Customer satisfaction	

## Background

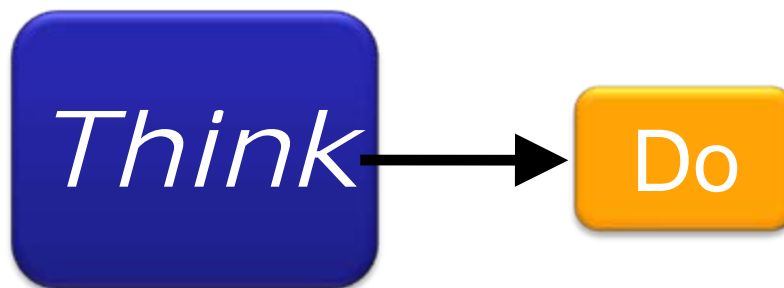
- The use of tools has improved factories
- Knowledge work areas has been more difficult
- Most managers do not advance to the implementation of Toyota Management System



# Do we understand each other?



Western

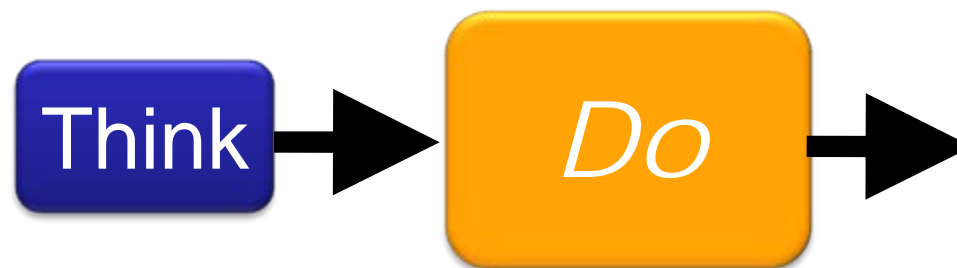


**Finished!**

**What is the goal?**



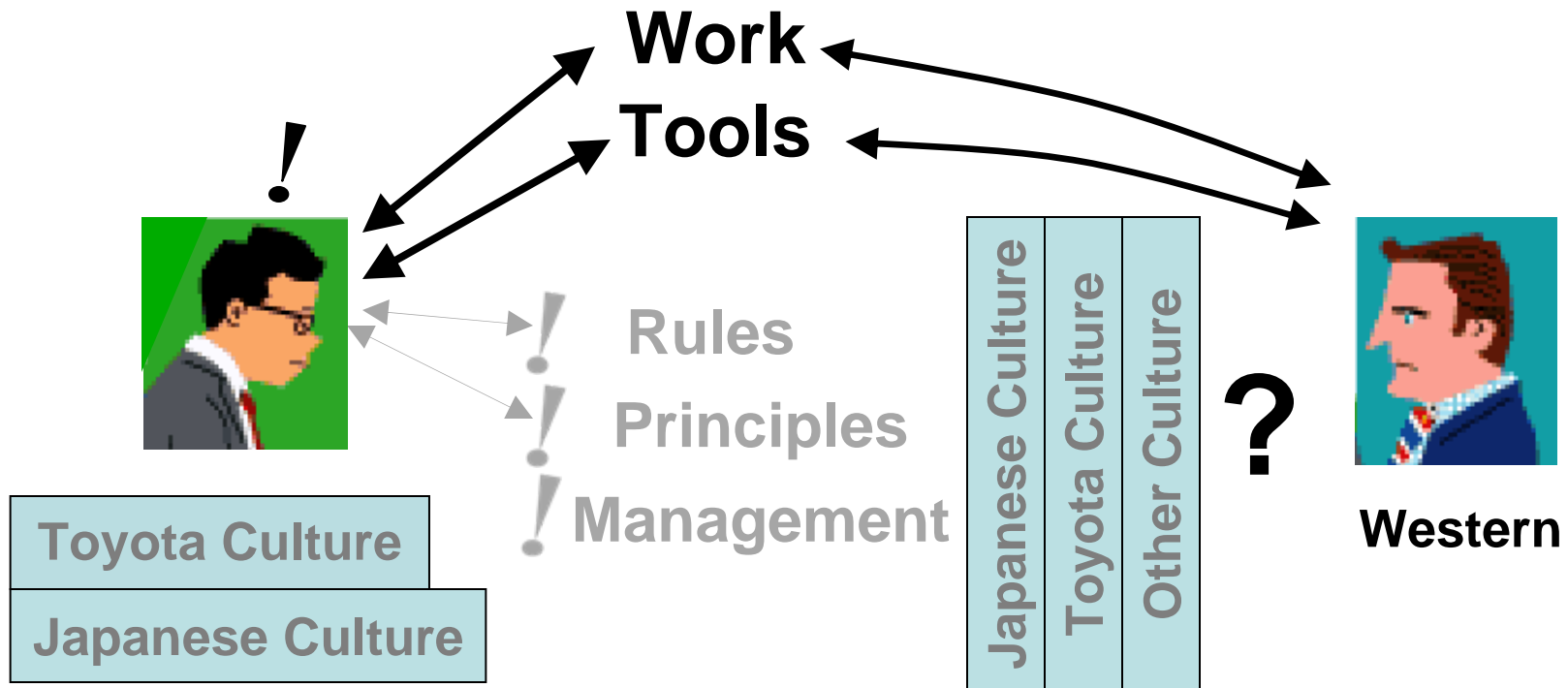
Toyota



**Continue  
PDCA  
Cycle**

- Genchi
- Gembutsu

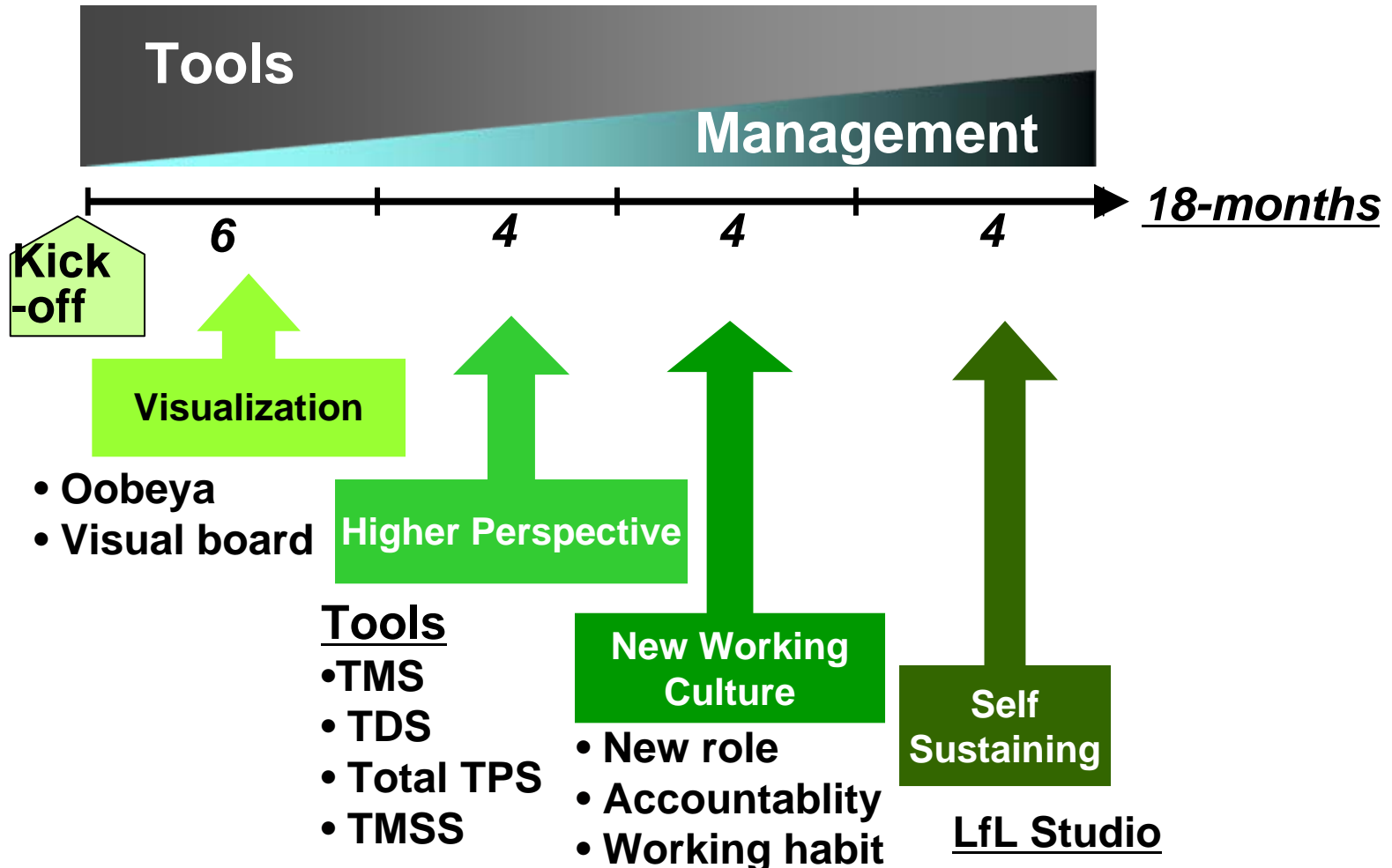
# Do we understand each other?



***Culture blocks understanding of Principles, Rules and management.***

# Procedure to Implement

**Using both Tools (Method-side) and Management (Human-side), we can create sustained improvement.**

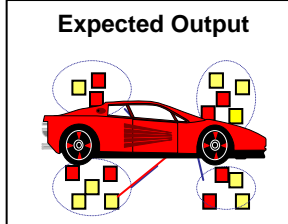


