



CM Implementation in a large Corporate Division

FAA CM Conference
September 2008

CM Implementation in a large Corporate Division

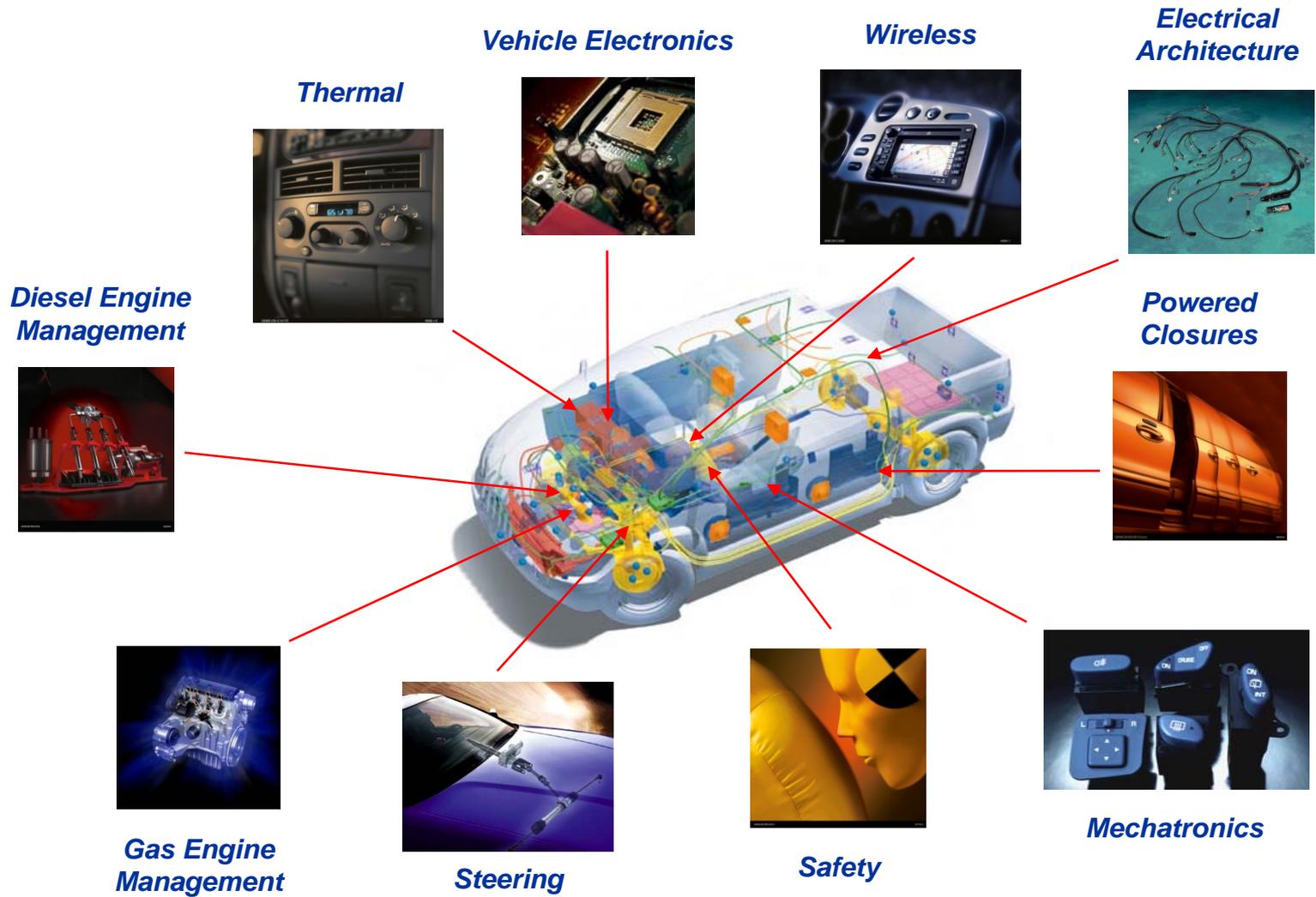
Agenda

- History and Delphi Overview
- CM Implementation at Delphi Steering
 - Phase 1: Product & Process Design
 - Phase 2: Global Enterprise
 - Phase 3: Process Automation for Efficiency

