PROCESS INDUSTRY PRACTICES

MIMOSA
Open Meeting

Houston , Texas
December - 2019

Agenda – Process Industry Practices

- **P I P Overview: 26 Years Strong**
  - Formation / Vision
  - Active Membership Growth
  - Organization & Volunteers
- **P I P Practices**
  - Development Process
  - Collaboration
  - Website
- **Leverage Proven Sucessful Process**

PROCESS INDUSTRY PRACTICES

Who is Michael Poehl ?

- **PIP Director since April 2013**

- *28 years with BP / Amoco*
- *Chemicals and Upstream*
- *Technical / Operations Early Career*
- *Vice President Amoco Energy Group North America*
- *Retired in 2002*

- **Adjunct Professor at University of Texas Chemical Engineering since 2002**

* **Paw Paw (Best Job Ever)**

PIP PROCESS INDUSTRY PRACTICES

PIP Vision

- ***Owner, engineering, and construction companies*** within the process industries seek active membership in PIP to establish Practices through the ***direct exchange of knowledge*** as a means to achieve superior results.

P I P Initiative

- **Founded by seventeen Members in 1993**
- **Self-Funded Organization**
  - Endorsed by the Construction Industry Institute (CII)
    - Research Unit within the Cockrell School of Engineering
  - Copyright owned by The University of Texas (UT)
- **Consortium of Owner and Contractor Companies**
  - Historically, membership has consisted of two Owners to each Contractor (E P C Firms)
- **Purpose:**
  - To Publish Guideline Practices involving Design, Construction and Procurement for the Process Industry

P I P Organizational Fit -

University of Texas at Austin

Cockrell School of Engineering

CII "Umbrella" $12.6 M / Year

CII Core R&D Center $7.8 M	PIP Engr. Stds. $2.6 M	OS2 IAP UT R&D $2.1 M	CCIS UT CEPM $0.1 M

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Active Members

- **Today, PIP has 97 Active Members**
  - 62 Owners
  - 35 Contractors
- **Members represent a significant share of diverse process-related industries**


Oil & Gas


Power


EPC Industries


Specialty Chemicals


Food & Beverage Processing


Mining


Pharmaceuticals & Biotechnology


Refining & Petrochemicals


Pulp & Paper

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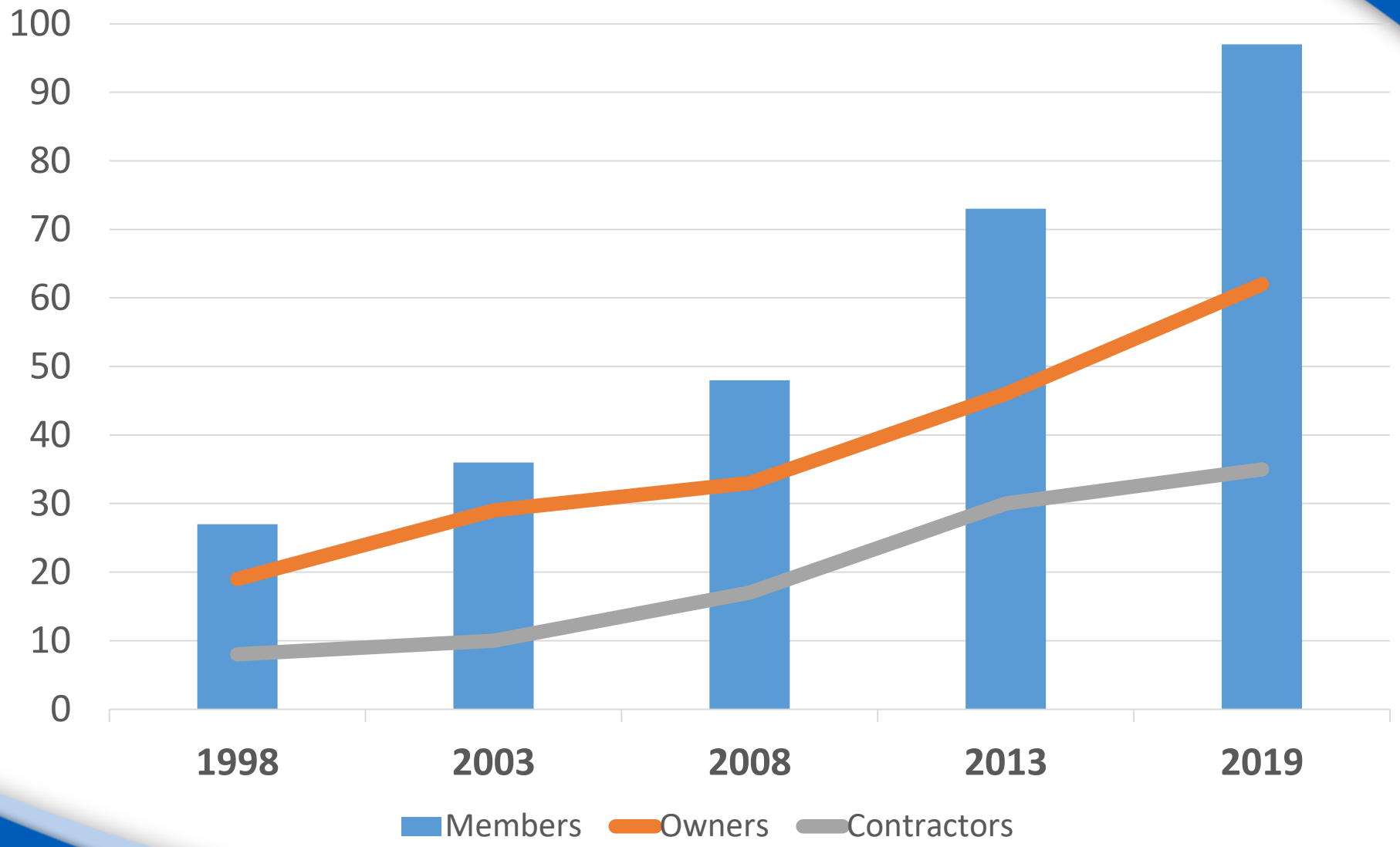
Active Membership Growth



