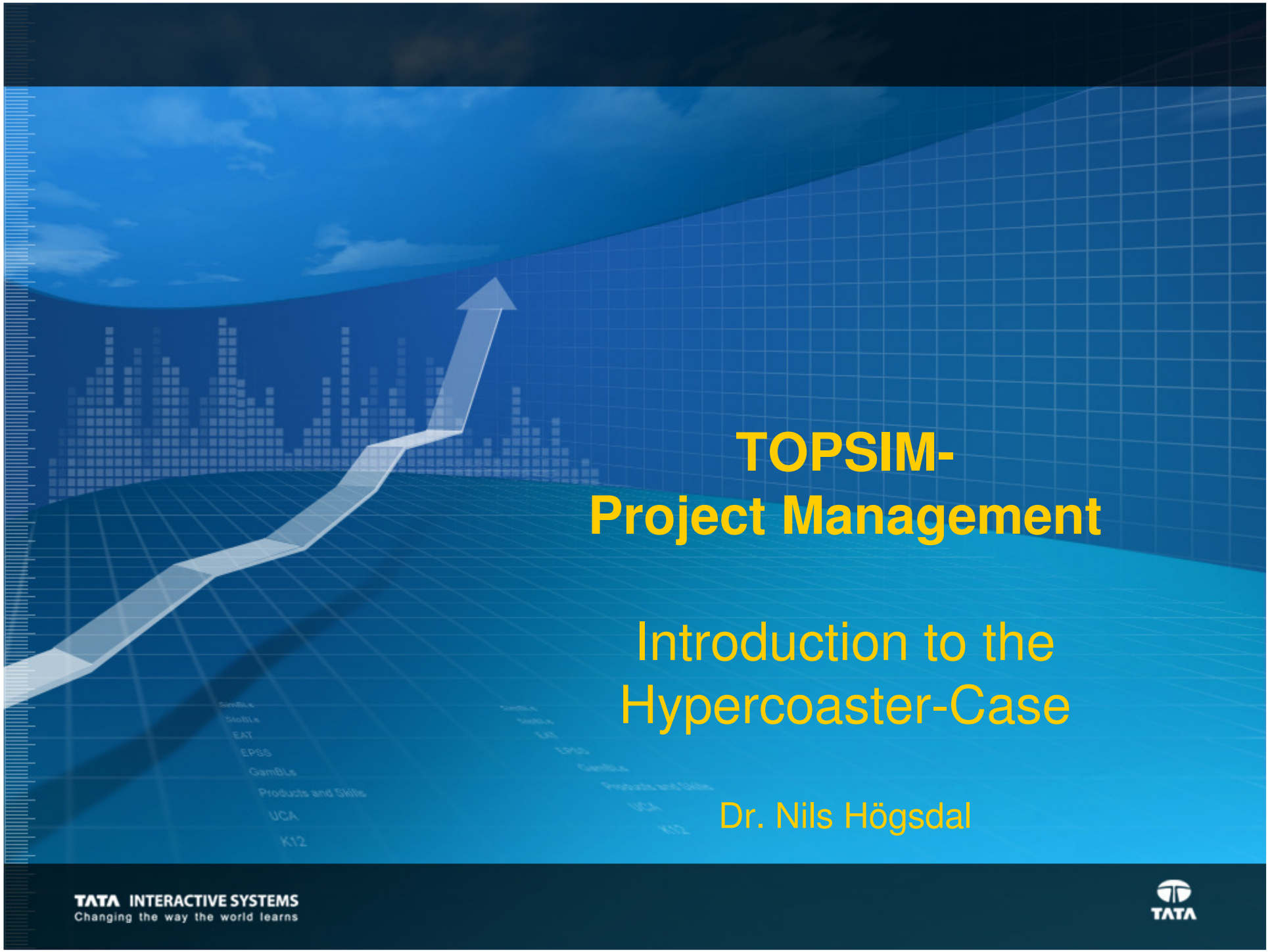

TOPSIM-
Project Management
Introduction to the
Hypercoaster-Case
Dr. Nils Högsdal
TATA INTERACTIVE SYSTEMS
Changing the way the world learns
TATA

