



Safety Evolution Guide: Partnership for Safety and Local Safety Councils - Safety Data Portal and Air Traffic Control (ATC) infoHUB

1. OBJECTIVE OF GUIDE

Members of the Civil Air Navigation Services Organisation (CANSO) are committed to the improvement of their services. As part of this commitment, organisations share their practices in an effort to transfer learning across the industry.

This guide captures:

- The practices of an Air Navigation Service Provider (ANSP) in one element of the CANSO Standard of Excellence (SoE) in Safety Management Systems (SMS). The practices of this ANSP have been recognised by their peers as being an Optimised practice within the industry (see Figure 1-1). Optimised practices have been selected on the basis of their novelty, innovation, or the recognition of their potential to manage operational risks.

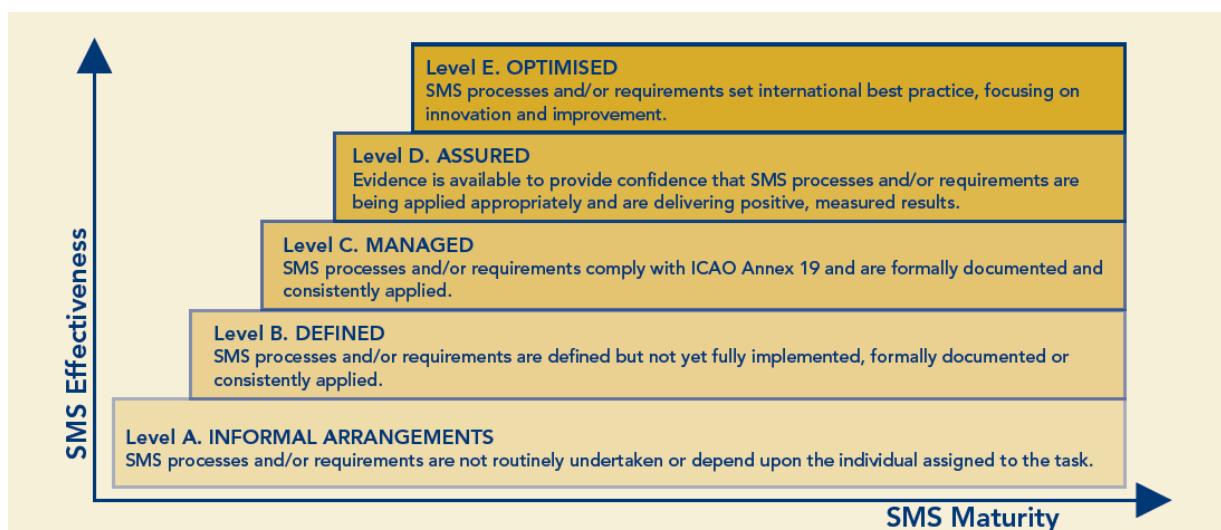


Figure 1-1: SMS Maturity

Given the dynamic nature of safety management, the practices presented in this document may be superseded. CANSO will publish updated best practice guidance.

2. APPLICATION OF THE GUIDANCE

CANSO recognizes that this guidance will not be relevant to all ANSPs. The maturity of any ANSP's SMS will be dependent on their specific context. This context will be a reflection of factors including the size and complexity of the organisation, domestic regulations, and the risk appetite of the organisation.

ANSPs do not necessarily need to adopt all the practices and processes promoted by CANSO, but consider the relevance of the practices promoted in this guide to their operational environment.

3. OPTIMISED PRACTICE

This guide addresses an SMS process which was identified in 2019 as being Optimised. It details how one ANSP, the U.S. Federal Aviation Administration (FAA) Air Traffic Organization (ATO), has designed, implemented, and managed two important tools—the Safety Data Portal and Air Traffic Control (ATC) infoHUB—which allow the ATO to effectively manage safety performance through comparative analyses. This approach was reviewed by a panel of experts from the Future Safety Working Group of the Safety Standing Committee.

4. SCOPE OF GUIDE

This guide aims to provide an insight into what the ATO has done in terms of designing and implementing the ATC infoHUB and Safety Data Portal, detailing why this approach was taken. The information included in this guide is intended to provide a starting point for other ANSPs wishing to adopt a similar outcome from the implementation of similar tools.

5. APPLICABLE STANDARDS AND REQUIREMENTS

This evolution guide, as well as the associated best practice submitted to CANSO by the ATO, is most closely associated with CANSO SoE in SMS Element 13, Safety Performance Monitoring and Measurement. Within Element 13, Objective 13.2 describes the implementation of quantitative and qualitative safety measures within the organisation, as well as internal and external comparative analyses.