GM history and Delphi origin

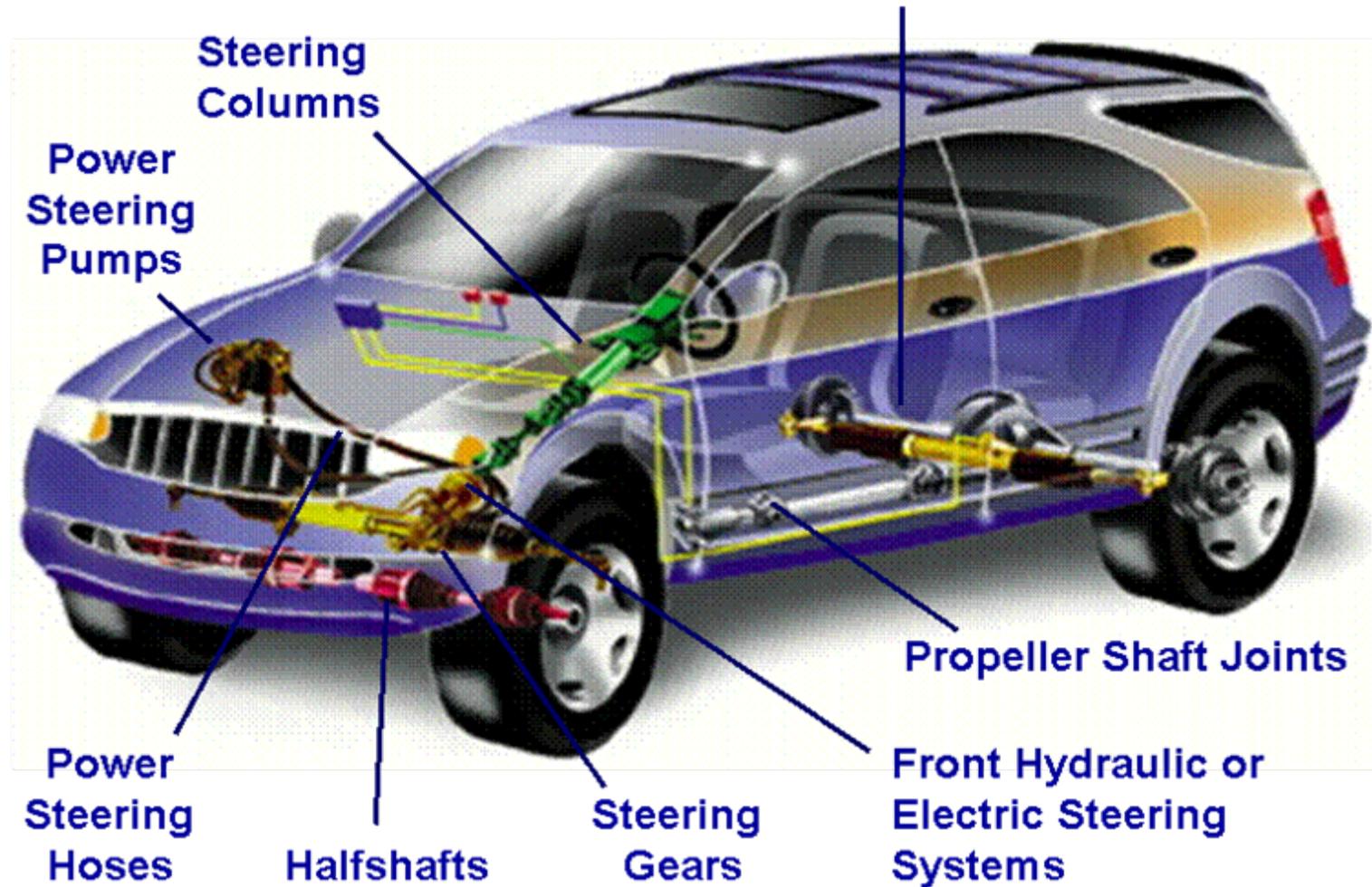
- 1908 -1994 General Motors Corporation
 - » Car Divisions and Component Divisions
- 1994: Formed Automotive Components Group (ACG)
- 1999: Delphi spun-off from General Motors (5 Divisions)
 - » Energy & Chassis
 - » Electronics & Safety
 - » Thermal & Interiors
 - » Packard
 - » Steering

Delphi System Technologies



Delphi Steering Technologies

QUADRASTEER™ Rear Electric Steering Systems



Delphi Steering Global Customers



Delphi Steering Engineering Footprint



Enable Global Collaboration

Global Collaboration

- Integrates People, Processes, & Information
- Across the Extended Enterprise
- Through the Entire Life Cycle

Collaboration...

