Establishing a Multidisciplined Organizational Infrastructure for CMMI Level 5

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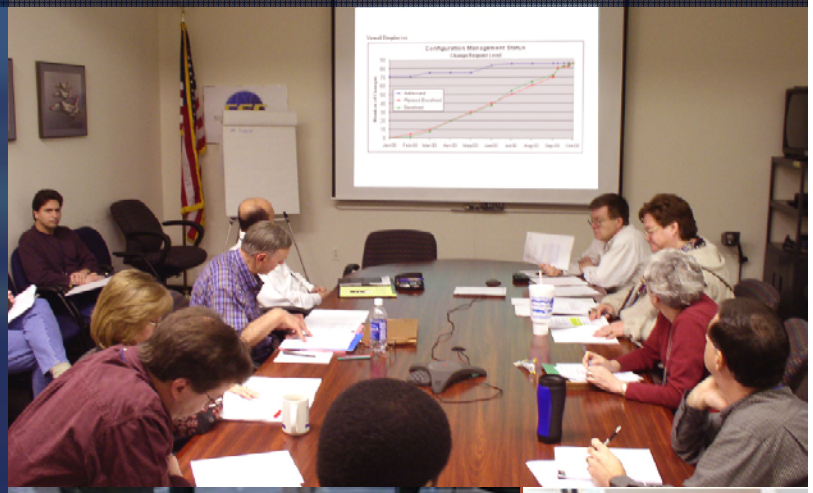
Agenda

- What is an Organization Infrastructure?
- Characteristics of a Level 3 Organization Infrastructure
- Attributes that support Level 3
- Attributes that can inhibit Levels 4 and 5
- Characteristics of a Level 5 Organization Infrastructure
- Our Level 5 Infrastructure
  - EPISC
  - PICs
  - EPG
  - Boards
  - Advisory Panels

What is the Organizational Infrastructure?

The **structure groups, teams, boards,** and **committees** that support the efficient and effective operation of the organization's performance improvement activities.

- Some elements of the infrastructure are **part of the organization's normal reporting structure**, some are not.
- Some elements are **permanent**; some are **transient**.
- Some elements are **populated primarily by staff or core people**; some by project people; some by both.
- Some elements have **full-time, dedicated staff**; some have **part-time, shared staff**.



Infrastructure Elements in CMMI®

Each of these elements is described in a generic sense, leaving each organization with considerable flexibility in determining their infrastructure.

Organizations that limit their infrastructure to these elements and roles may find their process improvement activities to be somewhat constrained.

- **Senior management sponsor (OPF)**
- **Management steering committee (OPF)**
- **Process group (OPF, OPD)** *(glossary term)*
- **Process action teams (OPF)** *(glossary term)*
- **Process owners (OPF, OPD)** *(glossary term)*
- **Organization's training staff (OT)**

