Project Management

Institut Sino-européen d'Ingénierie de l'Aviation
中国民航大学中欧航空工程师学院

Project Management Course

Session 1:

Project Management definition

Background – *Xiangping LI*

- **Education Background**
- **2005 Master Degree(NUAA) :**
  - Structural Strength and Fatigue
  - Structural Optimization
- **Work Background**
- **3 years Assistant Engineer:**
  - Turbine aeroengine; Rotor aeroengine
  - Aircraft fuselage; wings; parts
  - UAV developments
- **4 years System Engineer for Project:**
  - Many cases on developing aircrafts, including helicopter;
  - ** aircraft development;
  - ** helicopter development;
  - ** rotor aeroengine development;
  - Risk analysis and conflict solving
  - Measure and control the projects
- **Other Training Experience:**
  - Internal Quality Auditor Training
  - Project Management Training
  - Matrix Organization Training

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Project Management Course summary

Session N°: **TITLE:**

- **TC 1** **Project Management definition（2h）**
- **TC 2** Project Phasing - Key success factors（2h）
- **TC 3 & 4** Organize and Plan the Project（4h）
- **TD 1** **Make the WBS for the Project（2h）**

Our aims

✓ **2W + 1H+ ready for Multidisciplinary Project**

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Teaching Organization Form & Examination

Teaching form:

TCs + discussion+ TD+ exercises

Examination:

- ✓ **Attendance 10%**
- ✓ **Behaviour on course (individual) 40%**
- ✓ **Project Application (by group) 50%**

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Project Definition

- **10 Minutes Exercise:**
- What is **your** definition of “Project”?
- (Individual or group definitions)

- Can you give us some **Project Examples** ?

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Project Examples

- **Note: Project & Programme**
- According to PMI (Project Management Institute): synonymous words.
- In USA: A Programme is longer and includes several projects
  - Example: A 380 is a Programme; development & certification of A380 is a Project
- In French: Projet = proposition Programme = contract

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Project Examples

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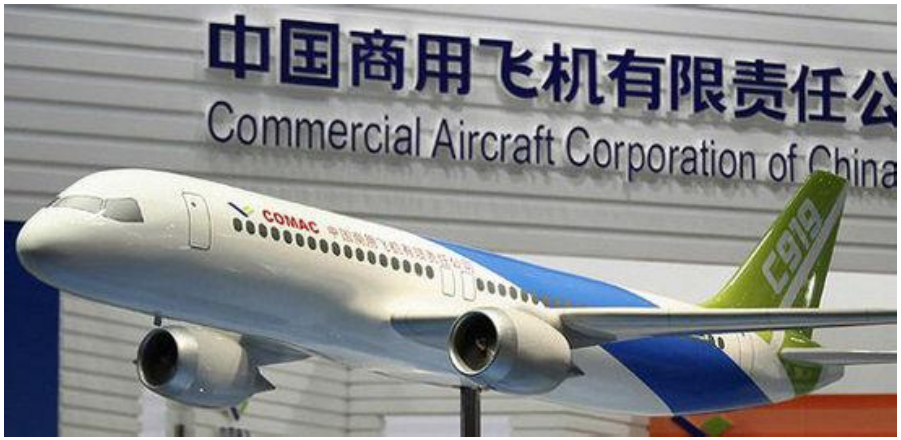
Project Examples



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Project Examples

NANJING 2014
YOUTH OLYMPIC GAMES
YOG DNA

Project Management

Project Examples

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Project definition

■According to PMI: A project is a temporary endeavor undertaken to creat a unique product, service or result;(旨在提供独特的产品、服务或成果临时性的努力)

■We suggest: Project = Bid + Programme

E.g.

✓Establish a reservior, a bridge, a building;

✓Supply new product, new software

✓Organize celebration activities, and meetings

✓Research project

✓Others

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Specifications of a project

- ✓The exact starting and ending time(明确的起止时间)
- ✓The exact definition of the final goal(明确的目标)
- ✓Only one time (只发生一次)
- ✓Including Time, Quality and Cost (时间、质量、成本)
- ✓The exact result (明确的结果)
- ✓Full of risk (充满风险)

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- **Note:　　Project　& Operations**
- **Importance：All the project specifications MUST be 100% satisfied**

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Which one is project?