***“...to work together, especially
in a joint intellectual effort.”***

American Heritage Dictionary



Business Imperatives

■ Global Collaboration

- Standardize Work  Methodology
- Continuous Improvement

■ Improve Organizational Efficiency

- First achieve effectiveness
- Then focus on efficiency



CM Implementation at Delphi Steering

Agenda

- History and Delphi Overview
- CM Implementation
 - Phase 1: Product & Process Design
 - Phase 2: Global Enterprise
 - Phase 3: Process Automation for Efficiency

CM Implementation

Phase 1: Product & Process Design

- 2001 - 2003: Implemented “Change Control Boards” & “Paper” Change Request
 - Limited initial CM training
 - Procedure for "Enterprise Change Request Process“
 - QS9000 Procedure audits indicated holes in our process

CM Implementation at Delphi Steering

Phase 1: Product & Process Design

- 1999: Delphi spun-off from General Motors
- 2001: Implemented CCB's & "paper" CR
- 2003: CM Benchmarking Study
 - External: Other Organizations
 - » Toyota
 - » Other Divisions
 - Internal: Delphi Steering historic processes

CM Implementation

Phase 2: Global Enterprise

- 2003: Industry Transition to ISO/TS 16949 (*2nd edition*)
 - Process based quality system & audits
 - Corporate Directives to Divisions for common process
 - » Executive attention & commitment
 - Rewrote divisional procedures into one global CM procedure

CM Implementation at Delphi Steering



DBS Policy Manual

Section 3.8 Design/Process Changes

CPR 3.8.1-1 (Corporate)

CM Change Process

G1375 (Delphi-S)

CM Change Process

CM Implementation

Phase 2: Global Enterprise

- 2003: Industry Transition to ISO/TS 16949 (*2nd edition*)
- Created the CM Strategy
 - Defined the management structure & created CM War Room

CM Implementation

Steering Division

CM Executive Champions
Dir. Quality, Dir. Engineering, & Dir. Operations

CM Core Team
Engineering, Mfg. Engineering

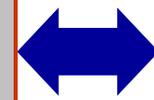
Engineering	GSM	Operations
PC&L	Materials Engr.	Quality
Service/Aftermarket	Sales	Finance
IT		

CM Process
Develop & Deployment

Cross functional implementation team	All CIL Mtg
	All ARA Mtg

CM System
Develop & Deployment

Cross functional leaders team



Delphi

CM Executive Council

Delphi

Steering

Energy & Chassis

E&S

T&I

Packard

CM Implementation

Phase 2: Global Enterprise

- 2003: Industry Transition to ISO/TS 16949 (*2nd edition*)
- CM Strategy Created
 - Defined the management structure & created CMII War Room
 - Defined our CM goal

Continuous improvement in the ability to
"change faster and document better"



CM Implementation

Phase 2: Global Enterprise

- 2003: Industry Transition to ISO/TS 16949 (*2nd edition*)
- CM Strategy Created
 - Defined the management structure & created CMII War Room
 - Defined our CMII goal
 - Defined the initial scope
 - » North America (5 sites)
 - » SOP and beyond
 - » Identified (25) controlled Product & Process documents
 - Defined the CM process

CM Implementation

Phase 2: Global Enterprise

- 2003: Industry Transition to ISO/TS 16949 (*2nd edition*)
- CM Strategy Created
 - Defined the management structure & created CMII War Room
 - Defined our CMII goal
 - Defined the initial scope
 - Defined CM process
 - Developed global roll-out
 - » Identified pilot plants
 - » Established training requirements & plan
 - » Identified performance metrics

