



OFFICE OF RESEARCH & DEVELOPMENT

2012 **R&D**
REVIEW

Safety Culture Panel Discussion Research Results

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U.S. Department
of Transportation

**Federal Railroad
Administration**

Program Area & Risk Matrix

Safety Culture Panel Discussion Research Results

Program Areas	Risk Factors	Trespass	Grade Crossing	Derailment	Train Collision	All Other Safety Hazards
Railroad Systems Issues						
Human Factors				X	X	X
Track & Structures						
Track & Train Interaction						
Facilities & Equipment						
Rolling Stock & Components						
Hazardous Materials						
Train Occupant Protection						
Train Control & Communications						
Grade Crossings & Trespass						

Acknowledgments & Stakeholders

The workers and managers at:

Amtrak

Union Pacific

The members and leaders of

American Association of Railroads

American Public Transportation
Association

Short Line and Regional Railroad
Association

United Transportation Union

Brotherhood of Locomotive Engineers
and Trainmen

Transportation Communication Union

The consultants, evaluators, & researchers at:

Behavioral Science Technology Inc.

Bureau of Transportation Statistics

University of Connecticut Industrial
Psychology Applications Center

Fulcrum Corporation

MacroSys

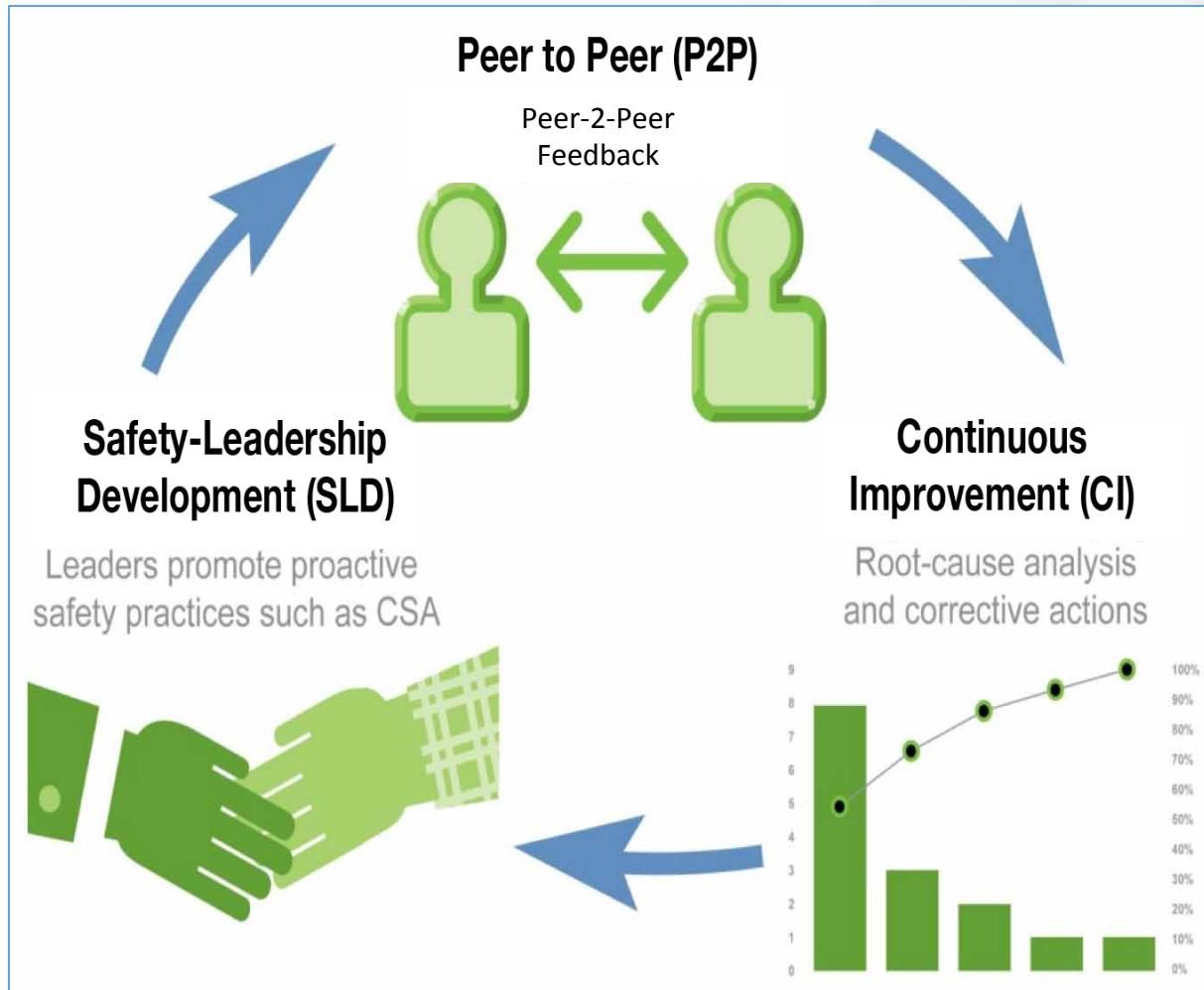
Western Michigan University Evaluation
Center