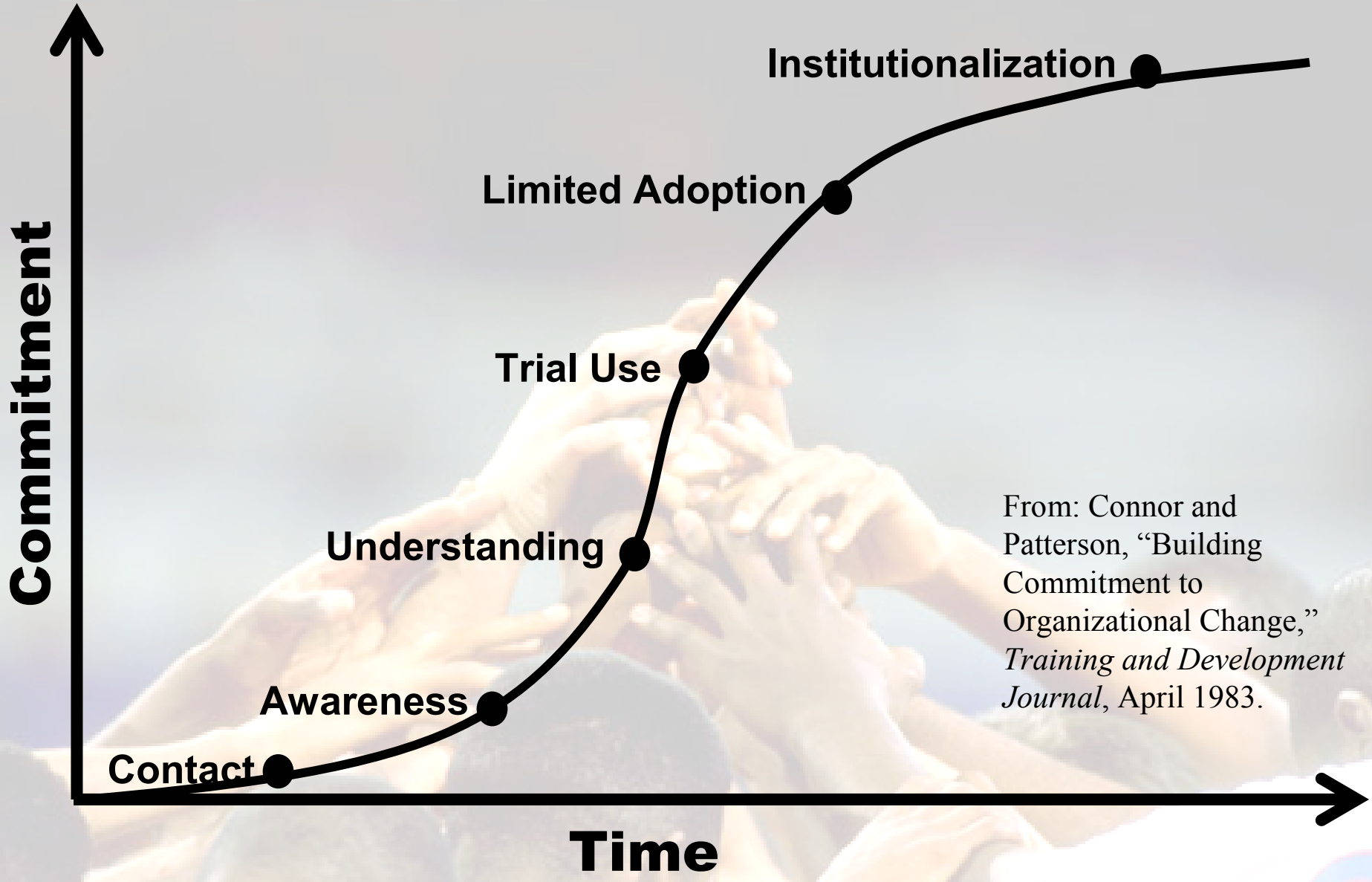
Characteristics of a Level 3 Infrastructure

At level 3, a primary goal of the infrastructure is to promote deployment and institutionalization of the organization's standard processes.

Typical functions of the infrastructure:

- **Enlightening** the senior management sponsor
- **Communicating** sponsor goals and objectives
- **Managing project culture** change and commitment from "first contact" through institutionalization
- **Serving as a conduit** for training and consulting
- **Tracking and reporting** project implementation
- **Verifying project compliance** (allied with Quality Assurance)
- **Preparing for** and conducting successful appraisals

Managing Commitment



From: Connor and Patterson, "Building Commitment to Organizational Change," *Training and Development Journal*, April 1983.

Central Role of the EPG at Level 3

Infrastructure Attributes that Support Level 3

- **Simple** lines of communication and direction
- **EPG facilitates** the achievement of senior management's goals across the organization
- **EPG controls** all 5 major organizational **assets**
  - Set of standard processes
  - Approved life-cycle models
  - Guidelines for tailoring
  - Process asset library
  - Measurement repository
- **EPG monitors and reports** process development and deployment progress