CM Global Deployment

Global CM Rollout

Site	2003	2004												2005												2006	
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jul	Oct
MX Juarez	Dec																										
MI -7			Feb																								
MI -3						May																					
AL 1 & 2						May																					
MX Q (1 & 2)						May																					
IA - 1								Aug																			
MI - 1											Nov																
MI - 4											Nov																
MI - 5												Dec															
MI - 6																Apr											
India																	May										
France																						Sep					
Italy																						Jul					
Spain																						Aug					
Poland																							Sep				
Australia																							Sep				
Brazil																									Jul		
China																										Oct	

 Target
  Running

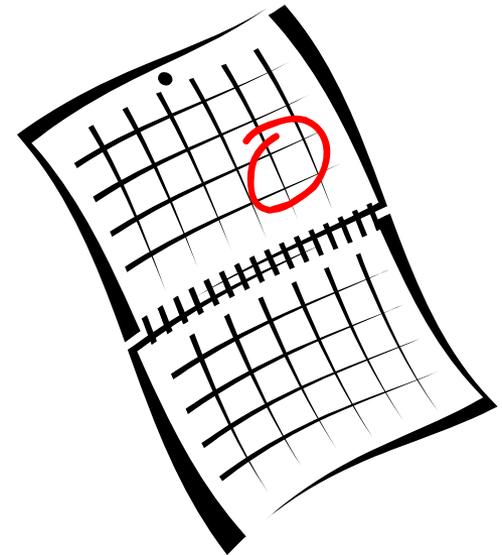
CM Training Requirements

- On-line Training:
 - CM Awareness Training
 - » On-line self-paced tutorial
 - » Everyone involved with design, release, and change 2hrs

- Classroom Training:
 - Application of CM – Procedural Training on Change Request
 - » Everyone involved with the Change Request process 2 hrs
 - Application of CM - Procedural Training on Change Notice
 - » Everyone associated with implementing changes 1½ hrs
 - CM Principles and Implementation (tailored to Audience)
 - » CM instructor
 - » Process champions (eg; Core Team, CL's, CIL's, etc) 4 days

Regular Communications

- Objective: Communicate broadly & frequently
 - Weekly CM Core Team
 - Weekly CM Implementation Team
 - Weekly Change Implementation Leaders
 - Bi-monthly Audit & Release Analyst
 - Bi-monthly/monthly PCL meetings
 - Bi-annual Engagement Conference
 - Training recognition
 - Monthly updates in company newsletter
 - Key milestone celebrations



