Introduction to Project Management

The 4 P's

- People — the most important element of a successful project
- Product — the software to be built
- Process — the set of framework activities and software engineering tasks to get the job done
- Project — all work required to make the product a reality

Software Teams

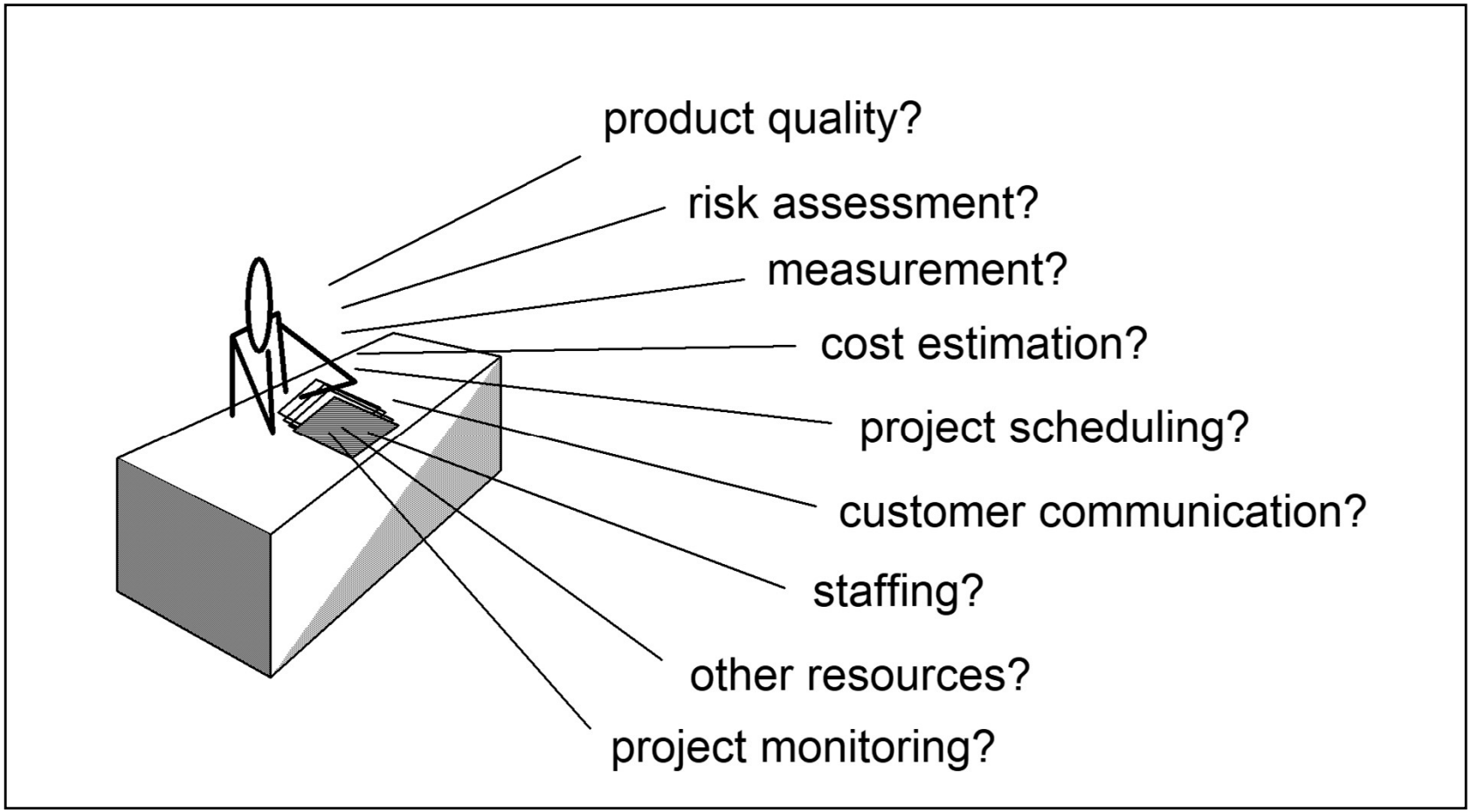
The following factors must be considered when selecting a software project team structure ...

- **the difficulty of the problem to be solved**
- **the size of the resultant program(s) in lines of code or function points**
- **the time that the team will stay together (team lifetime)**
- **the degree to which the problem can be modularized**
- **the required quality and reliability of the system to be built**
- **the rigidity of the delivery date**
- **the degree of sociability (communication) required for the project**

Organizational Paradigms

- closed paradigm—structures a team along a traditional hierarchy of authority
- random paradigm—structures a team loosely and depends on individual initiative of the team members
- open paradigm—attempts to structure a team in a manner that achieves some of the controls associated with the closed paradigm but also much of the innovation that occurs when using the random paradigm
- synchronous paradigm—relies on the natural compartmentalization of a problem and organizes team members to work on pieces of the problem with little active communication among themselves