Outline

- **Part 1:**
  learning business by doing business
  all about management simulations

- **Part 2:**
  TOPSIM®-Project Management
  “The Hypercoaster”-case study

Part 1

learning business by doing business

all about management simulations

A management simulation …

… is a flight simulator for managers

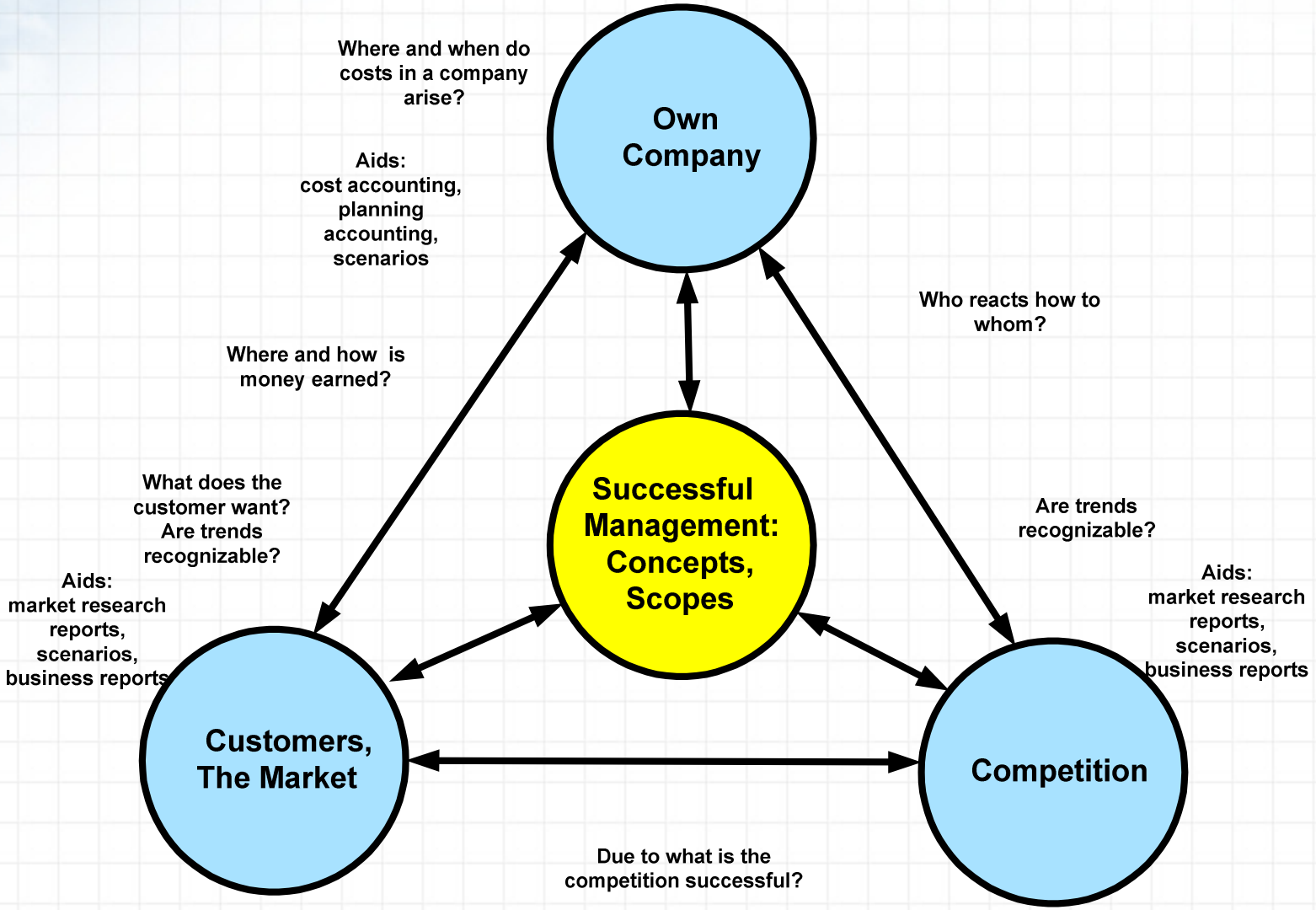
A management simulation …

- … presents a realistic model of a company