# Oobeya: Big Project Room

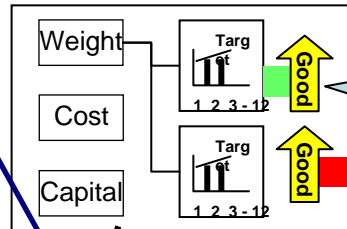
## Objective

- Project Background
- Project Objective
- Technical Spec
- Project Organization

## Expected Output



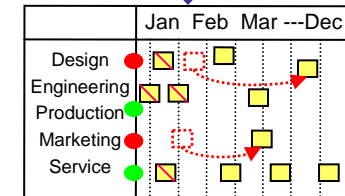
## Metrics



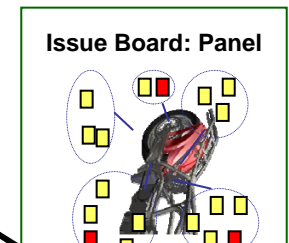
- Progress check, only Green & Red

## Action Board

### Concurrent Schedule



### Decomposition Area



- Identify issues for management decisions

## Prototype

- All related members, Planning, Design, Production and Sales & Marketing

Projector for Virtual Design Review or meeting



## Issue Board

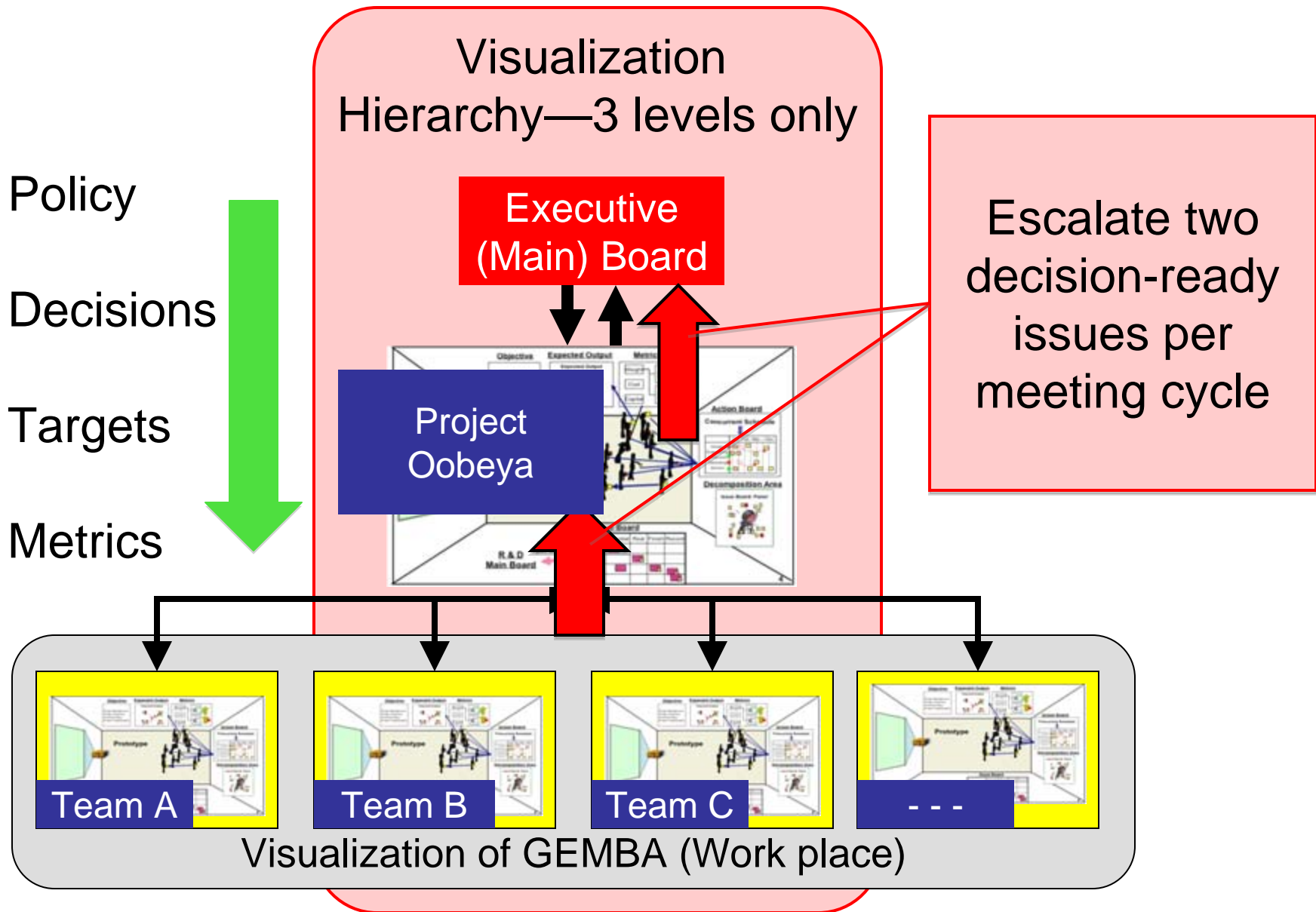
	Potential	Real	Finish	Record
Design	New concept			
Engineering		Drawing dela 3/3		
Production	Line A improve		Supplier sele 4/3	Supplier sele 4/3
Marketing				Supplier sele 4/3