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Active Members

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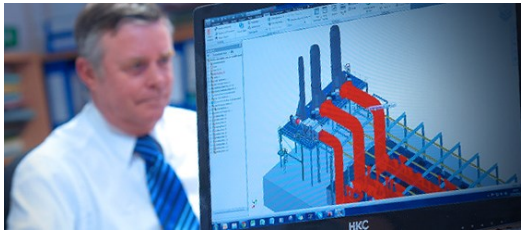
Non-active Members

ADM
BAE Systems
Bahrain Petroleum - BAPCO
Baker Hughes
BEI Engineers
Braskem SA
Brock Group
Carboline Company
Chevron Phillips
Ecodyne Limited
Emerson
Extraction Oil & Gas
Geo V. Hamilton
Gulf Interstate Engineering
HDR
IMTT
Jotun Paints
Koppers
Kraton Polymers
Lanier & Associates
Lloyd Engineering
Medallion Operating Company
NOVA Chemicals
ONEOK
OXEA
Phoenix Park Gas Processors
PPG
Praxair
Professional Engineering Consultants (PEC)
ROCKWOOL Technical Insulation
Salamander Solutions
Scientific Design Company, Inc.
SGCE, LLC.
Shell Global
Sherwin-Williams
Stepan Company
Sumitomo Chemical
The University of Texas at Austin - Department of Utilities & Energy Management
Valero
Velocys
Wood Group USA, Inc.
W.R. Grace

Licensees

API
ASME
Autodesk
Aveva
Cornell University
De La Salle University
Florida A&M University
Hexagon
IEEE
IHS
IRA-CIPEN
Kinsmen Group
Lamar University
Lee College
Montana State University - Billings
National Institute of Building Sciences
National Insulation Association
Palomar College
South Central Louisiana Technical College (SCLTC)
St. Paul Technical College
SAI Global
Texas A&M University-Corpus Christi
Techstreet (Clarivate)
University of North Dakota
University of Wisconsin – Madison



Shared Goals Amongst Members

- **Minimize Total Cost of Ownership**
- **Reduce Plant Operating and Installation Costs**
- **Standardize Non-Proprietary Processes**
- **Develop and Implement Common Industry Practices for:**
  - Facility Design
  - Procurement
  - Construction
  - Operations
  - Maintenance

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Are There Risks in Your Project ?

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Why Companies use P I P

- **Member Companies have the opportunity to adopt the Process Industry Practices**
- **Reduce Plant Operating and Installation Costs**
- **Standardize Non-Proprietary Processes**

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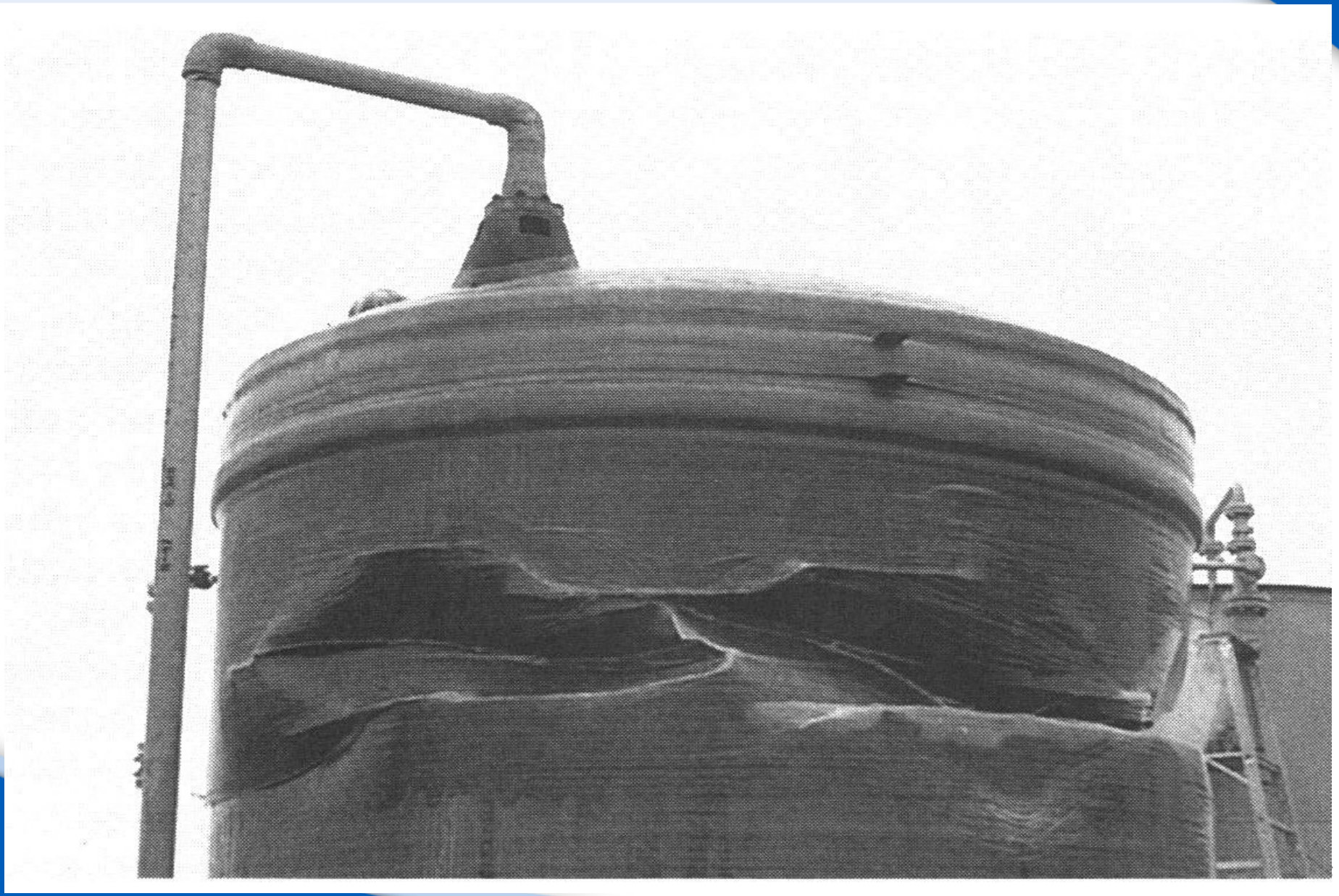
To Avoid Potential Risks