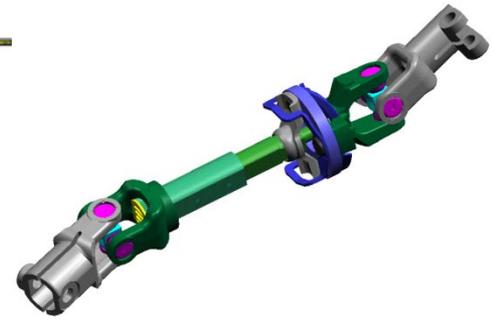
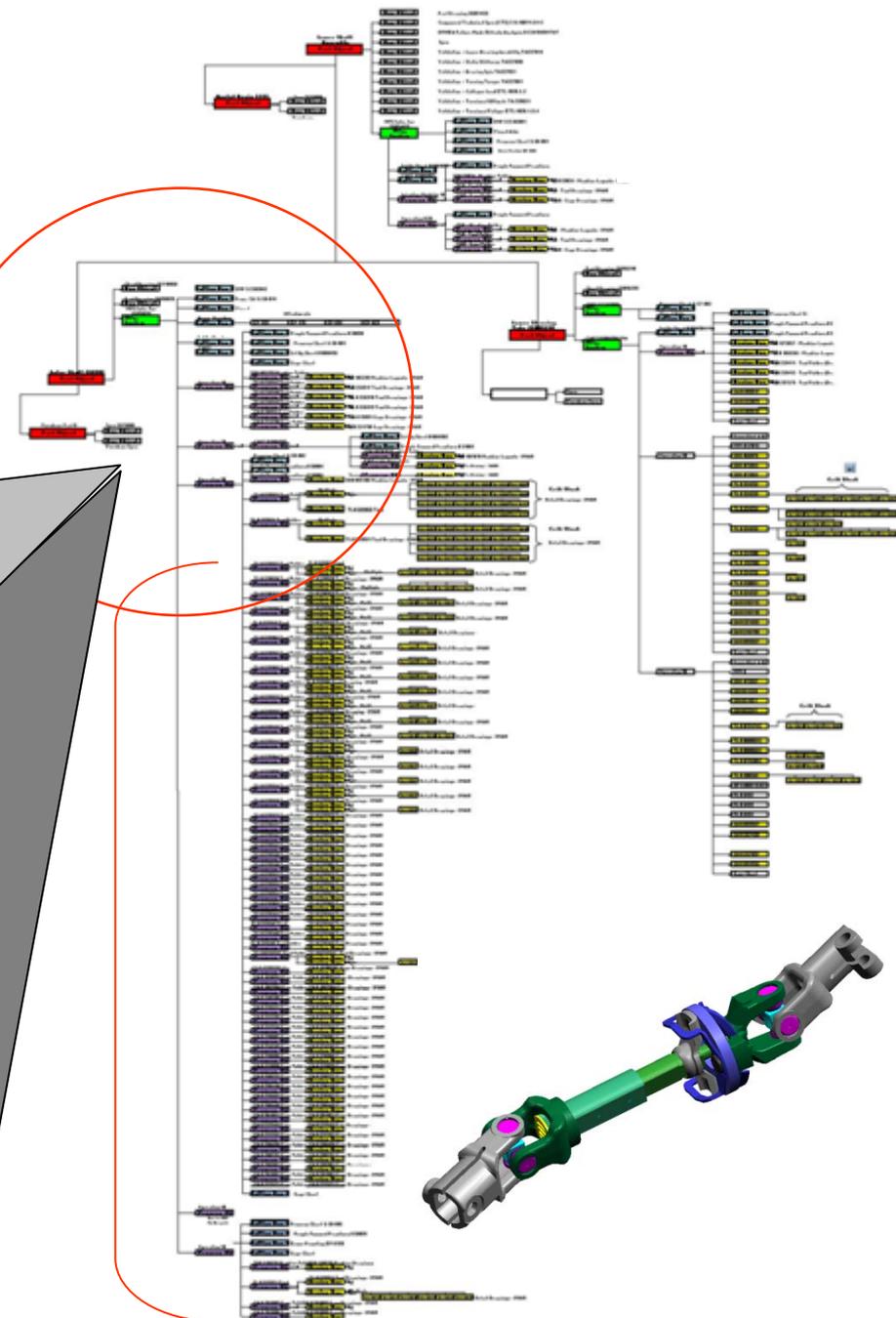
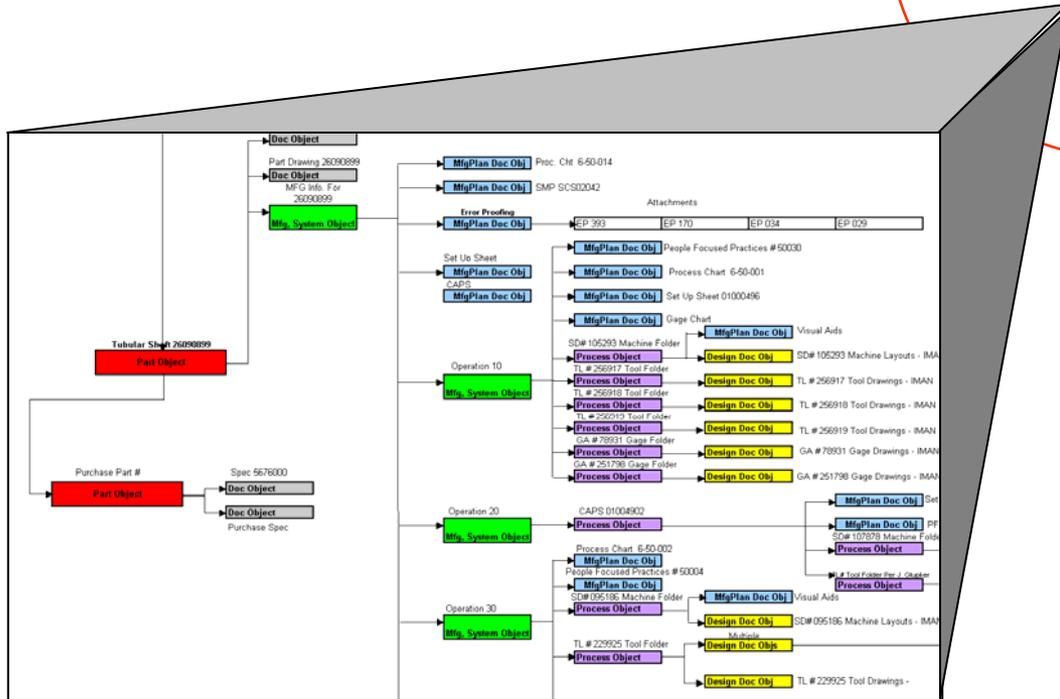
CM Performance Metrics