- Repair a car
- Develop a new product
- Interview applicants
- Produce telephone
- Design a new curriculum
- Modify the software to satisfy customer
- Use a new software
- Build a house
- SIAE

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Project definition

在当今社会中，一切都是项目，一切也都将成为项目

美国项目管理专业资质认证委员会主席

Paul Grace

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Project Management Definition

What is called Management

A person, or a group, or a team who is able to set up the confirmation of the "Goal" to the utilization of the "Resource" through the different tools of the "Plan"& "Supervision" in order to achieve the final satisfied "Result".

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Project Management Definition

- "Project Management" is the combination of **methods**, **tools** for evaluation, planning & organisation, in order to reach the **objectives** of the project, while respecting the constraints of **performance, delivery time and cost**, using the resources available. **(Hard)**
- "Project Management" is also the capacity to manage a team, to co-ordinate and to obtain co-operation from specialists with different skills. **(Soft)**

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Project Management Definition

Specifications of Project Management

- ✓Treat the variety, complicated
- ✓System engineering, Science & Art
- ✓Creative & specialty
- ✓Discipline&Major&Career (manager is very important, PMP)
- ✓Concept & Method
- ✓ Strategic curriculum

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Case discussion 1

Mike's Confusion

Background:

- ✓Mike was a very excellent student in university;
- ✓Good academic knowledge.
- ✓Mike also behaviour excellent as a structural engineer in recent 3 years;
- ✓Mike was asked to modify one certain type aircraft to exhibition within 3 months

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Case discussion 1

Mike is confused now:

- ✓How to start the work?
- ✓Whether he and his team can finish the task in time?
- ✓How to encourage his members?
- ✓How to ensure the quality of the aircraft?
- ✓How to ensure the project not out of control?
- ✓How to cope with risks?

Above all are not only technique questions!!

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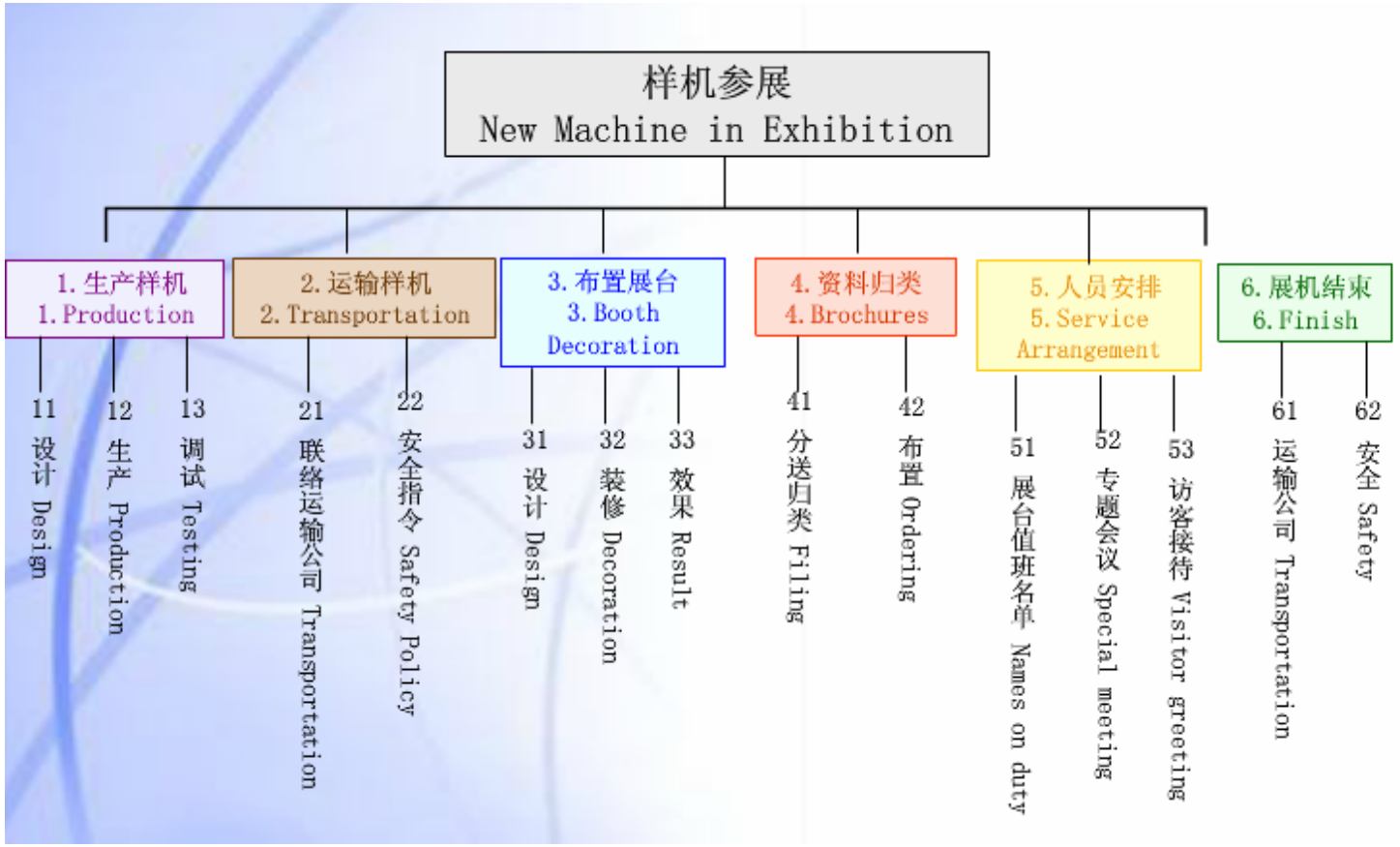
Case discussion 1



