



 POLITECNICO DI MILANO



Idee e strumenti per l'impresa manifatturiera del domani

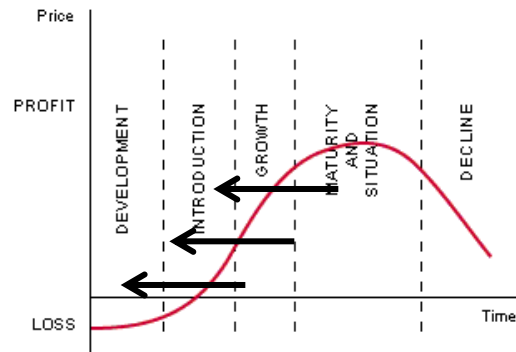


**Migliorare la progettazione riducendo gli sprechi:
il concetto di Lean Product Development**

Monica Rossi



Il contesto odierno



Shorter product life cycles

Market

Increased levels of competition



Dynamic



Change

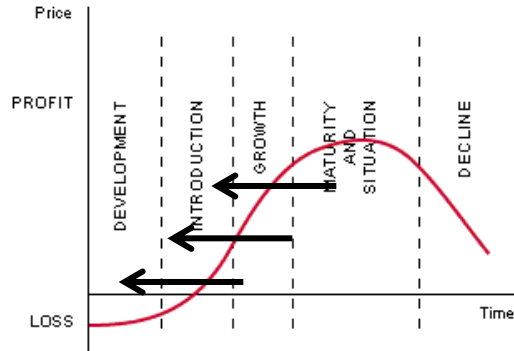
Rapidly changing market environments

High rate of technical obsolescence





Il contesto odierno



Companies

Develop
faster

Always
compete



**New Product
Development**



