Project Management
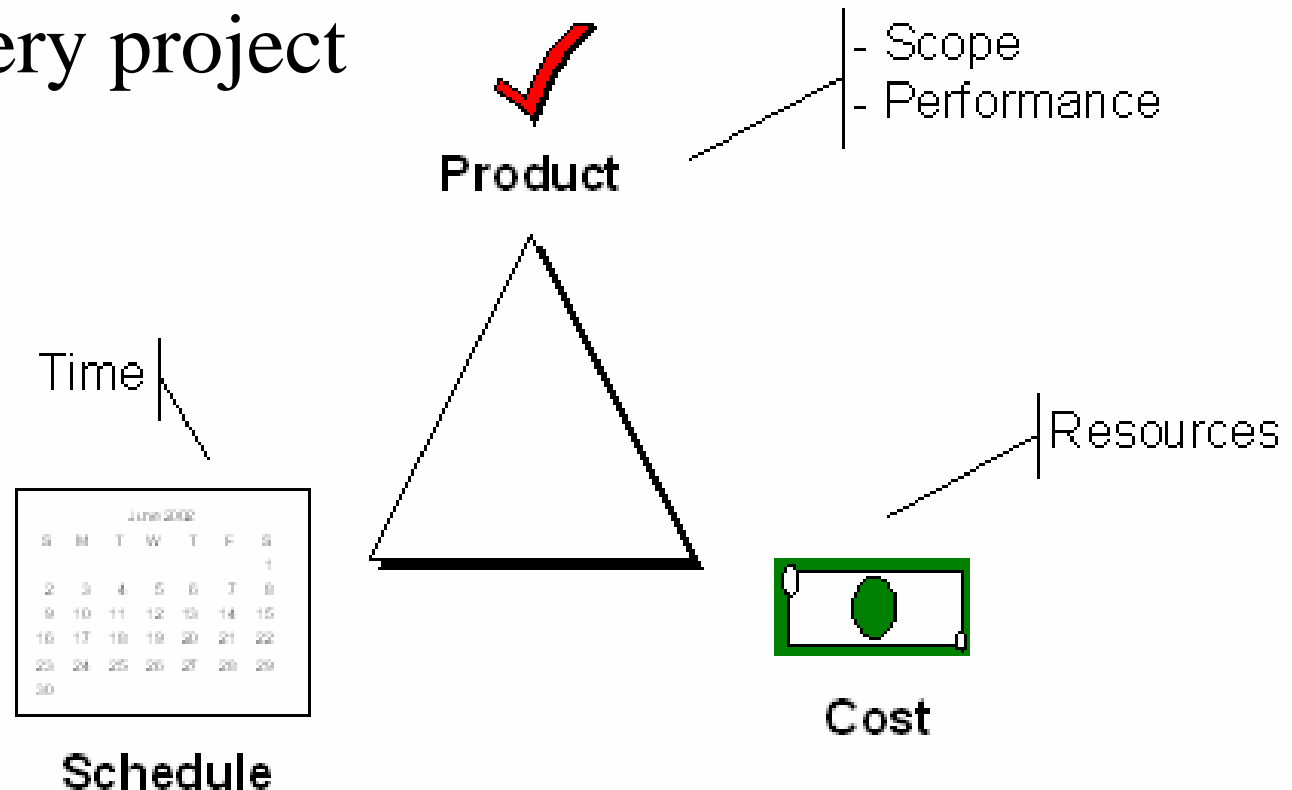
Session 2: Processes, Organization

Content

- PMI Fundamentals
- Project Organization
- Project Selection
- Project Portfolio Management
- Procurement Management
- Statement of Work (SOW)
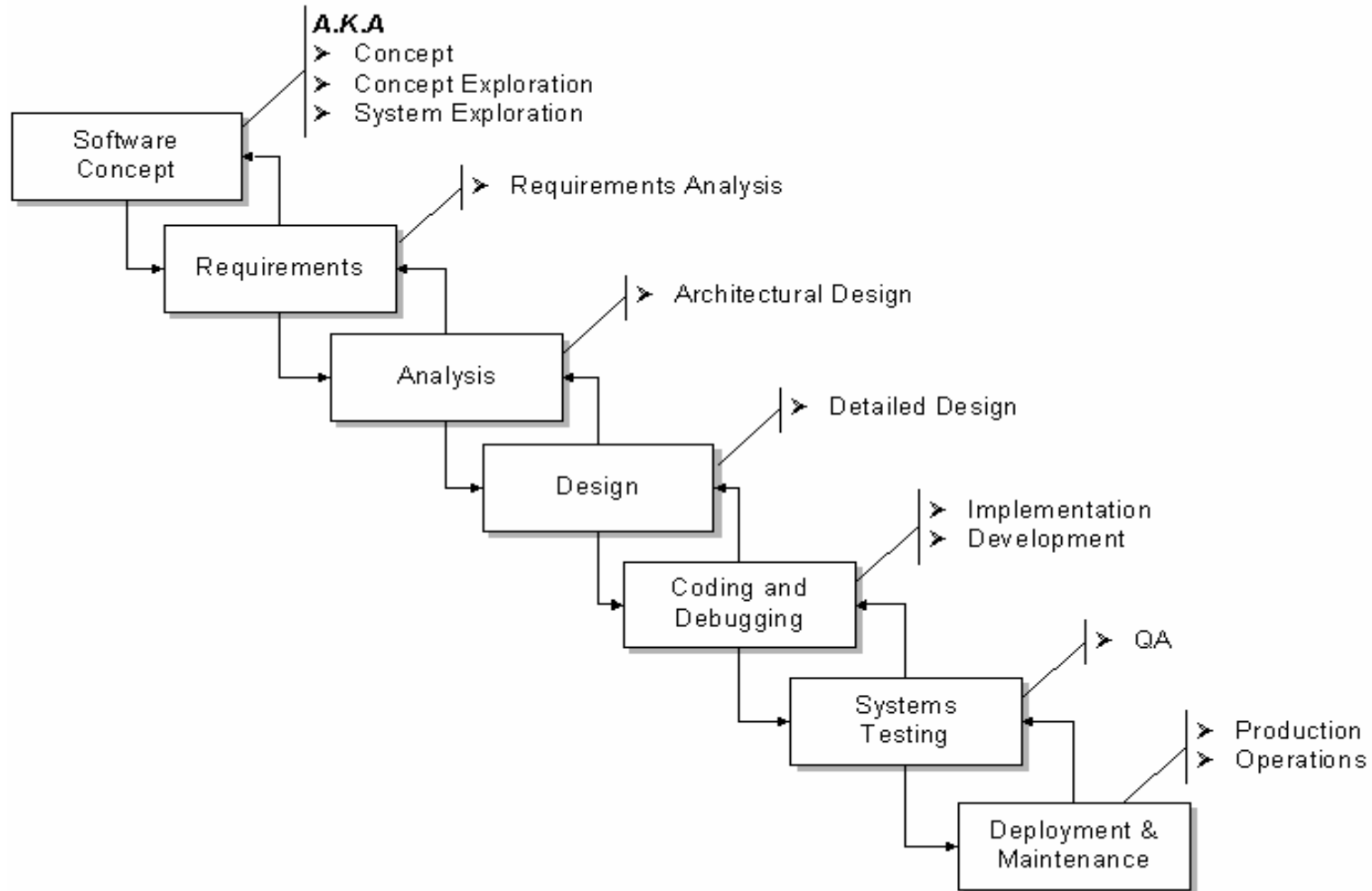- Project Charter

Trade-off Triangle

- Know which of these are fixed & variable for every project

Project Phases

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Project Success Rates

- The 2001 Standish Group Report Showed **Decided Improvement** in IT Project Success Rates From the 1995
  - **Time overruns: decreased to 63% compared to 222%**
  - **Cost overruns were down to 45% compared to 189%**
  - **Required features were up to 67% compared to 61%**
  - **78,000 U.S. projects were successful vs. to 28,000**
  - **28% of IT projects succeeded compared to 16%**

- Why the Improvements?
  - Avg. cost reduced by half
  - Better tools for monitoring and control
  - More skilled PM's, more process, more user involvement
  - And "The fact that there are processes is significant in itself."

Why Do Projects Succeed?