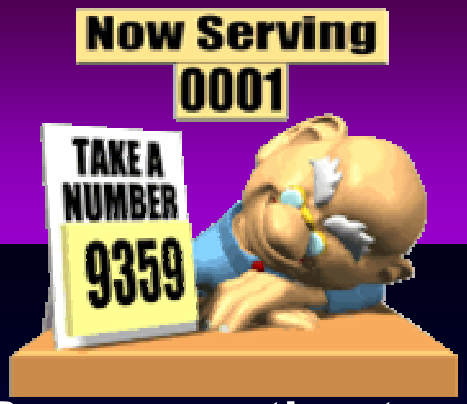
Infrastructure Attributes that Inhibit Levels 4/5

Projects take improvement direction from the EPG

In a large organization, the amount of project performance data can overwhelm the EPG

Project ownership of the process is lacking

Structure does not explicitly promote project-to-project communication and coordination



Process action teams initiated solely by the EPG

Staffing a central EPG may divert improvement funding from other parts of the organization

Characteristics of a Level 5 Infrastructure

At level 5, a primary goal of the infrastructure is to promote long-term, sustainable performance and quality improvement across the projects of the organization.

Typical functions of the infrastructure:

- **Monitoring** process performance measurements to identify opportunities for improvement
- **Setting goals** for performance improvement
- **Identifying** both incremental and innovative performance improvement proposals
- **Conducting pilot** improvement implementations
- **Deploying** organizational improvements
- **Measuring** the results of deployed improvements

Attributes that Support Level 5

- **Alignment of improvement goals** with business goals
- **Ideas** for performance improvement can come **from anywhere** in the organization
- **Project participation** in the organization-level review of measurements
- **High-level of competence** in analyzing performance measurements

- **High senior management interest** in performance improvement, not compliance or appraisals

Elements of our Organization Infrastructure

Management Councils

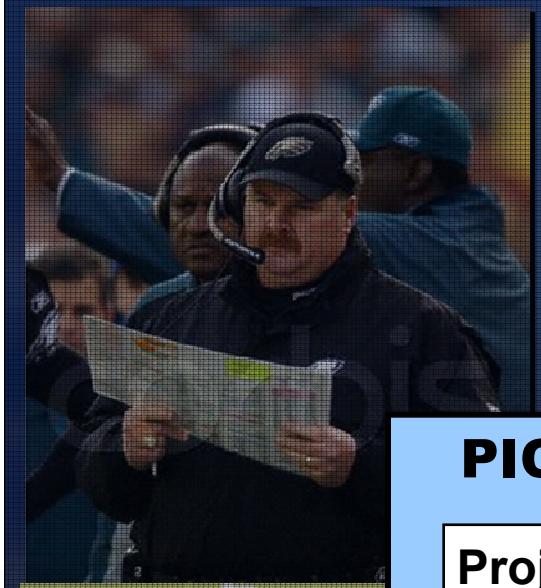
Engineering Performance Improvement Steering Council

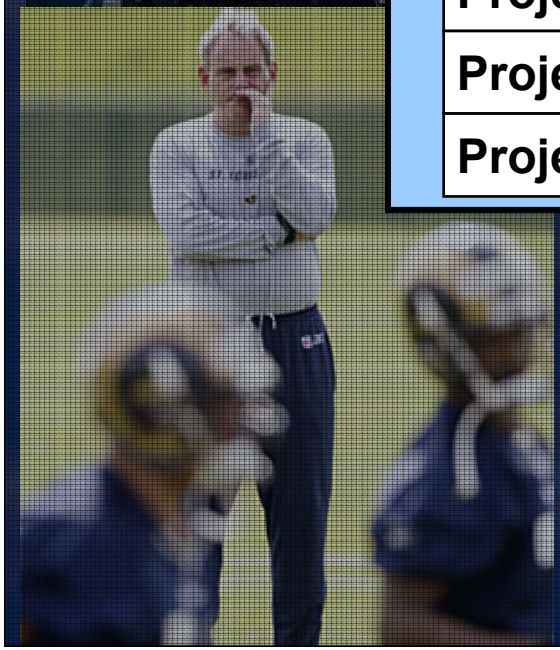
Performance Improvement Councils

Working Groups

- **Engineering Process Group**
- **Boards**
- **Advisory Panels**
- **Technical Working Groups**