**Continuous
Improvement**

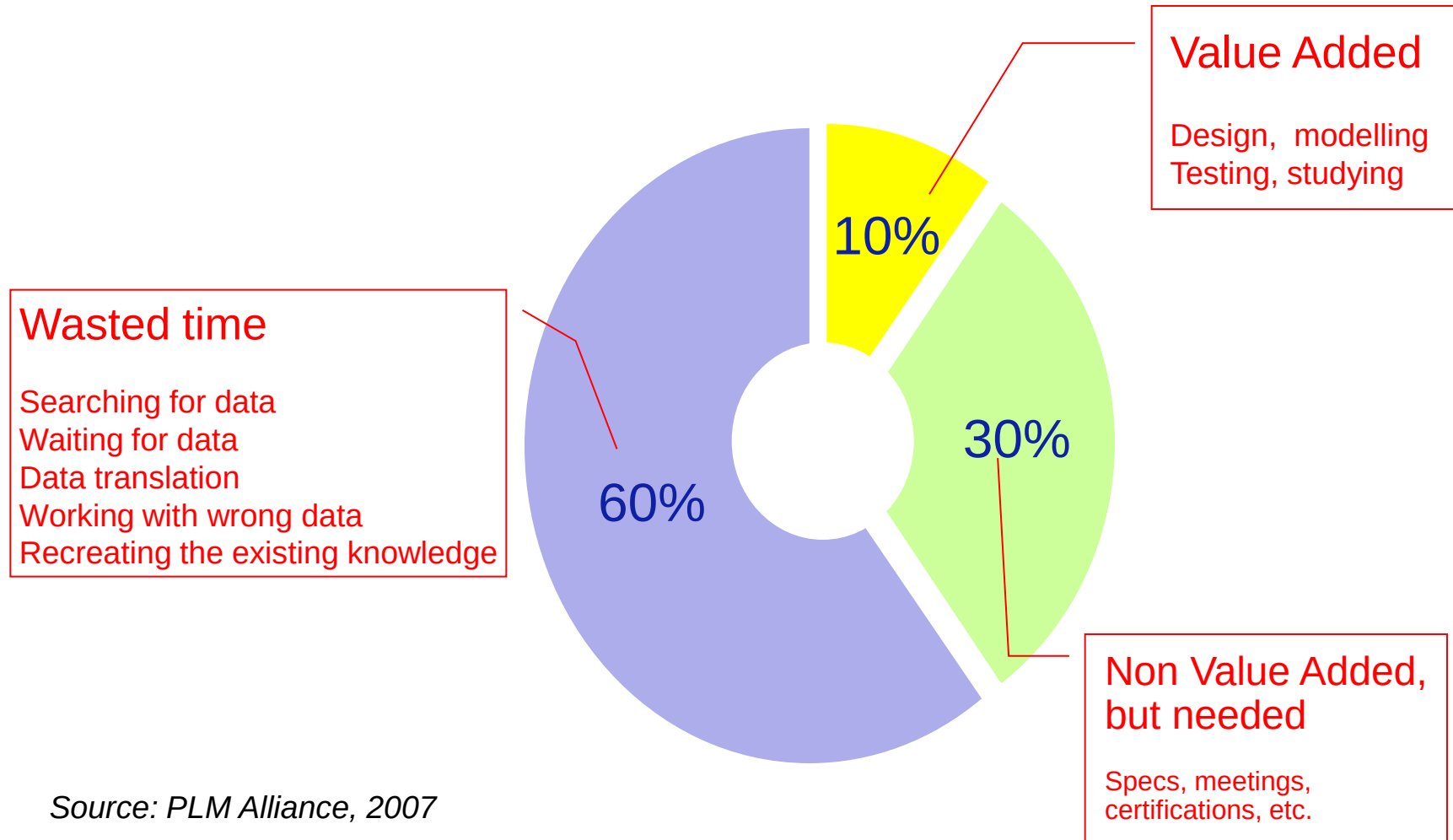


Innovate
better

Innovate
faster



Lo sviluppo prodotto oggi





Le aziende sanno generare valore?



How the customer explained it



How the project leader understood it



How the engineer designed it



How the programmer wrote it



How the sales executive described it



How the project was documented



What operations installed



How the customer was billed



How the helpdesk supported it



What the customer really needed



Ci sono sprechi in progettazione?





Ci sono sprechi in progettazione?