R & D Main Board

2-issues per week



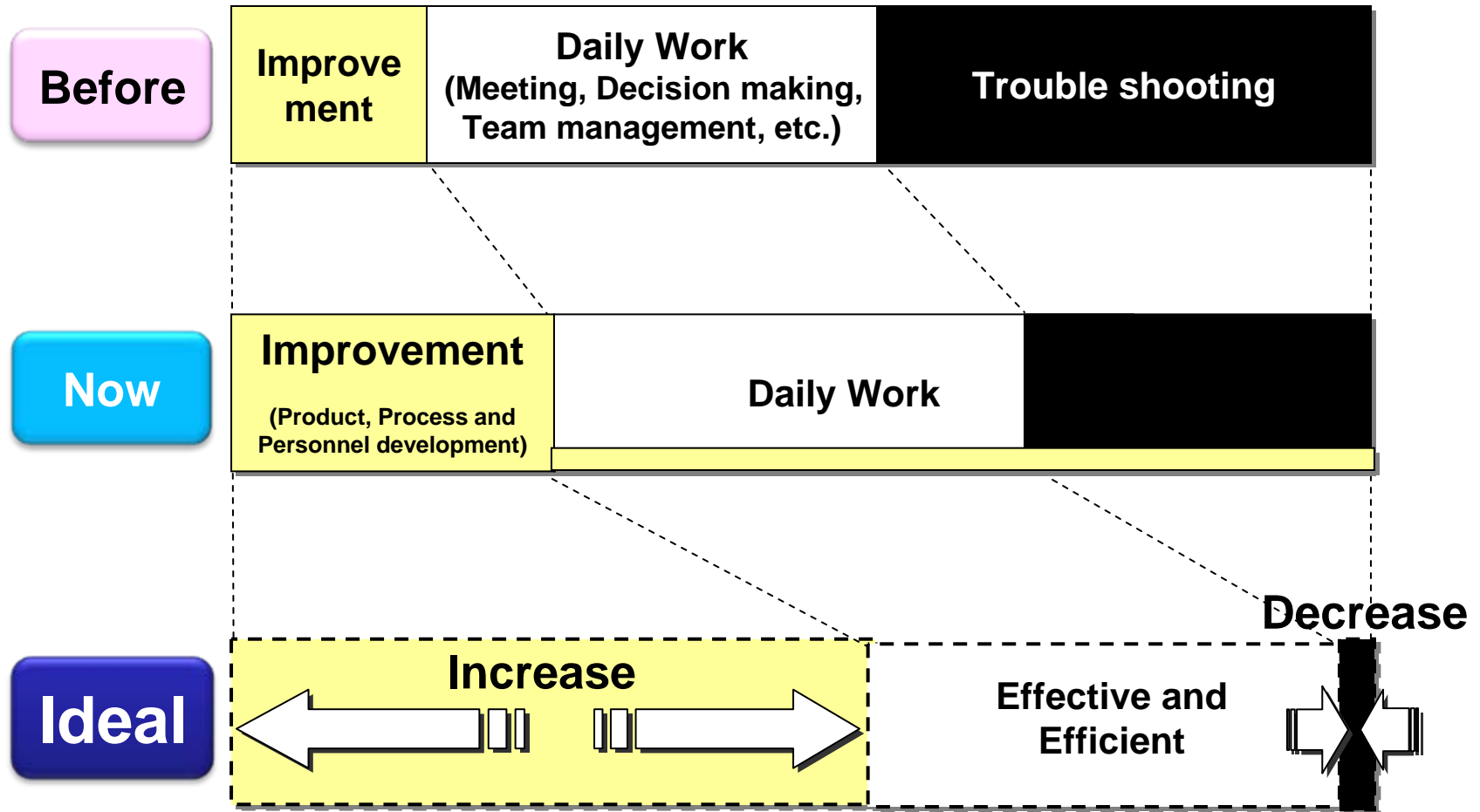
# Oobeya: Hierarchy with Flow



## “DUNS” -- Did, Understood, Next Steps

*My Name*

- *Listened (Did)*
- *Some new concept I have learned, or a new insight about a concept I already knew (Understood)*
- *What I will do differently back at my organization (Next Step)*



- **Leader: use more than 50% of time on improvement work.**

# Chief Engineer of Toyota

**CEO**

VP Engineering

Only one VP to manage all Chief Engineers and functions

**Prius** Chief Engineer

**Corolla** CE

**---** CE

Body

Chassis

----

Cost  
Under -10%

Quality  
DOK 90%

Delivery  
1<sup>st</sup> proto May 1

Platform Standardized committee

New navigation system committee

Matrix & Metrics Target break down

VP Strategy

VP Production

VP Marketing & Sales

...