- How to identify a projects success potential
  - What <u>metrics</u> could you look at?
    - Project size
    - Project duration
    - Project team size

- Analyse the project succes factors
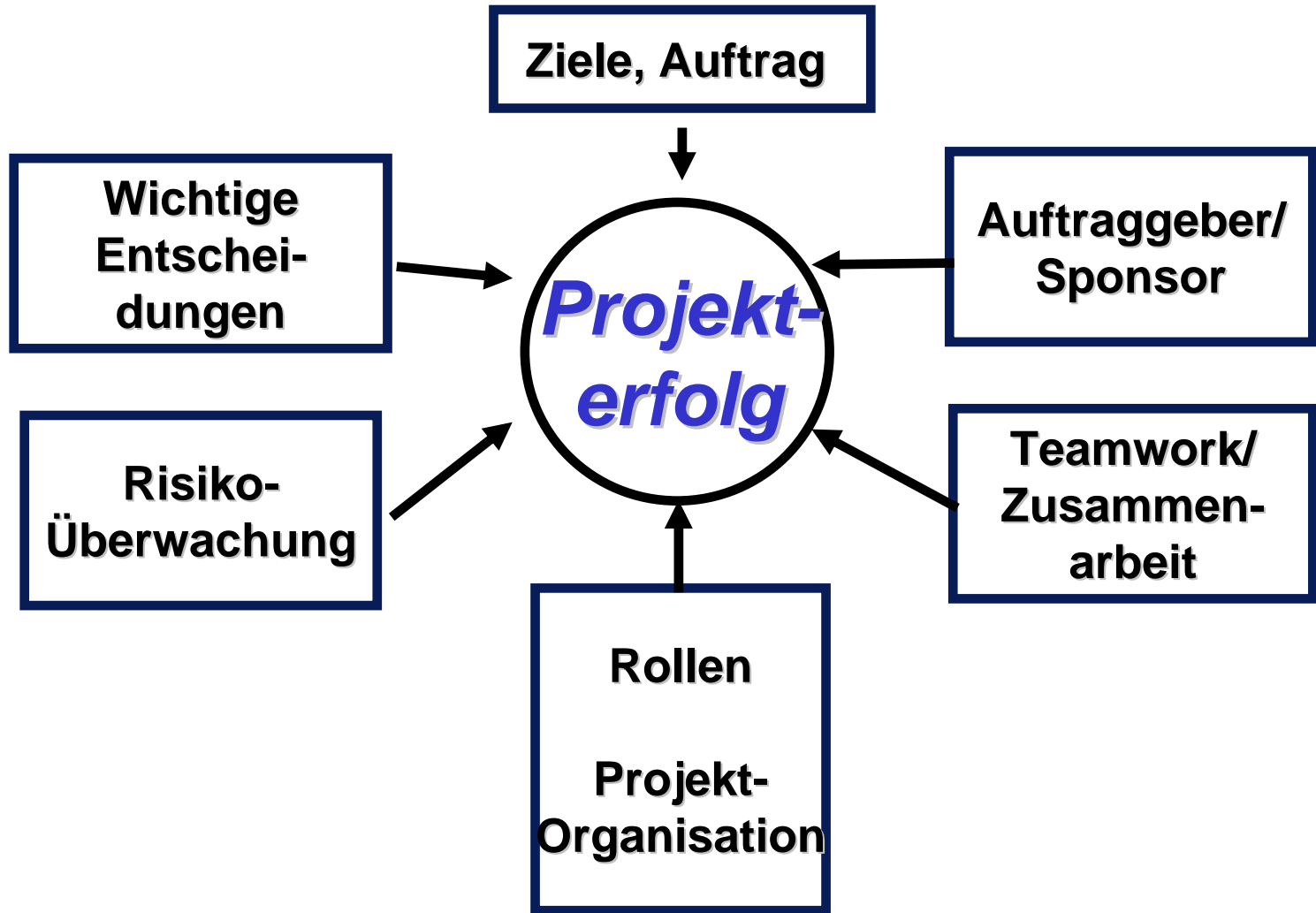 - Specific and general

Kurzübung

Brainwriting + Diskussion

Bitte geben Sie 3 kritische Erfolgsfaktoren (KEF) für Projekte an!

Meine kritischen Erfolgsfaktoren für Projekte

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Why Do Projects Succeed (CSF)?

– Executive support

– User involvement

– Experience project manager

– Clear business objectives

– Minimized scope

– Standard software infrastructure

– Firm basic requirements

– Formal methodology

– Reliable estimates

Standish Group "CHAOS 2001: A Recipe for Success"

Why Executive Support?

- Top management can help to:
  - Secure adequate resources
  - Get approval for unique project needs in a timely manner
  - Receive cooperation from people throughout the organization
  - Provide leadership guidance

Stakeholder Triad

- ## 1. Function Representative
  - The 'business person'
  - Or SME: Subject Matter Expert

- ## 2. Executive Sponsor
  - Project's visionary & champion
  - Also the 'General' and 'Minesweeper'
  - Not the PM, 'Santa Claus', or the 'Tech Guy'

- ## 3. Project Manager
  - The 'Linchpin' (" Dreh- und Angelpunkt")
  - Must be 'multi-lingual'

15 PM Job Functions

- Define scope of project
- Identify stakeholders, decision-makers, and escalation procedures
- Develop detailed task list (work breakdown structures)
- Estimate time requirements
- Develop initial project charter
- Identify required resources and budget

- Evaluate project requirements
- Identify and evaluate risks Prepare contingency plan
- Identify interdependencies
- Identify and track critical milestones
- Participate in project phase review
- Secure needed resources
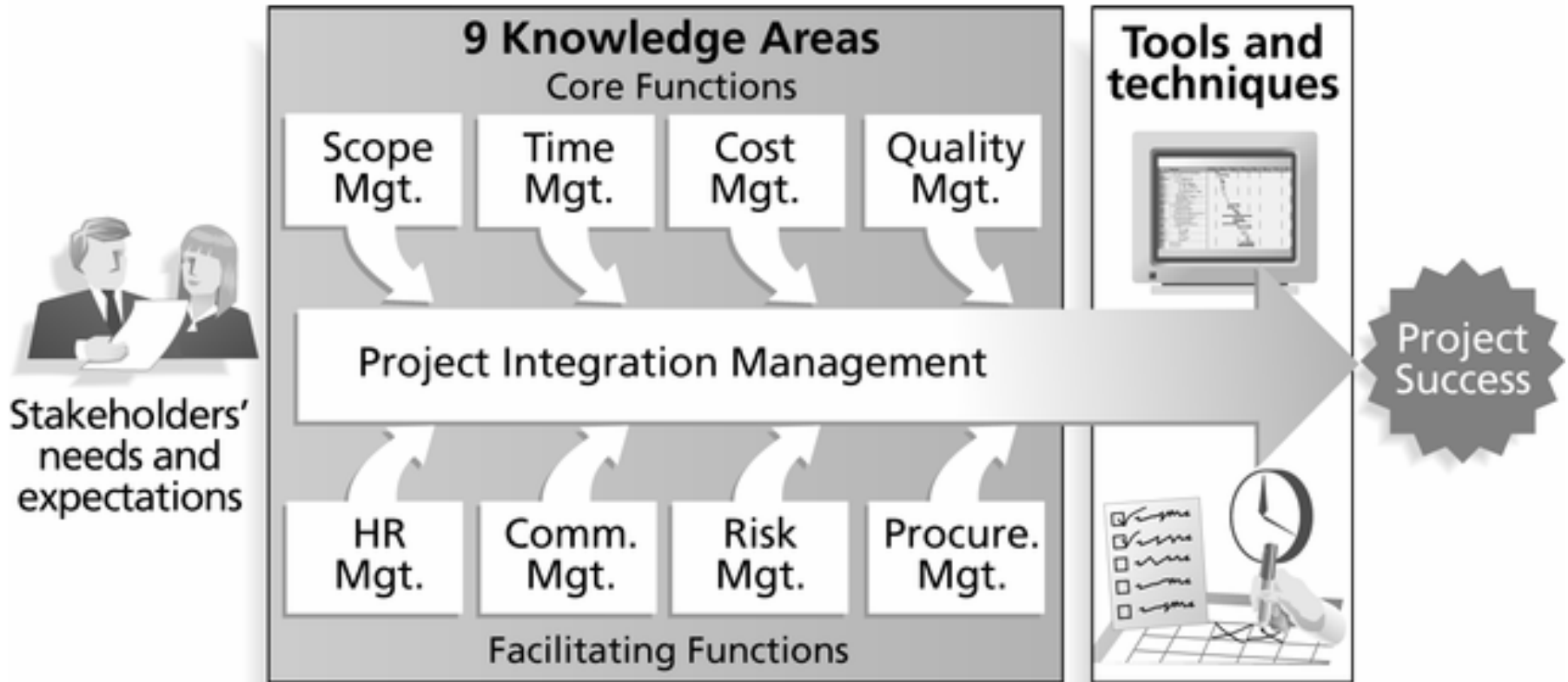- Manage the change control process
- Report project status