Management Council Structure





EPISC

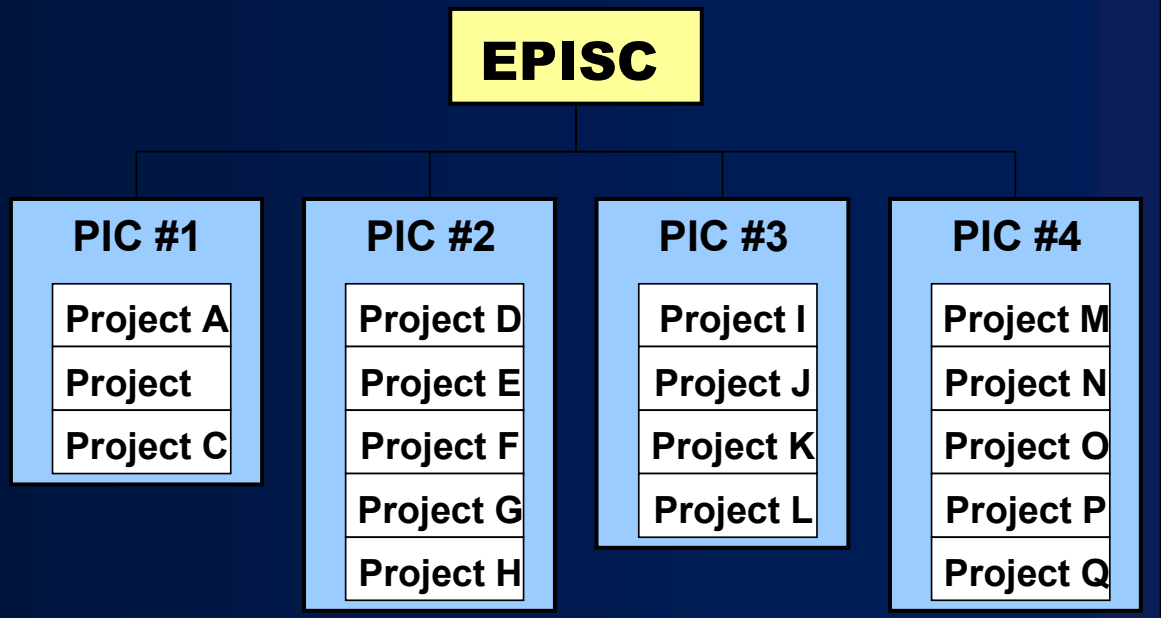
PIC #1	PIC #2	PIC #3	PIC #4
Project A	Project D	Project I	Project M
Project B	Project E	Project J	Project N
Project C	Project F	Project K	Project O
	Project G	Project L	Project P
	Project H		Project Q

Engineering Performance Improvement Steering Council

Chaired by the Site Chief Engineer (Senior Management Sponsor)

Members include...

- Engineering Division Managers
- Performance Improvement Council Chairs
- EPG Manager
- Selected EPG Staff