Cost Reduction Committee

-20%

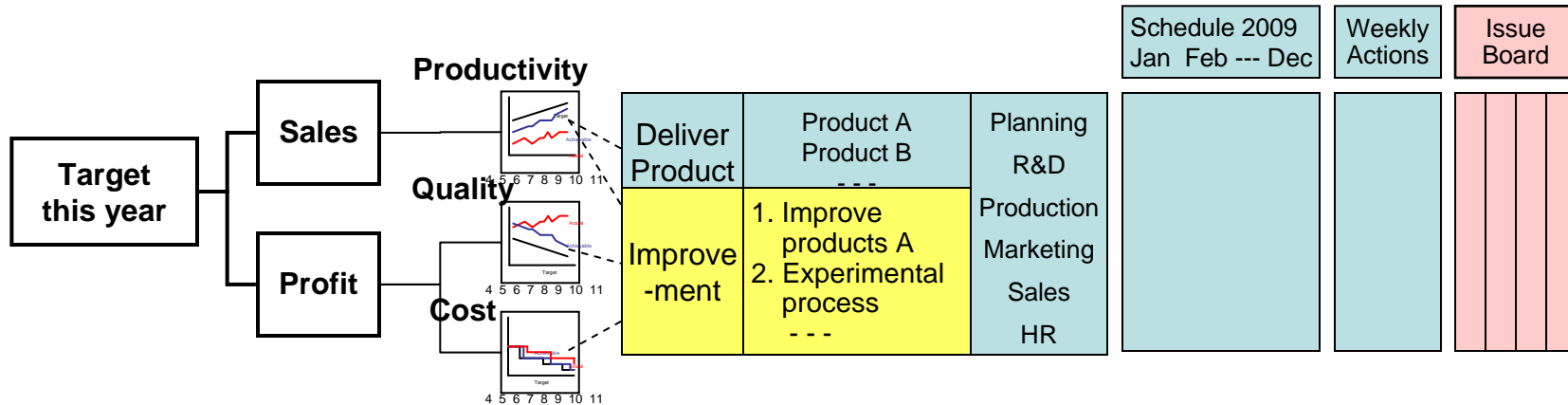
DOK 80%

On time Dec 15

Executives lead cross-functional committee

# Clear Targets Drive Results

## Oobeya creates a more action-oriented organization.



**Suitable Target**



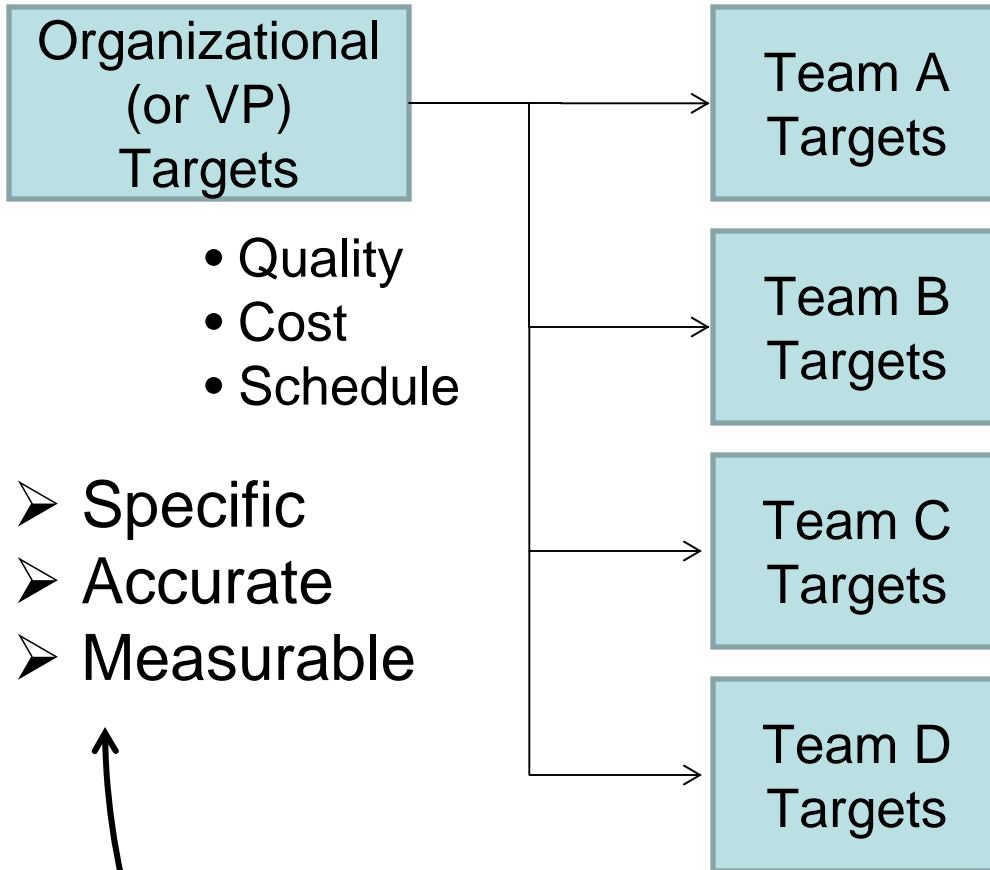
*Gap*

**Current Status**

**Only 3-5 focused metrics**

**Clear and concise activity and action**

**Only decision ready issues**



- Decompose targets to a meaningful level for the team
- Metrics show team's unique contributions to overall organizational goals

- Specific
- Accurate
- Measurable

$\Sigma \text{ Team metrics}^? = \text{Organizational Target}$

# Visualizing Targets with Barashi

Product Quality

Cost

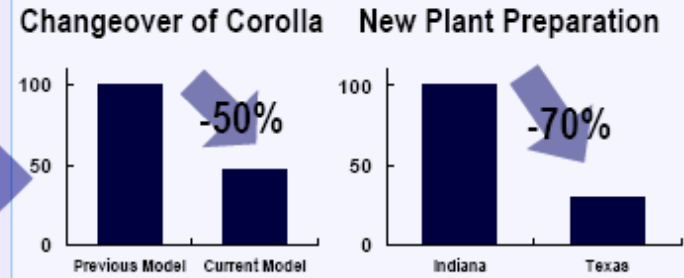
Human Resources

## Global Promotion of Self-Reliance

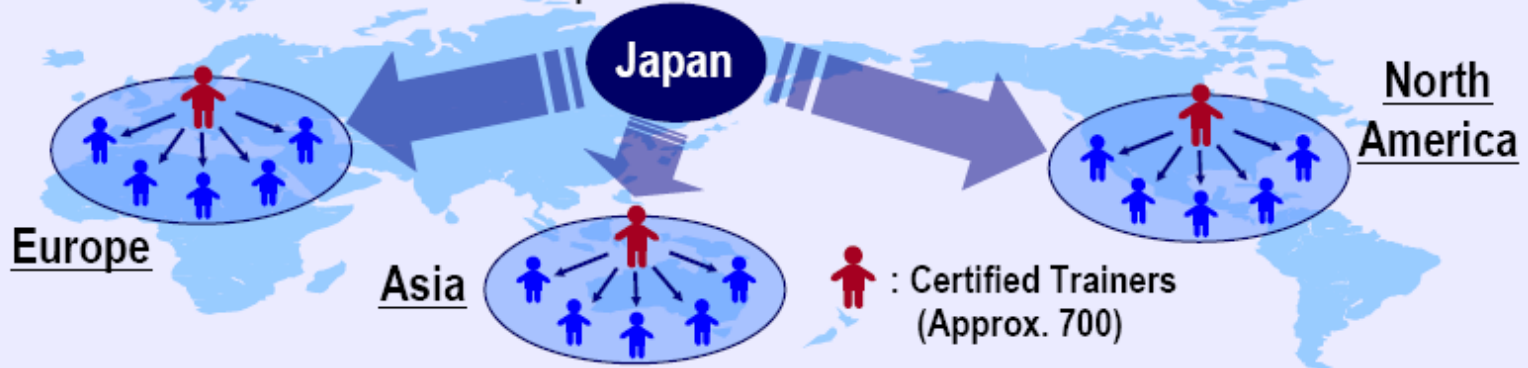
Japan:  
Explicit Knowledge of  
business conduct (=Toyota Way)  
expand  
Overseas:  
Human resources development  
by putting knowledge into practice