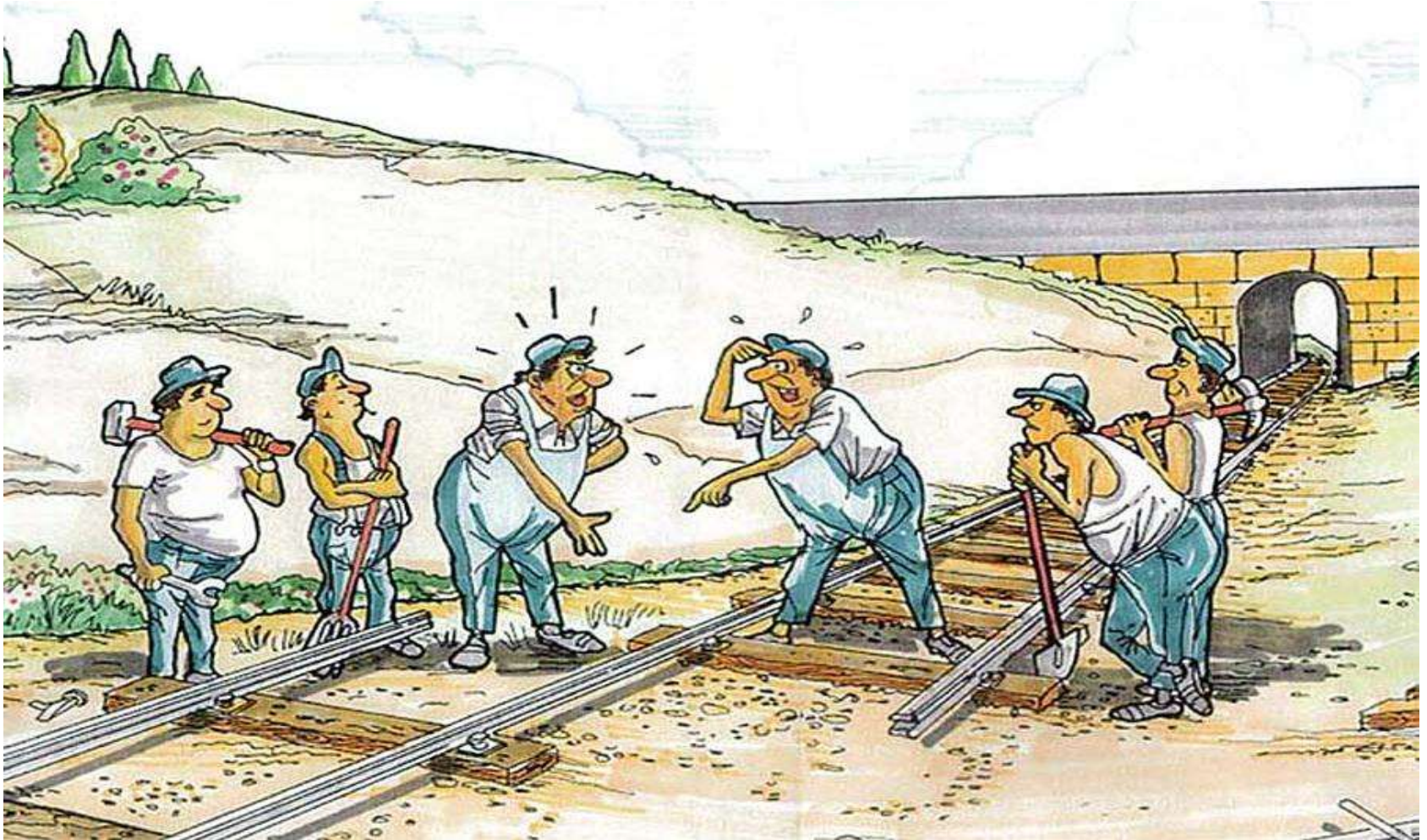


*«Am I producing wastes?
Not at all, I'm just doing
my job!»*

*“Engineers and designers are not willing to
consider that their own process could even
produce waste ” [Browning, 2003]*



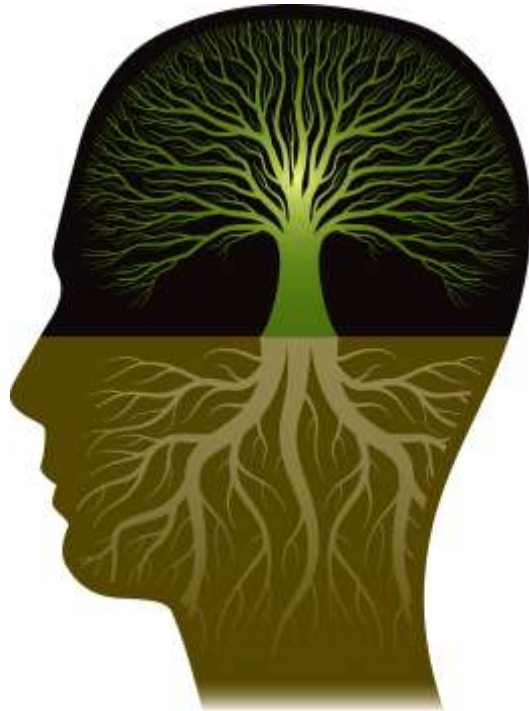
Ci sono sprechi in progettazione?