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PMBOK

- Structures PM by
  - A) Processes
  - B) Knowledge Areas

- Processes. 2 types
  - 1. PM processes: describing and organizing the work of the project
  - 2. Product-oriented processes: specifying and building the project's product (Engineering Processes)

PMI Framework

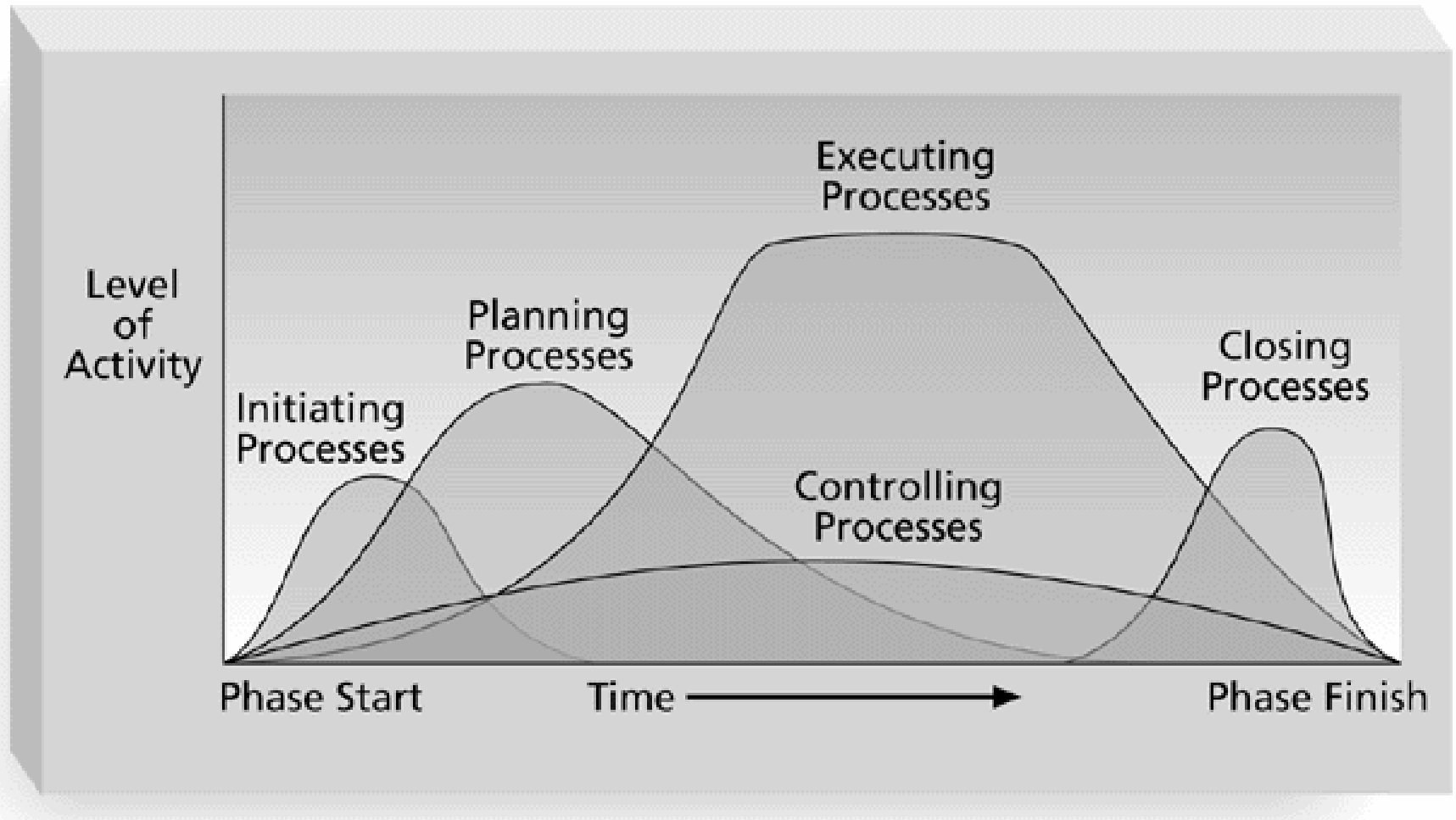Source: Project Management Institute

14

The 5 PMI Process Groups

- 1. Initiating
- 2. Planning
- 3. Executing
- 4. Controlling
- 5. Closing
- Note: these can be repeated for each phase
- Each process is described by:
  - Inputs
  - Tools & Techniques
  - Outputs

PMI Process Groups

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PMI: Process Links

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PMI Phase Interactions

Design Phase

Initiating Processes → Planning Processes → Executing Processes ↔ Controlling Processes → Planning Processes; Controlling Processes → Closing Processes

Implementation Phase

Initiating Processes → Planning Processes → Executing Processes ↔ Controlling Processes → Planning Processes; Controlling Processes → Closing Processes

PMI: Initiating Process

- Inputs
  - Product Description
  - Strategic plan
  - Project Selection Criteria
  - Historical Information

- Outputs
  - Project charter
  - Project Manager assigned
  - Constraints
  - Assumptions

PMI: Planning Process

Devising and maintaining a workable scheme to accomplish the business need that the project was undertaken to address

- Scope Planning
- Scope Definition
- Activity Definition
- Activity Sequencing
- Activity Duration Estimating
- Resource Planning
- Cost Estimating
- Cost Budgeting

- Risk Planning
- Schedule Development
- Quality Planning
- Communications Planning
- Organization Planning
- Staff Acquisition
- Procurement Planning
- Project Plan Development

PMI: Executing Process

Coordinating people and other resources to carry out the plan

- Project Plan Execution
- Scope Verification
- Quality Assurance
- Team Development

- Information Distribution
- Solicitation
- Source Selection
- Contract Administration

PMI: Controlling Process

Ensuring that project objectives are met by monitoring and measuring progress and taking corrective measures when necessary

- Overall Change Control
- Scope Change Control
- Schedule Control
- Cost Control
- Quality Control

- Performance Reporting
- Risk Response Control

PMI: Closing Process

Formalizing acceptance of the project or phase
and bringing it to an orderly end

- Administrative Closure
- Contract Close-out

PMI Knowledge Areas

Process Groups / Knowledge Area	Initiating	Planning	Executing	Controlling	Closing
4. Project Integration Management		4.1 Project Plan Development	4.2 Project Plan Execution	4.3 Integrated Change Control	
5. Project Scope Management	5.1 Initiation	5.2 Scope Planning 5.3 Scope Definition		5.4 Scope Verification 5.5 Scope Change Control	
6. Project Time Management		6.1 Activity Definition 6.2 Activity Sequencing 6.3 Activity Duration Estimating 6.4 Schedule Development		6.5 Schedule Control	
7. Project Cost Management		7.1 Resource Planning 7.2 Cost Estimating 7.3 Cost Budgeting		7.4 Cost Control	
8. Project Quality Management		8.1 Quality Planning	8.2 Quality Assurance	8.3 Quality Control	
9. Project Human Resource Management		9.1 Organizational Planning 9.2 Staff Acquisition	9.3 Team Development		
10. Project Communications Management		10.1 Communications Planning	10.2 Information Distribution	10.3 Performance Reporting	10.4 Administrative Closure
11. Risk Project Management		11.1 Risk Management Planning 11.2 Risk Identification 11.3 Qualitative Risk Analysis 11.4 Quantitative Risk Analysis 11.5 Risk Response Planning		11.6 Risk Monitoring and Control	
12. Project Procurement Management		12.1 Procurement Planning 12.2 Solicitation Planning	12.3 Solicitation 12.4 Source Selection 12.5 Contract Administration		12.6 Contract Closeout

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Importance of Phases

- Define your management review points
  - "Phase exits" or "kill points"
  - Ensure continued alignment with goals
  - Form of Validation & Verification (V&V)
    - More later in term

Understanding Organizations

|	
Structural frame: Focuses on roles and responsibilities, coordination and control. Organization charts help define this frame.	**Human resources frame:** Focuses on providing harmony between needs of the organization and needs of people.
Political frame: Assumes organizations are coalitions composed of varied individuals and interest groups. Conflict and power are key issues.	**Symbolic frame:** Focuses on symbols and meanings related to events. Culture is important.

