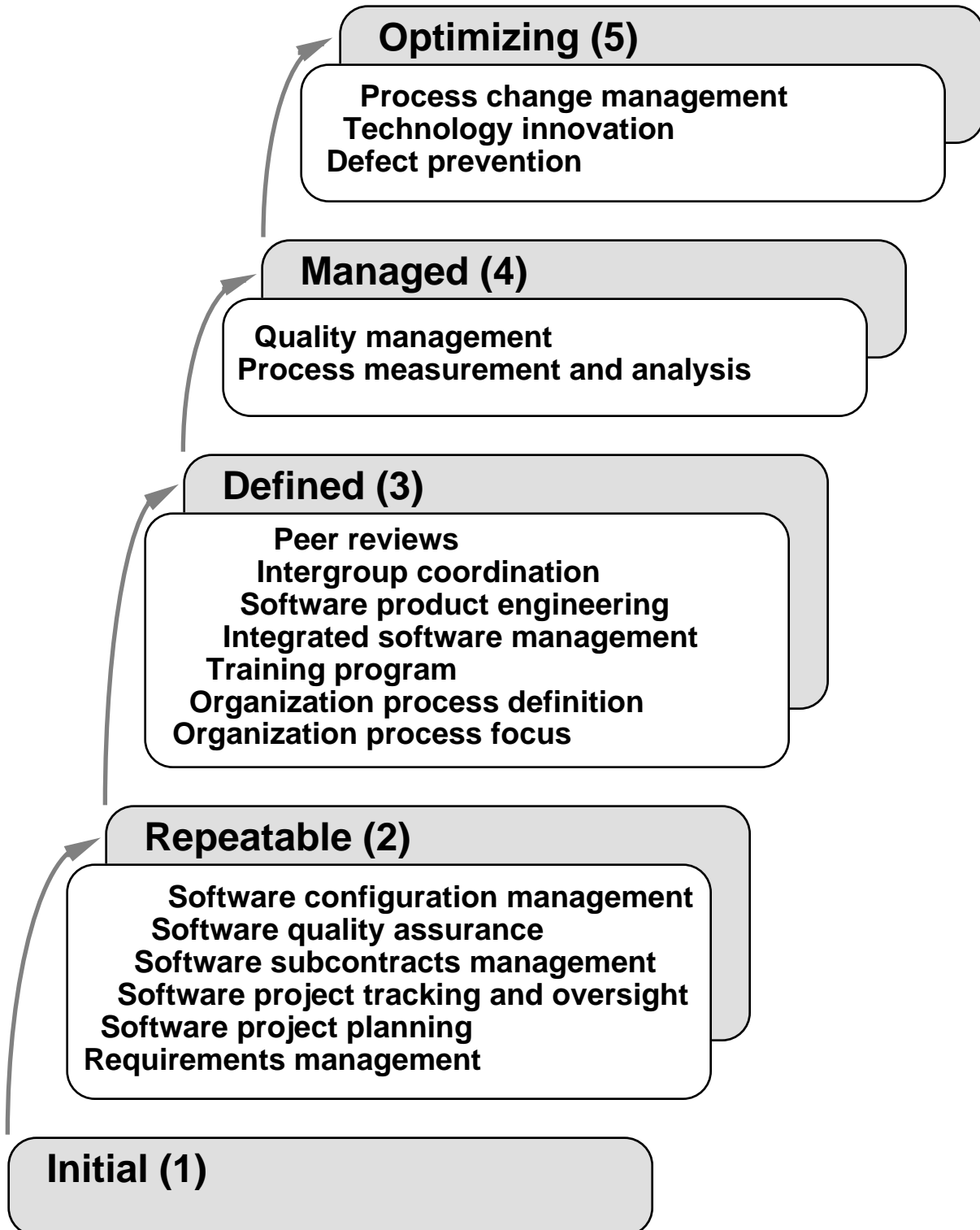


Software Process Maturity Levels



Shewart Improvement Cycle

1. Plan

Define the problem

State improvement objectives

2. Do

Identify possible problem causes

Establish baselines

Test changes

3. Check

Collect data