EG&G Technical Services

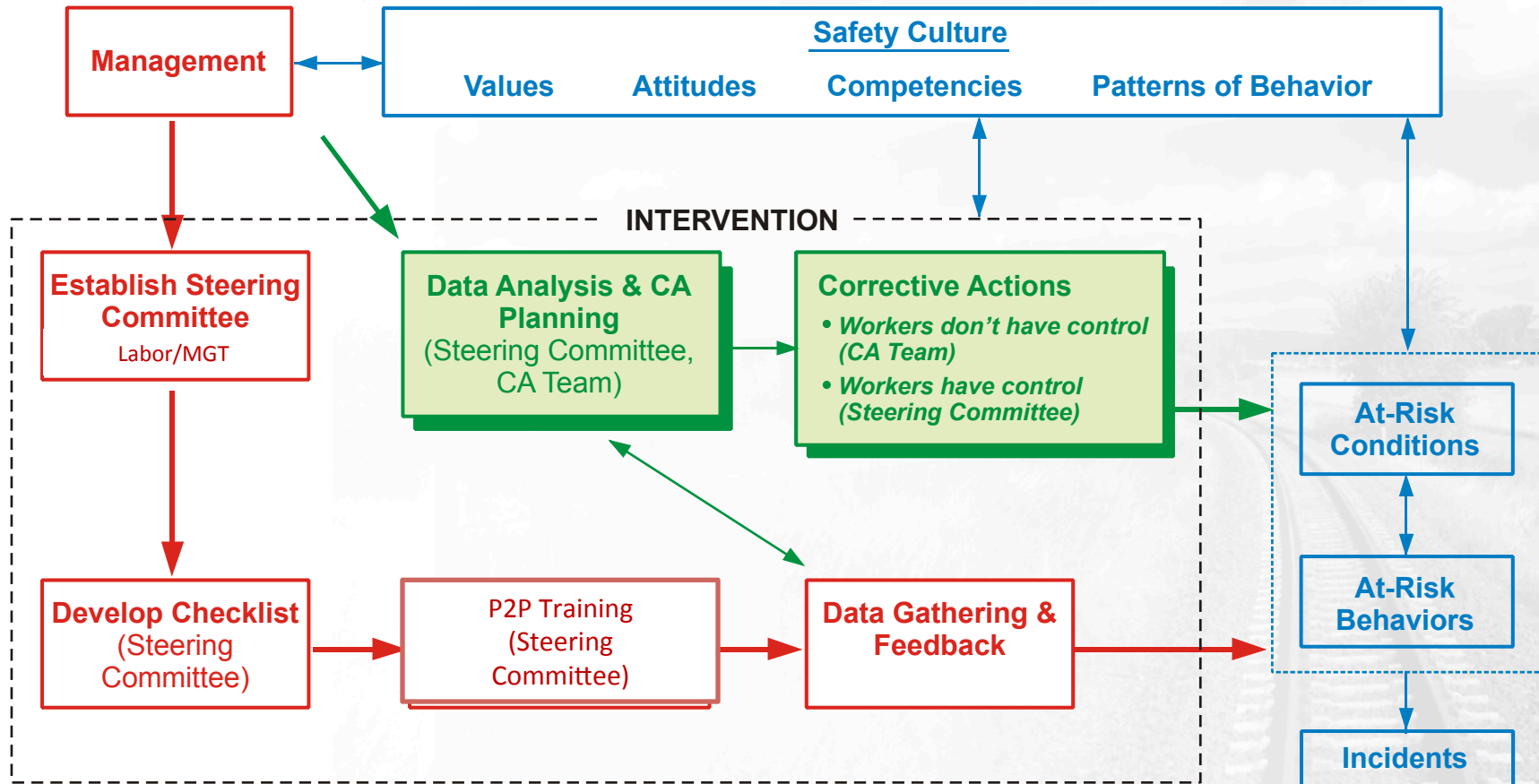
Organizational Safety Culture Pilot Programs

