



Integrated – AMS: the Air Canada Perspective

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On Change

“In times of change, learners inherit the world, while the learned know a world that no longer exists. It is not the strongest of the species that survives, nor the most intelligent, it is the one that is most adaptable to change.”

Introduction

- A similar presentation has been given to
 - » Authorities
 - > Canada
 - > China
 - > South Korea
 - > Mongolia
 - > Aviation Safety Council of Taiwan
 - > FAA
 - » Airlines
 - > Northwest Airlines, United Airlines
 - > ANA, JAL
 - > China Airlines

Introduction – cont.

- » Industry Associations
 - > Air Transport Association of Canada
 - > Asociación Latinoamericana de Transporte Aéreo (ALTA)
 - > International Air Transport Association

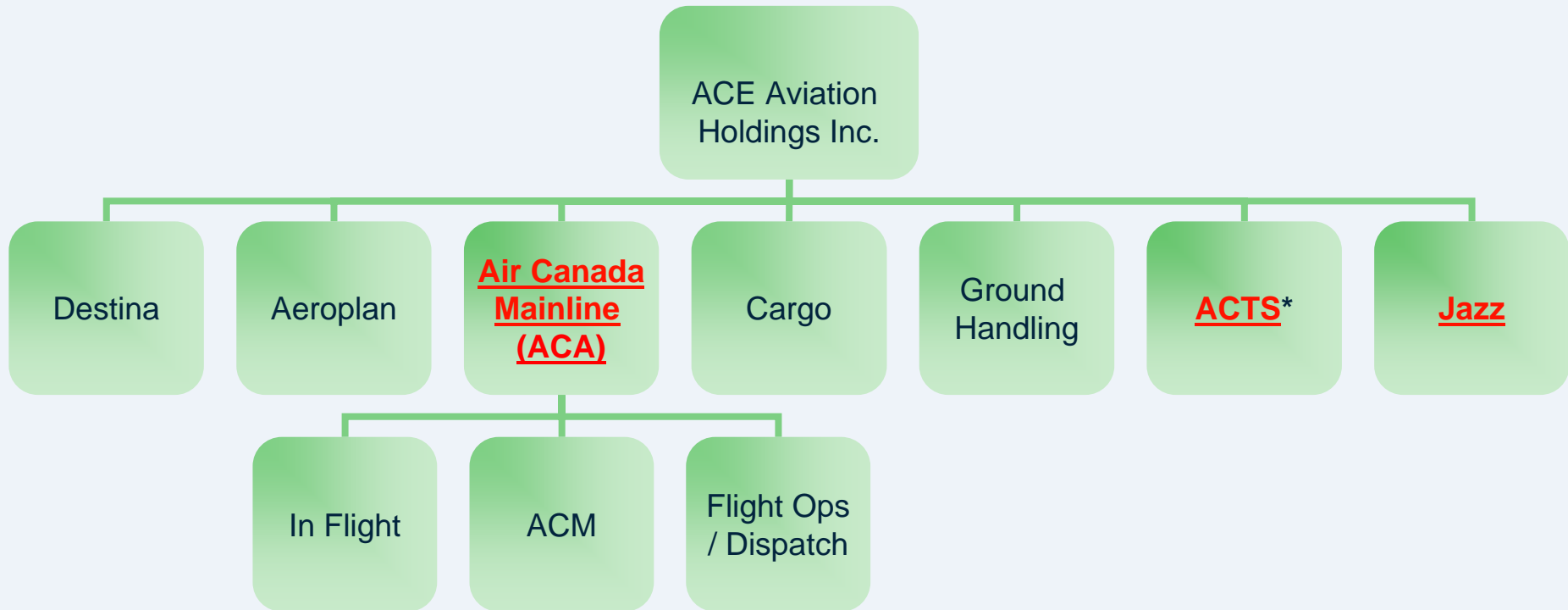
- » Air Traffic Management agencies
 - > NAV CANADA