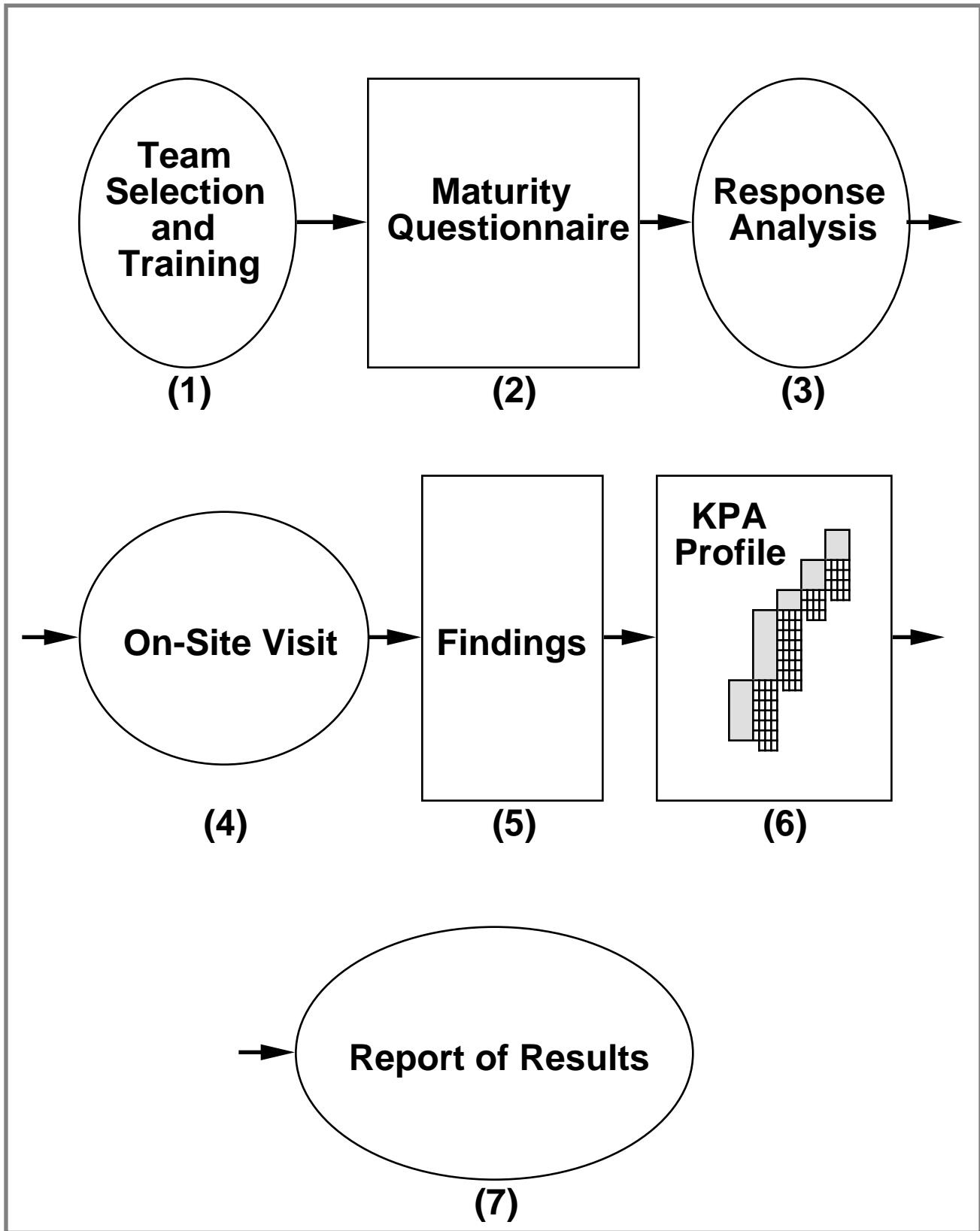
Evaluate data

4. Act

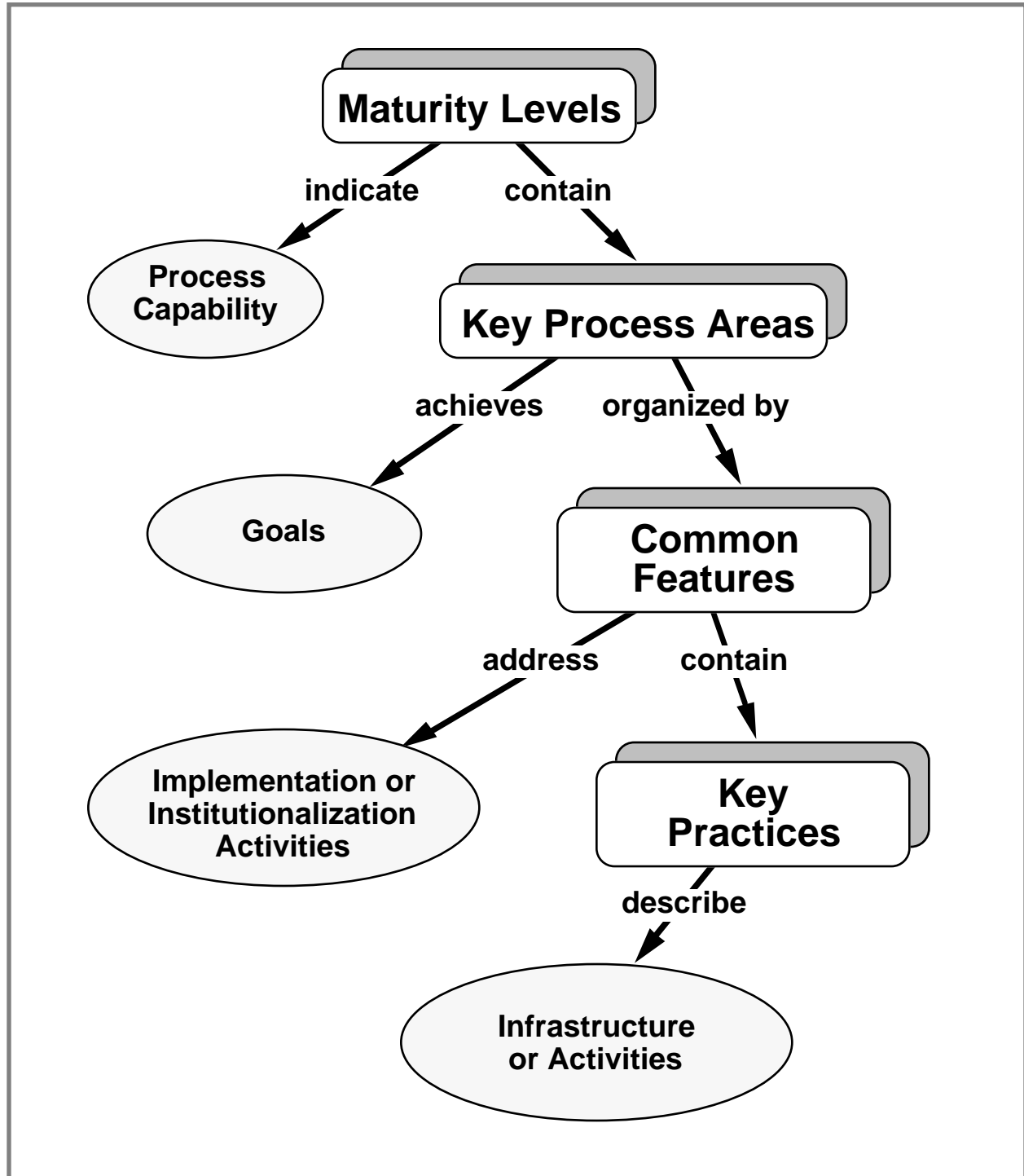
Implement system change

Determine effectiveness

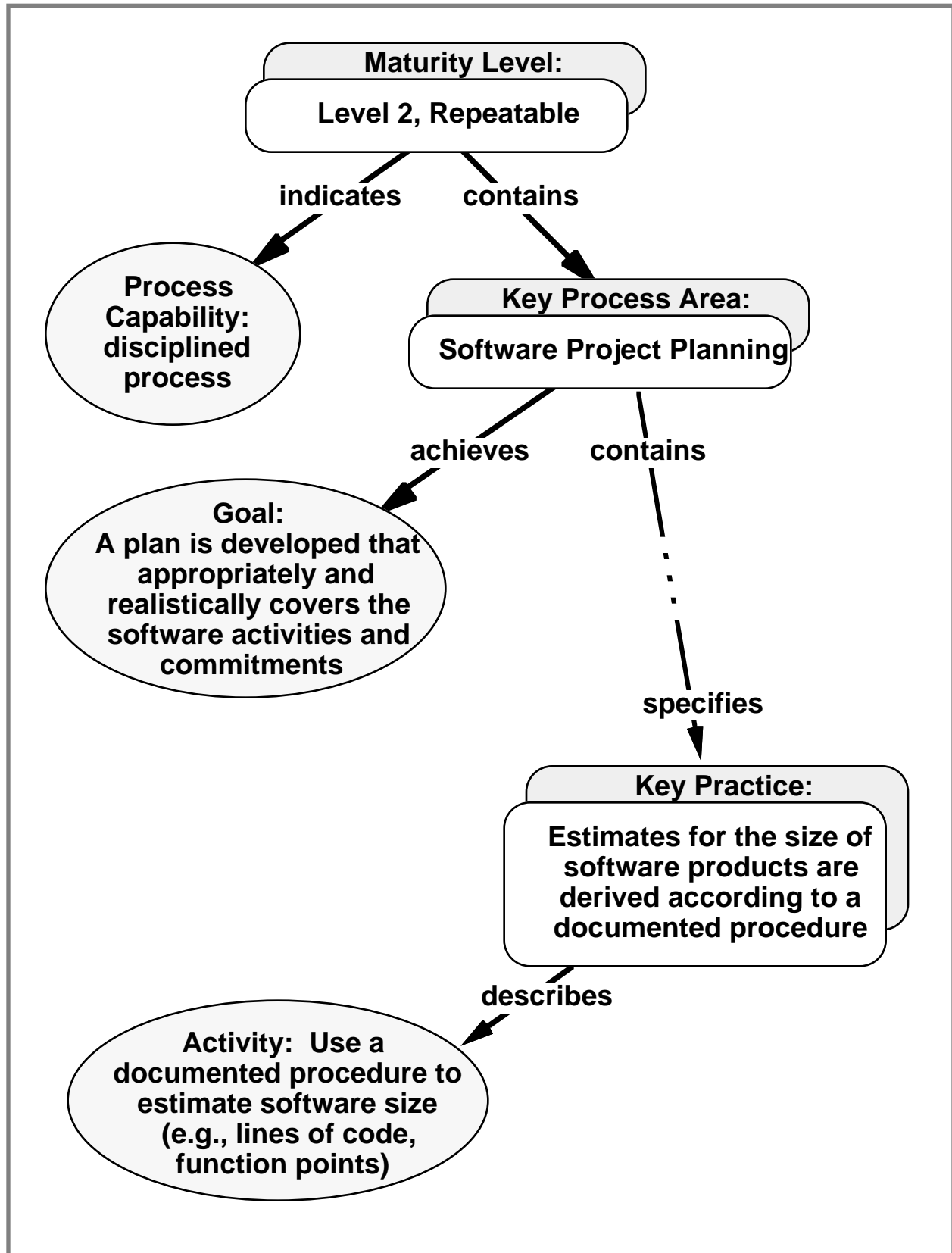
Common Steps in SPAs and SCEs



Capability Maturity Model Structure



Example of CMM Structure



Key Process Areas by Maturity Level

Level 2: Repeatable

- Requirements Management
- Software Project Planning
- Software Project Tracking and Oversight
- Software Subcontract Management, if applicable
- Software Quality Assurance
- Software Configuration Management

Level 3: Defined

- Organization Process Focus
- Organization Process Definition
- Training Program
- Integrated Software Management
- Software Product Engineering
- Intergroup Coordination
- Peer Reviews