Tipi di spreco nello sviluppo prodotto

Spreco di conoscenza



Spreco di tempo

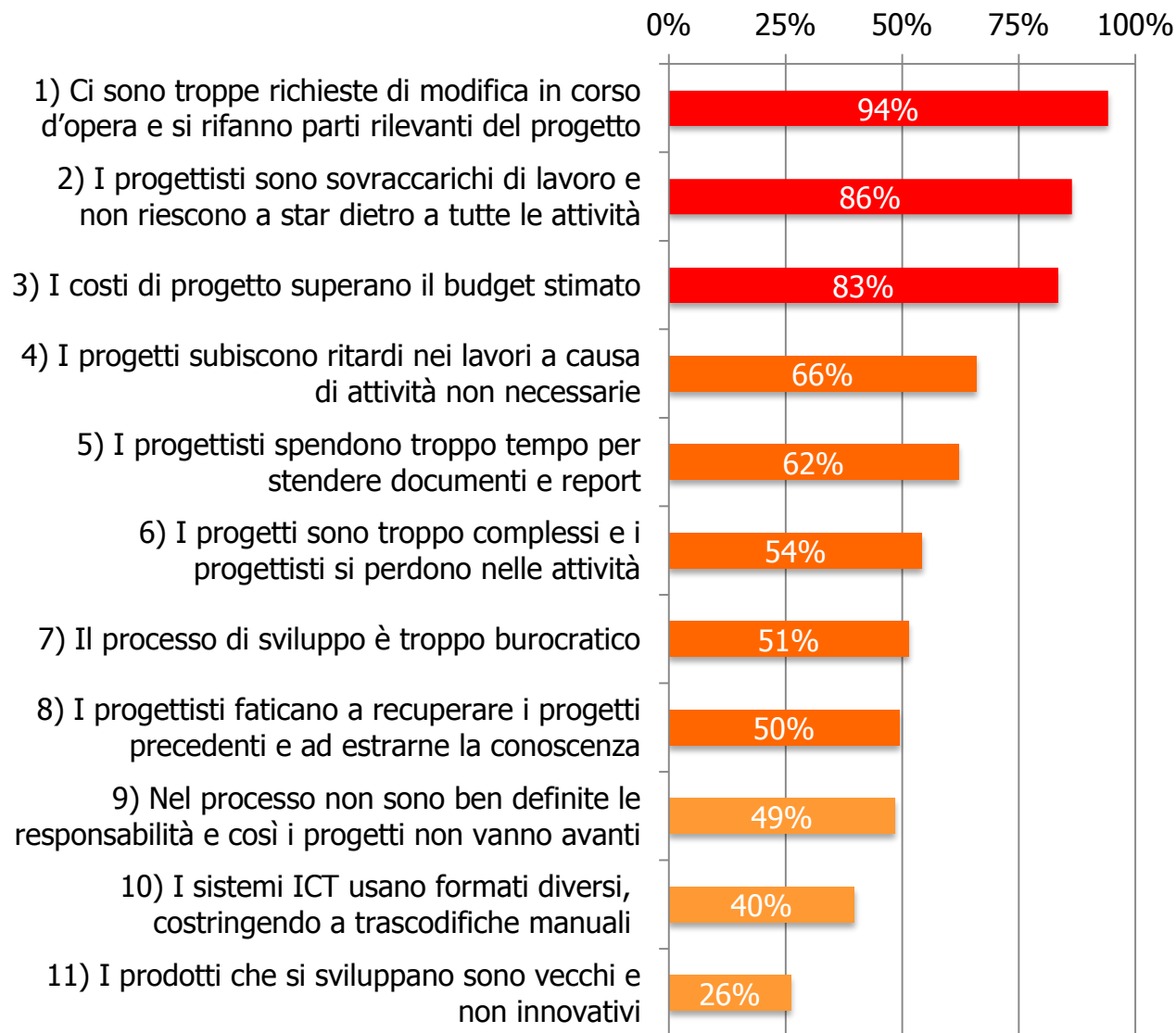


Spreco di risorse





Tipi di spreco nello sviluppo prodotto

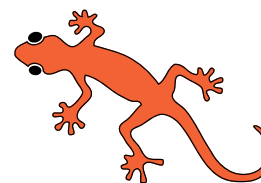


School of Management

POLITECNICO DI MILANO



DIPARTIMENTO
DI INGEGNERIA
GESTIONALE



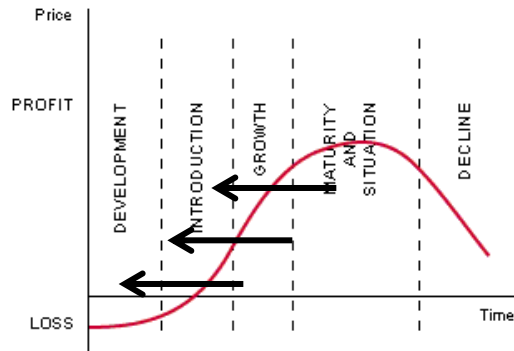
Osservatorio GeCo

*Gestione dei Processi
Collaborativi di
Progettazione*

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Come ci si muove nel contesto odierno?