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Case discussion 2

New teacher questions

How to apply for projects funded by National Natural Science Foundation ?

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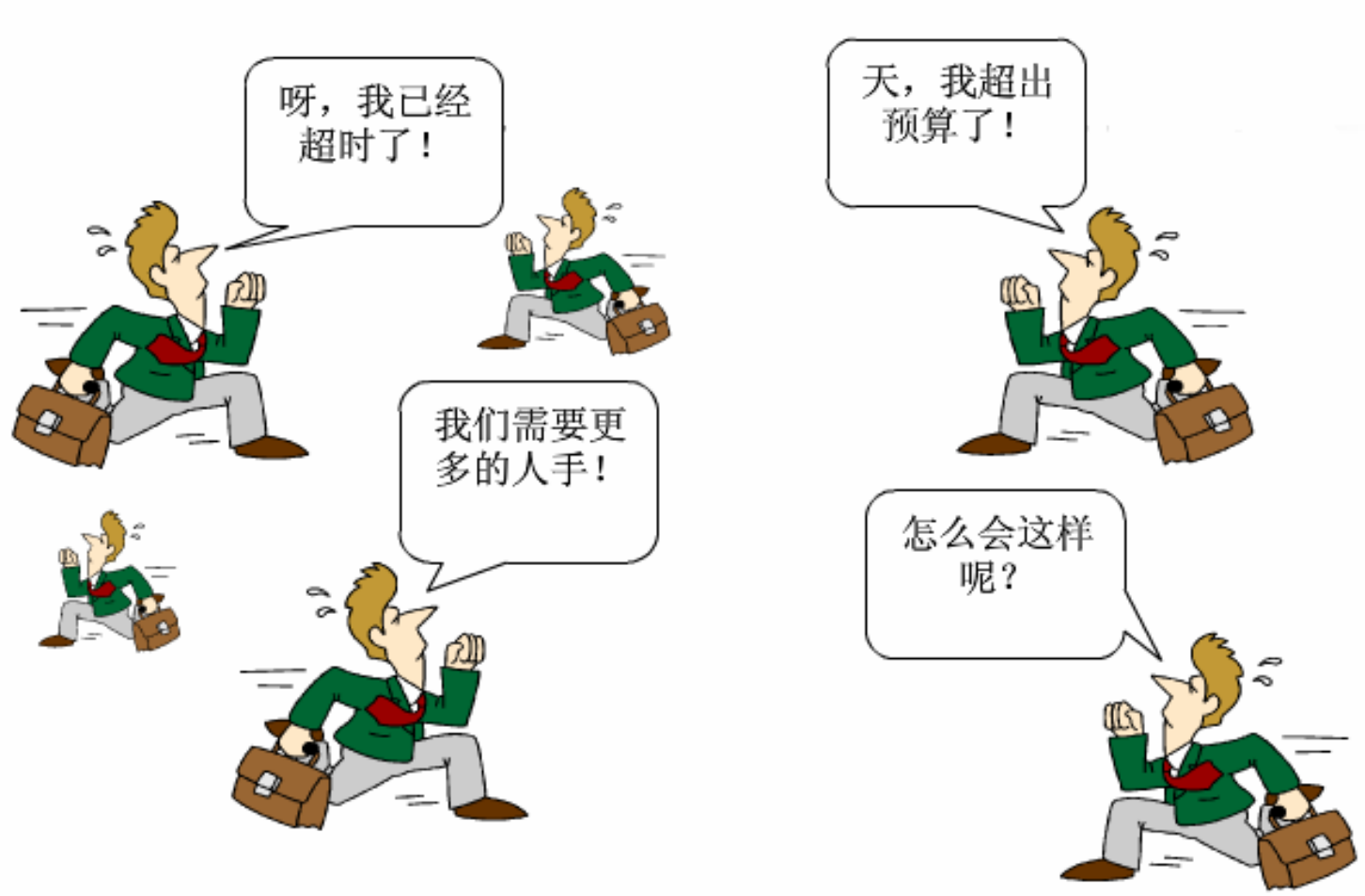