Organizational Structures

- Functional
  - Engineering, Marketing, Design, etc
  - P&L from production
- Project
  - Project A, Project B
  - Income from projects
  - PM has P&L responsibility
- Matrix
  - Functional and Project based
  - Program Mgmt. Model
  - Shorter cycles, need for rapid development process
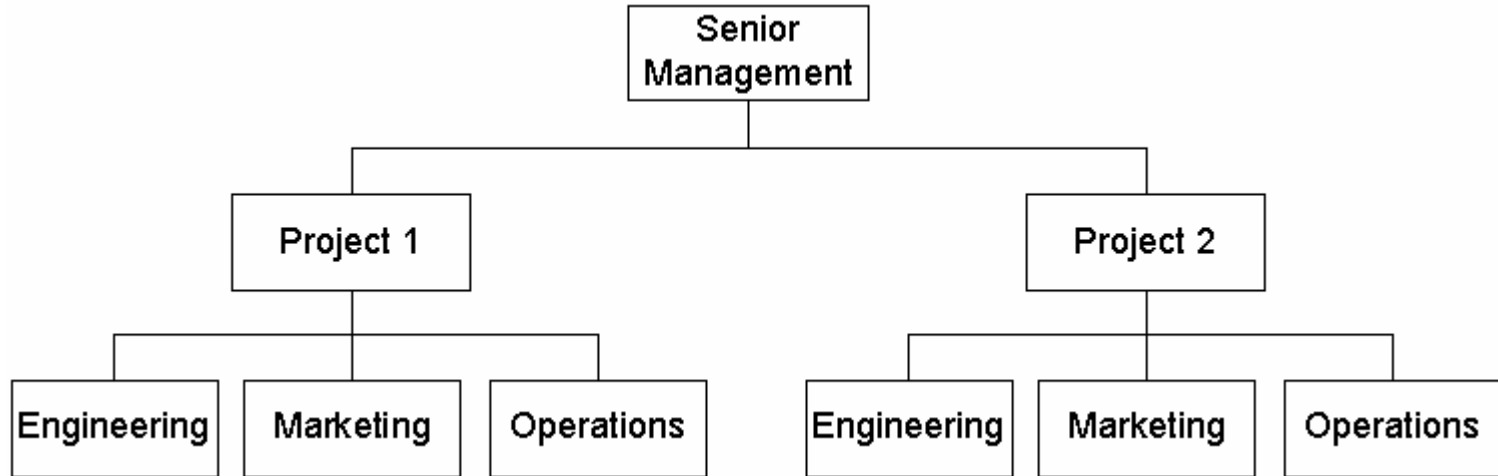
Functional Organization
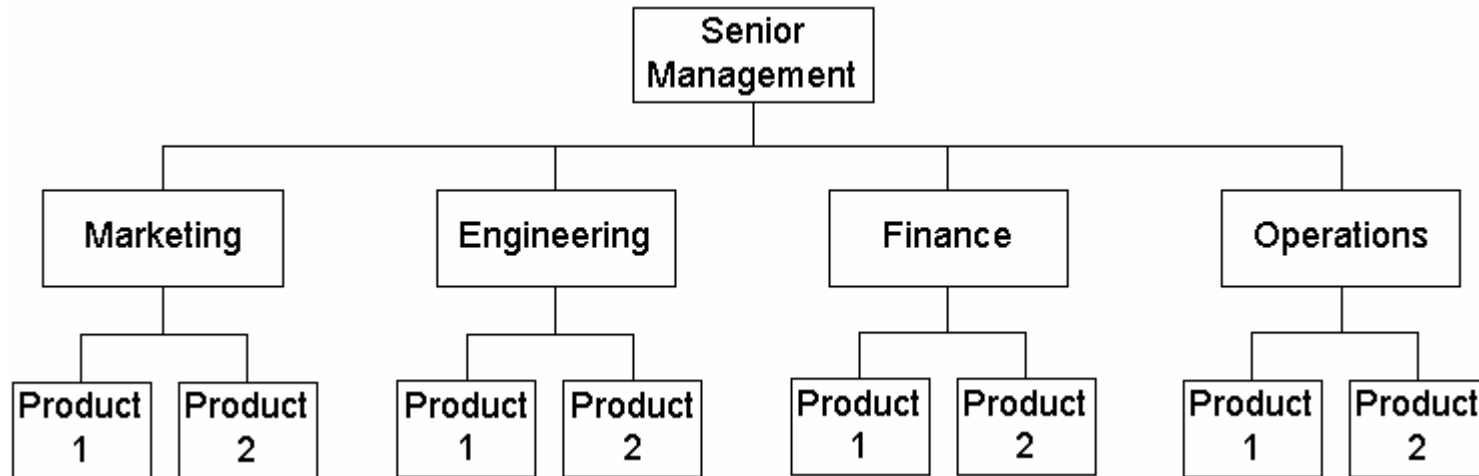
- Pros
  - Clear definition of authority
  - Eliminates duplication
  - Encourages specialization
  - Clear career paths

- Cons
  - "Walls": can lack customer orientation
  - "Silos" create longer decisions cycles
  - Conflicts across functional areas
  - Project leaders have little power

Project Organization

- Pros
  - Unity of command
  - Effective inter-project communication
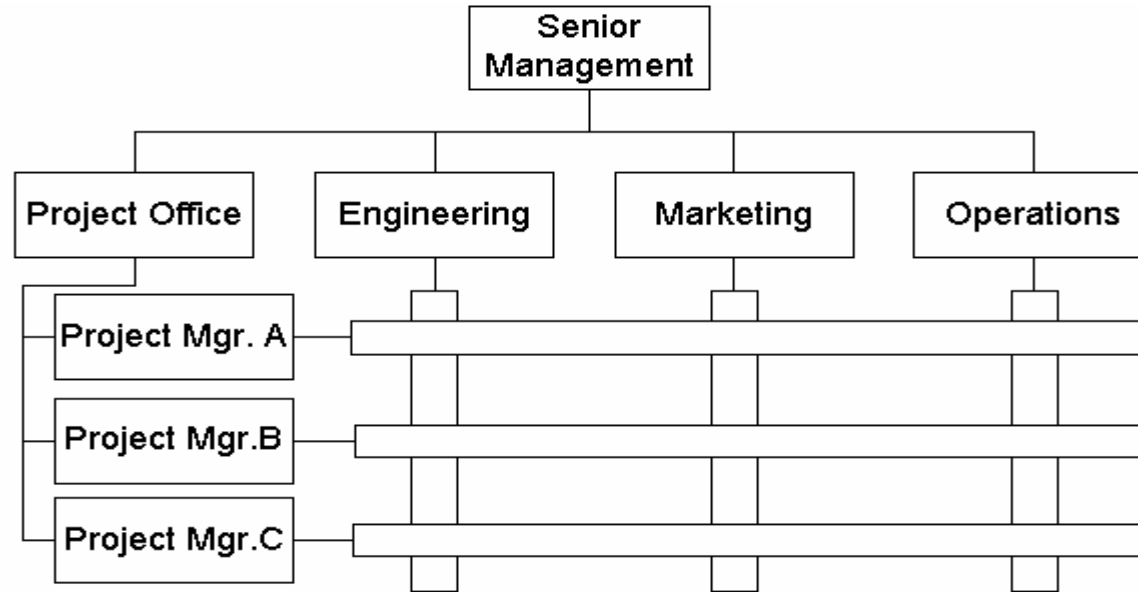
- Cons
  - Duplication of facilities
  - Career path

- Examples: defense avionics, construction

Matrix Organization

- **Pros**
  - Project integration across functional lines
  - Efficient use of resources
  - Retains functional teams

- **Cons**
  - Two bosses for personnel
  - Complexity
  - Resource & priority conflicts

Matrix Forms

- Weak, Strong, Balanced
- Degree of relative power
- Weak: functional-centric
- Strong: project-centric

Organizational Structure Influences on Projects

Organization Type / Project Characteristics	Functional	Matrix			Projectized
		Weak Matrix	Balanced Matrix	Strong Matrix	
Project Manager's Authority	Little or None	Limited	Low to Moderate	Moderate To High	High to Almost Total
Percent of Performing Organization's Personnel Assigned Full-time to Project Work	Virtually None	0-25%	15-60%	50-95%	85-100%
Project Manager's Role	Part-time	Part-time	Full-time	Full-time	Full-time
Common Title for Project Manager's Role	Project Coordinator/ Project Leader	Project Coordinator/ Project Leader	Project Manager/ Project Officer	Project Manager/ Program Manager	Project Manager/ Program Manager
Project Management Administrative Staff	Part-time	Part-time	Part-time	Full-time	Full-time