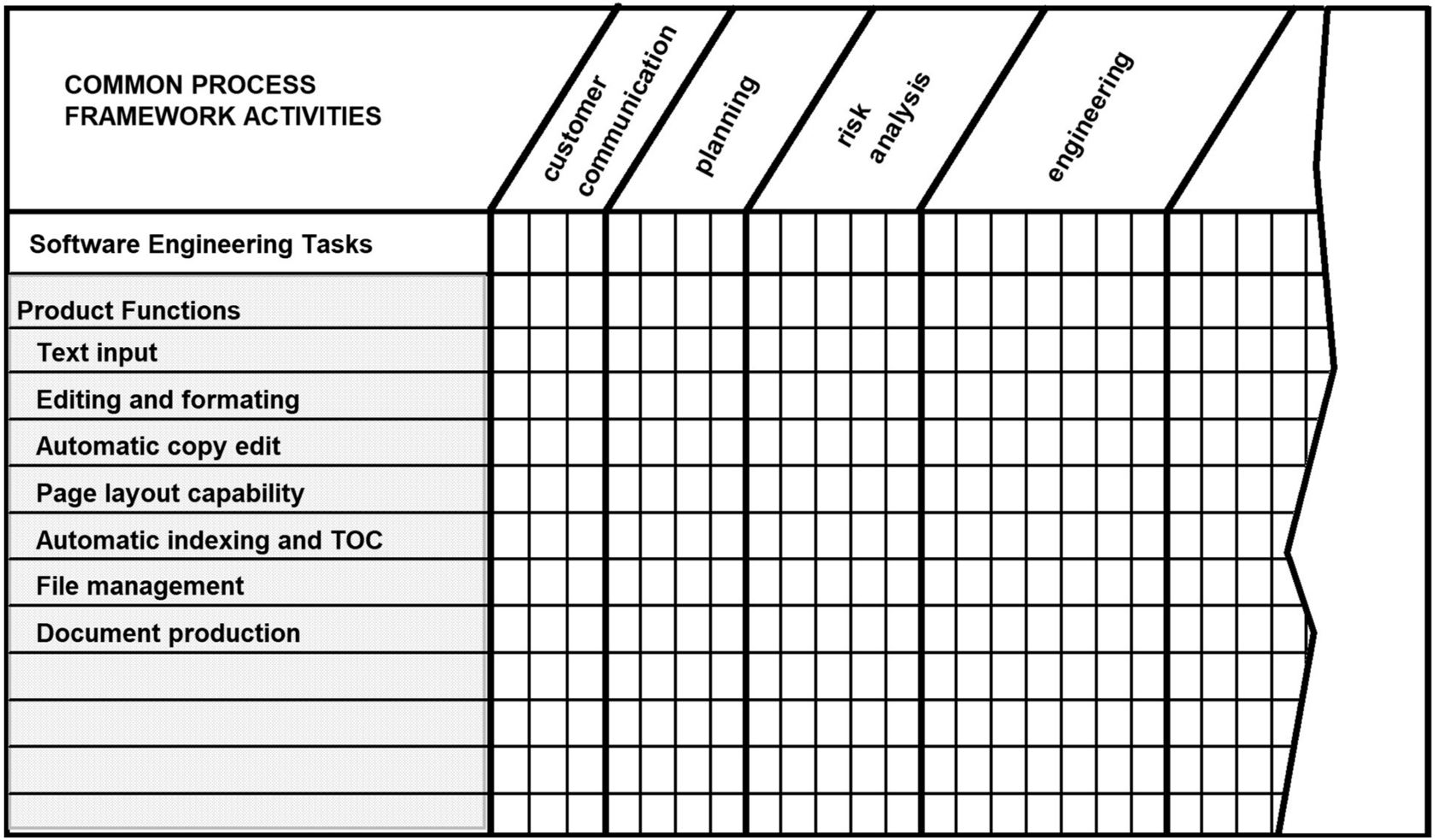
Project Management Concerns



Defining the Problem

- establish scope—a narrative that bounds the problem
- decomposition—establishes functional partitioning

Melding Problem and Process



Software Projects

Factors that influence the end result ...

- **size**
- **delivery deadline**
- **budgets and costs**
- **application domain**
- **technology to be implemented**
- **system constraints**
- **user requirements**
- **available resources**

Why Projects Fail?

- **changing customer requirements**
- **an unrealistic deadline is established**
- **an honest underestimate of effort**
- **predictable and/or unpredictable risks**
- **technical difficulties**
- **miscommunication among project staff**
- **failure in project management**

To Get to the Essence of a Project

Why is the system being developed?

What will be done? By when?

Who is responsible for a function?

Where are they organizationally located?

How will the job be done technically and managerially?

How much of each resource (e.g., people, software, tools, database) will be needed?

Critical Practices

- Formal risk analysis
- Empirical cost and schedule estimation
- Metric-based project management
- Earned value tracking
- Defect tracking against quality targets
- People-aware project management