Industry Position of P I P Practices

- Replace Internal Standards
- Redeploy Standards Maintenance to Higher Value Activities
- Industry Recognized by *API, ASME, ISO & ASTM.*
- Recognized And Generally Accepted Good Engineering Practices

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A B E T Philosophy for Chemical Engineering

None of us is as smart as *ALL* of us !

P I P Volunteers

- **Approximately 500+ Active Volunteers**
  - Subject Matter Experts
    - Function Team Members (380+)
    - Discipline Contacts
  - Management
    - Steering Team Representatives (120+)
    - Team Sponsors
    - Committee Leaders
  - Young Professionals
    - Development Opportunities

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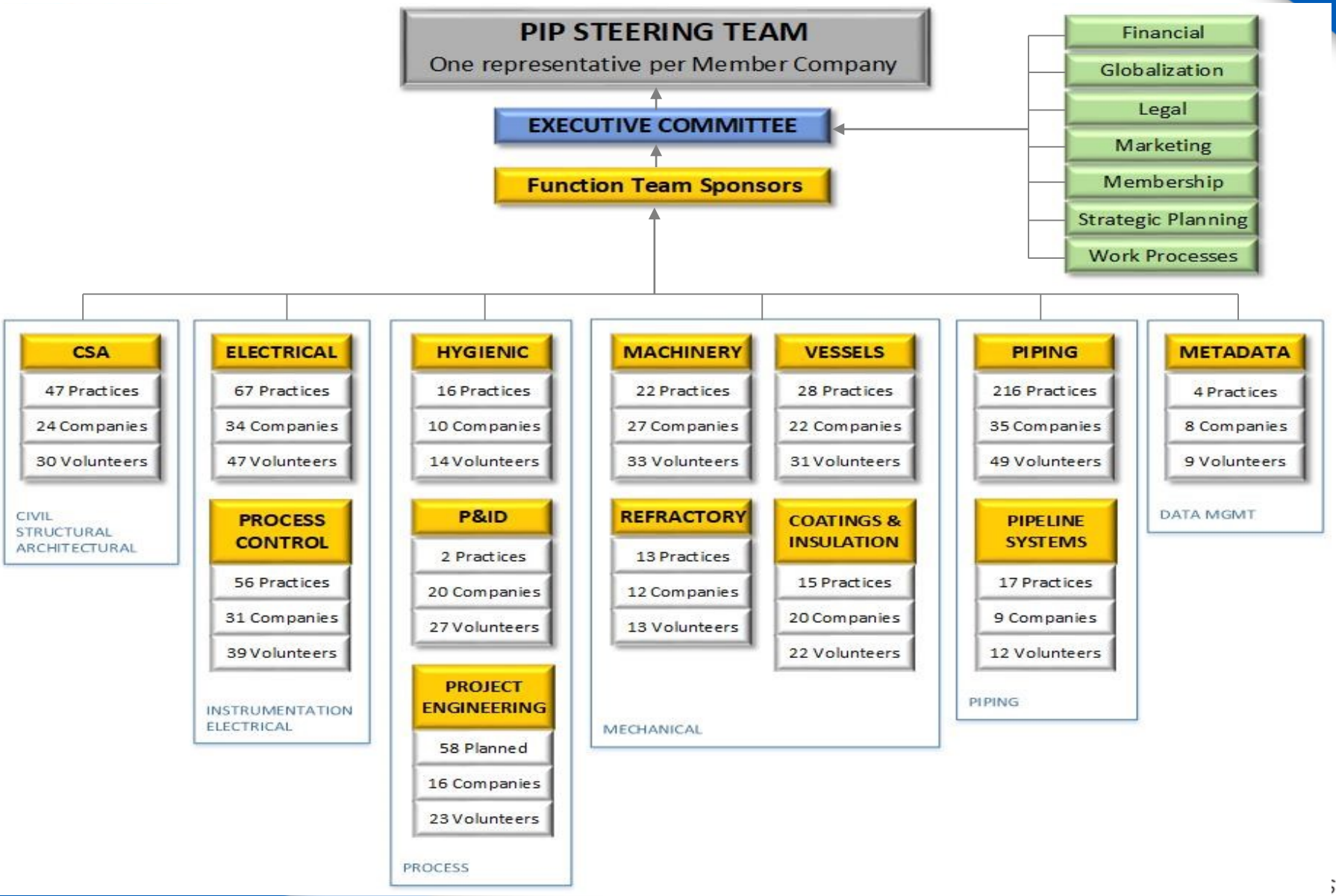
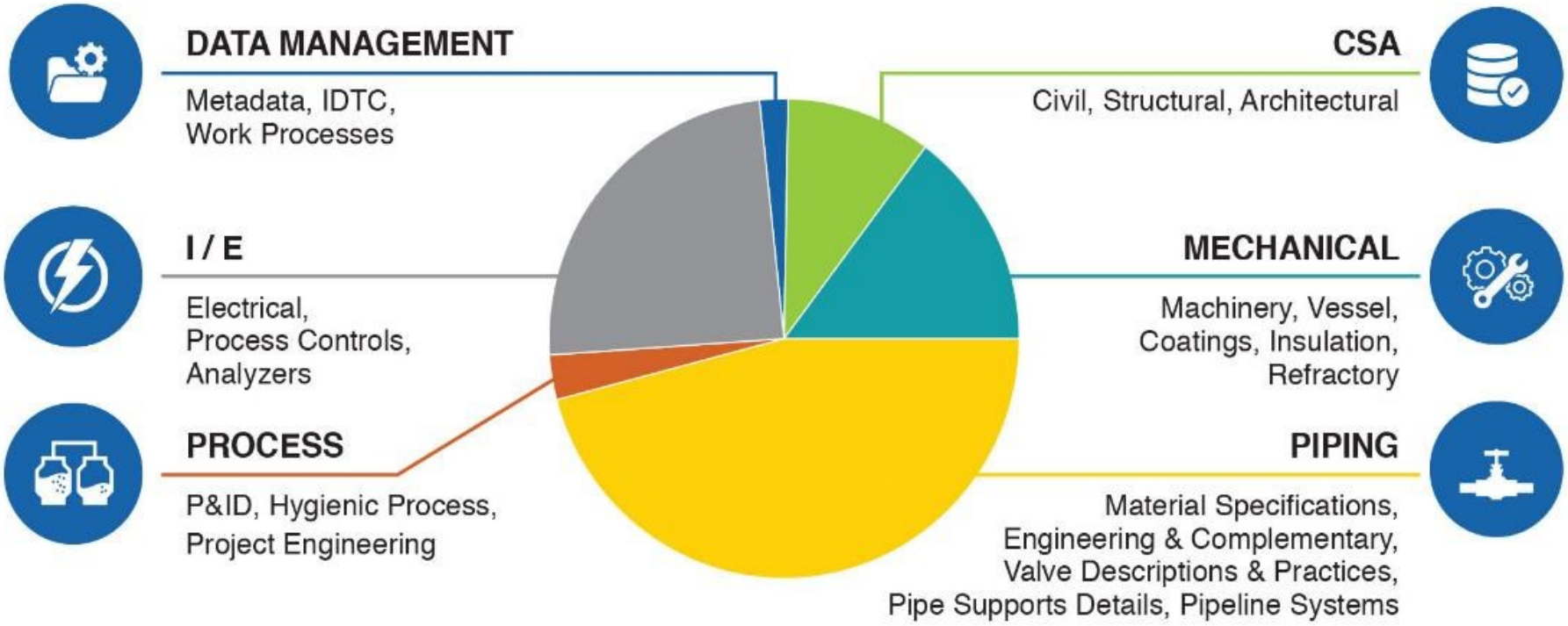
P I P Organizational Chart



P I P Practices

- Collaboration between Member Company SME's
- "Best Practice" Standardization where applicable
- 500+ Published Practices
- 13 Engineering Disciplines



Collaboration – Secret Sauce of P I P

- **Four Elements**
  - Openness
  - Ego Check
  - Transparency
  - Follow P I P business guidelines

- **Strong Leadership**
- **Commit to Improvement of the Process**
- **Training >>>> Teamwork**