Objective 13.2 is derived from International Civil Aviation Organization (ICAO) Annex 19, Safety Management, Element 3.1, Safety Performance Monitoring and Measurement. Specifically, ICAO Element 3.1.2 states, “The service provider’s safety performance shall be verified in reference to the safety performance indicators and safety performance targets of the SMS.” The SoE, in turn, links most directly to this Annex 19 requirement through the following attribute within the Managed maturity level of Objective 13.2:

- The organisation has implemented quantitative techniques to measure and verify safety performance.

In addition to other programs that collect, measure, and present qualitative data, ATC infoHUB and the Safety Data Portal allow the ATO to address another Managed attribute of Objective 13.2:

- The organisation has implemented qualitative techniques to measure safety performance (e.g., opinion surveys, National Airspace System Operational Support System (NOSS)/Day-2-Day results, and overload reports).

Further, the tools allow for both internal (within the facility) and external (in comparison to other, similar facilities) comparative analysis of safety and technical training data, thereby helping to address the Assured maturity level of Objective 13.2, the whole of

which is depicted in Figure 5-1. (Other ATO programs and techniques complement the tools to fully address the attributes of Objective 13.2.)

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
13.2 Methods to measure safety performance, which is compared within and across ANSPs.	Ad hoc safety performance data related to individual incidents is available, but there is no systematic approach for measuring safety performance.	At least some parts of the organisation have implemented safety performance measurement processes.	<p>The organisation has implemented qualitative techniques to measure safety performance (e.g., opinion surveys, NOSS/Day-2-Day results, and overload reports).</p> <p>The organisation has implemented quantitative techniques to measure and verify safety performance.</p> <p>The organisation has implemented measures to validate the effectiveness of risk controls and mitigations.</p>	<p>The organisation conducts internal comparative analysis.</p> <p>The organisation works with stakeholders to conduct external comparative analysis.</p> <p>The results of the organisation's safety performance activities influence the operational safety survey and SMS auditing programme.</p>	<p>The organisation has set best practice(s) for safety management for this objective and is willing to share those with other ANSPs/ organisations.</p>

Figure 5-1: 13-2 - Methods to Measure Safety Performance

6. ORGANISATIONAL CONTEXT

Like all safety management practices, managing safety risks, mitigations and mitigation performance requires a multi-pronged approach. A key component to the ATO's safety management practices has been the establishment of the Partnership for Safety (PFS) program which is defined in ATO Order JO 7200.21, *Partnership for Safety Program*. The PFS program encourages local air traffic control personnel to discuss and resolve safety concerns in partnership with management and the air traffic controllers union at each facility before an incident or accident occurs. The PFS program provides facility-centric data to the Local Safety Council (LSC) within each facility, made up of at least one member from the National Air Traffic Controllers Association (NATCA) and at least one member from management. The LSCs meet once a month or as mutually determined by the parties at the local level.

The LSC has access to the PFS Safety Data Portal, a national database where they can see operational performance metrics for their own facility, as well as de-identified Air Traffic Safety Action Program (ATSAP) reports submitted by the facility's controllers (as long as the submitter checks a box to allow it). With this information, LSCs can see their facility's safety trends, identify potential hazards, and devise corrective actions. They can then track and report their corrective actions, best practices, and lessons learned on ATC

infoHUB, another database that is part of the PFS effort. Together, the Safety Data Portal (PFS) and the ATC infoHUB are valuable tools for the LSCs in identifying and resolving safety issues at the local level.

6.1 SAFETY DATA PORTAL

The Safety Data Portal makes accumulated safety data for each facility, from all parts of the agency, available to the LSCs; this empowers them to focus on facility-specific issues. This level of analytic capability, backed by facility benchmarks, puts a vast amount of data in the hands of the frontline employees. The Safety Data Portal contains automated analysis tools that provide the status of various trends and help predict risk. As part of the portal, the FAA ATO has a dashboard that displays safety data in simple, easy-to-understand charts and graphs. The Safety Data Portal contains Surveillance Based Metrics using radar track data combined with weather data for the purpose of root cause analysis of risk indicators for over 300 ATO facilities. The Safety Data Portal also includes Employee Reported Metrics that are comprised of ATSAP, limited Confidential Information Share Program (CISP), and Mandatory Occurrence Reporting (MOR) data for all participating facilities.

The Safety Data Portal supports LSCs in their efforts to identify and mitigate hazards that might not have become known until a more serious incident occurred. For example, one facility was able to discover that “isolated” incidences of planes overshooting the final approach courses were actually a trend at that facility. Once the trend was identified, the LSC was able to take action to mitigate the issue. The result was a significant decrease in these events.

6.2 ATC INFOHUB

The ATC infoHUB tool allows for knowledge sharing and tracking of local safety issues and the associated actions at the individual facilities. In addition, the ATC infoHUB allows external dissemination to other facilities, thus enabling external comparison and information sharing. Users have the ability to create “Risk Items” and “To Do” tasks that pertain to their facility and to publish these items and tasks to other facilities as deemed appropriate. At the facility level, this allows facility LSC members to input and share facility safety issues, mitigations, and lessons learned. Once an issue is resolved at the local level, the Local Safety Council can choose to publish their experience in the ATC infoHUB and share it as a best practice. This allows sharing between facilities for mitigation of similar safety issues. In the example above, the ATC infoHUB helped the facility to identify this issue and the risk involved, describe mitigation plans, and assign tasks to members of the LSC.