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Project organisation: the basic triangle!

- **The 3 parameters to strongly monitor in Projects:**
- **Performance, quality:**
  - Usually, the first topic addressed.
  - **Performances**, as required by the Customer technical specification
  - **Quality**, as required by the Customer contract / standards, the international standards (ISO 9001…) **and** the Company standards.
  - Higher performance / quality impacts costs; lower is not acceptable!
- **Delivery time:**
  - Usually, specified in Contract (after negotiations)
  - To be strongly monitored in Project management: **WHY?**
  - Delivery time is strongly related to cost: **WHY?**
- **Cost:**
  - The first concern of Company Management & Customer!
  - **Exercise:** What is the difference between COST and PRICE?

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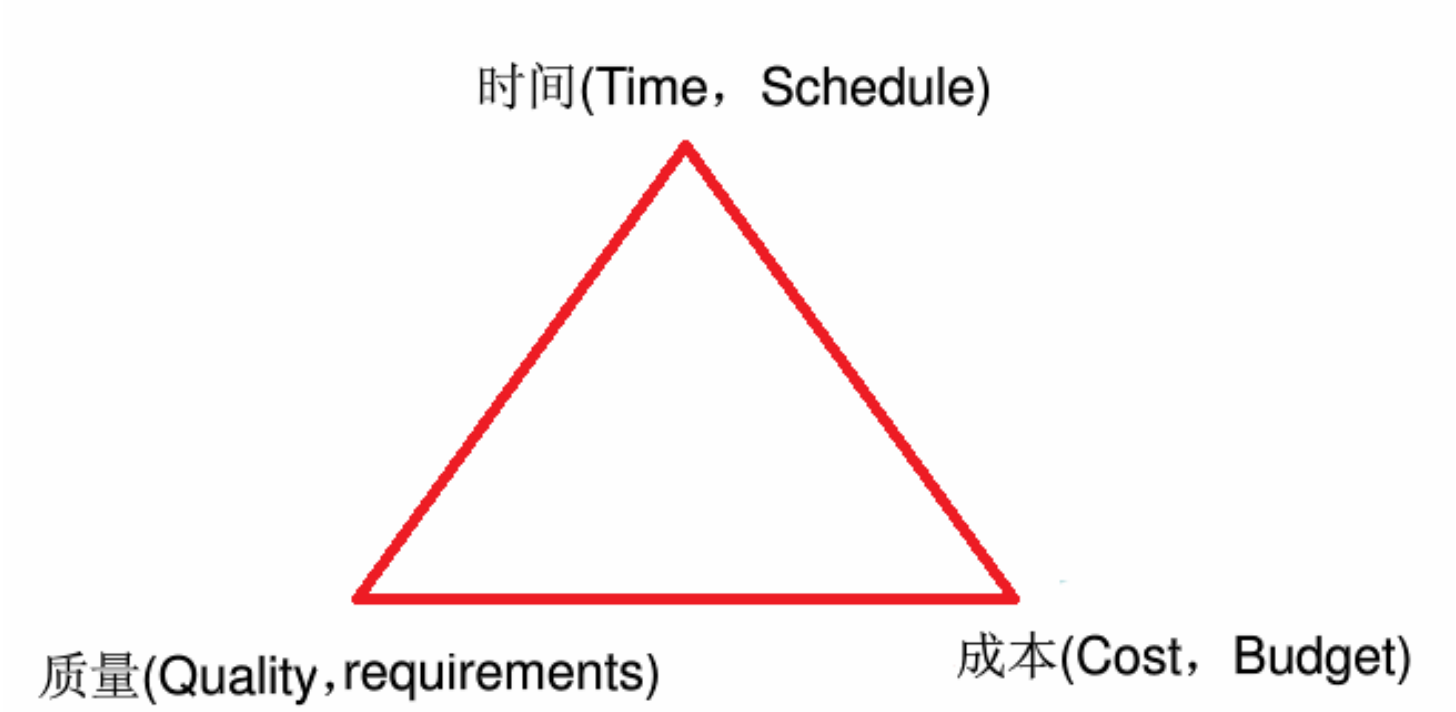
Project organisation: the basic triangle!