PMBOK Guide, 2000, p. 19

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Organizational Impact

- Form can greatly impact your role
- Determine what skills you'll need from which functions
- The new "Project Office"
  - A) As centralized project management
  - B) As coach and info. office to project teams
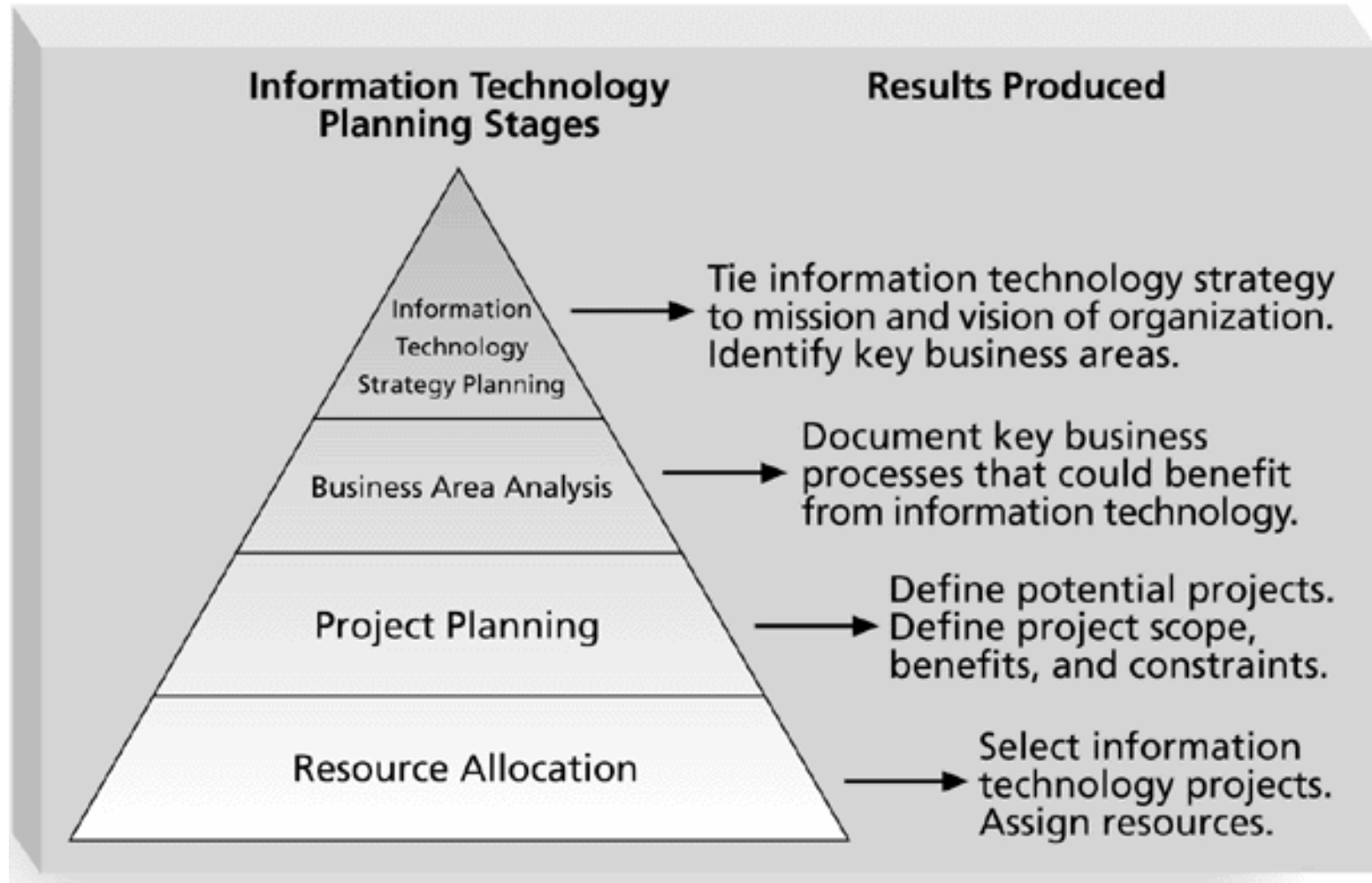- The "Enterprise PMO" (EMPO)

Why Firms Invest in IT

REASON FOR INVESTING IN INFORMATION TECHNOLOGY PROJECTS	RANK BASED ON OVERALL VALUE OF PROJECTS
Supports explicit business objectives	1
Has good internal rate of return (IRR)	2
Supports implicit business objectives	3
Has good net present value (NPV)	4
Has reasonable payback period	5
Used in response to competitive systems	6
Supports management decision making	7
Meets budgetary constraints	8
High probability of achieving benefits	9
Good accounting rate of return	10
High probability of completing project	11
Meets technical/system requirements	12
Supports legal/government requirement	13
Good profitability index	14
Introduces new technology	15

Bacon, James. The Use of Decision Criteria in Selecting Information Systems/Technology Investments, *MIS Quarterly*, Vol. 16, No. 3 (September 1992).

34

IT Planning Process

Information Technology Planning Stages / Results Produced

- **Information Technology Strategy Planning** → Tie information technology strategy to mission and vision of organization. Identify key business areas.
- **Business Area Analysis** → Document key business processes that could benefit from information technology.
- **Project Planning** → Define potential projects. Define project scope, benefits, and constraints.
- **Resource Allocation** → Select information technology projects. Assign resources.

Methods for Selecting Projects

- There are usually (always?) more projects than available time and resources to implement them
  - Therefore: It is important to follow a logical process for selecting IT projects to work on
- Methods include
  - Focusing on broad needs
  - Categorizing projects
  - Financial methods
  - Weighted scoring models

Broad Organizational Needs

- It is often difficult to provide strong justification for many IT projects, but everyone agrees they have a high value

    - "It is better to measure gold roughly than to count pennies precisely"

- Three important criteria for projects:

    - There is a *need* for the project

    - There are *funds* available

    - There's a strong *will* to make the project succeed

Categorizing IT Projects

- One categorization: whether project addresses
  - a **problem**
  - an **opportunity**
  - a **directive**
- Another: how long it will take & when it is needed
- Another: overall priority of the project

Project Portfolio Management

- Portfolio: a group of IT project under a coordinated management structure

- Different 'portfolio models' are available:
  - Economic return model
    - NPV, IRR, ROI
  - Cost-benefit model
    - Can include less tangible factors
  - Market research model
    - For new products

- Each considers relative value and resource/budget interactions

Abgrenzung zum Multiprojektmanagement

Multiprojektmanagement (MPM):   operative Koordination
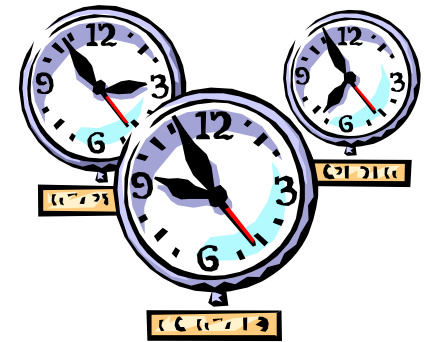
Projektportfoliomanagement (PPM): strategische Führung
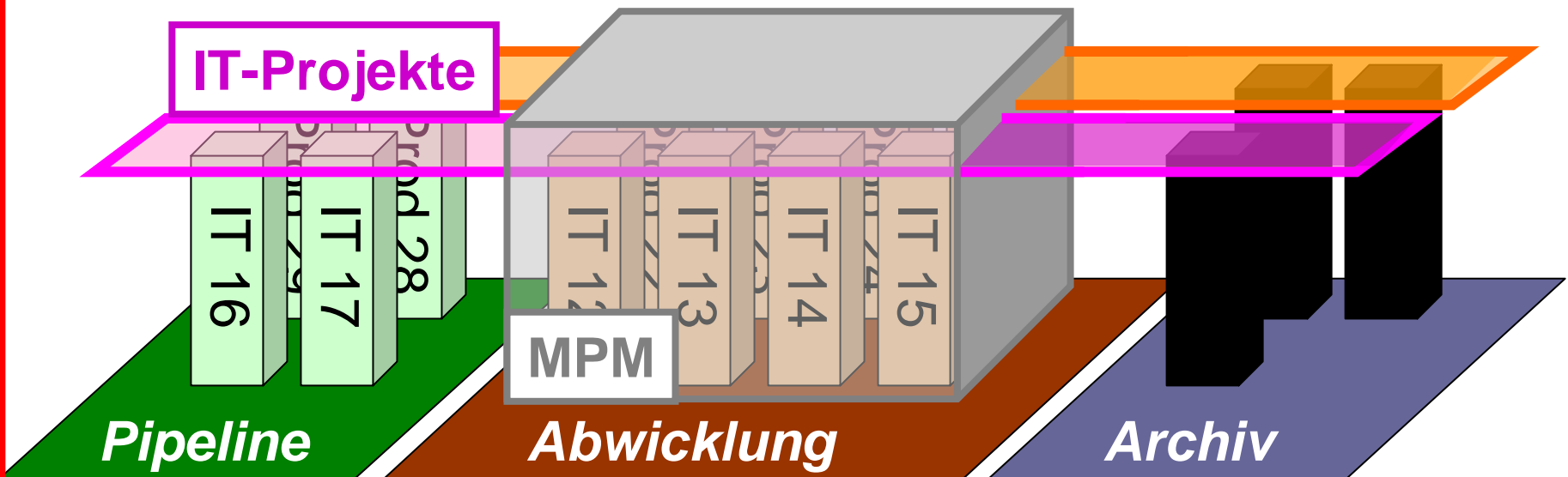
Was ist ein Projektportfolio?