7. OVERVIEW OF PRACTICES

Legacy methods of identifying safety hazards and risk focused primarily on controller error and/or the outcome of an event (e.g., loss of separation) instead of looking at and

tracing underlying factors and trends. Many requests across the country showed a need for this type of program. ATSAP was intended to address systemic issues at the national level, not to be a facility level effort. Establishing LSCs, modelled after several successful local level safety councils that were already in place, encourages employees to become proactively engaged in identifying hazards and developing safety solutions locally before an incident or accident occurs.

7.1 REQUIREMENTS AND DEVELOPMENT

The Partnership for Safety Program was initiated as an effort between FAA Management and NATCA to allow and encourage LSCs to become involved with using available data to help identify and address issues at a local level. As part of that effort, the Safety Data Portal and the ATC infoHUB were developed in conjunction with the formation of the Partnership for Safety Program. The process for developing the tools was evolutionary in nature and not based on predefined requirements.

The developers used available data as a starting point and created a list of metrics to determine what type of data would be helpful to users and how best to distribute that data to facilities. Monthly meetings were held to continuously revise and update the tools. After initial product development, project leads met with a small group of volunteers who represented potential users of the tools to gather feedback on design features and make further revisions. The development and refining of the tools was approximately a two year process, after which maintenance responsibility was given to the national PFS team. As the formation of LSCs at facilities across the country began, access to the tools was granted.

The improvement of the Safety Data Portal and the ATC infoHUB is an ongoing process as facilities determine what data is most helpful in identifying safety trends, and as the developers determine how best to display those data. Recent updates have been made to both the Safety Data Portal and the ATC infoHUB to help make the tools more user friendly. Additional updates are planned for the Safety Data Portal in the future to continue this effort.

7.2 DESIGN

7.2.1 Safety Data Portal

The Safety Data Portal is a web-based database that contains safety trend and facility-specific information.

The Safety Data Portal provides data gathered from voluntary reports and advanced automated tools, contextual information, and analytical capabilities. There are three primary areas of focus including employee-reported metrics, surveillance-based metrics, and overviews.

The Safety Data Portal contains dashboards that display the safety data provided in simple, easy-to-understand charts and graphs. The homepage provides a list of dashboard views in order to easily access a variety of information. A list of safety topics associated with the user's facility type as well as overviews will be visible. These safety topics show how the rates of select safety-related events have evolved over time.

Employee-reported Metrics

Employee-reported metrics combines information from the voluntary safety reporting program ATSAP, CISP, MORs filed by management, and Risk Analysis Events (RAEs) derived from Electronic Occurrence Reports (EORs) captured through automated reporting and detection systems. Users are able to share de-identified ATSAP and CISP narratives, as well as view the full text of MOR and RAE reports, for their facility. The combined metrics offer LSCs the ability to look across their reporting programs to determine the rate of events and causal factors, as well as enabling them to trend top-level categories. The Safety Data Portal also provides drill-down capabilities to identify specific, secondary causal factors.

The ATSAP/MOR Combined Reports dashboard will bring up a set of Event Report Dashboards for a user's facility designed for analysis of ATSAP, CISP- Aviation Safety Action Program (ASAP), MOR, and RAE reports. The Report Submission Trend of these reports shows a gold line indicating a comparison with a cohort (a similar facility: Terminal Radar Approach Control (TRACON) to TRACON, Center to Center, and Tower to Tower with similar airport/runway configurations). The Category Benchmark tab combines the data to provide the user with reporting trends of different categories per rate of a number of operations for the user's facility and again includes the gold line of a comparison cohort. The available data sources and runway configurations for comparison cohorts can be filtered. For a look at the category benchmark table described here, see Appendix A.

The Category Report Viewer tab is where MOR, ATSAP, CISP, and RAE reports can be viewed. Both the categories and the types of reports can be filtered. Causal Factor Benchmarks, collected as part of the ATSAP reporting process, are also included in this dashboard.

The Top 5 Hazards Reports Dashboard is housed on the Safety Data Portal. This dashboard focuses on analyzing ATSAP and MOR reports to identify how often Top 5 events are reported. The results can be used to examine trends and determine over time whether or not the mitigation strategies are working.

Surveillance-Based Metrics

Surveillance-based metrics are developed by fusing radar track data with other aviation and weather data to allow for root cause analysis of leading indicators of risk. These metrics including missed approaches/rejected landings, overshoots on final approach, high energy approaches, opposite direction approaches, and similar call sign events.