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Project organisation: the basic rules!

- **The 2 basic rules to implement in Projects:**
- **Organise and Plan:**
  - The first phase to be addressed.
  - **Organise:** System design, WBS / OBS,team, resources…
  - **Plan:** Detail specifications & planning, including links
- **Monitor and Control:**
  - Essential to get good results for the basic triangle.
  - **Monitor:** Measure achievements, planning, costs
  - **Control:** the implementation of tasks, the risks…
- **To be detailed later in the course!**

Note: COST:

PRICE:

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Project or Production organisation?

- **Production organisation:**
  - Traditional organisation of large companies
  - Adequate for delivery of (large) number of (identical) equipment
  - From Cars to Radars: other Examples?
  - Benefit: low cost , quality, traditional organisation in specific jobs…
  - Lack of flexibility in the Design & Development!
  - Organisation in Departments: Design & Development, Quality…

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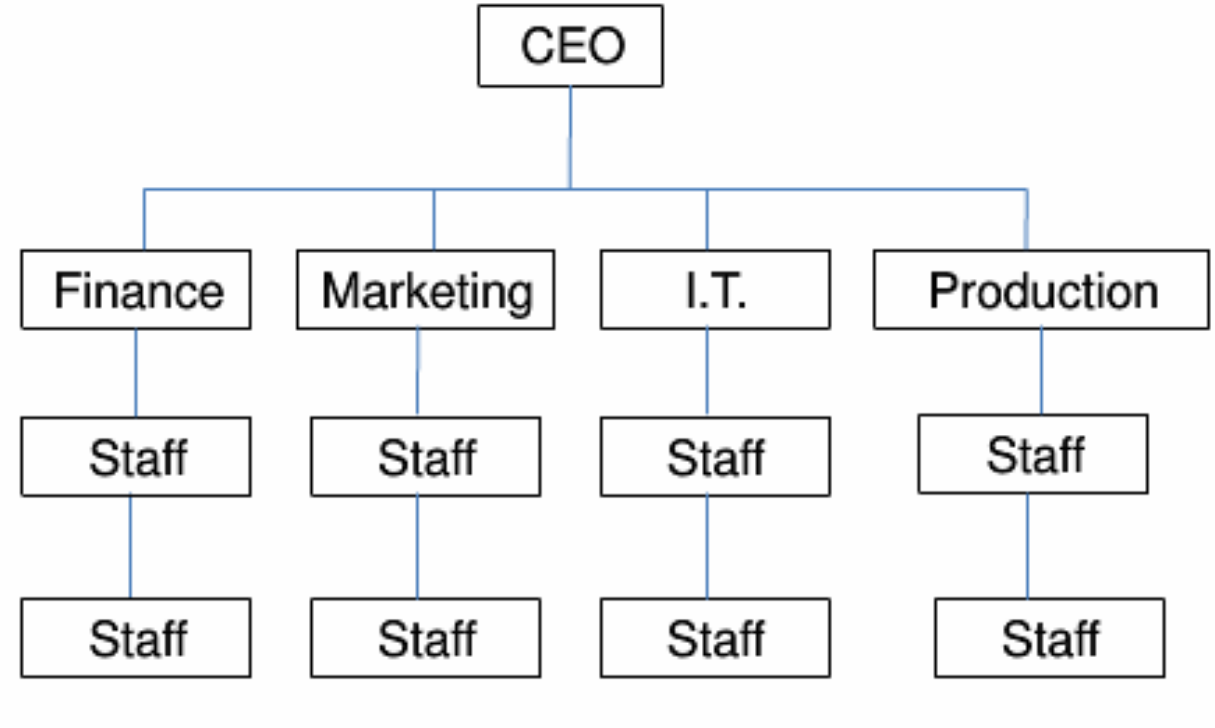
Project or Production organisation?