Company Profile

- Air Canada was founded on April 10, 1937
- Founding member of Star Alliance
- World's 13th largest passenger airline
 - » 23,500 employees - approx. 85% unionized
 - » 207 aircraft
 - » Carry over 32 million passengers / year
- Flies to over 161 destinations on 5 continents
 - » Stations vary in size and complexity
 - » Regulatory environment also variable

ACE Organization & Operations Certificates

ACE is comprised of a number of legal entities, three of which are holders of Operations Certificates

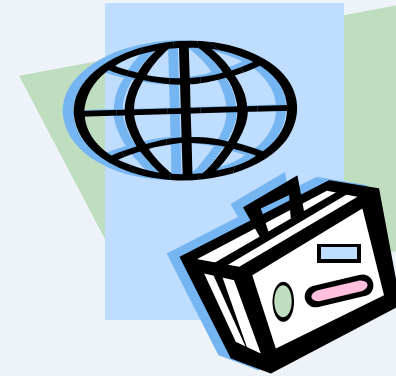


Challenges Facing Us: Business Pressures

- Passenger safety
- Environment (Green Culture)
- Financial stability
- New competitors
- Security pressures
- On time departures and arrivals
- Customer satisfaction
- Insurance costs
- Union/employee relationships
- Ramp damage to aircraft and equipment
- Regulatory and code share requirements
 - » Transport Canada, FAA, STAR and ICAO

Challenges Facing Us: Scope of Airline Operations

- **Dispersed operations**
 - » 165+ stations
 - » Diverse fleet types
 - » Multi-cultural employee groups
- **Many technical functions**
 - » Licensed / highly skilled employee groups
 - » Unskilled employee groups
 - » Diverse job functions
 - » Diverse training requirements



Challenges Facing Us: Diverse Management Systems

Operational Systems

- Flight Operations
- Cabin
- Maintenance
- Dispatch
- Ground Handling
- Cargo

Support Systems

- Personnel
- Supplier
- Financial
- Marketing
- Communication
- Legal



Systems that “touch” everyone

Safety, Quality, Security, Enterprise Risk, Environmental, Occupational Safety & Health

Challenges Facing Us: Regulations and Standards

- ICAO Standards and Recommended Practices
- US Department of Defense Quality and Safety Requirements
- IATA Operational Safety Audit (IOSA) Standards and Recommended Practices
- Airline Alliance “Best Practices”
- Highly regulated and overlapping State jurisdictions
 - » Civil Aviation Authority of your State
 - » Civil Aviation Authorities of the States your airline operates into
 - » Authority for Aviation Security
 - » Occupational Safety & Health Authority
 - » Privacy Authority
 - » Justice / Law Enforcement Authorities
 - » Environmental Agency

Ongoing Challenges for *Integrated* AMS Implementation

- Embedded Culture
 - » 70 years in the making
 - » Formerly a state-owned airline
 - » “Safety” focused on the safe operation of the aircraft (and then only in the CAA regulated Branches)
 - » Overcoming the philosophy of “Regulated therefore safe”
Regulatory compliance does not necessarily make airline safer
 - » Business Units unwilling to share information with others (silos)
 - » Never accurately and consistently quantifying costs or other negative impacts due to injuries, incidents, accidents, etc.
 - » Safety, Quality, Security, Environment and Risk Management are everyone’s responsibility; however no one was ever truly held accountable