- … gives the opportunity to experience "real leadership" without any risk
- … conveys the principles of business administration
  - How to use information in decision-making
  - How to handle risk and uncertainty
  - How to work in teams
- … offers a high degree of transferable knowledge and skills which can be used in participants' daily work ("learning business by doing business"

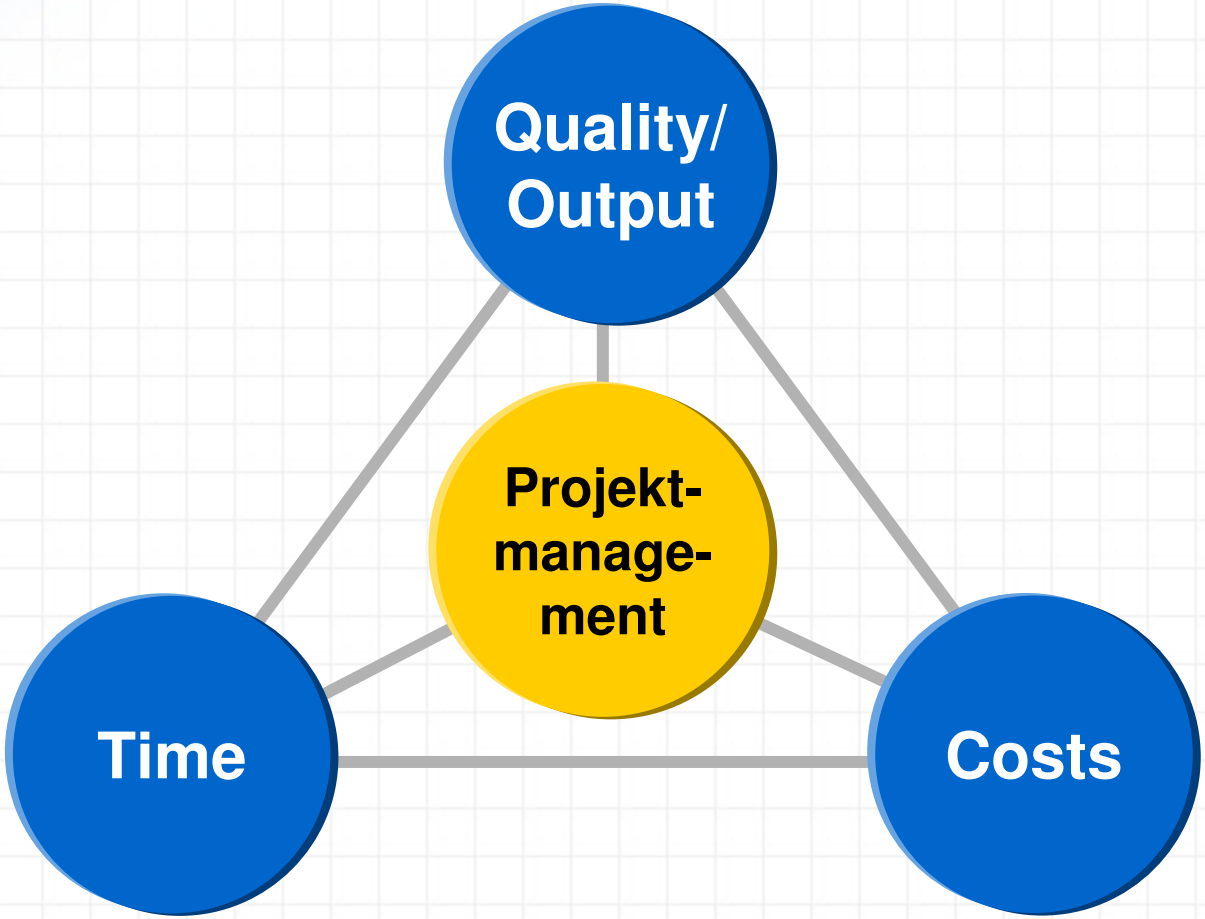
Learning Objectives of TOPSIM-Project Management

