

END4830 LEAN PRODUCTION

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Lean is a way of thinking, not a list of things to do.

Shigeo Shingo

Shigeo Shingō (1909-1990) was a Japanese industrial engineer who was heavily involved in the development of the [Toyota Production System \(TPS\)](#), specifically tools such as [SMED](#), [Poka-Yoke](#) and Zero Quality Control (ZQC).

What is Lean?

Definition:

“Becoming ‘lean’ is a process of eliminating waste with the goal of creating value.”

Note: This stands in contrast to definitions of lean that only focus on eliminating waste, which is too often interpreted as independent of its impact on value delivery

Lean Thinking

The core idea is to **maximize customer** value while minimizing waste.

Simply, lean means creating more value for customers with fewer resources.

Lean Thinking

Profitability and improvement for all stakeholders

Doing right things

- Value for customers
- Common goals

Doing things right

- Monitoring processes
- Uncompromising quality, velocity, flexibility, security
- Doing it right in the first time

Human-oriented management

- Eliminating wastes
- Balancing work load
- Decreasing complexity

Obtaining the most with less

- Competence improvement
- Employee enhancement
- Go-see-understand principle
- Mutual respect

Continuous improvement

- Turning problems into opportunities
- Investigating reasons without accusing
- Process performance monitoring

Being customer and value oriented in all processes from start to finish

Comparison of two mindsets

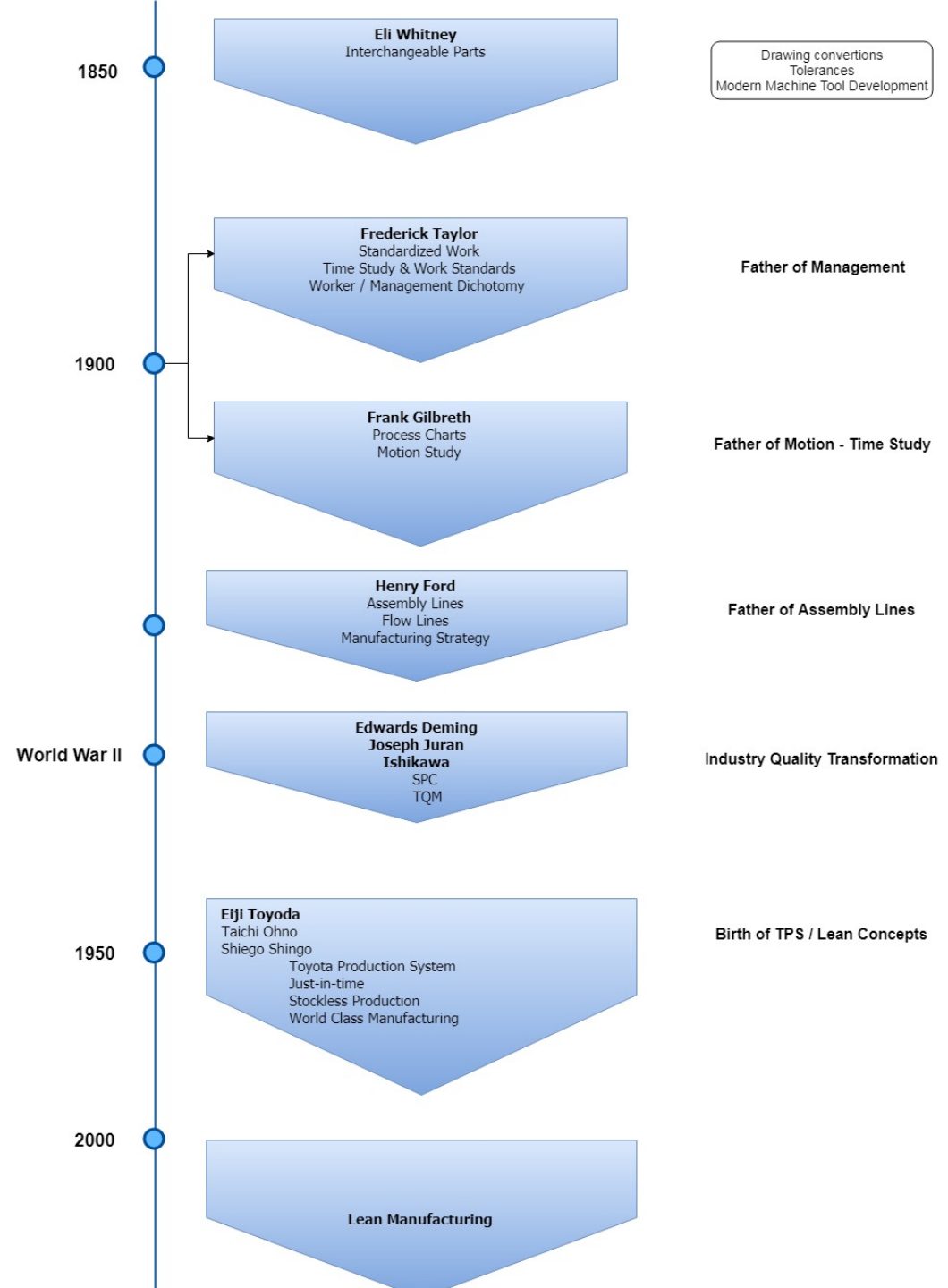
"Mass Production" Mindset	"Lean Enterprise" Mindset
Producer "push"	customer "pull"
movement of materials	flow of value
high volume	flexible response
inspection	prevention
expert-driven	knowledge-driven
decomposition	integration
periodic adjustment	continuous improvement