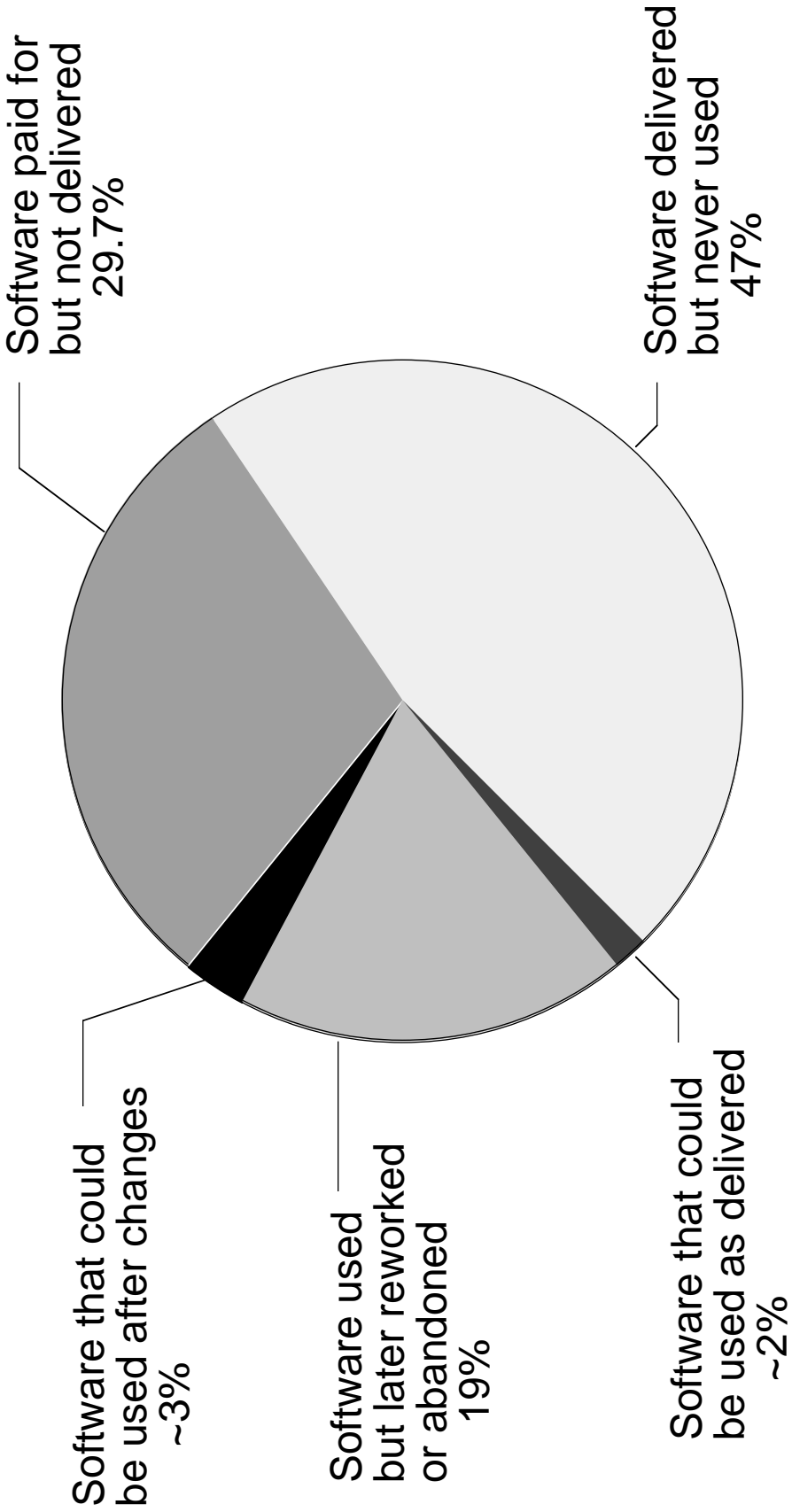
Level 4: Managed

- Process Measurement and Analysis
- Quality Management

Level 5: Optimizing

- Defect Prevention
- Technology Innovation
- Process Change Management

Software Systems Development is Prone to Waste



Year 1982: Nine Contracts Totalling \$6.8 Million

On-Board Shuttle Software Improvements

NASA	1982	1985
Early error detection (% errors found)	48	80
Reconfiguration time (weeks)	11	5
Reconfiguration effort (person-years)	10.5	4.5
Product error rate (errors/1000 lines of code)	2.0	0.11

Comparison Between SCE and SPA

SCE	SPA
<p>Used by acquisition organization for source selection and contract monitoring</p>	<p>Used by organization to improve software process</p>
<p>Results to the organization and the acquirer</p>	<p>Results to organization only</p>
<p>Substantiates current practice</p>	<p>Assesses current practice</p>
<p>Assesses commitment to improve</p>	<p>Acts as catalyst for process improvement</p>
<p>Analyzes contract performance potential</p>	<p>Provides input to improvement action plan</p>
<p>Independent evaluation—no organization members on team</p>	<p>Collaborative—organization members on team, with representative of licensed SPA associate or SEI</p>
<p>Applies to performance for a particular contract</p>	<p>Applies to organization overall, not individual projects</p>