- Learning the primary responsibilities of a project manager
- Identifying organizational requirements for successful project management
- Recognizing the possibilities and boundaries in project management and becoming sensitive to the effects of one's decisions
- Maintaining control in difficult situations.
- Developing a sense for the overall-picture as well as for the details.
- Making decisions in teams with a PC-supported planning model

Successful management within the system



The Magic Triangle of Project Management



Part 2

TOPSIM®-Project Management

"The Hypercoaster"-case study

Hypercoaster News – The facts

- **Family-Fun Inc.** is planning a large investment into an existing amusement park
- The main attraction of this new section park will be a roller coaster (**Hypercoaster**) bearing the name "**Rocket-Star**".
- It will not only be the highest, but also the longest in scope with a distance of one kilometer.
- Technological limits will be pushed by the roller coaster‘s more than 90° angle track.
- Due to the high technical requirements of the equipment, your company Hypermax Inc. has a good chance at getting the contract awarded

Hypermax. Inc

- Plans, produces and mounts special machinery (including roller coasters)
- Approx. 1.000 employees
- Revenues from last year: 280 million $
- But: constantly declining profits

Organizational structure

Technical Director

Development	Production	Assembly / Service	Sales

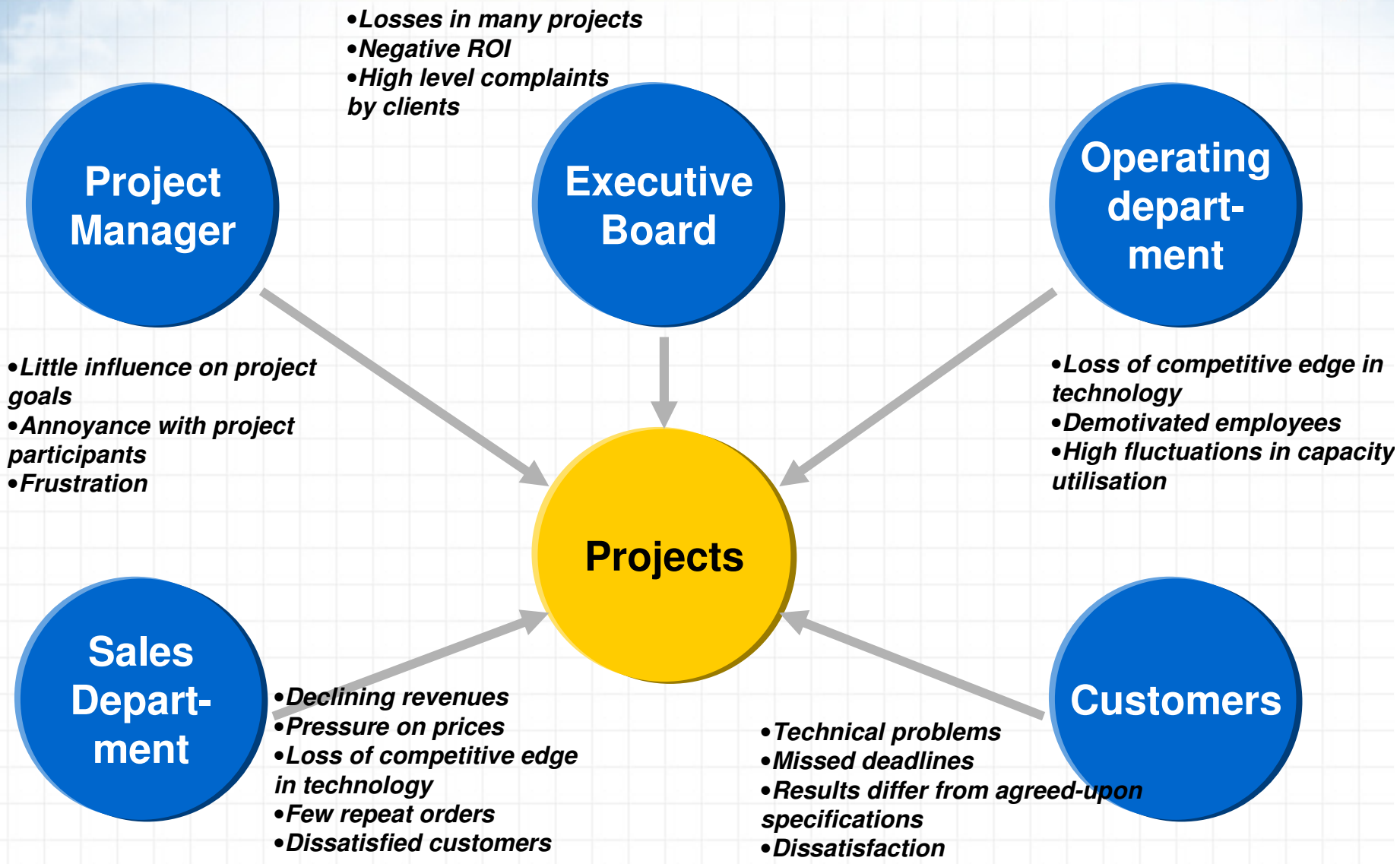
Commercial Director

Purchase / Shipping	Accounting Department	HR Department

Behind the scenes

- Business is generated by making the company’s service offering available to customers. Business can also result from responding to calls for tenders.
- The Bid Proposal manager works together with the departments responsible for Project Planning, Work Preparation, Planning and Legal issues.
- An order is assigned according to the sub-assembly groups "Structure", "Mechanics/Hydraulics" and "Electronics" and completed by the following departments: Development, Production and Assembly/Service