Das Projektportfolio beinhaltet die relevanten Projekte einer Führungseinheit in einer Unternehmung.

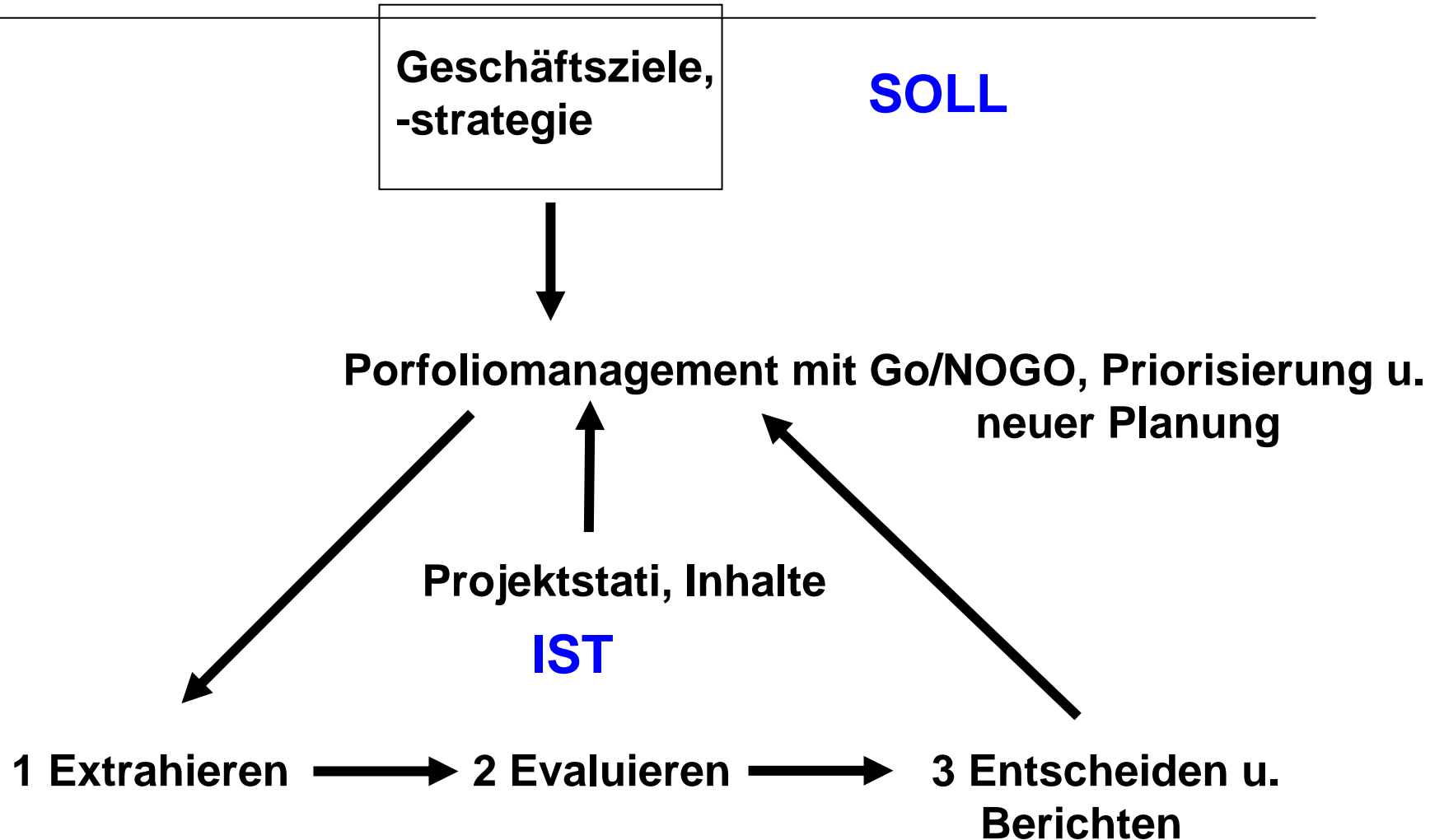**Dimensionen des Projektportfolio:**

- **wirtschaftlich**
  (Kosten: Investition, Betrieb)

- **zeitlich**
  (geplant, operativ, beendet)

- **Fachlich, inhaltlich**
  (Projektarten)

- **strategisch**
  (Prioritäten)

41

Der Prozess des Portfoliomangements

Geschäftsziele, -strategie

SOLL

Porfoliomanagement mit Go/NOGO, Priorisierung u. neuer Planung

Projektstati, Inhalte

IST

**1 Extrahieren** → **2 Evaluieren** → **3 Entscheiden u. Berichten**

Das Projektportfoliomanagement – die Teilprozesse (Siemens Österreich)

- Projekt ins Projektportfolio
  - Projektwürdigkeitsanalyse
  - Projektanalyse (Nutzenbeitrag, Business Case)
  - Autorisierung

- Projekte im Projektportfolio
  - Projekte regelmässig priorisieren
  - Projektportfolio optimieren
  - Krisenmanagement

- Projekte aus dem Projektportfolio
  - Abschluss von Projekten (Archivierung, Lessons Learned)
  - Abbruch/Einfrieren von Projekten

Die Ebenen des Projektportfolios

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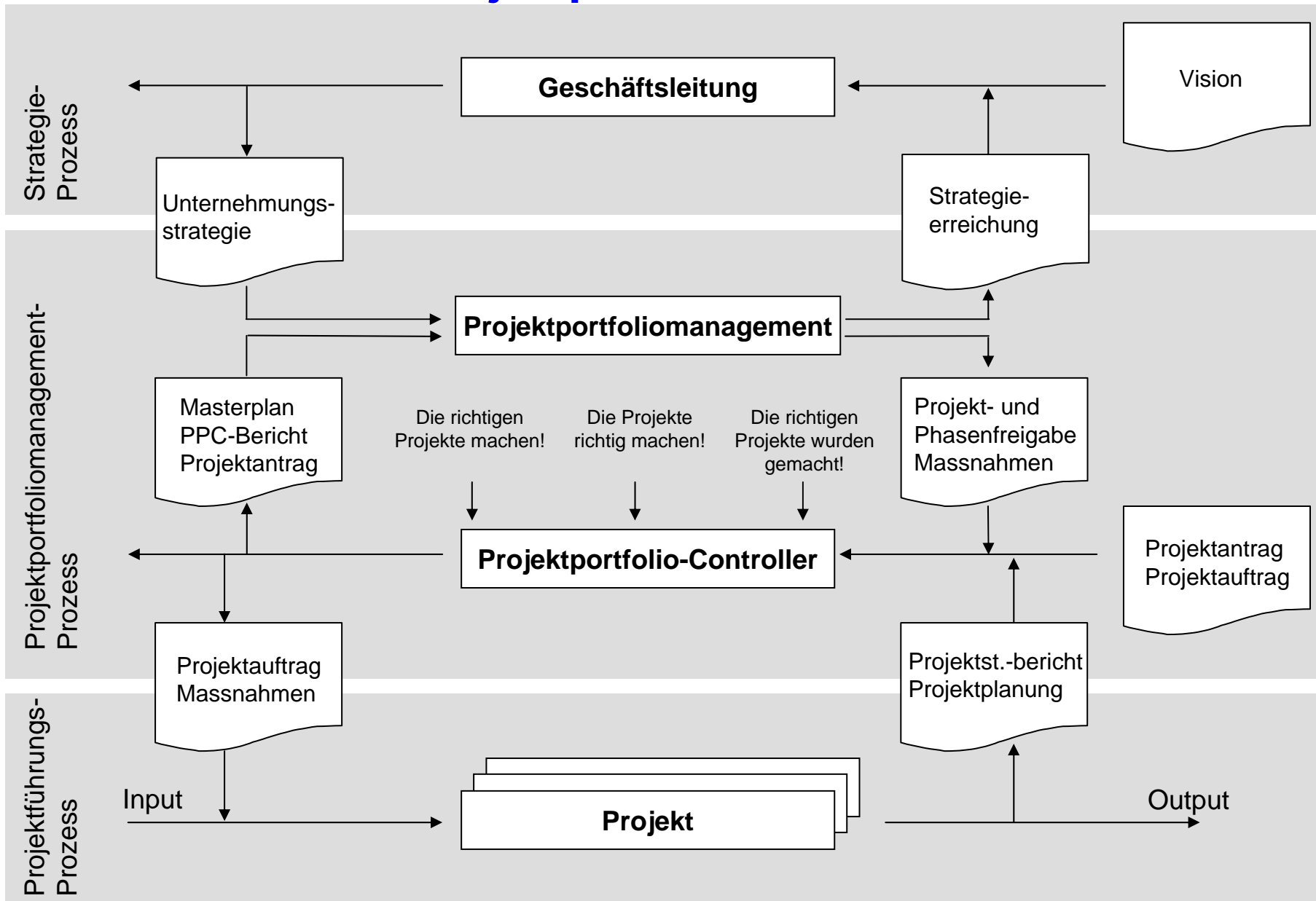
Tools