The Missed Approach/Rejected Landings dashboard shows missed approach trends at the airport/runway level and also individual missed approach events (see Appendix A). This dashboard provides data pertaining to: Runway Details, Aircraft Energy, Aircraft Details, Weather Details, and Traffic Details.

The Similar Call Sign Reports dashboard within the Safety Data Portal provides a platform for communicating conflict and potential risk to the airlines by giving historical, quantitative data. One of the tabs in this dashboard is the Problem Call Sign Drilldown (see Appendix A), which allows users to view a list of the most common call signs and to find trending information.

Air Traffic Facility Overviews

The Safety Data Portal also includes daily Airport, TRACON, and En Route overviews, as well as an Airport monthly overview. These overviews are developed to provide LSCs with consolidated views of operational information such as weather, traffic management initiatives, and traffic flow in the En Route environment.

The Airport Daily Overview (ADO) dashboard presents consolidated operational information for specific airports for a specified day via Airport Graphs, Runway Graphs, Vicinity Map, Source Data, and User Reference Guide.

The main Airport Graphs tab depicts weather information, which includes visibility, winds, and traffic flow management information.

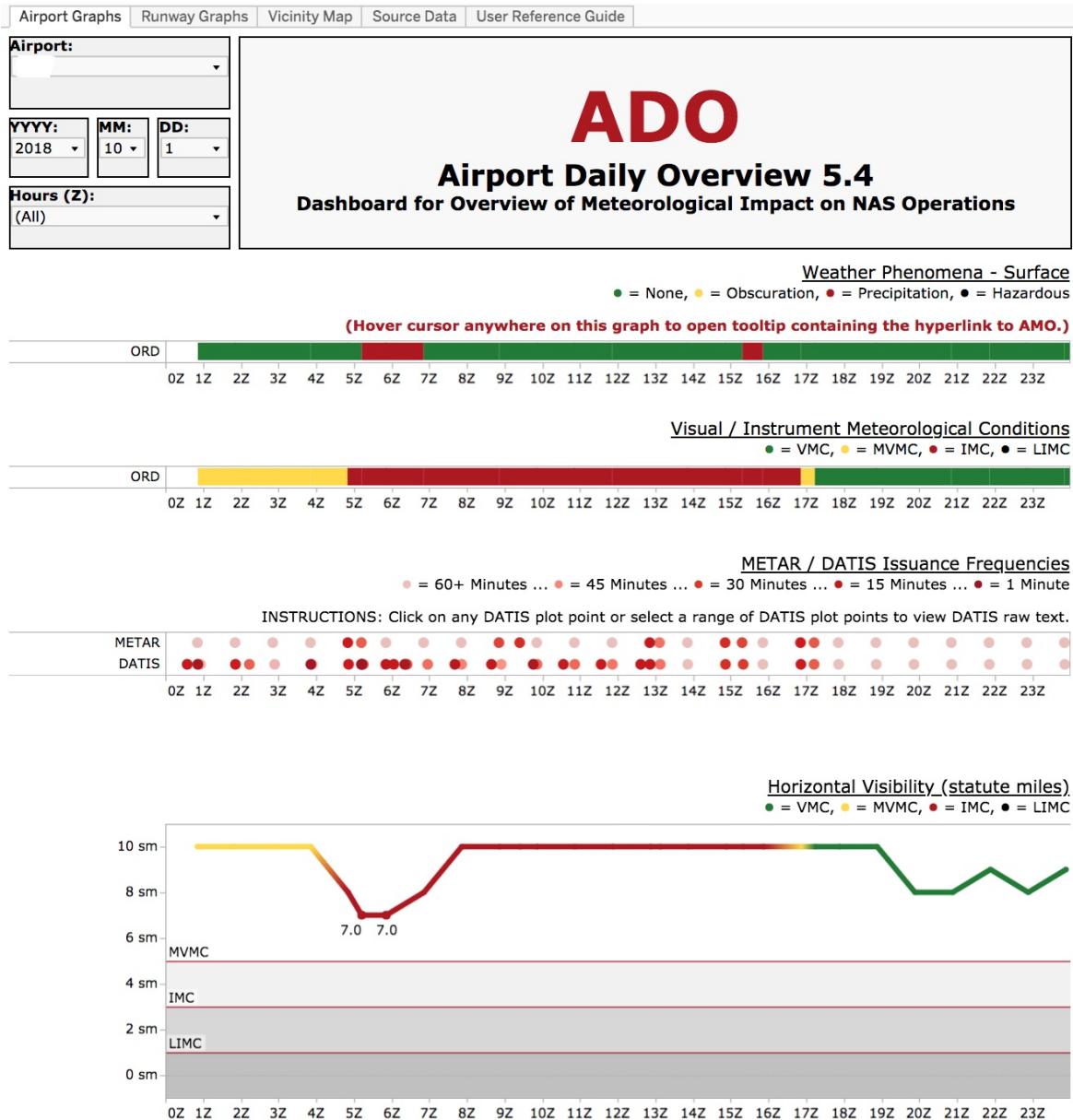


Figure 7.2.1-1: Airport Daily Overview Dashboard

The TRACON Daily Overview dashboard includes traffic management initiatives, weather in the area, Pilot Weather Report (PIREP) information, as well as a quick overview of each FAA facility within the TRACON for that particular date.