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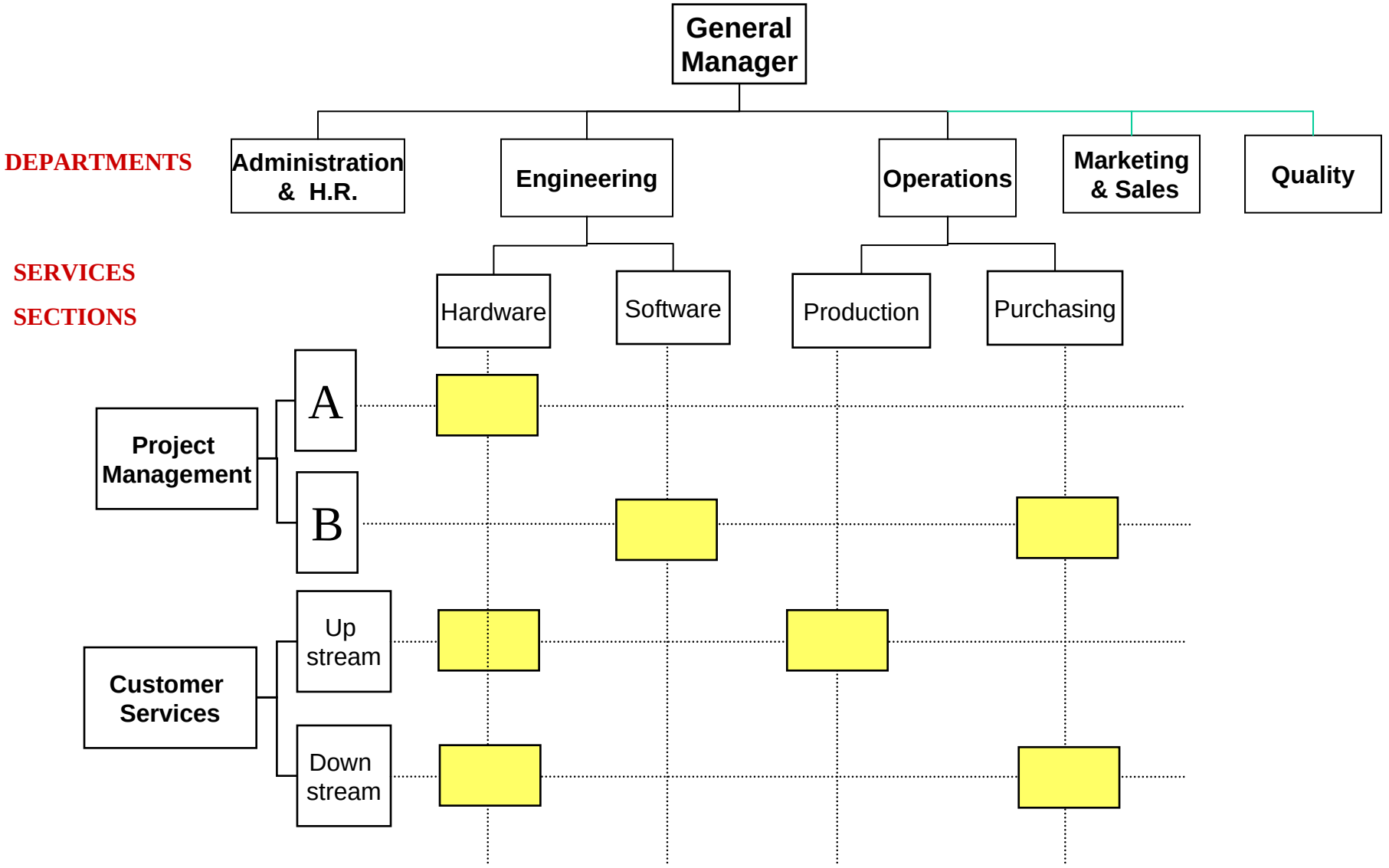
Project or Production organisation?