Where to begin?

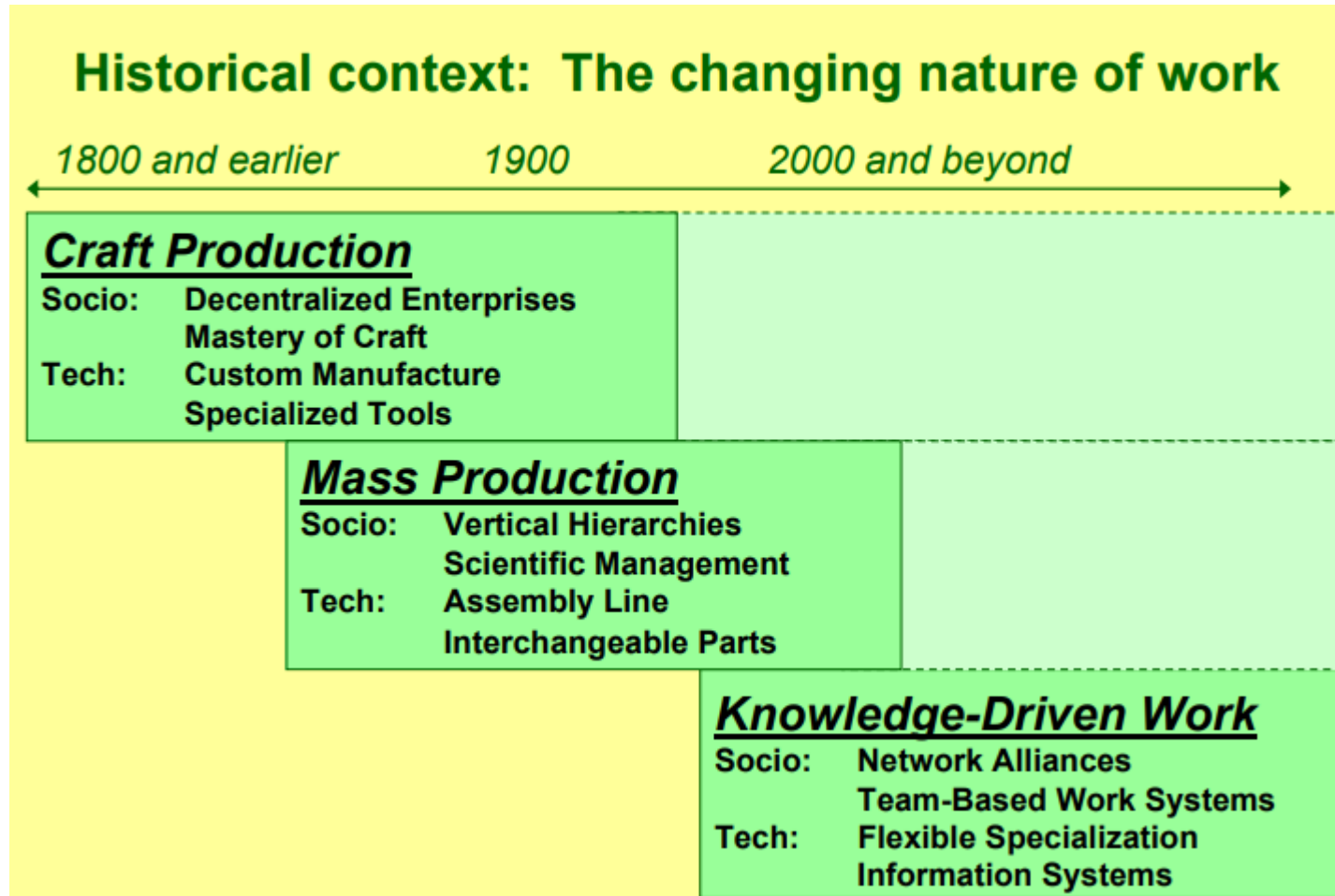
An Exercise in Lean Thinking:

- Small groups of 4-5 people
- Half of the groups:
 - Draw a picture of a home workbench or kitchen used by someone engaged in “mass” thinking
- The other half of the groups:
 - Draw a picture of a home workbench or kitchen used by someone engaged in “lean” thinking

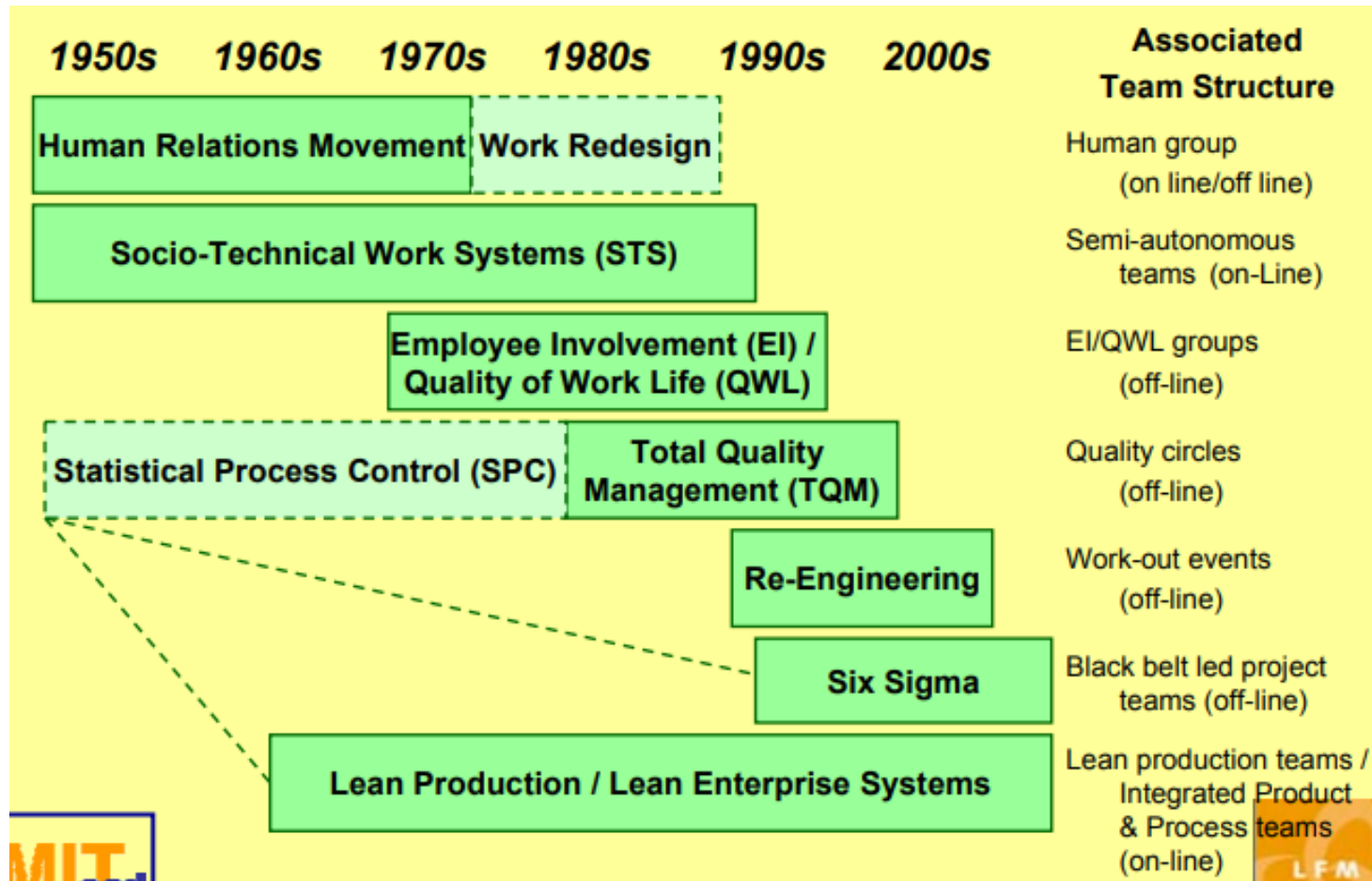
Evolution of Lean Thinking – According to Drivers