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GROWING LEADERS

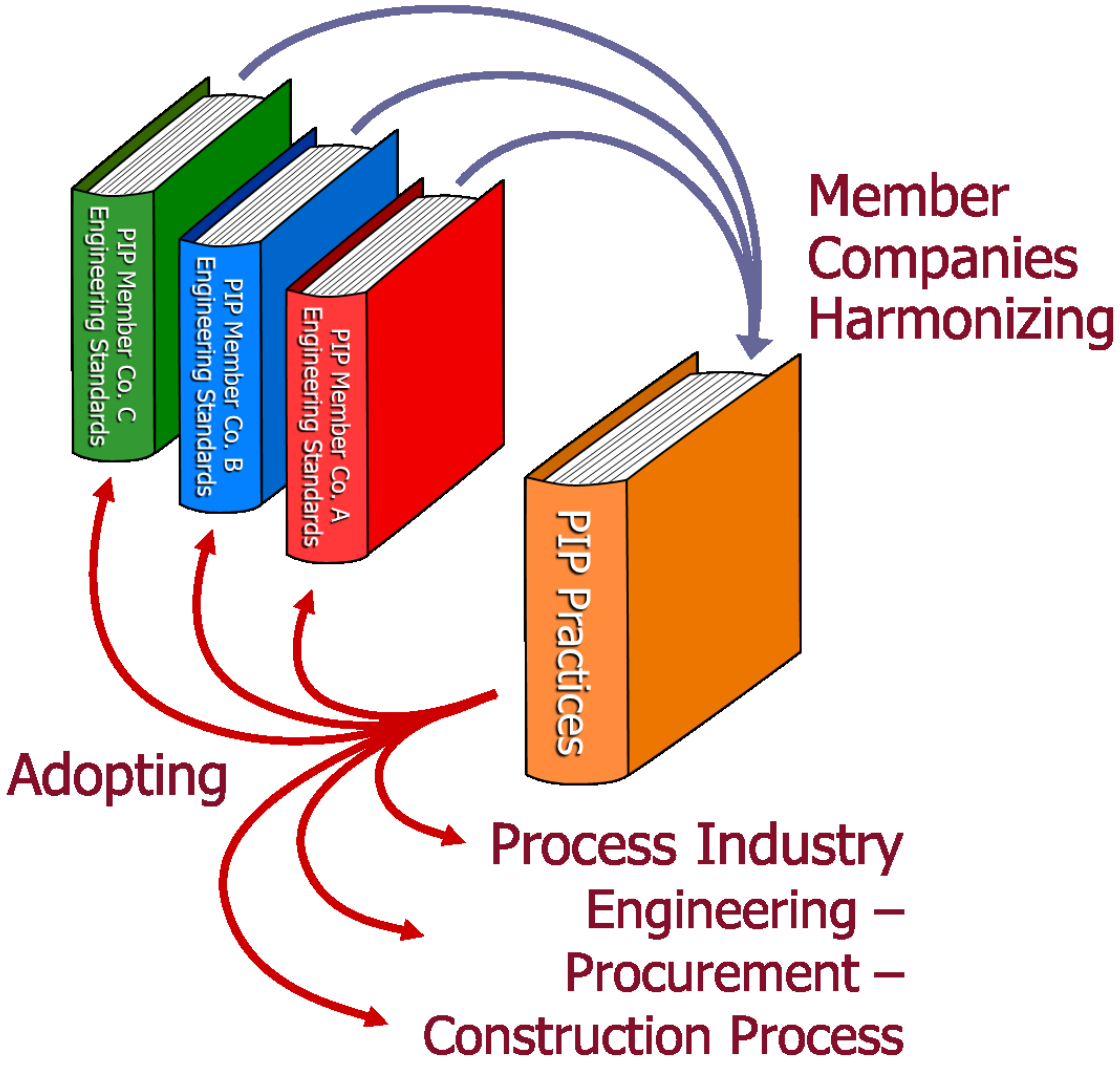
LORI PANNELL
LEADERSHIP COACHING, INC.


Do the best you can until you know better. Then when you know better, do better.
Maya Angelou
quotefancy

ADG – 001
Specification for Developing Practices

- **Table of Contents**

Practice Development Process



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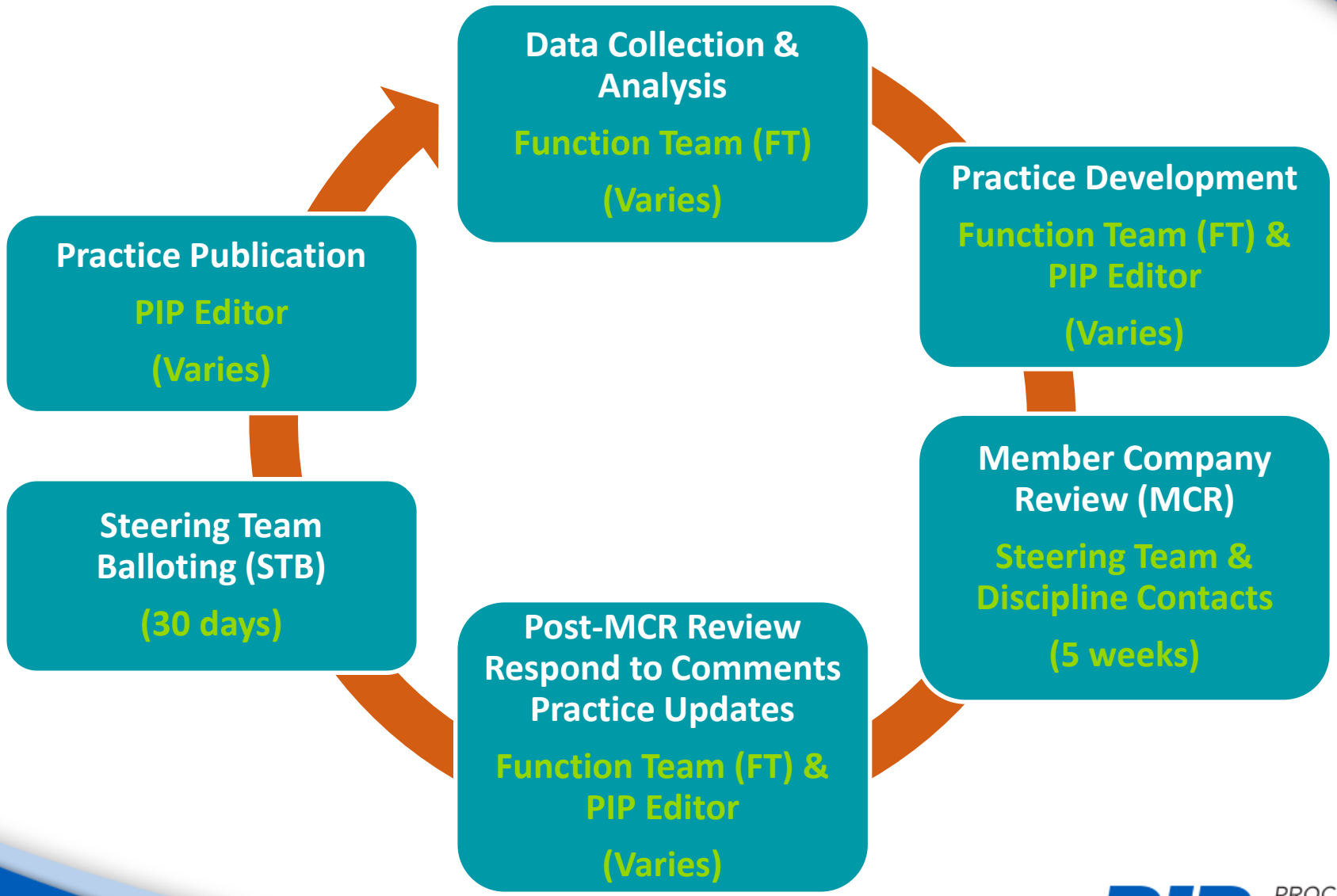
Practice Development Process



