

Business Innovation in Optics and Photonics

Course Section 8

**New Product Generation
Simulation**

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Workshop Objectives

- **To prepare participants to**
 - **Make a breakthrough performance improvement in a key business process**
 - **Take part in a process improvement team**

- **To demonstrate that**
 - **Traditional views of new product introduction are out of date**
 - **Better quality products that are less costly can be introduced much more quickly**

- **By the end of this workshop you will be able to understand the improvements in the new product introduction process**

Agenda Workshop

		Workshop Introduction
10	10:00	Preparation for the simulation
80	10:10	NPISim™ cycle 1 & debrief
15	11.30	Modelling the process
15	11.45	Break
15	12.00	Understanding the opportunity
15	12.15	Planning the redesigned process
45	12.30	NPISim™ cycle 2 & debrief
15	13:15	Next steps & feedback
16	13.30	Planned finish

3 hrs 30

Introduction

- **Each team member has a role to play**
- **You will play 2 cycles of the simulated new product introduction process**
- **Your Customer and Supplier will be located in the next room**
- **Cyle 1 debriefing will include**
 - **Measuring of performance**
 - **Brainstorming of issues/problems**
 - **The Implementation of Improvements**
- **Some team members may be observers of the simulation**
- **Do not mix up or loose any of the components**
- **Please read the brief for your role**

NPISim Team(s)

<u>Roles</u>	<u>Cycle 1</u>	<u>Cycle 2</u>
Customer	
Project Manager	
Marketing	
Design	
Production Engineering	
Manufacturing	
Supplier	
Observer	Process	Process
Observer	Process	Process
Observer	Team Rational	Team Interpersonal
Observer	Team Rational	Team Interpersonal
Observer

Performance Measures

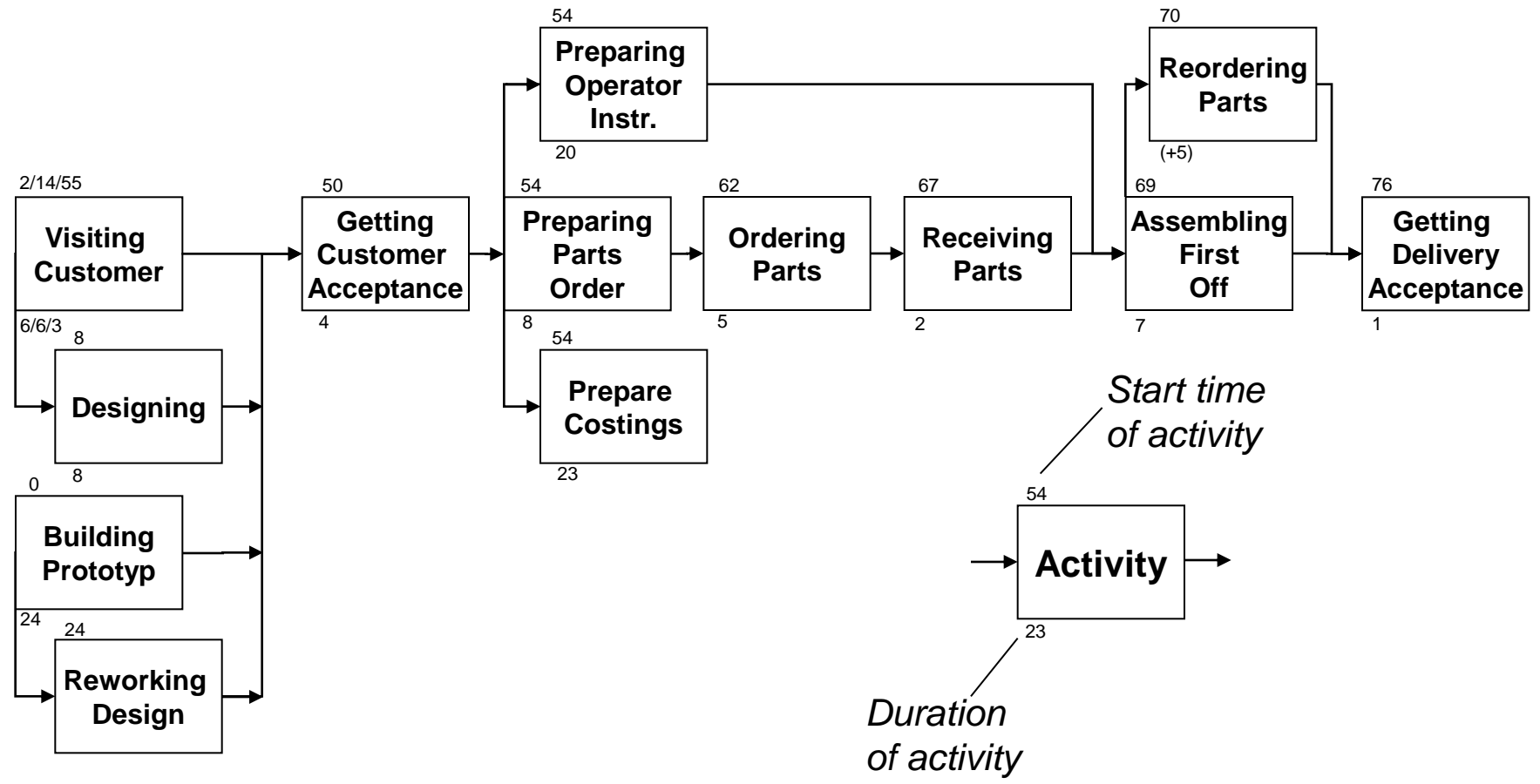
Key Performance Indicators	Cycle 1	Cycle 2	Units
Development Lead Time			minutes
Manufacturing Lead Time			minutes
Reordering panalty			minutes
Development Cost			EUR
Manufacturing Cost			EUR
Materials Cost			EUR
Customer Satisfaction (%)			%
Total Lead Time			minutes
Total Cost			EUR
Profit (Loss)			EUR
No. Of Assemblies			No.
No. Of Individual Parts			No.