Improve capacity  
of overseas  
operations

### # of supporting staff from Japan



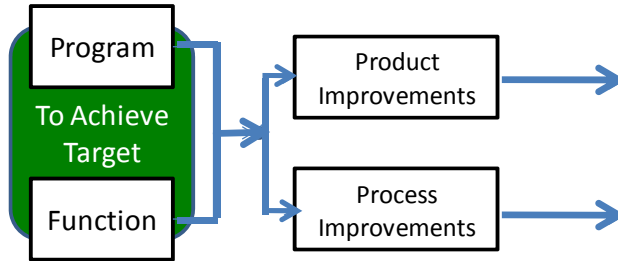
< Develop Certified Trainers >



TOYOTA

## Lean for Leaders Implementation Team, 2007

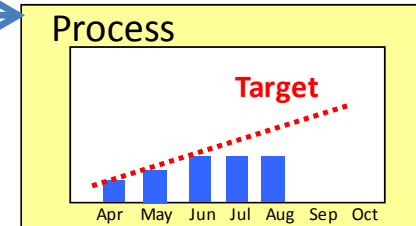
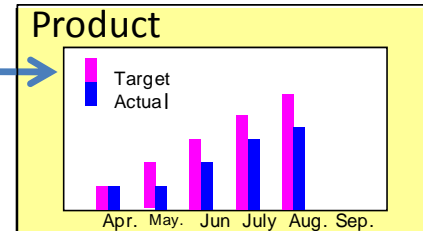
### Program Plan



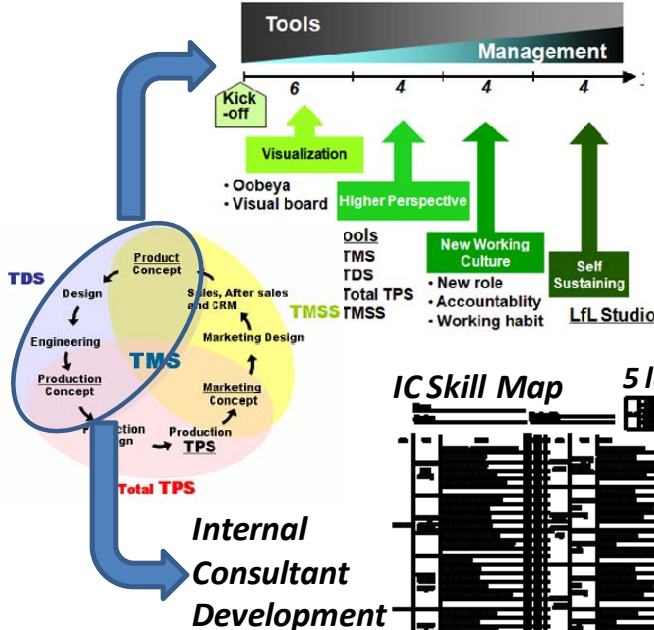
### Team Progress Audit

Progress Check Sheet: Oobeya/Project room		Section					Date:
Category		1	2	3	4	5	Total
Quality	Summary by Project Leader	Progress chart	Measurement metrics	Indicator of priority with green & red check	Connection with Total TPS	Members' concerns check	
	Objective, Target	Attached calendar contents	Shared with all members	Think about it in sub-system	Logical link and connection	Consistency across all related documents	
	Expected Output	Visualized with starting etc.	Shared with all members	Status & accomplishment as we clear	Decomposition of critical path	IT based system	
	Metric	Visualized standard metric	Clear indicator with same format	Status & accomplishment as we clear	Priority metrics	Periodical face with members	
Decomposition / Scenario	Indication of current the status	Connection with other board	Scenario clear for difficult issue	Connection with working status	Answering at 20-40% level		
	Real products or model	Provide a presentation, as it real products	Same decomposition status	Get in the project room	Visual work	Integration and Standard	
Quantity	Consumption Schedule	As leader (Plan, just in time) number	Relation with other / Process improvement	Capacity change for change in process	Sub-systems are standardized	Connection with sub-system schedule	
	Issue flow	Kind of status	Select 2-3 issues and discuss with each other	Control & Communication in a priority status	Prevent trouble in a priority status	Plan month issue month for TCSA process	
Human-side	Meeting	Agenda & schedule	Establish efficiency and efficiency	Kindly request member & other member	Prevent looking transferred opinion	Connection of new role & responsibility	
Visualization	Display	Visual Control Panel	Visual Control Panel	Visual Control Panel	Customizing Visualization Panel	Customizing Visualization Panel	
Total Grade							