The En Route Daily Overview dashboard provides a high-level overview from the perspective of an En Route facility. This Daily Overview is the only one that shows sector traffic. This information is taken from actual live traffic data that are generated from handoff messages that were created in the sector in 15-minute increments. The Sector Traffic tab provides traffic information for the selected center, organized by areas and by sectors in the areas. Each box provides the actual sector occupancy counts, and the color is based on the Monitor Alert Parameter (MAP) value.

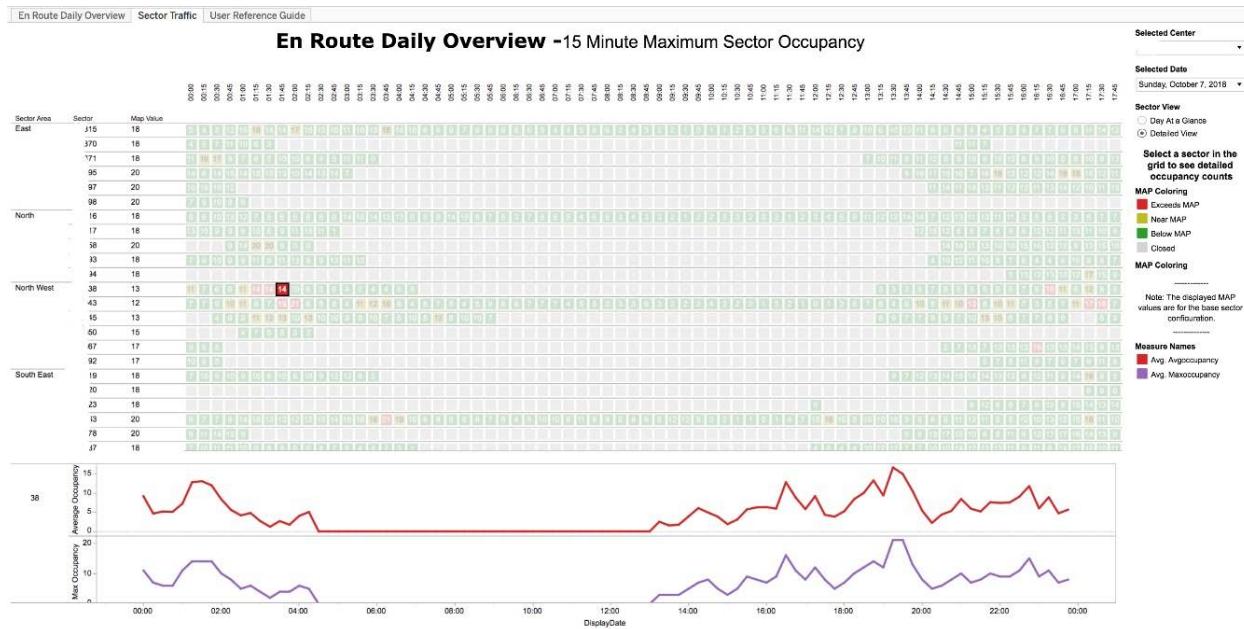


Figure 7.2.1-2: En Route Daily Overview Dashboard

The Airport Monthly Overview dashboard presents a summary of consolidated information and gives a broader perspective than ADO. This dashboard contains tabs similar to the ADO dashboard (Airport Graphs and Runway Graphs) except that it's broken down by day of the month, rather than by hour of the day.

The Safety Data Portal also contains Corrective Action Request (CAR)/Corrective Action Plan (CAP) dashboards that help to communicate CAPs filed by individual facilities. These CAPs help to monitor safety risk mitigation strategies, and are always in response to CARs to identify, implement, or maintain a mitigation strategy.

The News tab within the Safety Data Portal is where users will find information about any recent changes to the portal, including monthly data updates, portal design changes, and planned system outages.

7.2.2 ATC INFOHUB

The ATC infoHUB provides an interface for members of a facility's LSC to enter, track, and share risk information. Encouraging local collaborative efforts between management and ATC specialists at the facility level increases the opportunity for implementing corrective actions prior to a negative event outcome.

Risk Items and Risk Tasks are tied to issues facilities have identified and wish to track. The Risk Item must be categorized into one of the top-level ATSAP categories. Action plans are also described as part of the Risk Item. If an optional Risk Task is assigned to a Risk Item, the application will provide a Gantt chart to help track the status of the Risk Task and Risk Item.