Cycle 1 Mission

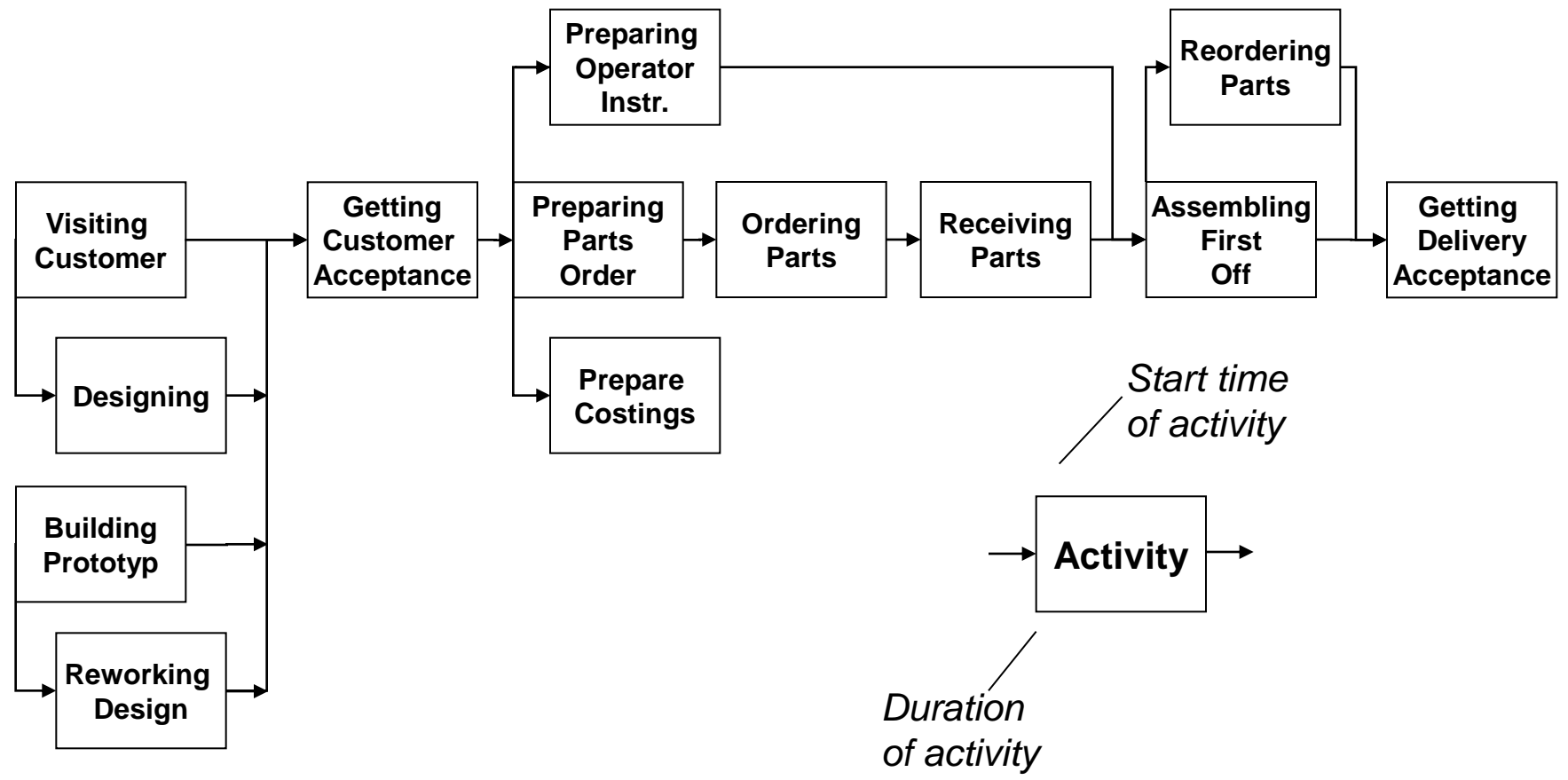
- **You have been awarded a contract to build a helicopter:**
 - **You must agree the specification with your customer**
 - **Your customer requires a prototype and a production model**
 - **The materials for the prototype have been provided free issue**
 - **You must build a prototype which your Customer will retain when it has been accepted**
 - **The contract is fixed price at EUR 4000**
 - **Delivery of the production model is expected within 60 minutes of the start**
 - **Delivery later than this will incur a price reduction penalty**