- **Toolcharakteristiken:**
  - Project Management Suites
  - Process Management Software
  - Schedule Management Software
  - Cost Management Software
  - Resource Management Software
  - Communications Mgmt. Software
  - Risk Management Software

- **ABER:**
  „A fool with a tool
  is still a fool...“

45

Projektportfoliomanagement - Toolanbieter
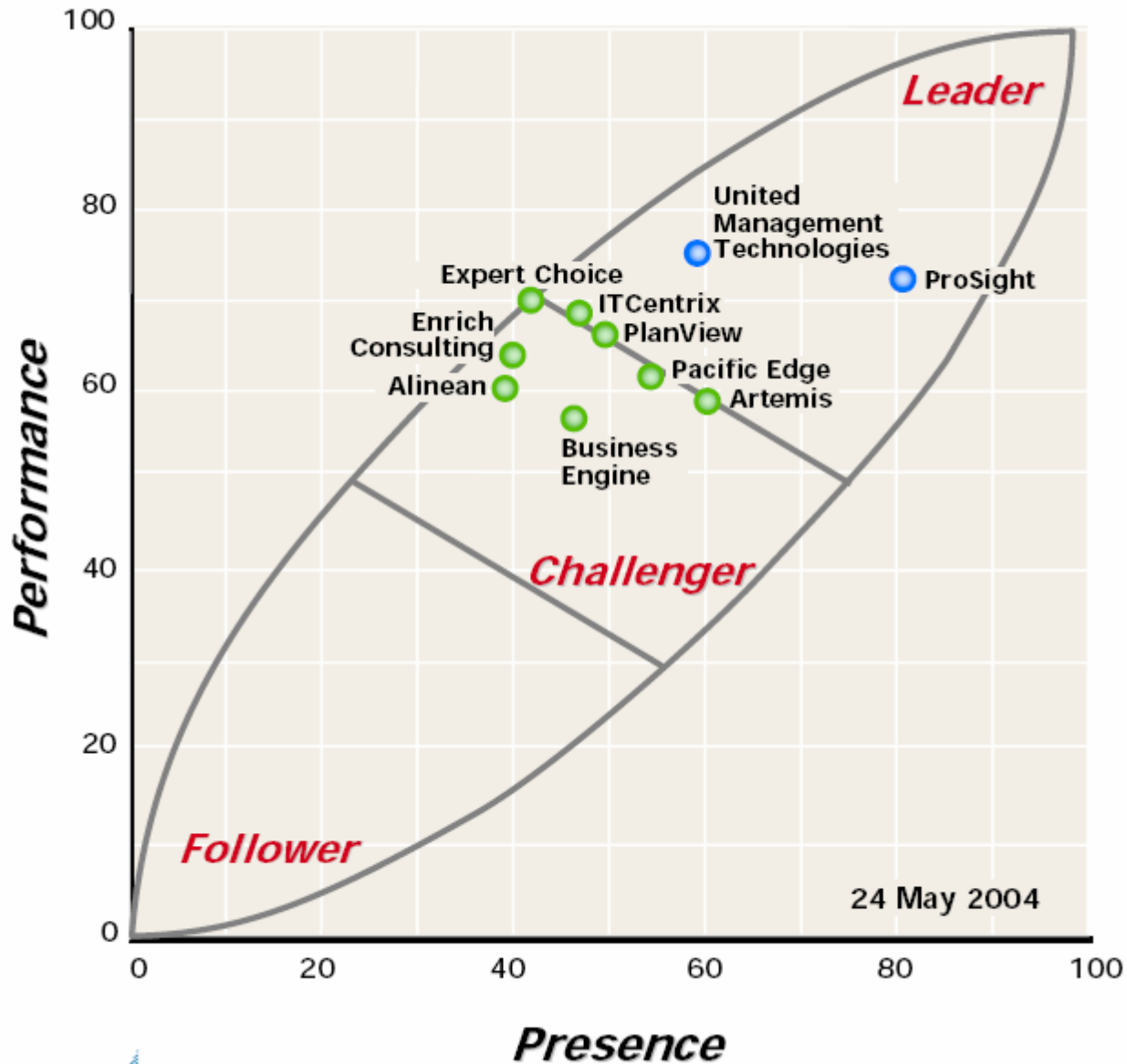
Meta Group, 2004

Procurement Management

- Procurement means acquiring goods and/or services from an outside source
  - a.k.a. purchasing or outsourcing

Why Outsource?

- To reduce both fixed and recurrent costs
- To allow the client organization to focus on its core business
- To access skills and technologies
- To provide flexibility
- To increase accountability

Procurement Management

- Procurement planning: determining what to procure and when

- Solicitation planning: documenting product requirements and identifying potential sources

- Solicitation: obtaining quotations, bids, offers, or proposals as appropriate

- Source selection: choosing from among potential vendors

- Contract administration: managing the relationship with the vendor

- Contract close-out: completion and settlement of the contract

Project Procurement Management Processes and Key Outputs

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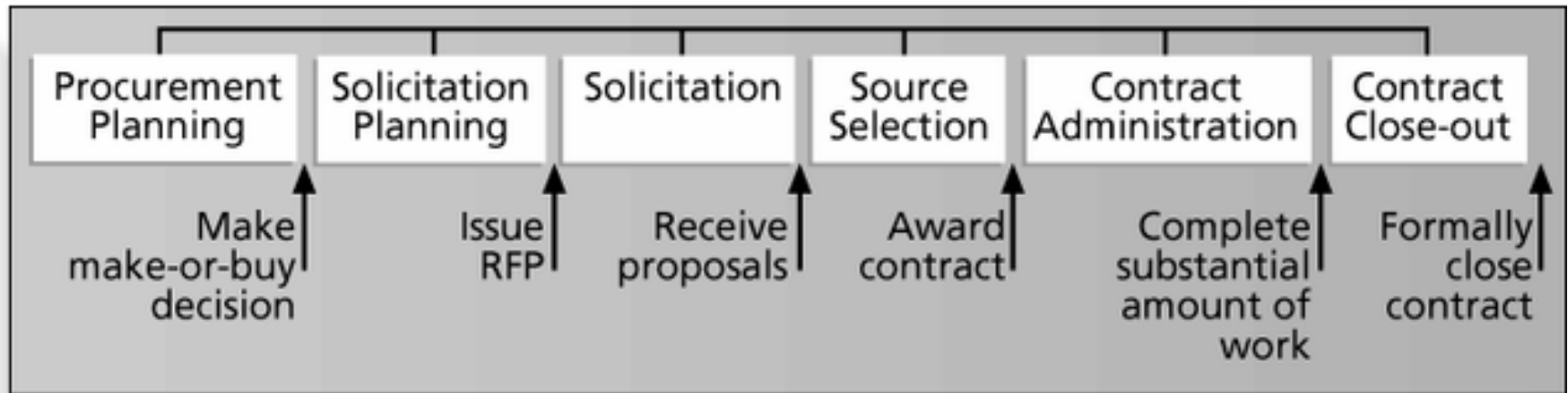
Procurement Tools & Techniques

- ## Make-or-buy analysis (build vs. buy)
  - ### Determining whether a particular product or service should be made or performed inside the organization or purchased from someone else. Often involves financial analysis

- ## Experts
  - ### Both internal and external, can provide valuable inputs in procurement decisions

Make-or Buy Example

- Assume you can lease an item you need for a project for $150/day. To purchase the item, the investment cost is $1,000, and the daily cost would be another $50/day.