EPISC Responsibilities

The EPISC is responsible for…

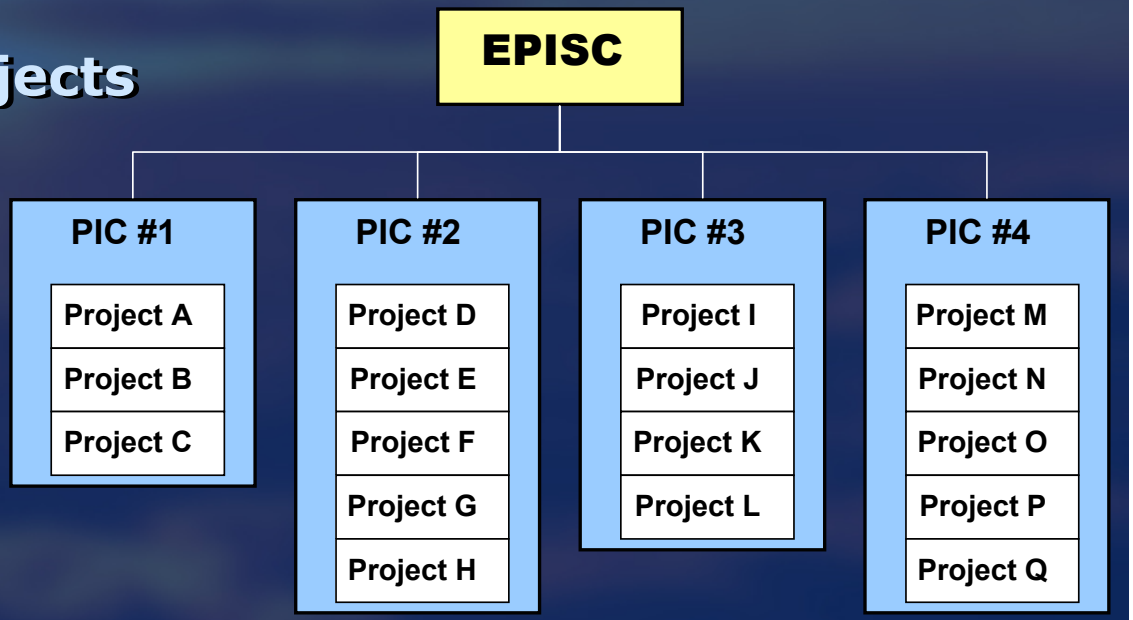
- **Strategic Planning** and Setting Improvement Goals
- **Establishing** Organizational Policies
- **Directing and Overseeing** the EPG
- **Monitoring** Organization-wide Measurements
- **Authorizing and sponsoring** formal Appraisals
- **Allocating** Process Improvement Funding

Performance Improvement Councils (PICs)

PICs are formed to coordinate improvement activities across groups of closely related projects, typically aligned by application domain or product line.

Example PICs…

- Tactical Aircraft Projects
- Weapon Systems Projects
- Mission Planning Projects
- Flight Simulation Projects
- System Integration Laboratory Projects
- Tool Development Projects



PIC Membership

Each PIC is chaired by a senior manager who has responsibility over the projects in the PIC.

PIC Membership includes…

- **Project Managers**
- **Project Software Managers** (if applicable)
- **Other selected project team leaders**
- **Project Process Focals**
- **Project Quality Assurance**
- **Project Metrics Engineers**

PIC Responsibilities

Each PIC is responsible for…

- **Reviewing member project measurements** for process performance and product quality
- **Establishing and maintaining Process Capability** Baselines for member project measurements
- **Coordinating, reviewing, and approving** member project Action Plans
- **Monitoring member project improvements**
  - Status of project Improvement actions
  - Status of Performance Improvement Proposals (PIPs)
- **Planning member project participation** in appraisals
- **Promoting commonality** across the member projects
- **Reporting overall progress** to the EPISC

Organization Boards

Performance Improvement Management Board

- Initiates, Evaluates, Authorizes, and Tracks Performance Improvement Proposals (PIPs)
- One for each engineering discipline (Software, Systems Engineering, etc.)

Defect Management Board

- Subordinate to the PIMBs
- Coordinates Defect Prevention/Causal Analysis actions across the organization

Waiver Resolution Board (WRB)

- Dispositions Project Process Waiver Requests

Standard Process Configuration Control Board (CCB)