Lessons learned can be entered as independent items or assigned to a particular Risk Task. Only items that facilities choose to publish become available on the infoHUB to

other LSCs. Users have the ability to perform a search on keyword or phrase for all data from their own facility as well as all published data items from other facilities.

The information in the infoHUB is presented to users via tabs on a horizontal menu bar that open additional sub menus. An “Actions” box will appear in the upper right-hand corner of the page when the user has permission to perform an action on that page (create, edit, delete, publish, etc.).



The screenshot shows the 'My Facility' dashboard. At the top, there is a horizontal menu bar with tabs: ATC infoHUB Home, My Facility, Browse, Search, Admin, Reports, Help, and Actions. The 'Actions' tab is circled in yellow. Below the menu, there is a section titled 'My Facility Overview' with a 'filters' dropdown. The main content area is titled 'Risk Items' and lists several risk items with their details and tasks. The tasks are represented by green progress bars.

Element	Aug	Sep	Oct	Nov	Dec	'13	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	'14	Jan	Feb	Mar	Apr	May	Jun	Jul	
Risk Item:	Coordinator staffing at TRACON arrival positions. (Coordination)																										
Task:	Define responsibilities of the [REDACTED]																										
Risk Item:	Excessive Spalling of Concrete on Runway Apron (Airport and Surface)																										
Task:	Contact Concrete Specialist [REDACTED]																										
Task:	Review Analysis [REDACTED]																										
Task:	Select Between the Different [REDACTED]																										
Lesson:	Use of Concrete Sealant on non-runway surfaces (Airport and Surface)																										
Risk Item:	Hose Maintenance (Equipment)																										

Figure 7.2.2-1: “My Facility” Dashboard

Upon logging in, users are directed to the ATC infoHUB Home tab. This page allows a user to see all recent facility activity. Real-time updates are provided as changes are made by LSCs on the system. Published information from other facilities, as well as the user’s own facility, are all shown on the home page.



The screenshot shows the ATC infoHUB Home page. At the top, there is a horizontal menu bar with tabs: ATC infoHUB Home, My Facility, Browse, Search, Admin, Reports, Help, and ATC infoHUB Overview. Below the menu, there are three main sections: 'Recent Comments', 'Recent Published Items', and 'Recent Changes'. Each section has a yellow arrow pointing to it. The 'Recent Comments' section contains a risk item about lighting issues. The 'Recent Published Items' section contains risk items about runway crossings and RNAV altitude deviations. The 'Recent Changes' section contains risk items about runway crossings and RNAV altitude deviations, with a note that they were changed on 22-Aug-2012 by Laura Ragan.

Figure 7.2.2-2: ATC infoHUB Home Page

The “My Facility” tab provides the user with an overview of the items that are currently being worked on at their facility. When a new item (Risk Item, Lesson Learned, or To Do Task) is created, it will be added to the list on this page.



Figure 7.2.2-3: “My Facility” Risk Items List

The footer provides links to download readers and viewers through the FAA Employee website for Adobe, PowerPoint, zip files, Word, and Excel. These links do not export data from the infoHUB, but they do allow users to open a read/view version of documents or files.

8. OVERVIEW OF IMPLEMENTATION AND USE

The Safety Data Portal and ATC infoHub are implemented nationally and use by each of the LSCs is encouraged. They are available to all members of the LSCs. Additionally, the Safety Data Portal is used by both Quality Assurance and Quality Control.

8.1 EDUCATION AND USE

Safety Awareness for Excellence (SAFE) discussions, delivered via monthly webinars to LSCs, include safety alerts, updates to procedures and policy, excerpts from ATSAP/CISP reports, and facility discussion questions. Regular training covering the PFS/LSC program, the Safety Data Portal, and the ATC infoHUB is available, and is required, for new LSC members. Various training briefings have been developed for the different dashboards available within the Safety Data Portal. A User’s Guide was developed in support of the ATC infoHUB, as well as a series of instructional videos demonstrating the basic features of the site. These tools can be accessed via the Partnership for Safety website and a secure login portal.

8.2 REPORTING AND COMMUNICATION

LSCs are encouraged to participate in monthly webinars conducted by Partnership for Safety. Any updates or changes to the tools will be addressed through these briefings. The Safety Data Portal News tab also displays recent changes and planned system outages.

8.3 BENEFITS TO THE ORGANISATION

The information provided to LSCs by the Safety Data Portal is used to help identify, resolve, and monitor systemic or organizational safety issues. LSCs can observe safety trends at their facilities and make informed, data-driven decisions to address issues identified by these trends. The tool puts the data in the hand of those able to address issues at facilities most effectively. The data provided by the tool not only assists in determining what type of change might be necessary, but also monitoring the effectiveness of mitigation efforts that have been put in place.

ATC infoHUB database is used to manage information about the identification of local safety problems and the actions taken to resolve them. Once an issue is resolved at the local level, it can be published and shared as a best practice. This sharing provides other facilities with possible mitigations to address similar safety issues. The shared information found on the ATC infoHUB can also be used to support monthly SAFE discussion sheets to further awareness of potential safety issues across the National Airspace System.