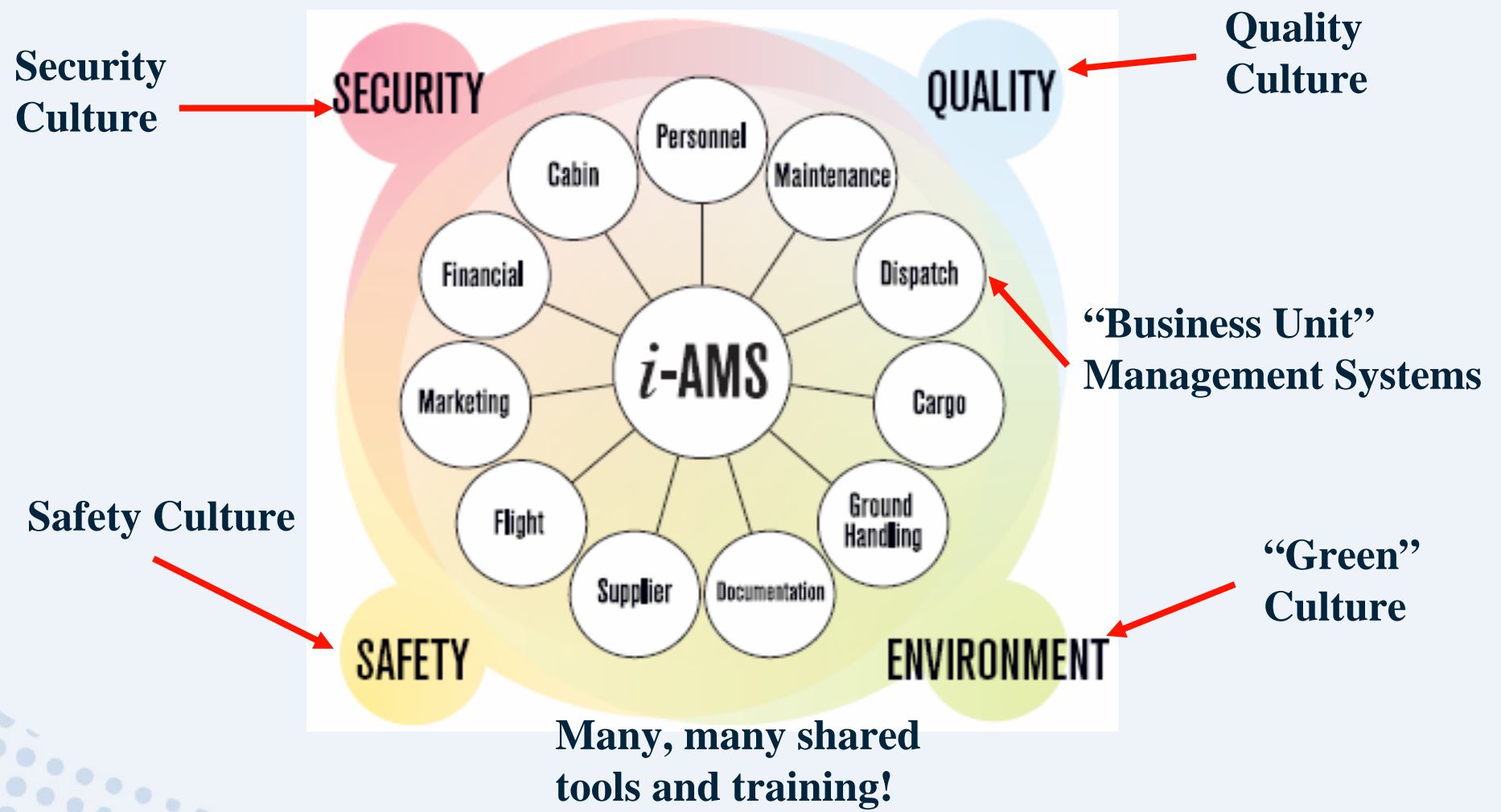
Meeting the Challenges: *Integrated* AMS

- The *integrated* Safety Management System (*iSMS*) project was officially launched at Air Canada November 12, 2002 to build upon existing safety systems throughout the organization
- Seeing the benefit Air Canada *integrated* IATA Operational Safety Audit (IOSA), Star Alliance Best Practices, and Transport Canada requirements into one *integrated* Airline Management System comprised of:
 - » *integrated* Safety Management System
 - » Quality Management System
 - » Security Management System
 - » Environmental Management System and
 - » Occupational Health & Safety Programs
 - » Enterprise Risk Management System (ERM)

Meeting the Challenges: *Integrated* AMS tools

- **Quality Management System (QMS): THE FOUNDATION**
 - » Tools: Auditing, Risk Model, Classification Model, Training
- **Safety Management System (SMS)**
 - » Tools: Safety Reports, Risk Model, Classification Model, Investigations, Training, FDA
- **Occupational Health & Safety Programs**
 - » Tools: Safety Reports, Risk Model, Classification Model, Investigations, Training
- **Security Management System (SEMS)**
 - » Tools: Security Reports, Auditing, Risk Model, Classification Model, Investigations, Training
- **Environmental Management System (EMS)**
 - » Tools: Environmental Reports, Auditing, Investigations, Training
- **Enterprise Risk Management Systems (ERM)**
 - » Tools: Workshops, Risk Model, Training, Risk Management Plans