Adoption of
Lean Thinking
throughout the
entire life cycle



From waste
reduction...

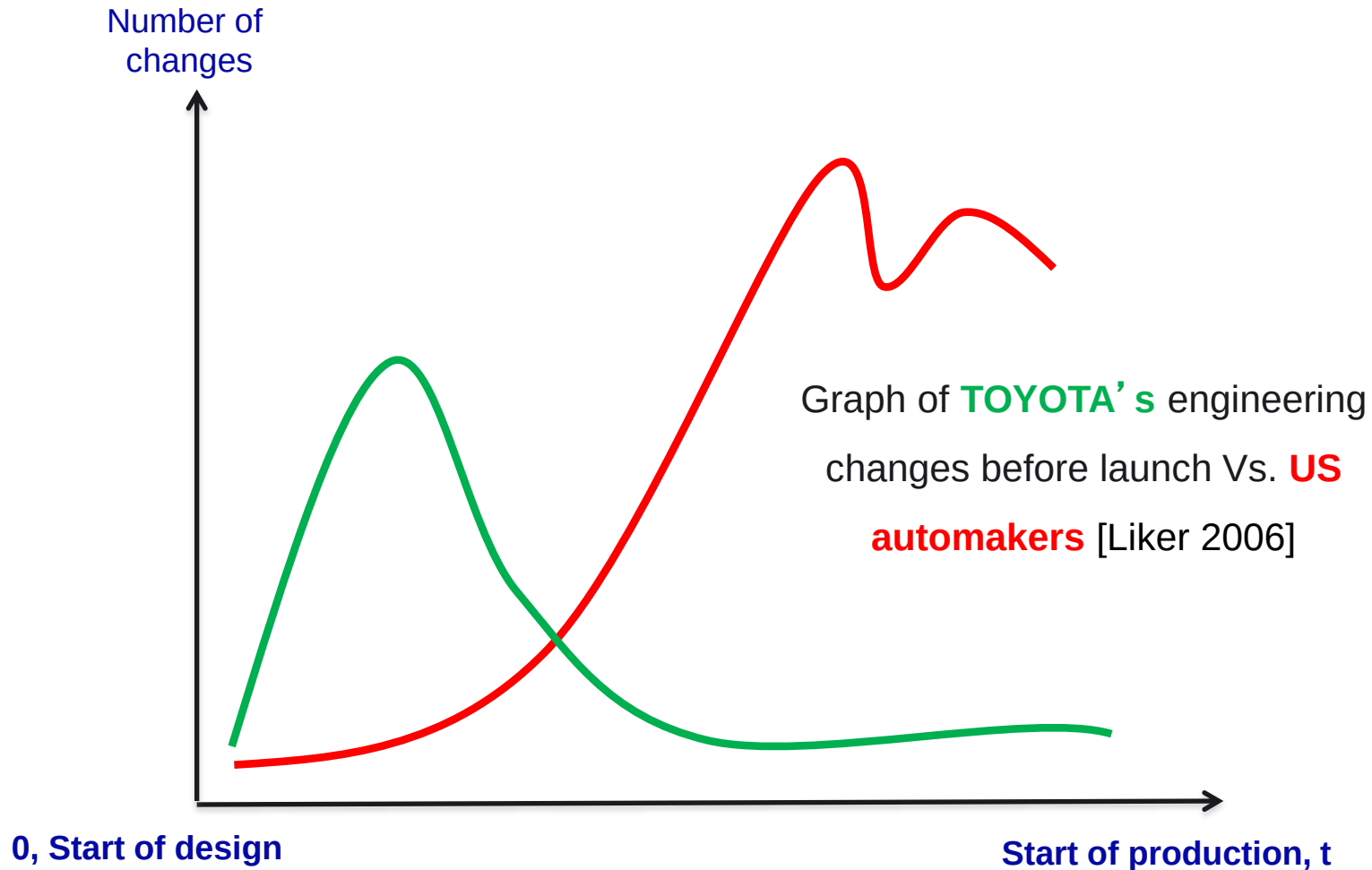


...to value
creation





L'esperienza Toyota





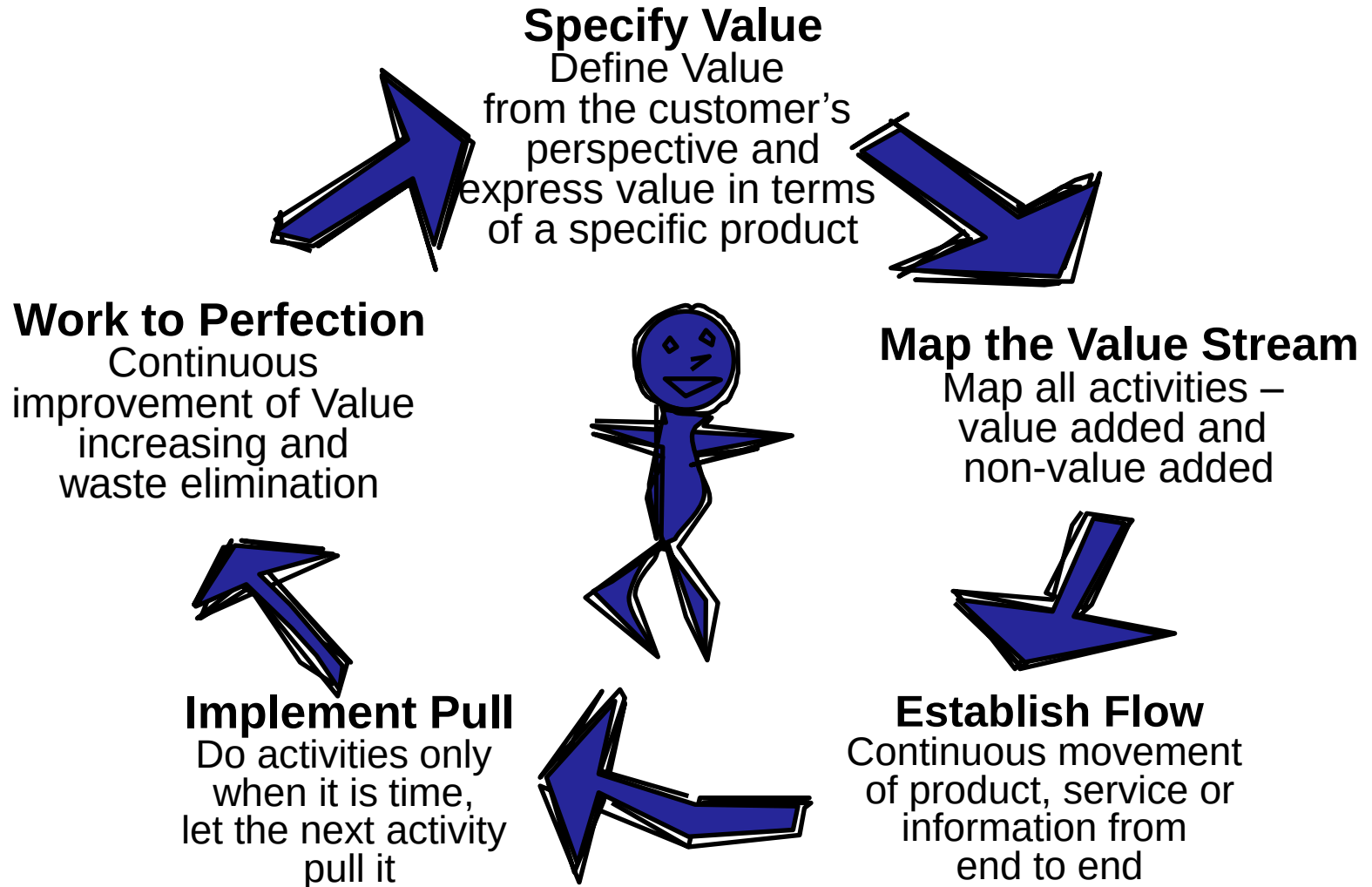
L'esperienza Toyota

Measures	Toyota	North American	European
Avg. eng' s. hrs. per new vehicle development (million hrs.)	1.7	3.1	2.9
Avg. development time (month)	46.2	60.4	57.3
Engineering change cost (% total cost)	10-20%	30-50%	10-30%
Employees per team	485	903	904
Ratio of delayed project	1 in 6	1 in 2	1 in 3
Achieve normal quality after launch (month)	1.4	11	12

Clark (87), Clark and Fujimoto (89), Womack and Jones (90, 2003)



5 (+1) principi alla base della filosofia lean...