- **Make a profit**

Observations



Observations



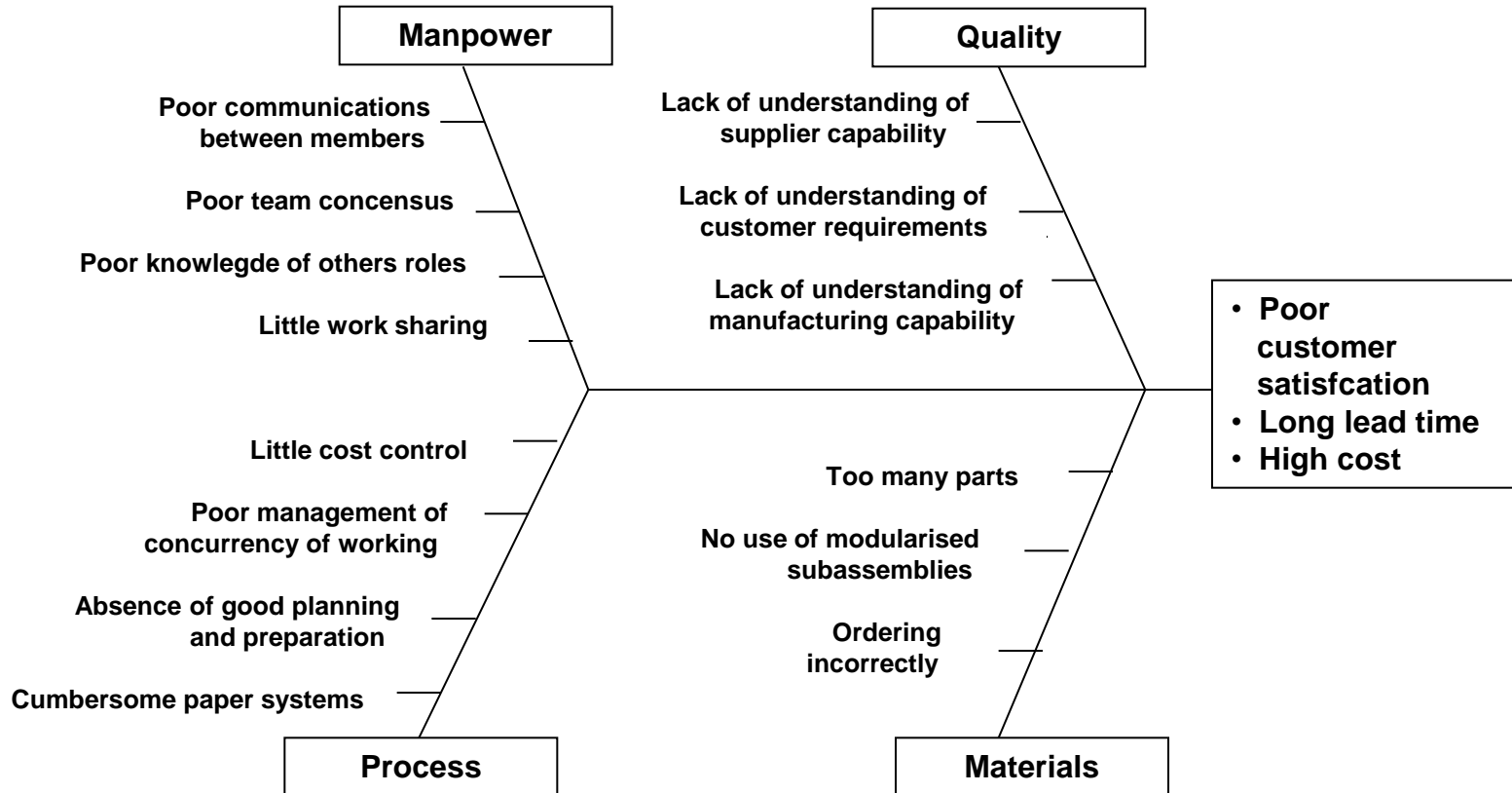
Observers Activity Analysis

Activity	Start Time	Finish Time	Duration	Project Manager	Marketing	Design	Production Engineering	Manufacturing	Supplier
Planning	9:30	9:55	5	5	5	5	5		5
Visiting Customer	9:35	9:40	5	5	5				
Designing	9:35	9:40	5			5			
Building prototype	9:40	10:10	50	10	15	50	6		
Getter Cust. Accept.	10:10	10:15	5	5	5				
Reworking Design	10:15	10:20	5		2	5	5		
Getting Cust. Accept.	10:20	10:22	2	2	2				
Preparing order	10:22	10:28	6			3	6		

Observers Activity Analysis

Activity	Start Time	Finish Time	Duration	Project Manager	Marketing	Design	Production Engineering	Manufacturing	Supplier
Planning									
Visiting Customer									
Designing									
Building prototype									
Getter Cust. Accept.									
Reworking Design									
Getting Cust. Accept.									
Preparing order									

Cause & Effect Typical Cycle 1 Output



NIPITM Process Redesign

Typical Cycle 2 Plan

The Goal Plan							Departments / Functions / Actors								
Target time	Result Paths					Milestone definitions	Responsibility Codes								
	Costing	Ideas	Needs	Limits	Office		R - delegates Resources	D - takes Decision	I - to be kept Informed	Customer	Supplier	Project Mgr.	Marketing	Design	Prod. Engineer
5				1		When design for manufacture understood			I		I	R	R		
7		2				When suppliers ideas understood		R	I		I	R	I		
10			3			When customer requirements understood	R	I	I	D	R	R	I		
12			4			When design options considered	I	R	D	I	R	R	R		
19	5					When cost build up is profitable		R	I	D	R				
20					6	When instructions & order are ready		R			D	R	R		
21			7			When prototype is built			D		R		R		
22			8			When prototype is accepted	I		D						
23			9			When materials are deliverd		R					R		
27			10			When first off is built									R
29			11			When customer is happy	D		R						
Then mission will have been achieved															

NIPITM Process Redesign Typical Cycle 2 Plan

The Goal Plan								Departments / Functions / Actors						
Target time	Result Paths					Milestone definitions	Responsibility Codes R - delegates Resources D - takes Decision I - to be kept Informed	Customer	Supplier	Project Mgr.	Marketing	Design	Prod. Engineer	Manufacturing