- At the preparation stage, the timeline, materials, and capacity requirements of an order are planned by the work preparation team.
- The assembly of equipment takes place on site with company technicians (TAA) and service personnel in the respective country.

Problems from the perspective of involved stakeholders



The opinions of everyone involved

Who To Whom	Executive Board	Operating Departments	Sales Department	Project Managers	Customers
Executive Board	• Falling prices • Rising costs	• Too opinionated • Too high costs • To many untried technologies	• They sell at a lower price than they can • Too technology-focused	• Ineffective	• They constantly demand more for the same amount of money.
Operating Departments	• They do not know what they want.	• We are not allowed to be innovative.	• They do not bring in enough business.	• Interfering know-it-alls	• They do not understand the technology
Sales Department	• Price reductions for initial projects are necessary	• They do what they want.	• Too little personnel	• They confuse the customers.	• They demand the impossible.
Project Managers	• No support • No decisions	• They do not stick to guidelines. • No information	• Inaccurate work statements delivered	• No competence • No preparation	• Too rigid on their requirement
Customers	• Nice people who are quick in compromising	• They make changes for no reason.	• They promise too much.	• Lack of knowledge about the project	• Too little knowledge of the technology involved

Some identified weaknesses and conflict areas

- Increasing number of projects are generating losses
- Customers are frequently unsatisfied with process and results on projects
- Delivery dates are not met
- Costs significantly exceed planned costs
- None of the departments feel responsible for the end result
- Constant technical changes take place in the various departments
- Acceptance specifications and test procedures are not clear
- Many points in the customer contracts are not clear