Approach	Carriers	Start	
Participative Safety Rules Revision	ACBL, CSXT, KCS, CN-IC	1999	
ISROP : Investigation of Safety Related Occurrences Protocol	Canadian Pacific	2003	
Clear Signal for Action (CSA)	EAGLES : Employee Alliance for Great Levels of Excellence in Safety	Amtrak	2001
	CAB : Changing At-risk Behavior	Union Pacific	2005
	STEEL : Safety Through Employees Exercising Leadership	Union Pacific	2006
C3RS : Confidential Close Call Reporting System	Union Pacific	2007	
	Canadian Pacific	2008	
	New Jersey Transit	2009	
	Amtrak	2011	

Clear Signal for Action (CSA) has three components



How CSA Works



Amtrak Station Services

Employee Alliance for Great Levels of Excellence in Safety (EAGLES)

- **Study Site:** Chicago Union Station

- **Cohort Population:** 220 employees
 - Station Services
 - Baggage, Red Caps, Ticket Agents, Gate Agents, Customer Services
 - Mail and Express
 - Materials Movement

- **Labor Affiliation:** Transportation Communication Union (TCU)

Checklist of Behaviors and Conditions



At Risk



Safe

CSA: Amtrak Stations Services

Approach	Functions	Start	Outcomes
Clear Signal for Action (CSA)	Amtrak Station Services	2001	76% drop in injury rates 71% drop in reportable injuries
	Union Pacific Road Crews	2005	79% drop in L.E. decertification rates 81% drop in H.F. derailments
	Union Pacific Yard Crews	2006	62% drop in yard derailment rates