### Program Metrics



### TMS Implementation



Team Support

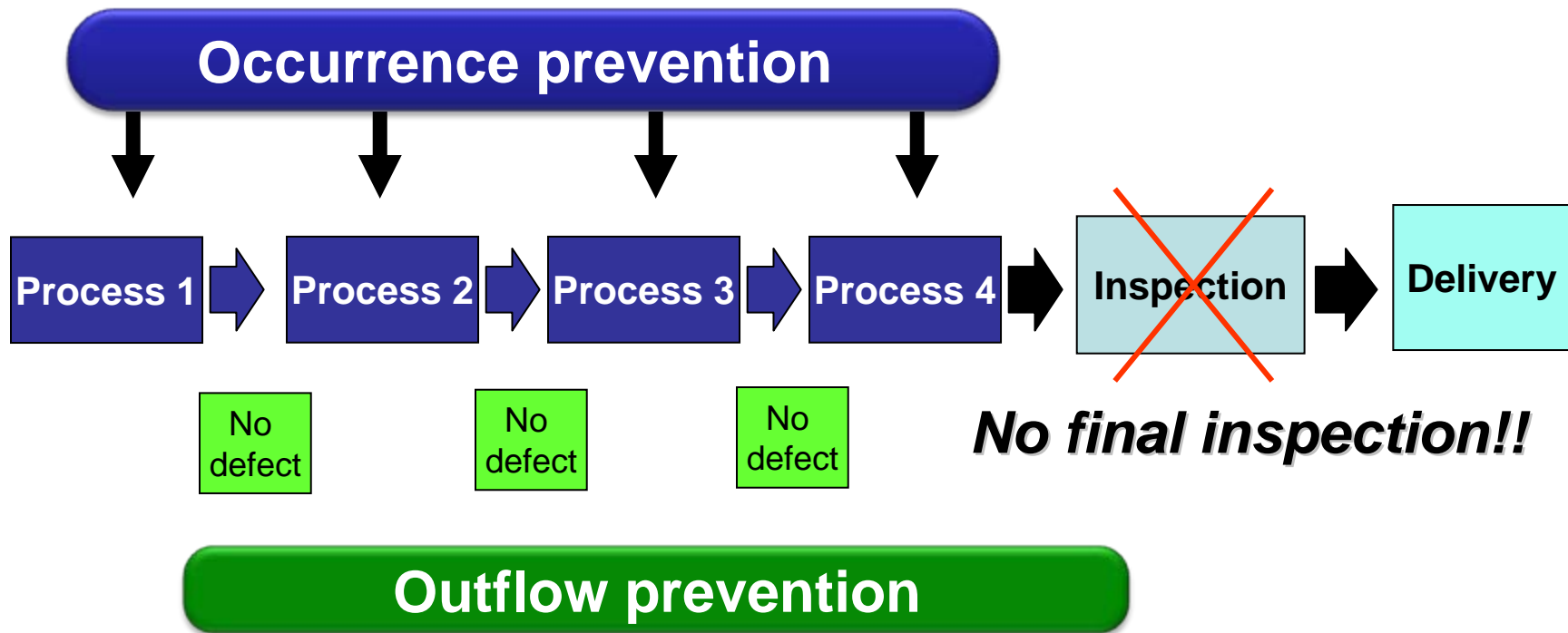
### TMS Implementation

- Phased implementation
- Emphasizing TDS toolset
- Developing internal consultants (IC)
- Supporting team and IC maturity
- Achieve program targets

### IC Skill Map 5 levels

Level	1	2	3	4	5
IC1	...	...	...	...	...
IC2	...	...	...	...	...
IC3	...	...	...	...	...
IC4	...	...	...	...	...
IC5	...	...	...	...	...

# Concept of “Quality into Process”



## Front loading tools

**Target:**  
 - Right on time  
 - Right first time



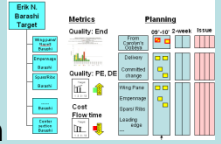
**2. Education/ Training**

- Knowledge management
- Multi-skilled engineer
- Supplier training

**1. Management**

- Policy deployment
- Target and Metrics
- Long-term planning
- Daily implementation
- Issue board for unexpected problems

**Oobeya for project**



**3. Standard Work**

- Design standards
- Process standards
- Structured template

**4. Quality assurance**

- Sustain standard work
- Support improvement activity



**6. Check sheet**

- Front page, Whole process
- Back sheet, a part or a process

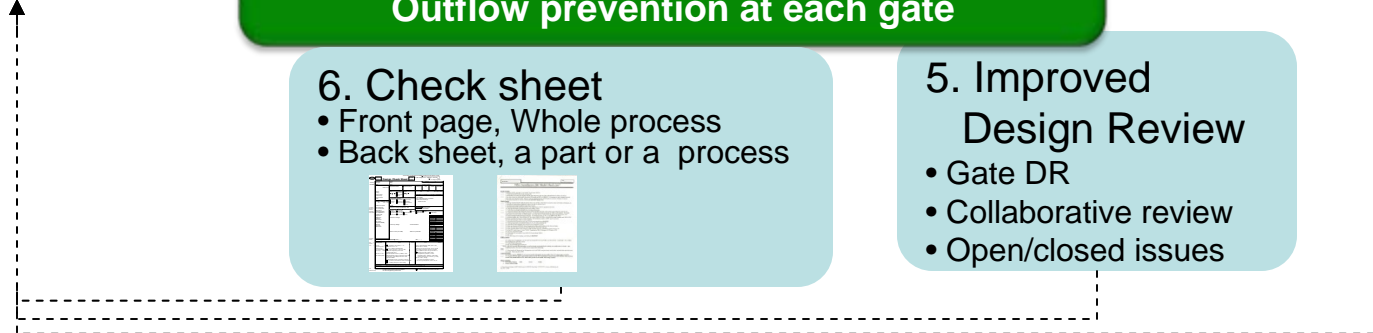
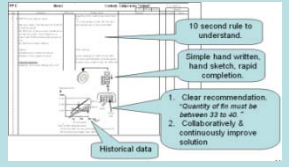


**5. Improved Design Review**

- Gate DR
- Collaborative review
- Open/closed issues

**7. Feedback sheet**

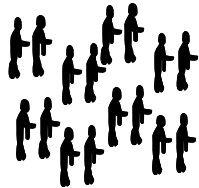
- Lesson and learn from past projects



# Comparison of Design Review

## DR at US manufacturer ~ 6 months

Engineering, Purchasing  
Test and production



Many hours in large meetings

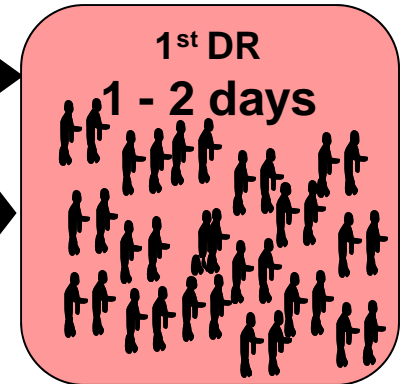
- Much discussion
- Little problem solving

Individually prepare, Engineering sub-teams

Internally prepare, Production

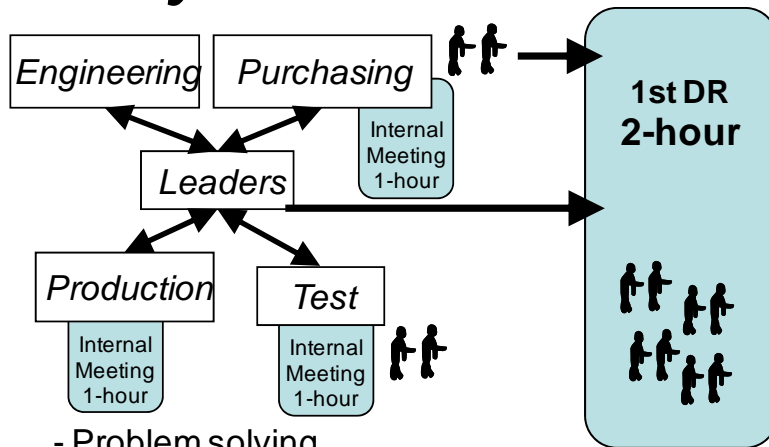
Internally prepare, Test

Internally prepare, Finance, Purchasing, etc.