- How long will it take for the lease cost to be the same as the purchase cost?

- If you need the item for 12 days, should you lease it or purchase it?

Make-or Buy Solution

- Set up an equation so the "make" is equal to the "buy"
- In this example, use the following equation. Let d be the number of days to use the item.

$$\$150d = \$1,000 + \$50d$$

- Solve for d as follows:
  - Subtract $50d from the right side of the equation to get

$$\$100d = \$1,000$$

  - Divide both sides of the equation by $100

$$d = 10 \text{ days}$$

- The lease cost is the same as the purchase cost at 10 days
- If you need the item for > 12 days, then purchase it

Types of Contracts

- Fixed price or lump sum ("pauschal"): involve a fixed total price for a well-defined product or service

- Cost reimbursable: involve payment to the seller for direct and indirect costs

- Time and material contracts: hybrid of both fixed price and cost reimbursable, often used by consultants

- Unit price contracts: require the buyer to pay the seller a predetermined amount per unit of service

Cost Reimbursable Contracts

- Cost plus incentive fee (CPIF)
  - Buyer pays seller for allowable performance costs plus a predetermined fee and an incentive bonus

- Cost plus fixed fee (CPFF)
  - Buyer pays seller for allowable performance costs plus a fixed fee payment usually based on a percentage of estimated costs

- Cost plus percentage of costs (CPPC)
  - Buyer pays seller for allowable performance costs plus a predetermined percentage based on total costs

Contract Types Versus Risk
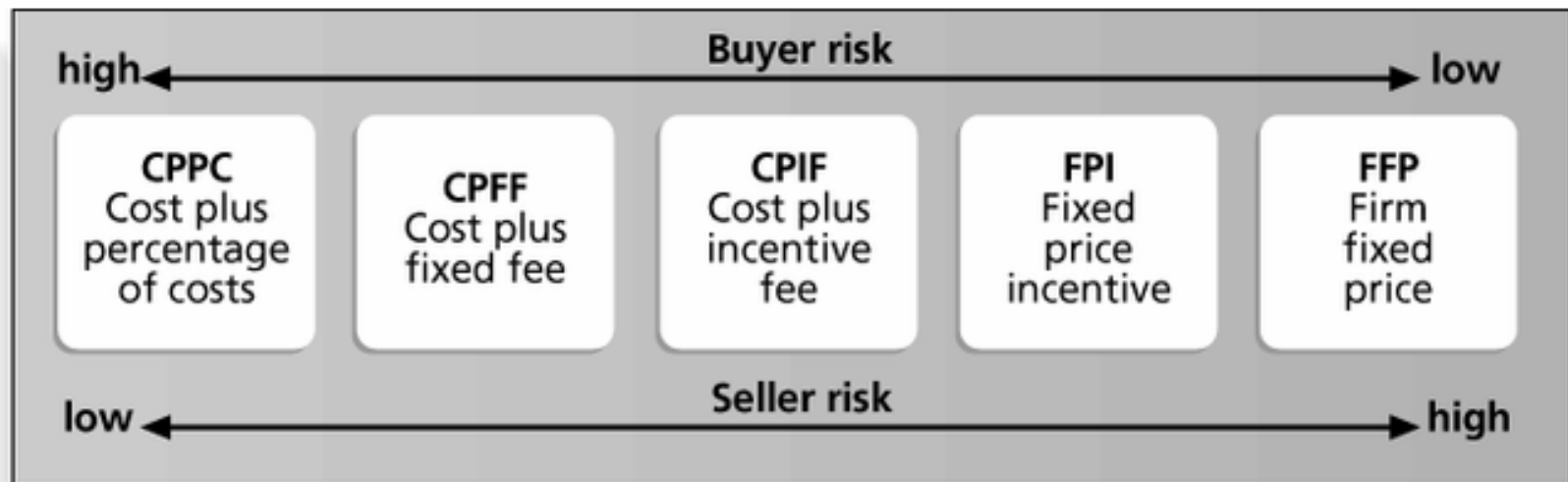
Statement of Work (SOW)

- A description of the work required for the project

- Sets the "boundary conditions"

- SOW vs. CSOW (Contract SOW)

  - Latter: uses legal language as part of a competitive bidding scenario

- Can be used in the final contract – be careful, be specific, be clear

57

SOW Continued

- Typically done after approval (after "Go")
- Can be multiple versions
  - 1. List of deliverables for an RFP
  - 2. More detailed within final RFP
  - 3. Binding version from contract

RFP = Request For Proposal

SOW Template

I. **Scope of Work:** Describe the work to be done to detail. Specify the hardware and software involved and the exact nature of the work.

II. **Location of Work:** Describe where the work must be performed. Specify the location of hardware and software and where the people must perform the work

III. **Period of Performance:** Specify when the work is expected to start and end, working hours, number of hours that can be billed per week, where the work must be performed, and related schedule information. Optional "Compensation" section.

IV. **Deliverables Schedule:** List specific deliverables, describe them in detail, and specify when they are due.

V. **Applicable Standards:** Specify any company or industry-specific standards that are relevant to performing the work. Often an Assumptions section as well.

VI. **Acceptance Criteria:** Describe how the buyer organization will determine if the work is acceptable.

VII. **Special Requirements:** Specify any special requirements such as hardware or software certifications, minimum degree or experience level of personnel, travel requirements, documentation, testing, support, and so on.

59

Project Charter ("Projektauftrag")

- A high-level project description:
  - Business need, product, assumptions
- Often precedes SOW
- Often 2-4 pages (can be longer)
- Project definition

Project Charter

- Typical outline
  - Overview
    - Business need
    - Objectives
    - Method or approach
  - General scope of work
  - Rough schedule & budget
  - Roles & responsibilities
  - Assumptions

Homework Reading

- McConnell: 7 "Lifecycle Planning"
- Review construx.com: <u>"Project Plan Template"</u>

Homework Assignment

- Write a **Project Charter** for your project

- Combines elements of an SOW

- 2-3 pages

- Use format of your choice

- Graded on content, not format

63

Assignment Details

- Include:
  - Overview (2-4 paragraphs)
    - What the system is (summary)
    - Who will use it
    - What problem is it solving (Objectives)
  - Scope of Work (outline format or text)
    - Deliverables
      - » What the system is (details)
    - Rough time estimate (2 months or 2 yrs?)
  - Out of scope items
  - Assumptions

Charter Examples

- ## Assumptions
  - We will reuse the architecture from the previous ordering system
  - The system will be built using an ASP model
  - Customer will provide necessary business experts as needed during development
  - System will run on existing networking and computer resources
  - Customer will sign-off on interim deliverables within one week of each delivery
  - All import data will be available in XML format
  - This will be a web-based application
  - Our in-house development team will do the work
  - The rendering engine will be licensed from a third party
  - We will partner with an overseas development firm to create the security systems

Charter Examples

- Primary Stakeholders (following examples are not of one set)
    - Sponsor: VP of Marketing
    - Sponsor: Five Star Brokerage Consortium
    - Sponsor: Bill Smith, CEO
    - Users: Call center operators
    - Users: Our partner banks
    - Customers: Attorneys from small-to-mid size law firms
    - Customers: Males 30-45 earning $75K or more

Charter Examples

- Deliverables
  - Retail Web Site
    - Full catalog
    - Shopping-cart system
    - Search engine
    - User registration system
  - Trading System
    - Equities order entry system
    - Portfolio management
    - Order execution engine
    - Integration with X legacy systems
    - Security infrastructure

Charter Examples

- Deliverables
  - Corporate Application
    - Network and hardware
    - Web-based HR portal
    - Connectivity for VPN
    - "Asset Management Viewport" application
    - Customized Reporting Engine
      - Allowing users to Perseus data mart
      - Delivery into HTML and Excel
    - User manuals

68

Charter Examples

- ## Out of Scope
  - News feeds
  - Dynamic pricing
  - Jazzy color picker
  - Auction engine
  - EDI support
  - Legacy integration
  - Help system

- ## Schedule
  - We anticipate an overall 12-14 month development timeframe
  - The project is expected to start in Q2 2006 and complete in Q3 2006
  - The initial release is expect within 10 months with the follow-on delivery within 4-6 months

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Questions?