- Objectives:
 - Measure the process
 - Change behavior
 - Drive continuous improvement
 - By-product of the process



Process to Product Document Ratio

100:1



2005 CM Statistics

Change Requests (CR)

- 4214 issued
- 17 per day

Engineering Notices (EN)

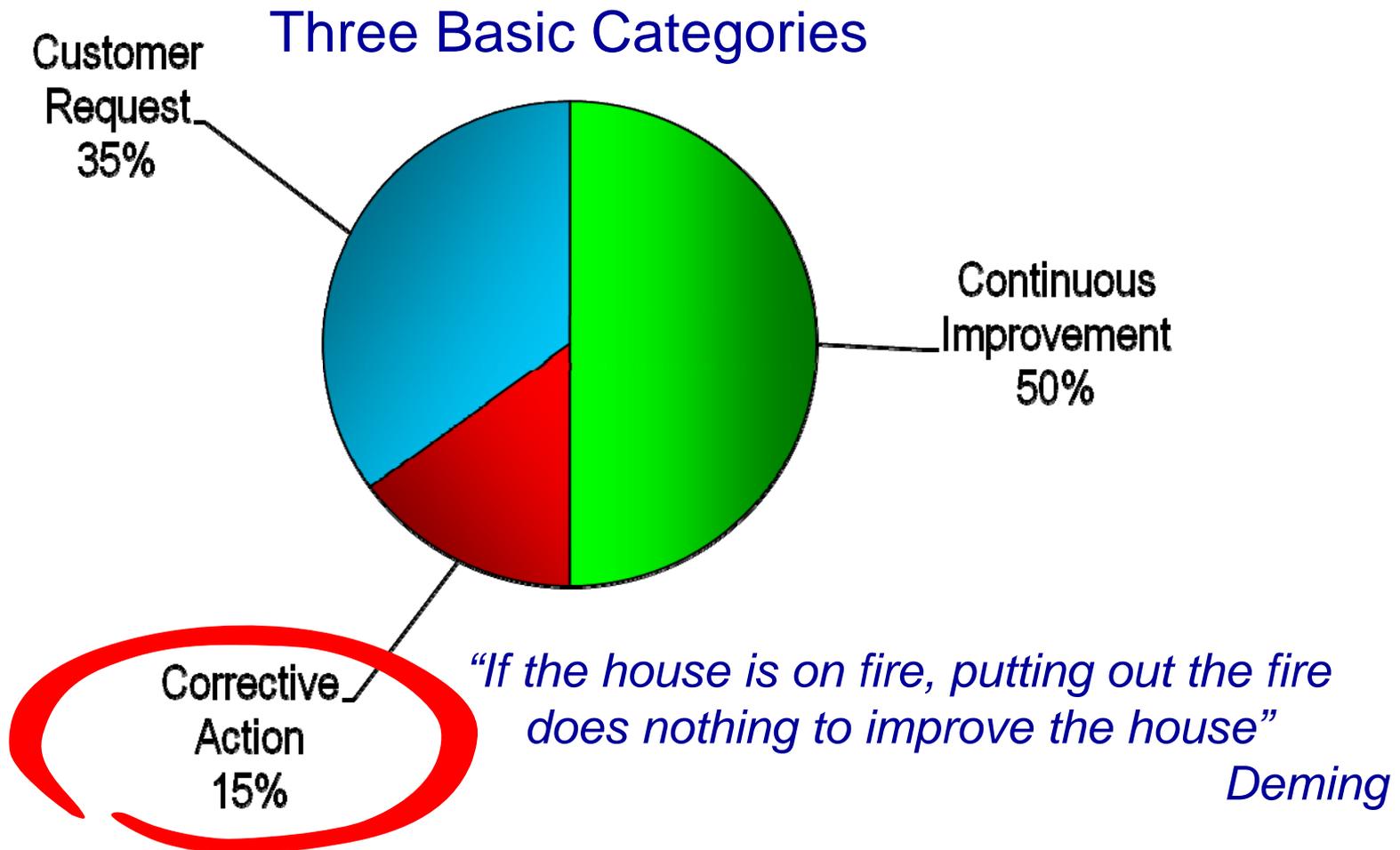
- 1279 issued
- 5 per day
- 75 drawings changed per day