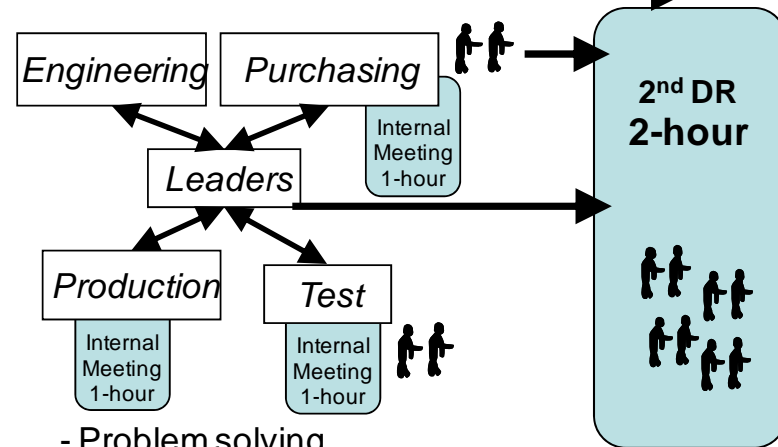


## Toyota DR

1-month

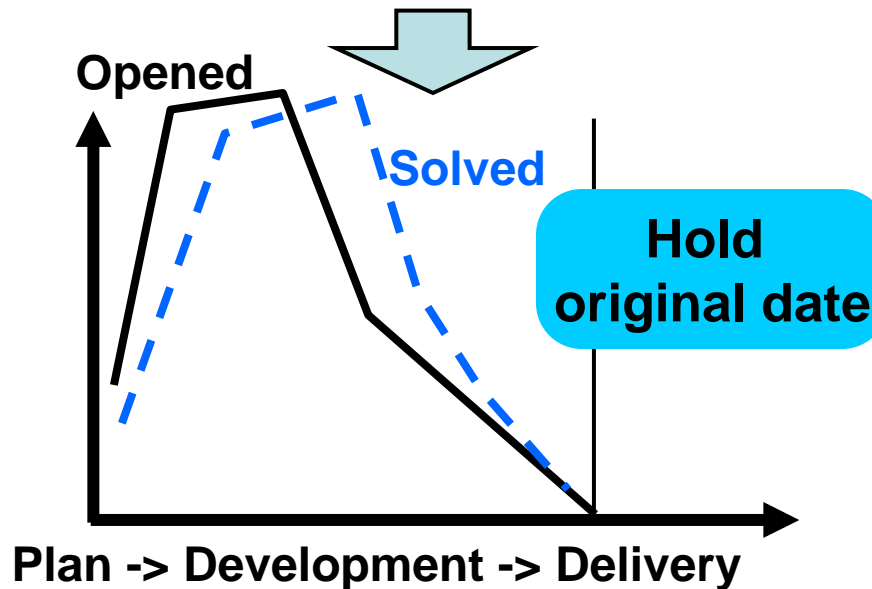
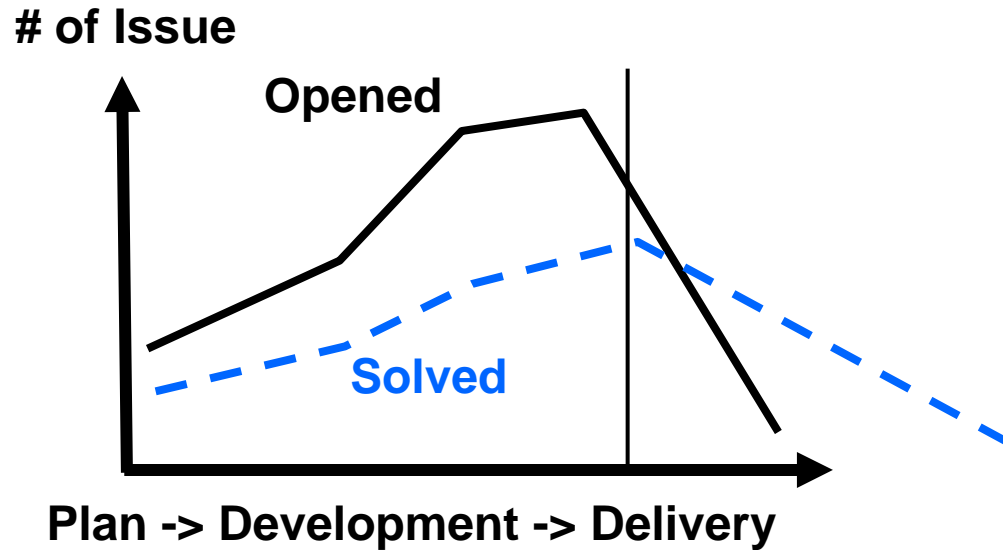


- Problem solving
- Decision making



- Problem solving
- Decision making

# Process Metrics: Design Completion



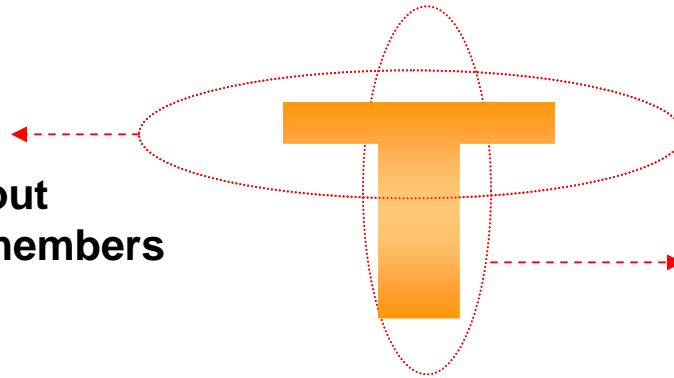
- Start at the top—Executives apply TMS to themselves first. Lean is not a delegated activity that executives “sponsor.”
- Select and train internal consultants (ICs) to support the implementation
- Incorporate a journey-approach to training by creating an LfL (Lean for Leaders) Studio
- Create infrastructure to support Ics & teams
- Institute a disciplined approach to progress checks for teams and ICs

## T Style Concept

Developing both simultaneously

### Horizontal

- Organizational roll-out
- Participation of all members



### Vertical

- 1) Tool installation
  - Multi-skilled Worker
  - TLSC, Structured 5-Why
  - Oobeya
  - etc.
- 2) Management skill
  - Vision, Target setting
  - Decision-making
  - Leadership
  - etc.