- **Project organisation:**
  - Organisation for specific needs; System matched to a Customer
  - More and more applied in large companies for large Systems
  - Benefit: matched to Customer demand, to Operational needs
  - Drawbacks: more complex management, generates conflicts!
  - Organisation with a dedicated Project team, and transverse relations.

Matrix organizational structure



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Discussion: winning projects

- Satisfied customer/user
- Finished on time
- Not excess budget
- Ensure the quality

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Discussion: Why projects fail?

- Lack of user involvement
- Incomplete requirements & specifications
- Change of requirements & specifications
- Lack of executive support
- Technology Incompetence
- Lack of resources
- Unrealistic expectations
- Unclear time frames
- New technology

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The first winning Project in History: The great pyramid of Cheops

- Feasibility study: “During first & second years of Pharaon reign, the large parts of the pyramid construction work were defined; a rough pre-project was made, some drawings were designed. A first estimate of manpower, materials, equipment was made. In summary, all main parameters were defined, in order to check they were realistic”.

- Budget control: “A budget control was made, with multiple accounts. On one side, global accounts including the number of day-work and corresponding number of meals; on the other side, the number of workers,with their name and the actual number of work-hours; finally, the organisation in teams.”

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Other winning Project examples in History:

1) Standardization in Roman empire:

The Roman road is famous for its high resistance, due to its structure. Roman people constructed in their empire a large network of roads, enabling the administration and the military control of their empire. It included 90 000 km of main roads & 200 000 km of secondary roads. It enabled a large economical development of the Roman empire.

2) Budget control in Greece:

"In Greece, architects were obliged to implement their works for the price they have quoted before. When the work was completed, if the actual cost was inside the prevision, they were awarded and honoured in public. If the actual over-cost was not more than 1/4th of the prevision, it was paid by the public budget. If the over-cost was more than 1/4th , the excess was born by the architects!"

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One losing Project example in History: the first Panama channel.

Taking advantage of his great popularity, following the success of the Suez channel, Ferdinand de Lesseps started the work on the first Panama channel in 1880. Great technical difficulties and the impact of the local climate (malaria & yellow flew) led to bankrupt and stop of the project in 1889. Americans re-started the second channel project in 1904, on the basis of a different concept, for an inauguration in 1914.

The Panama channel is an example of a **technical concept/design not matched to the actual constraints**: the first choice was a “level channel” as for Suez; when it became obvious that this choice was a mistake (actual profile of the terrain), Lesseps asked Eiffel to build dams, but it was too late to save the project. Americans started directly with the second concept, an advantage of previous mistakes.

The **feasibility study** should have taken into account the actual geographical / geological constraints, as well as the local climate.

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Other losing Project example in History: Tacoma Narrows Bridge

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References:

[1]Harold KERZNER, Project Management: A Systems Approach to Planning,Scheduling,and Controlling [PhD Thesis]. Baldwin-Wallace College in Ohio (America)

[2] A Guide to the Project Management Body of Knowledge(PMBOK Guide), Project Management Institute (America)