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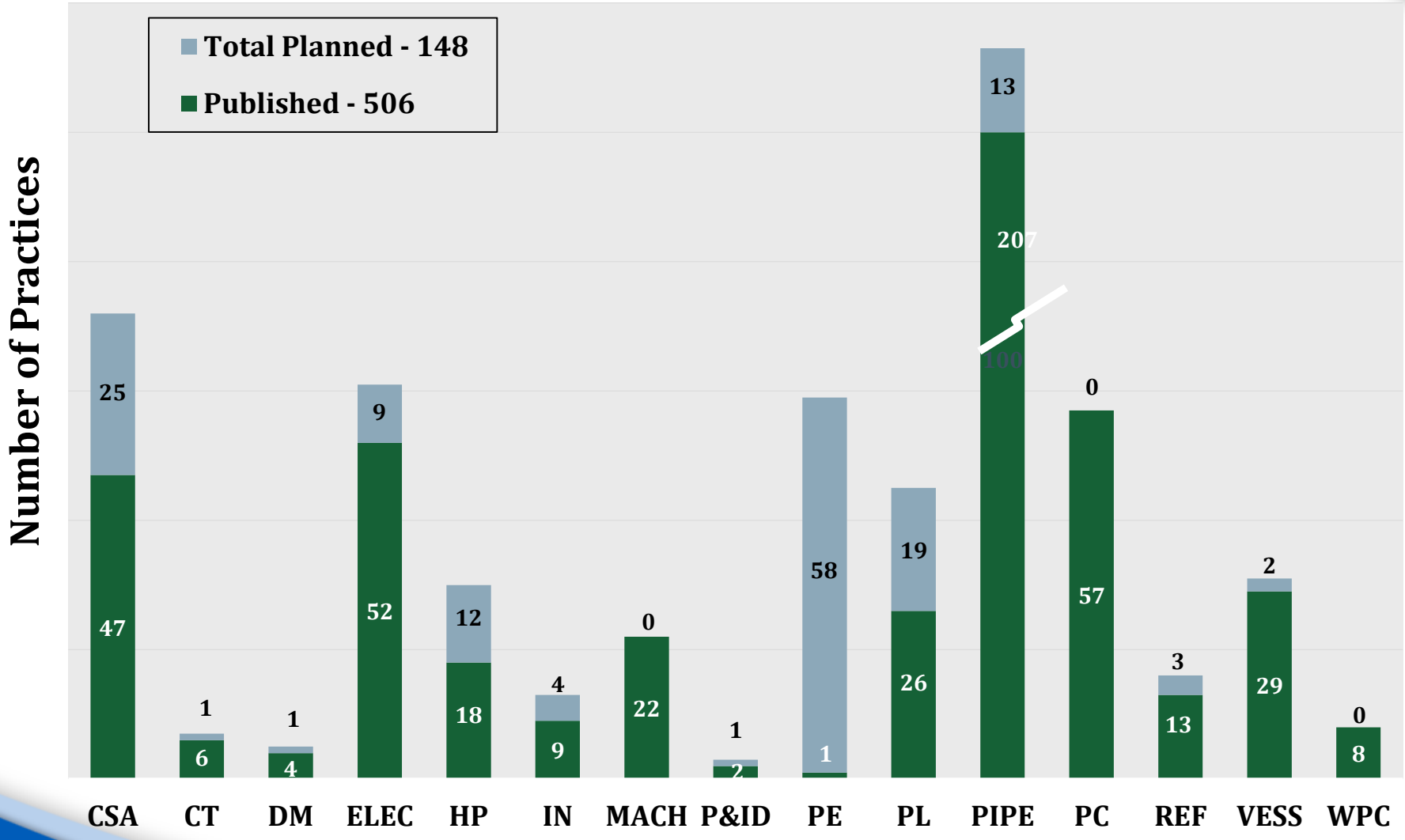
Practice Types