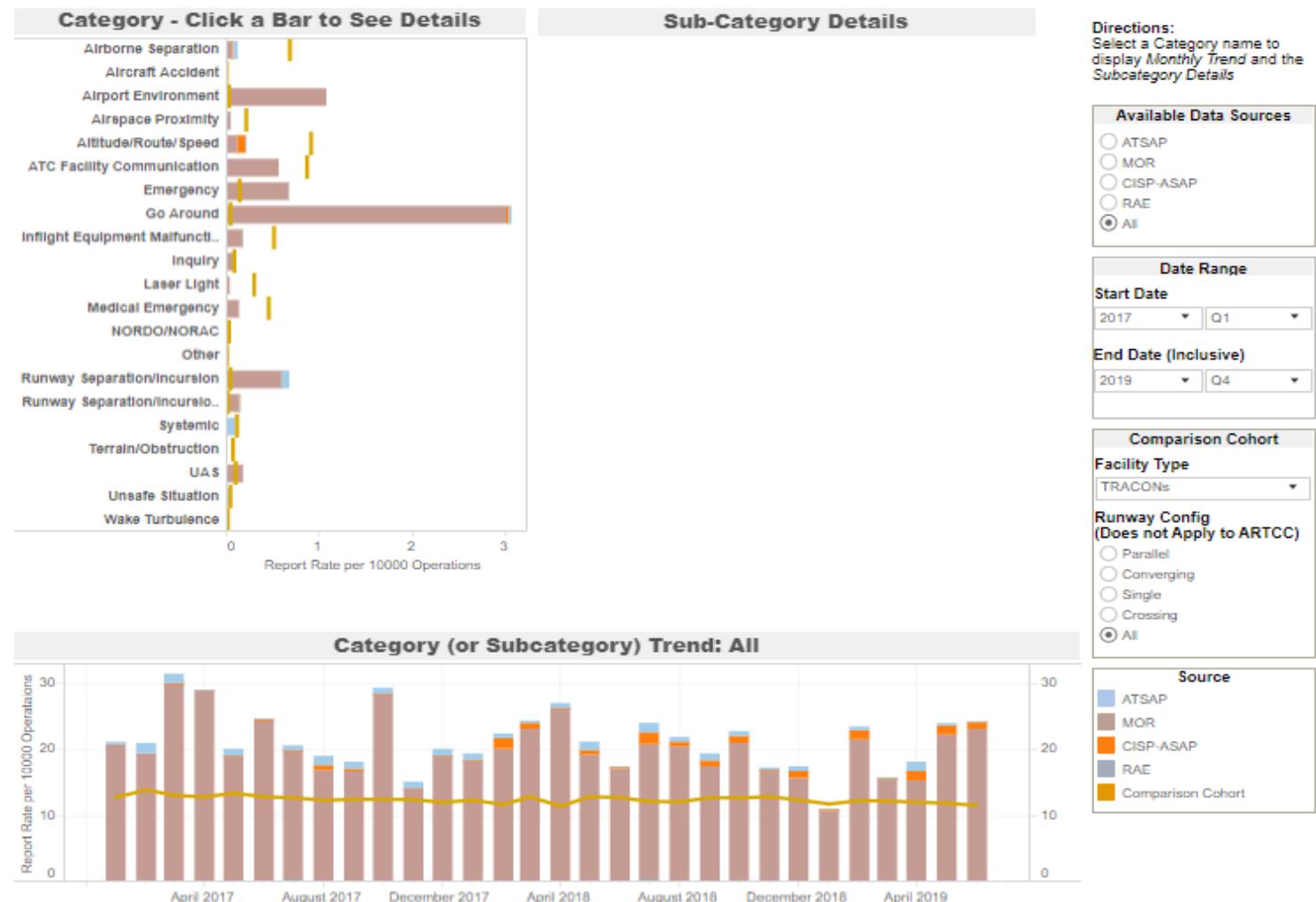
9. SUMMARY

This evolution guide, as well as the associated best practice submitted to CANSO by the ATO, is most closely associated with CANSO SoE Element 13, Safety Performance Monitoring and Measurement. The practices in this guide present an example of how one ANSP has designed and implemented tools that provide facilities with access to operational performance metrics and safety-related data from multiple sources, as well as corrective actions, best practices, and lessons learned from other facilities in order to identify and resolve issues at a local level.