## Internal Consultants:

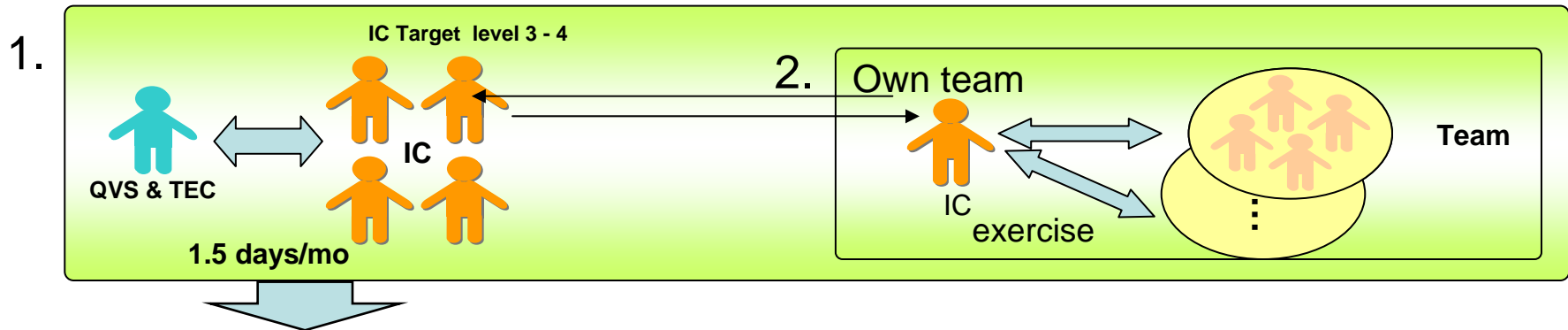
- Learn quickly, by working with consultants on multiple projects within the organization
- Apply techniques themselves
- Aid executives/teams implementing TMS.

## Necessary Characteristics:

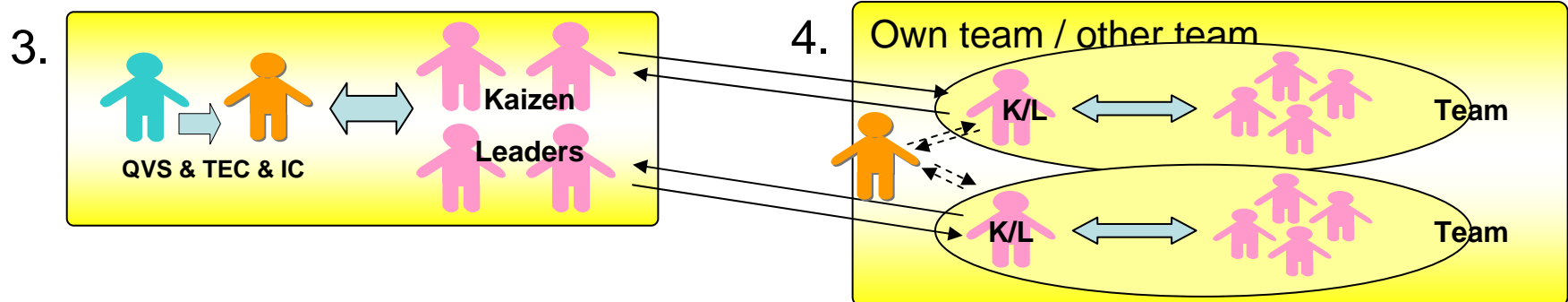
- Technical strength
- Success in leading large projects
- Influence at the executive level
- Strong collaborative skills
- Real network within the organization

1. QV&TEC's role is to develop IC.
2. IC exercises Kaizen with own team.
3. IC develops Kaizen Leader (KL) with support of QV&TEC.
4. KL develops own team / other team.

## LfL Studio for Senior / Organization IC



## LfL Studio for Kaizen Leader





# Progress Check Sheet



## Example of Check Sheet: Project

Progress Check Sheet: Oobeya/ Project room			Section:			Date:
Category	1	2	3	4	5	Total
Quality	Summary by Project Leader	Progress chart	Measurement metrics	Indication of priority with green & red mark	Connection with Total R&D	Member's consistent check
	Objective, Target	Attached suitable contents	Shared with all members	Break down to sub-system	Logical link and connection	Consistently update with related documents
	Expected Output	Visualized with drawing etc.	Shared with all members	Issues & countermeasures are clear	Decomposition of critical part	IT based screen
	Metrics	Selected prioritized metrics	Clear indication with same format	Update all results regularly	Priority marks	Forecasted line with scenario
	Decomposition / Scenario	Indication of current hot topics	Connection with other board	Scenario chart for difficult issue	Connection with quickening action	Arriving at 5-why level
	Real products or model	Inside a project room, is it real products	Some decomposition parts	DR in the project room	Virtual tools	Integration and Standard
Quantity	Concurrent Schedule	At earlier phase, join all related member	Due date and milestone with output / Process Improvement	Capturing delay & change for review	Sub-systems are spontaneously breakdown	Connection with sub-system schedule
Issue flow	Kind etiquette	Select 2-issues are smooth activity	Contents & Countermeasure are mutually kind	Spontaneous attitude for solution	Potential issue is proactively capture	From record, issue moving for PDCA process
Human-side	Meeting	Agenda & schedule	Explain effectively and efficiently	Kindly support leader & other member	Front loading considered opinion	Conscious of new role & responsibility
Visualization		Display	Visual Control Level1	Visual Control Level2	Quickening Visualization Level1	Quickening Visualization Level2
Total Grade						

- Executive (Main) Board
- Project
- Team
- TDS

- **Clear, focused targets will empower teams and drive accountability**
- **Deep reflections and strategic planning will improve long-term success**
- **Visibility of knowledge work & metrics will foster continuous improvement**
- **Standard work and disciplined process approach enhance quality improvements**
- **IC development will ensure a self-sustaining lean culture within Millennium**

# The Basics of Oobeya

Lean for Leaders Masterclass

Summer 2011

Takashi Tanaka

Sharon Tanner

- To communicate the oobeya technique quickly
- QV Oobeya makes knowledge-work visible, so that waste and non-value-add activities can be removed.
  
- Oobeya means ‘big conference room’
- Developed with Toyota in the 1990s for
  - first Prius and SUV
  - 50% time-to-market reduction

- A clear problem/target statement
  - Quantified
  - Includes entire scope
  - Balanced
  - Differentiates internal and external targets

- Each target is fully decomposed
  - Broken down into targets for each team or participant
- Targets are adequate
  - 60% accurate to start is OK
  - You will improve accuracy and ensure fairness as you go
- Bounded with +/- limits

- Define targets
- Maintain time and content discipline
- Manage issue priority
- Check that activities are sufficient to meet targets
- Check member workload; balance as needed
- Ensure team participation, team skill

- Deliver solutions
- Define activity and task to meet targets
- Report ahead-or-behind on targets
- Define and resolve issues in a 'kind' way

- Clear problem statement
- Target decomposition (external, internal)
- Roles/responsibilities defined and followed
- Problem-solving skills
- Kind approach/kind issue:
  - Clear, concise
  - Constructive, contains analysis or recommendation
- Issue board basics

- Plan - My target is...
  - I am ahead/behind
  - Issues/countermeasures
- Do - Last week I accomplished...
- Check - I learned the following...
  - New insight
  - 'Aha!' moment
- Act - Next week I will...