	Costing	Ideas	Needs	Limits	Office									
5														
7														
10														
12														
19														
20														
21														
22														
23														
27														
29														

Cycle 2 Mission

- **You have been awarded a contract to build a car:**
 - **You must agree the specification with your customer**
 - **Your customer requires a prototype and a production model**
 - **The materials for the prototype have been provided free issue**
 - **You must build a prototype which your customer will retain‘ when it has been accepted**
 - **The contract is fixed price at EUR 3500**
 - **Delivery of the production model is expected within 30 minutes**
 - **Late delivery will incur a price reduction penalty**

- **Make a profit**

People need help to make Mindest shifts

	<u>Today</u>	<u>Tomorrow</u>
Management frame work	Functional organisation	Empowered process owner
Customer requirements	Guessed	Regorously deployed
Customer/Supplier relationships	Secrecy based	Partnership
Resource management	Individual task by function	Cross functional team tasks
Planning	Activity based (CPA)	Goal driven (concensus)
Development	Test, analyse & fix	Simulation & design of experiments

Typical Results

Key Performance Indicators	Cycle 1	Cycle 2	Units
Development Lead Time	69	27	minutes
Manufacturing Lead Time	8	1	minutes
Reordering penalty	5	0	minutes
Development Cost	690	270	EUR
Manufacturing Cost	1300	100	EUR
Materials Cost	2860	2340	EUR

Customer Satisfaction (%)	30	9	%
Total Lead Time	82	28	minutes
Total Cost	4850	2630	EUR
Profit (Loss)	(850)	870	EUR
No. Of Assemblies	8	6	No.
No. Of Individual Parts	8	0	No.

Typical Results

Key Performance Indicators	Cycle 1	Cycle 2	Units
Development Lead Time			minutes
Manufacturing Lead Time			minutes
Reordering penalty			minutes
Development Cost			EUR
Manufacturing Cost			EUR
Materials Cost			EUR

Customer Satisfaction (%)			%
Total Lead Time			minutes
Total Cost			EUR
Profit (Loss)			EUR
No. Of Assemblies			No.
No. Of Individual Parts			No.