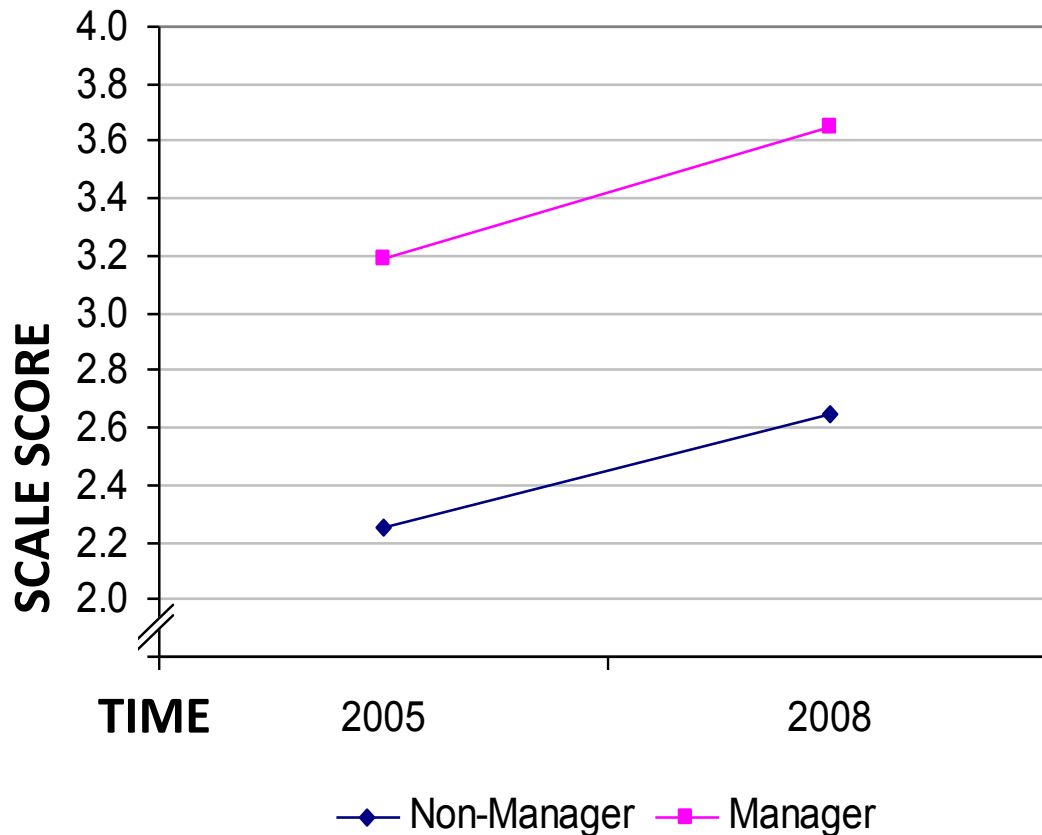
Union Pacific Road Crews

Changing At-risk Behavior (CAB)

- **Study Site:** San Antonio, Texas
- **Cohort Population:** 1100 employees
 - Road Crews
 - Yard Crews
- **Labor Affiliation:**
 - Brotherhood of Locomotive Engineers and Trainmen (BLET)
 - United Transportation Union (UTU)

Safety Culture Improved with Union Pacific (UP) Road Crews

Labor-management relations survey



Final open-ended interviews

“I think crews have been more safety-conscious in general, not just regarding [signals and such]. Crews tell managers things that are safety concerns now. That may be due to [CSA].”

-Manager

CSA UP Road Crews

Approach	Functions	Start	Outcomes
Clear Signal for Action (CSA)	Amtrak Station Services	2001	78% drop in injury rates 74% drop in reportable injuries
	Union Pacific Road Crews	2005	79% drop in L.E. decertification rates 81% drop in H.F. derailments
	Union Pacific Yard Crews	2006	62% drop in yard derailment rates

Corrective action: Policy change positioning locomotive with a/c as lead

Union Pacific (UP) Yard Crews

Safety Through Employees Exercising Leadership (STEEL)

- **Study Site:** Avondale Yard, Louisiana
- **Cohort Population:** ~140 employees
- **Labor Affiliation:**
 - Brotherhood of Locomotive Engineers and Trainmen (BLET)
 - United Transportation Union (UTU)

CSA: UP Yard Crews

Approach	Functions	Start	Outcomes
Clear Signal for Action (CSA)	Amtrak Station Services	2001	78% drop in injury rates 74% drop in reportable injuries
	Union Pacific Road Crews	2005	79% drop in L.E. decertification rates 81% drop in H.F. derailments
	Union Pacific Yard Crews	2006	62% drop in yard derailment rates

Corrective actions: 160 were implemented over 2.5 years (eg. hard to throw switches, uneven ballast)

CURRENT STATUS CSA: HIGH SPEED/INTERCITY RAIL PROJECT

Importance of Low Cost High-Speed/Intercity (HS/IC) CSA Materials

- CSA pilots suggest benefits
- High cost of training would inhibit use
- FRA Administrator, R&D, and the Office of Railroad Safety allocated \$1.5M for low cost, materials
- The Risk Reduction Program is partnering with the R&D Human Factors Division

Next Steps for HS/IC CSA Materials

- Design a low-cost CSA program
 - Training materials and software application
- Pilot the program
- Compile lessons learned, revise materials
- Plan for launch

Estimated Timeline

HS/IC Rail CSA Training and Software Materials Project

ID	Task Name	2012				2013				2014				2015				2016			
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
1	Select CSA Contractor	█																			
2	Develop and Test Training and Software Materials					█															
3	Conduct FRA Train-the-Trainer									█											
4	Establish CSA at Demonstration Pilot Site									█											
5	Evaluate and revise CSA materials													█							
6	Develop Implementation plan for broader application																	█			

Benefits of CSA

- **Expect 30-80% improvement in Human Factor (HF) incidents**
- **Reducing cost of implementation will encourage use**
- **Provides complete program to help drive safety culture**
- **Labor and management agree on value of method if both involved**

Stakeholder Support for HS/IC CSA Materials

- Administrator seeks to use peer to peer methods
- Risk Reduction Program (RRP) partner R&D
- Proposal was approved by TRB Rail Operational Safety Committee (labor, mgt, govt)
- Improving safety culture is a key goal of the DOT Safety Council
- The Short Lines are interested if materials are provided