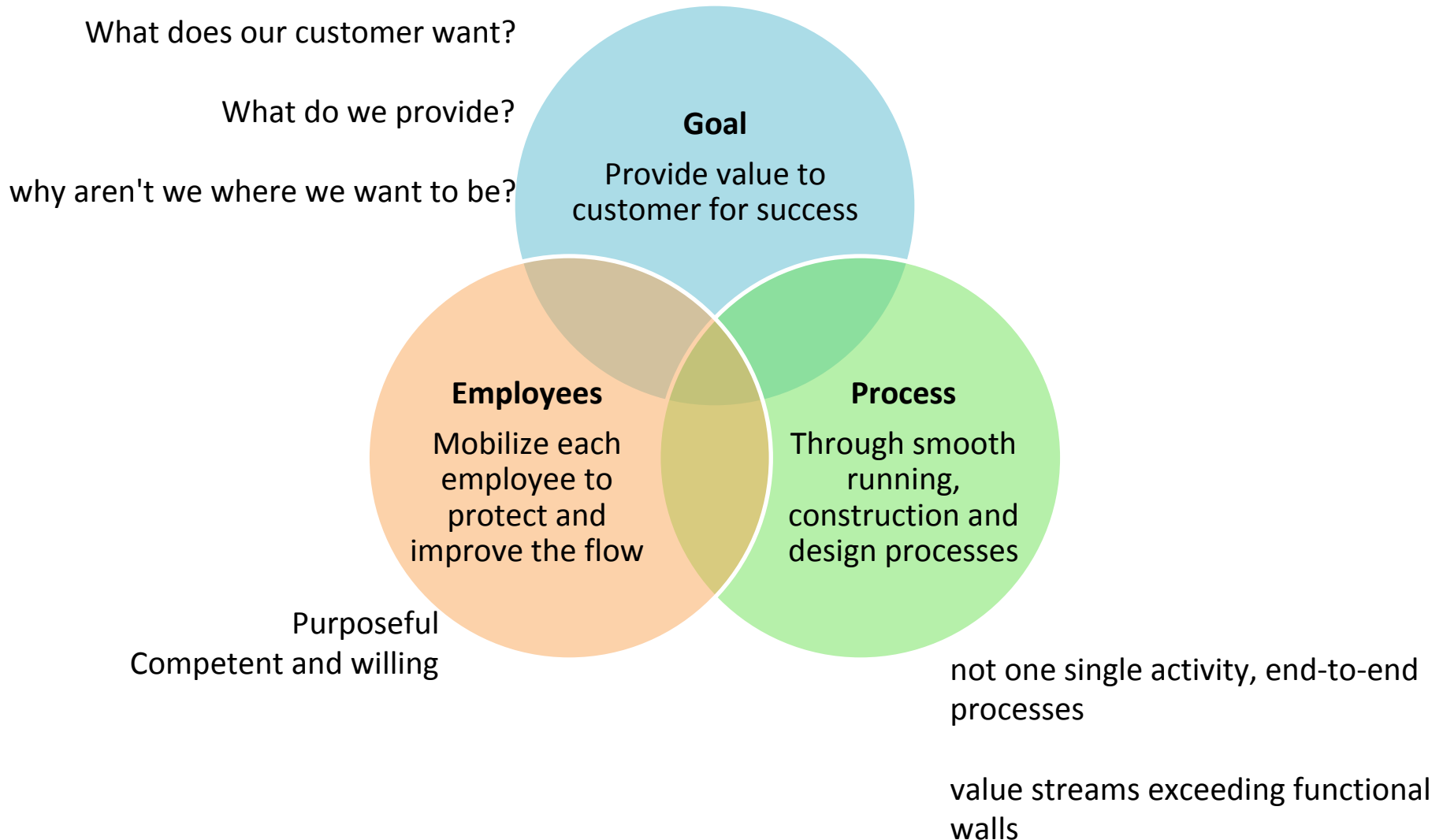
Evolution of Lean Thinking – According to Changing Nature of Work



Historical context: Transformation initiatives



Lean Management System



Structure of Lean Organizations

- individuals always work in a team.
- team leader is the lever of continuous improvement. does part-time work.
- The task of each manager is to improve the team members in such a way that they can make improvements.
- Everyone makes improvements in person.

Doing the right thing...

Costs

- Money: consultants, analysts, managers
- Time: analysis, research, meeting, discussions

Assumptions

- There is a right answer
- And it is knowable
- No value in wrong answer
- That wrong & right are definable

Lean Production

An approach to management that focuses on cutting out waste, whilst ensuring quality. This approach can be applied to all aspects of a business – from design, through production to distribution.

Lean Production in a Nutshell

- Doing the simple things well
- Doing things better
- Involving employees in the continuous process of improvement
.... and as a result, avoiding waste

Lean Production

- When you say **Lean Production**, you think Toyota.
- It is recognized to be one of the **best company in the world**.
- This **worldwide reputation** is based on a **Lean Production System** named **TPS**.

TPS was created to give value to:

- Customers
- Employees
- Products

Toyota Production System (TPS)

- These values are shared and get into practice by all Toyota Team Members.
- The early stage was made in 1918 by Sakichi Toyoda on the looms.
- But,
It is recognized that the main architect of the TPS was Taichi Ohno in 1958.

He got the inspiration by the American supermarkets where the customer can find on the shelves the goods %100 of the time and the shelves are always replenished on time.

Effective lean production requires...

- Good relations with suppliers
- Committed, skilled and motivated employees
- A culture of quality assurance; continuous improvement & willingness to embrace change
- Trust between management and employees

Lean thinking: A mental model Womak and Jones:

- Specify value
- Identify the value stream
- Make value flow continuously
- Let customers pull value
- Pursue perfection