Problems

- **Operating departments have too much influence**
  - Lack of coordination and commitment
  - Lack of responsibility for the business results
- **Project managers have had insignificant roles and can hardly influence anything**

➔ **Solution: Strengthen the role of the project managers**

➔ **The next project will be the pilot for the new system**

➔ **Congratulations: You will be this project manager**

Objectives for the pilot project

- **Establishment of the organizational structure and introduction of an efficient project management system within 12 months of the project start.**

- **Requirements**
  - Decrease of 20% in turn around times of an order
  - Decrease of 15% of the total costs of an order
  - Achieve clarity in authority and competency in the execution of jobs

Your Responsibilities as Project Manager

- To analyze the contract specifications and to define clear project objectives
- To structure the project using project work breakdown structures
- To schedule the project
- To develop a risk management process
- To assign resources and to optimize the project in terms of time, cost and result
- To successfully execute the project, achieving the highest possible profit margin for the company.

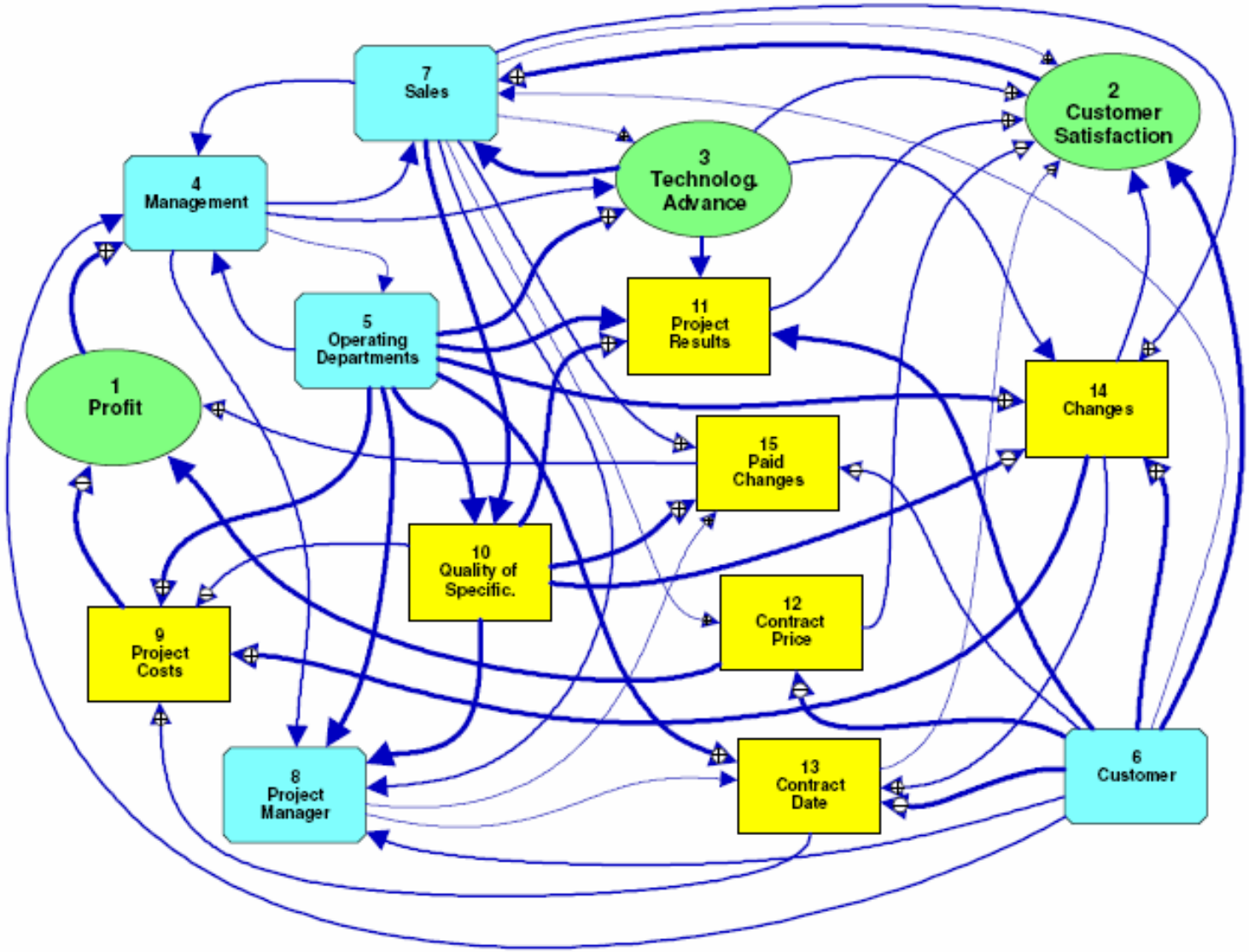
Definition of Goals

Goal 1:
Be profitable to ensure the company's survival.

Goal 2:
High level of customer satisfaction.

Goal 3:
Cutting edge technology

Influencing Factors in the Interconnected Network



The pilot project for the new project team (1)

The ROCKET STAR Hypercoaster

The pilot project for the new project team (2)

1. Length of the track traveled — 1000 m
2. Maximum height of the track — 50 m
3. Number of roller coaster cars — 3
4. Number of passengers per car — 36
   (9 rows, 4 columns)
5. Inversions — 4
   (1 vertical loop and three heartline rolls)
6. Top speed — 130 km/h

The pilot project for the new project team (3)

7.	Peak acceleration	4.0 G
8.	Longitudinal slope	97° (for an inversion)
9.	Transverse slope	120° (minimum two)
10.	Duration of travel	2:00 Minutes
11.	Standards to be met	DIN / ISO / EN