...13 principi per lo sviluppo prodotto

5. Develop a Chief Engineer System to Integrate Development from Start to Finish.
6. Organize to Balance Functional Expertise and Cross-functional Integration.
7. Develop Towering Technical Competence in all Engineers.
8. Fully Integrate Suppliers into the Product Development System.
9. Build in Learning and Continuous Improvement.
10. Build a Culture to Support Excellence and Relentless Improvement.



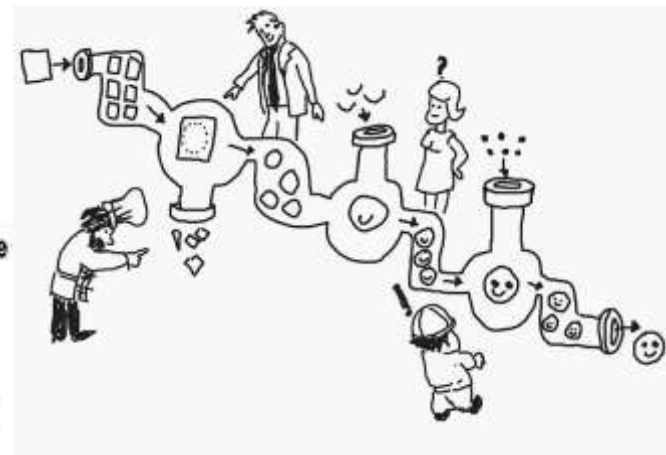
Lean Product Development System

Source: Clark, K. B., 2004, The Toyota Way, New York, McGraw Hill

1. Establish Customer-Defined Value to Separate Value-Added from Waste.
2. Front-Load the PD Process to Explore Thoroughly Alternative Solutions while there is Maximum Design Space.
3. Create a Leveled Product Development Process Flow
4. Utilize Rigorous Standardization to Reduce Variation, and Create Flexibility and Predictable Outcomes.



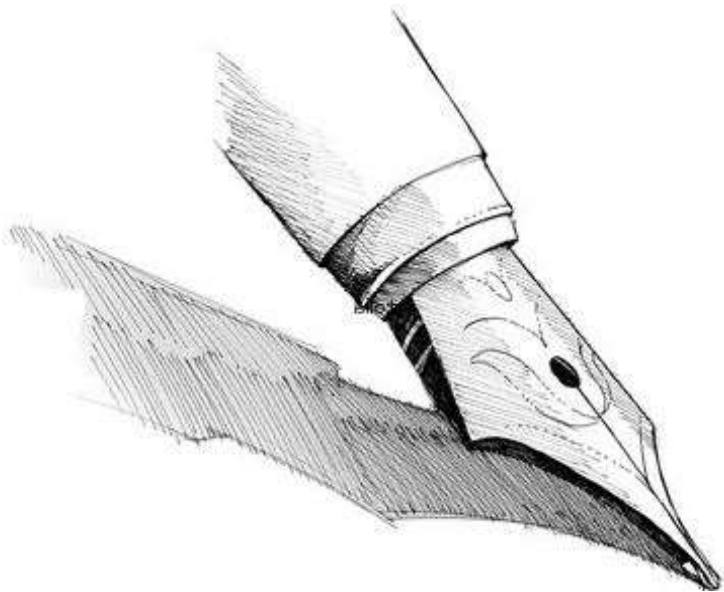
11. Adapt Technology to Fit your People and Process.
12. Align your Organization through Simple, Visual Communication.
13. Use Powerful Tools for Standardization and Organizational Learning.





Il Lean Product Development

Il Lean Product Development consiste nella creazione di **valore** per il cliente attraverso un processo di trasformazione, **libero da sprechi**, capace di integrare in maniera appropriata **strumenti e tecnologie, processi, persone.**



(Womack and Jones, 1996)
(Morgan and Liker, 2006)

Grazie

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