CODE	TYPE	AUDIENCE
G	General (Internal Administrative Practices)	Authors and Editors of Practices
C	Criteria (Design Specification)	Engineers
E	Engineering Guide	Less experienced Engineers
S	Specification (Purchase Order or Subcontract Specification)	Vendors, Fabricators, Manufacturers, Installers, and Constructors
F	Fabrication Details	Procurers (BoMs), Fabricators (Details), and Inspectors
I	Installation Details	Installers, Constructors, and Inspectors
T	Inspection and Testing Requirements	Vendors, Fabricators, Manufacturers, Installers, Constructors, Inspectors, and Start-up Teams
D	Documentation Requirements	Vendors, Fabricators, and Manufacturers

Practices by Discipline

December 2, 2019



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P I P Engineering Guideline and Criteria

- Practice Development – 6
- Architectural & Civil – 8
- Structural – 4
- Foundations – 5
- Structural Steel – 5
- Coatings/Insulation/Refractory – 6
- Electrical – 7
- Machinery – General – 6
- Pumps- 6
- P&ID – 2
- ASME B31.3 Piping General - 7
- ASME B31.3 Piping Design – 4
- Valves – 8
- ASME B31.4/8 Pipeline Systems – 4
- Hygienic Processes Piping – 2
- Process Controls - General – 9
- Process Analyzers – 5
- Process Control Valves – 6
- Process Measurement – 9
- Vessels – 5
- Heat Exchangers & Tanks - 2

116 Practices on How To Use Practices

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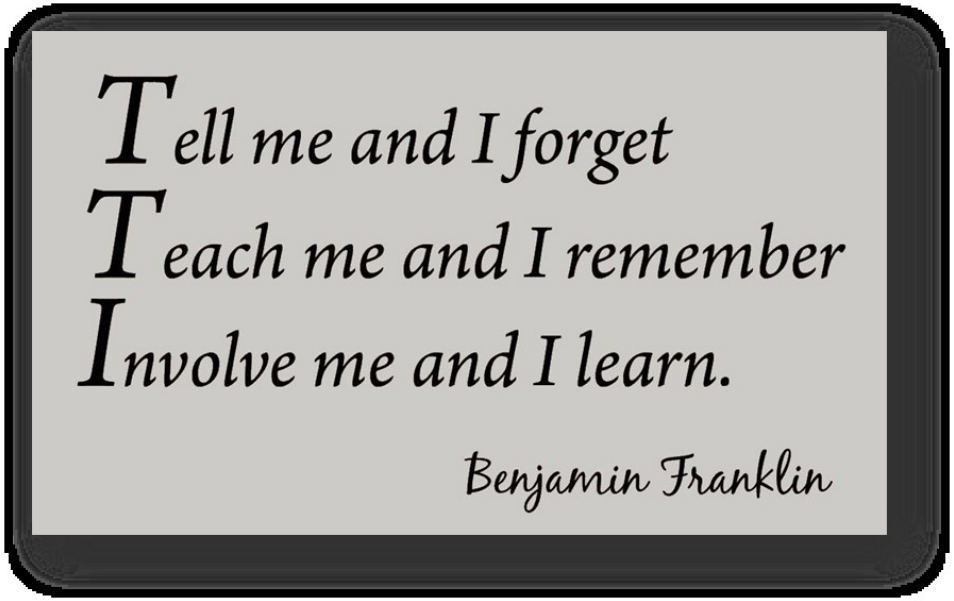
Why Employees use P I P

- **Employee development thru participation**
  - **Technical, Interpersonal, Leadership abilities**
- **Opportunity to influence P I P Practices to best meet the needs of your company**
- **Allows YOU to learn from OTHERS**



Why Employees use P I P

- **Haagen-Dazs Ice Cream ?**

Collaboration with Other Organizations

Need YOUR Input on Path Forward

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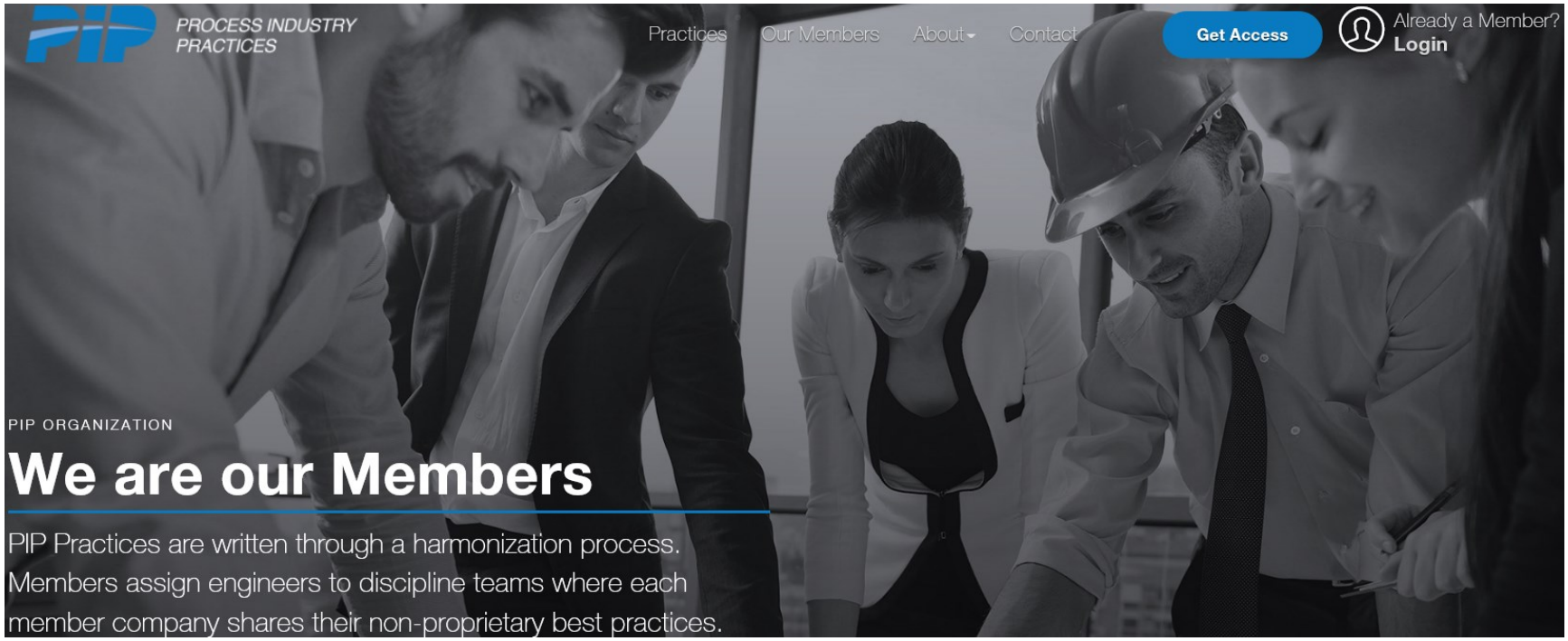
Website