- Dispositions Process Problem Reports

Working Groups

Advisory Panels

- Metrics
- Configuration Management
- Training

Technical Working Groups

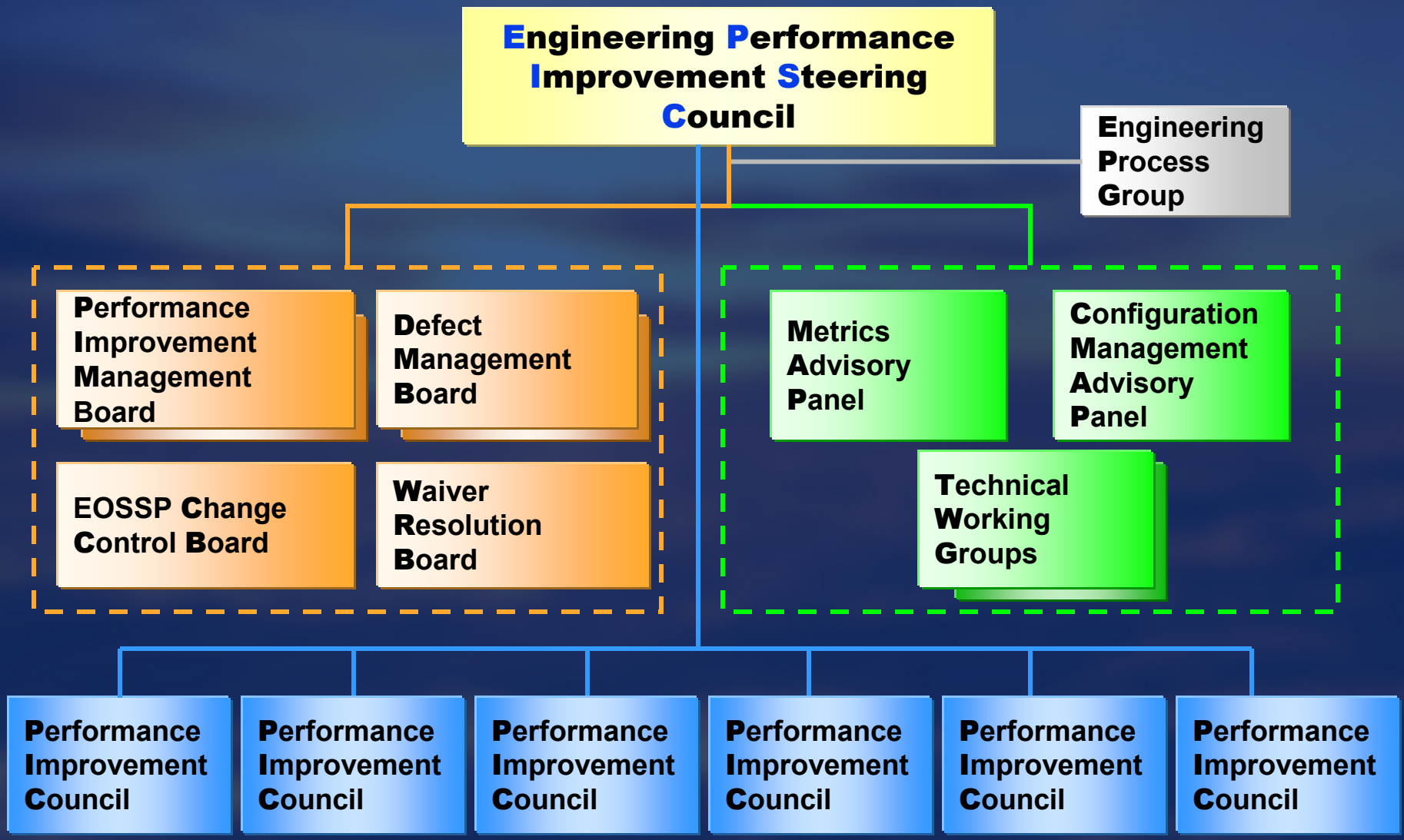
- a.k.a. Process Action Teams
- Short-term working groups formed to address specific process-related problems and issues
- Typically facilitated by EPG members
- Most members represent projects

Engineering Process Group

The charter of the EPG is to serve the performance improvement needs of the organization, not to dictate the improvement actions of the projects.

- EPG manager reports to the Site Chief Engineer
- All engineering disciplines are represented
- EPG members rotate from/to projects
- EPG Functions…
  - Project Support
  - Process Development and Maintenance
  - Quantitative Management
  - Infrastructure
  - Training Development and Administration

Entire Organization Infrastructure



Benefits of this Infrastructure

- **Project managers and practitioners participate at all levels of decision making**
- **The EPG serves the organization**
  - It does not direct the process improvement initiative
- **The infrastructure elements are highly dynamic**
  - Multiple instances can be created for several elements
  - Elements can be created and terminated as needed
- **Infrastructure incorporates multiple points of view**
  - PICs represent the projects POV
  - PIMBs represent the disciplines POV
  - Multidiscipline EPG

Questions?

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