APPENDIX A – SAFETY DATA PORTAL DASHBOARD EXAMPLES

Category Benchmark Dashboard

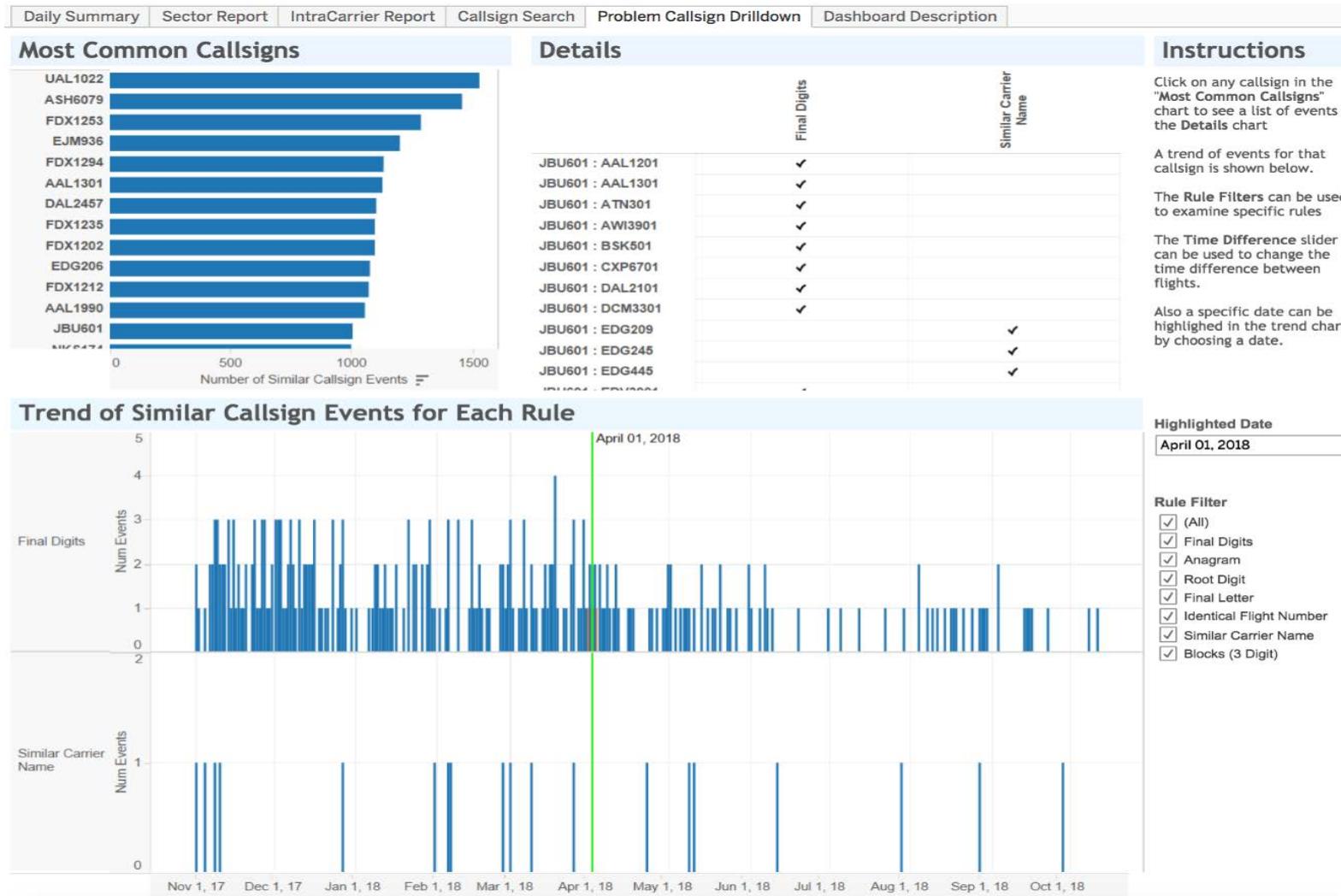
[Introduction](#) [Category Benchmark](#) [Category Report Viewer](#) [Causal Factor Benchmark](#) [Causal Factor Report Viewer](#)



Missed Approach Landing Dashboard



Similar Callsign Reports Dashboard



APPENDIX B – ACRONYMS

ADO	Airport Daily Overview
ANSP	Air Navigation Service Provider
ASAP	Aviation Safety Action Program
ATC	Air Traffic Control
ATO	Air Traffic Organization
ATSAP	Air Traffic Safety Action Program
CANSO	Civil Air Navigation Services Organisation
CAP	Corrective Action Plan
CAR	Corrective Action Report
CISP	Confidential Information Share Program
EOR	Electronic Occurrence Report
FAA	Federal Aviation Administration
ICAO	International Civil Aviation Organization
LSC	Local Safety Council
MAP	Monitor Alert Parameter
MOR	Mandatory Occurrence Report
NATCA	National Air Traffic Controllers Association
NOSS	NAS Operational Support System
PIREP	Pilot Weather Report
PFS	Partnership for Safety
RAE	Risk Analysis Event
SAFE	Safety Awareness for Excellence
SMS	Safety Management System
SoE	Standard of Excellence
TRACON	Terminal Radar Approach Control