www.pip.org



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Thank you! Questions?

www.pip.org

marketing@pip.org

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Back – Up Slides

Active Membership Requirements

- **Attend Quarterly Meetings in Houston, Texas**
  - Provide internal non-proprietary standards for harmonization into PIP Practices, if available
  - Contribute to Practice revisions
  - Follow PIP business guidelines
- **Voluntarily adopt & implement Practices**
- **Commit to improvement of the process**

Active Membership Requirements

- **Provide at least 2 Volunteers**
  - Steering Team Participant
    - Able to represent the company's interest on voting matters (strategic direction, budget, employee resources)
    - In-person attendance at a minimum of 50% of meetings annually
    - Up to 3 alternates allowed
  - Function Team Participant(s)
    - Subject Matter Expert in an Engineering Discipline
    - Participate at a minimum of 33% of team meetings, in person or via webex
    - No limit to the number of Function Team participants allowed

Active Membership Dues

- **First Year Dues = $25,000**
- **Membership Renewal = $35,000/year**
  - Discounts earned through active participation
    - Gold Level Discount (60% off renewal)
      - **Steering Team Representative attends 75% of meetings**
      - **Function Team Member attends at least 66% of team meetings**
    - Silver Level Discount (30% off renewal)
      - **Steering Team Representative attends 50% of meetings**
      - **Function Team Member attends at least 33% of team meetings**
  - Minimum Level of Participation required to achieve Active Member status

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Metadata – Preview Teaser ….

What does Metadata mean for PIP?

Metadata Function Team

Mission Statement:

Promote awareness and coordinate the discovery, documentation, harmonization, use and reuse of data using best practices.

Long Range Objectives (5-10 years to achieve)

- Develop Metadata communication/transfer beyond PIP

Medium Range Objectives (2-5 years to achieve)

- Develop an Electrical data elements list (similar to DMDIM001) from the Electrical Practices datasheets

Short Range Objectives (<2 years to achieve)

- Develop MDFT Charter document
- Hyperlink the internal PIP References in the Practices (concentrated effort for all Practices; existing and new)
- Develop guidelines for coordinating the assignment of data labels and fields
- Develop an initial PIP "data dictionary"
- Develop a Metadata Management Process
- Develop a Data/Metadata Stewardship Program (See Note)
- Create a Metadata Strategy / Practice
- Adopt / existing industry Metadata Standards
- Identify Appropriate Metadata Tools
- Implement Metadata Management across the PIP organization

PIP SPECS – Knowledge Management

- **Think About It**
  - When was the last time you printed out a spec to read it?
  - When was the last time you referred to a handbook sitting in a shelf vs. looking online?
  - Have you ever wondered where the spec developers got their values from?
  - Have you ever seen a spec refer you to 10 other relevant specs?
  - Have you ever uploaded an old specification (non-digital) and then tried to run a search?

- **If you answered yes to any of these questions, you are yearning for Metadata!**

PIP – WHAT ? .....

- If it looks like a
- Duck

- If it walks like a
- Duck

- If it sounds like a
- Duck

- It is probably a
- Duck

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P I P – NOT D u c k ….

D U c k

D U C k

D UC k

D U C K

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P I P METADATA

- **Metadata tags must be added at the native document level**
- **Links must be created before the document converts to PDF**
- **PCCFL001 – with Metadata**

2.1 Process Industry Practices (PIP)

- PIP PCCGN001 - *General Instrument Design Checklist*
- PIP PCCGN002 - *General Instrument Installation Criteria*
- PIP PCIDP100 - *Differential Pressure Installation Details*
- PIP PNF0200 - *Vent/Drain/Instrument Connection Details*

2.2 Industry Codes and Standards

- American Gas Association (AGA)
- American National Standards Institute (ANSI)
  - ANSI-2530/API-14.3/AGA-3/GPA-8185 - *Natural Gas Fluids Measurement - Concentric, Square-Edged Orifice Meters*
    - Part 1 General Equations and Uncertainty Guidelines
    - Part 2 Specification and Installation Requirements
    - Part 3 Natural Gas Applications
    - Part 4 Background, Development, Implementation Procedures and Subroutine Documentation