Change Notices (CN)

- 1404 issued
- 6 per day

CM Performance Metrics

CRs Initiated YTD



CM Implementation at Delphi Steering

Phase 3: Process Automation for Efficiency

- Global Engineering System (GES)
 - Developed system & performance requirements
 - » Common Team members between CM and GES



CM Implementation

Steering Division

CM Executive Champions
Dir. Quality, Dir. Engineering, & Dir. Operations

CM Core Team
Engineering, Mfg. Engineering

Engineering	GSM	Operations
PC&L	Materials Engr.	Quality
Service/Aftermarket	Sales	Finance
IT		

CM Process
Develop & Deployment

Cross functional implementation team	All CIL Mtg
	All ARA Mtg

CM System (GES)
Develop & Deployment

Cross functional leaders team

Delphi

CM Executive Council

Delphi

Steering

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Packard



CM Implementation at Delphi Steering

Phase 3: Process Automation for Efficiency

- Global Engineering System (GES)
 - Common system for all Delphi divisions
 - Developed system & performance requirements
 - » Common Team members between CM and GES
 - Common System for 3 Delphi divisions



CM Implementation

Steering Division

CM Executive Champions
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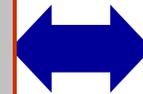
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CM Process
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CM System (GES)
Develop & Deployment

Cross functional leaders team



Delphi

CM Executive
GES Development
Delphi Councils

Delphi

Steering

Energy & Chassis

E&S

T&I

Packard

CM Implementation at Delphi Steering

Phase 3: Process Automation for Efficiency

- Global Engineering System (GES)
 - Common system for 3 Delphi divisions
 - Defined our CM life cycle
 - Developed system & performance requirements
 - » Common Team members between CM and GES
 - Required customization of commercial software
 - » Defined our CM life cycle
 - » 2 years and \$\$\$



CM Implementation at Delphi Steering

In Summary

- Implementation of a “Common” CM Process
 - Organizational Structure – process champions
 - » Executive Sponsorship
 - » Core Team
 - » Implementation Team
 - » PLM Oversight team
 - Organizational Structure – process managers
 - » Change Control Board
 - » Change Owners/Change Leaders
 - » Change Implementation Leaders
 - » Change Implementation Board
 - » Process Auditors



CM Implementation at Delphi Steering

In Summary

- Implementation of a “Common” CM Process (cont.)
 - Organizational Structure – process champions
 - Organizational Structure – process managers
 - Organizational Structure – process
 - » Develop a Common Process
 - Benchmark → Find best practices
 - » Develop Common Forms
 - » Develop Implementation Plan
 - » Develop Training Plan
 - » Identify metrics



CM Implementation at Delphi Steering

In Summary

- Implementation of a PLM System
 - Develop System Requirements
 - » Use existing programs
 - Form user teams
 - Evaluate strong points & deficiencies
 - Develop lists what is required & desired
 - » Evaluate Commercial Software
 - » Establish a PLM “Oversight Team”
 - Core Team leadership, CM users, IT
 - Develop Implementation Plan
 - » Develop training plan
 - » Identify metrics





Thank-you