Capturing the Essential: The Contributing Factors Framework (CFF)
Briefing Content

- What is it - Setting the Context
- Looking beyond the framework
- What does the CFF consist of
- How to Apply
Part 1

What is it - Setting the Context

Looking beyond the framework

What does the CFF consist of

How to Apply
What is the CFF?

A structured framework for capturing & categorising the systemic contributors to rail safety occurrences
What are the benefits?

- Assist in identifying the **sources of problems**
- Aggregate data allows analysis of **trends**
- Consolidation of data at State and National level
- Assist in making informed decisions which enables **more sustainable solutions**
Example

• Provide example from accident
• What the findings say..
• What is captured and coded in a database for further analysis
Investigation Tools used in Rail Industry

- **AS 4292.7**
  - Provides guidance for conducting a systemic investigation process
- **COP Rail Investigations Manual (ARA)**
  - Provides high level process for conducting systemic investigations
  - (Contributing factors are an output)
- **ON-S1**
  - Captures occurrence type (event information)
  - (Interfaces with CFF)
- **CFF** captures the **contributing factors** from the findings in the investigation report
Where does the CFF fit?

Rail Safety Occurrences result in ON-S1 Notification of occurrence – (NO CFF APPLIED)
Rail Safety Occurrences requiring investigation are subject too systemic investigations eg. AS 4292.7

Systemic investigations lead to the identification & documentation of findings and contributing factors

Coded CFF data allows aggregate CFF data to be analysed to identify patterns
When to apply the CFF

- **Level 1/ Level 2 Investigations (AS 4292.7)**
- Other events
  - eg near misses
  - Other occurrences that operators choose to code
Part 2

What is it - Setting the Context

Looking beyond the framework

What does the CFF consist of

How to Apply
Design Goal

- Accommodate use by organisations with limited resources
- Compatible (as far as possible) with existing standards, frameworks / databases & ARA Code of Practice.
- Design for sustainability over time
- Easily understood & used by ‘lay’ personnel (users language, good definitions)
- Easy to find and follow codes
- Encourage accurate recording
- Framework links to the occurrence details
- Framework permits both coded and free text descriptions
- Importance and/or frequency of factors as culling device for codes
- Minimise duplication to maintain data reliability
- Multi – modal (for different transport modes)
- Provide sufficient level of detail to allow comprehension & effective analysis
- Time efficient
“Systems Approach”

- “Set of components that are inter-related”.

- Number of factors from different parts of the organisation combined, leading to the accident (system failure).
System Investigations

• Assumptions:
  • Human error is inevitable and must me “catered for”
  • Error is a consequence

• Consider the whole organisation
  • Not just “what happened”!
  • See the event as a symptom

• Look upstream
  • Past decisions by management
  • Worker competence and support systems
  • Supervision, resourcing

• Identify the conditions that led to the event.
System Models

- Lack of Control
  - Inadequate:
    - System
    - Standards
    - Compliance

- Basic Causes
  - Personal Factors
  - Job/System Factors

- Immediate Causes
  - Substandard Acts/Practices
  - Substandard Conditions

- Incident
  - Event

- Loss
  - Unintended harm or damage

- Organisation
  - Management Systems, Decisions, Processes

- Workplace
  - Local conditions
  - Task & environment

- Individual/Team
  - Unsafe acts
  - Technical failure

- Defences

- Rail Safety
  - Regulators’ Panel
• The CFF is based on the “Reason model”
Part 3

- What is it - Setting the Context
- Looking beyond the framework
- What does the CFF consist of
- How to Apply
CFF Components

Organization factors
Management systems, decisions & organisational processes

Local Conditions
Task / Environment
Local - Error and violation producing conditions

Individual / Team
Violations & errors

Technical failures

Rail Safety Occurrence
E.g. Over-speeding

E.g. Broken rail

Local Conditions

Included in CFF

Included partially in ON-S1 & CFF

Best identified through formal Investigation process

ON-S1

Occurrence Notification
## CFF Data Types

### CFF - Main Categories & Related Information

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organisational Factors</strong></td>
<td>Management systems, decisions &amp; organisational processes</td>
</tr>
<tr>
<td><strong>Local Conditions</strong></td>
<td>(Workplace) Task / Environment producing conditions</td>
</tr>
<tr>
<td><strong>Social, Political, Regulatory &amp; Economic environment</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Local Conditions &amp; Organisational Factors</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Functional Area</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Technical Failures</strong></td>
<td>Component</td>
</tr>
<tr>
<td></td>
<td>Mechanism</td>
</tr>
<tr>
<td></td>
<td>Origin</td>
</tr>
<tr>
<td><strong>Individual / Team Actions</strong></td>
<td>Person type</td>
</tr>
<tr>
<td></td>
<td>Error / violation type</td>
</tr>
<tr>
<td></td>
<td>Activity type</td>
</tr>
</tbody>
</table>

* May include organisations other than the one that had the occurrence
CFF Manual

- Glossary of terms
- Context of CFF
- The structure of the CFF
  - Components & sub-elements
- How to guide
- Definitions of factors and keywords
- Summary tables
- Coding sheet
- Case studies
Part 4

- What is it - Setting the Context
- Looking beyond the framework
- What does the CFF consist of
- How to Apply
How to apply the CFF?

- Applied by regulators / investigators / operators using the CFF data set and coding sheets
- Applied after the occurrence “findings” have been determined
- Person who has investigated the occurrence best placed to code findings
Analysis of Contributing Factors

People Category - Person who made an error or violation that lead to the incident

- Infrastructure maintainers
- Train crew
- Network controllers

Error/Violation Type

- Knowledge, skills and experience
- Task demands
- Physical environment
- Social environment
- Procedures
- Training and assessment
- People management
- Organisational management
- External organisational influences

Contribute Factors Categories

- Error
- Violation
- Unknown error/violation
Data Management

- RSRP – ownership
- NROD – management
- CFF group - review data quality
- State regulators to manage and report on data
- Information stored on state-level and pooled nationally at intervals
What’s in it for you?

• Provide operators with a (free) validated and tested framework, user manual and software
• Enables operators to compare contributing factors across the industry
• Enables the identification and analysis of safety trends and conditions affecting them
• Provides a more informed understanding of the systemic issues associated with different rail safety occurrences
Thank you!