12.	4-D-Soundsystem:	22 onboard loudspeakers per car and 200 boxes along the track

The pilot project for the new project team (3)

13. Passengers per hour 1400
14. Equipment life 25 years / 2.0 million runs
15. The technology and attraction index of the hypercoaster must equal 100.0 points.
16. The quality and reliability index of the hypercoaster must equal 100.0 points.
17. The passengers of the ride should be thrilled by the experience.

The pilot project for the new project team (4)

18. Fast passenger changes are very important.
19. It is particularly important for the ride to be smooth and not jerky.
20. The area in which the amusement park will be situated is flat.
21. The soil of the area is very soft.
22. The deadline for the project is April 1 (week 65) since the season will then begin.
23. The bid price should not exceed 10.0 million €

What is unique: the executive summary

- Higher and longer than anything built before by Hypermax
- Decline in the track with more than 90°
- Acceleration will be done using a catapult
- Maximum of 4G to be achieved
- New 4-D-soundsystem to be integrated
- Should be ready for the season 2008 by April 1st, MUST be in operation by memorial day

ROCKET STAR: Important Subprojects

track

car

sound system

station building

accelerator

steel support and base

Rewards and penalties (1)

Completion Date

REWARDS		PENALTIES	
Early completion (weeks)	Reward per week (1000 €)	Late completion (weeks)	Penalty per week (1000 €)
1 – 2	300	1 – 3	200
3 – 5	250	4 – 6	250
6 – 7	250	7 – 10	300
under 7	150	over 10	400

Rewards and penalties (2)

Technology and Attractivity

REWARDS		PENALTIES	
Index	Reward per point (1000 $)	Index	Penalty per point (1000 $)
101 – 103	50	99 – 97	50
104 – 107	75	96 – 94	75
108 – 110	90	93 – 90	125
over 110	100	under 90	200

Rewards and penalties (3)

Equipment Quality and Reliability

REWARDS		PENALTIES	
Index	Reward per point (1000 $)	Index	Penalty per point (1000 $)
101 – 105	60	99 – 98	60
105 – 108	70	97 – 95	80
109 – 112	85	94 – 92	90
over 113	100	under 92	120

Let’ get started!

It’s up to you now!