Integrated-Airline Management System: Conceptual Diagram



Integrated AMS ~ Standards Used for Implementation

- *Integrated* AMS: Based on the Comprehensive listing of approximately 900 standards and recommended practices (at the time) from IATA Operational Safety Audit (IOSA) and incorporates the 7 Transport Canada components and 17 elements
 - » Transport Canada SMS regulations apply **only** to Flight Operations, Flight Dispatch, Cabin Services and Maintenance
 - » The Air Canada *integrated* AMS extends to **all** Operational Business Units within the airline (including Ground Handling, Cargo, and Security)

Transport Canada SMS Components & Elements

Table A - SMS Assessment Protocol Framework	
Component	Element
0. Safety Management System	
1. Safety Management Plan	1.1 Safety Policy
	1.2 Non-Punitive Safety Reporting Policy
	1.3 Roles, Responsibilities & Employee Involvement
	1.4 Communication
	1.5 Safety Planning, Objectives and Goals
	1.6 Performance Measurement
	1.7 Management Review
2. Documentation	2.1 Identification and Maintenance of Applicable Regulations
	2.2 SMS Documentation
	2.3 Records Management
3. Safety Oversight	3.1 Reactive Processes
	3.2 Proactive Processes
	3.3 Investigation and Analysis
	3.4 Risk Management
4. Training	4.1 Training, Awareness and Competence
5. Quality Assurance	5.1 Operational Quality Assurance
6. Emergency Preparedness	6.1 Emergency Preparedness and Response

Integrated AMS ~ Reference Overview

- Air Canada has chosen to implement an *integrated* AMS that is comprised of:
 - » QMS (foundation of integrated-AMS): Based on IOSA and ISO 9001-2000 / ISO 19011 and
 - » iSMS: Based on IOSA and CAA regulations
 - » Environmental Management System: Based on ISO 14001
 - » Security Management System: Based on IOSA, IATA Security Manual, ICAO, Canadian and US Security Regulations
 - » Occupational Health & Safety Programs: Based Canada Labour Code

Integrated AMS is based on existing international standards and best practices

iSMS / iAMS ~ ACA Project Timeline

- Project Kick-off 13-Nov-02
- Project Charter Completed and Signed 02-Mar-03
- Initial Safety/Quality Analysis Completed (Gap Analysis) 10-Mar-03
- Integrated Audit Process Documented 21-Jul-03
- Integrated Safety Reporting Process Documented 06-Oct-03
- Safety Pulse Check Survey Developed and Delivered 1/7-Dec-03
- Corporate Organizational Structure Documented 30-Jan-04
- Non-Punitive Safety Reporting Process Documented 06-Feb-04
- Approval of IT Requirements 12-Mar-04
- Corporate *Policy & Procedures* Manuals Documented 26-Mar-04
- Corporate Risk Model Documented (IRAM) 10-May-04

iSMS / iAMS ~ Project Timeline... cont'd

- Corporate Accountabilities Documented 30-Jun-04
- RFP Tendered 17-Sep-04
- IT Solution (Vendor) Determined ~ EtQ 14-Jan-05
- Job Competencies Documented 11-Mar-05
- IOSA Registered 21-May-05
- AFC Approved 16-Jun-05
- Document Management Go Live 02-May-05
- SMS Phase I compliance submission 29-Sep-05
- Audit Management Go Live 18-Apr-06
- Training / Awareness Complete 29-Sep-06
- SMS project closure 29-Sep-06
- Safety Reporting Go Live(Reliance small group trials) 04-Sep-07

Integrated AMS Implementation

- Manuals (Corporate and Branch)
 - » *Integrated* Airline Management System Manual
 - » Security Manual
 - » Environmental Manual
 - » Occupational Safety & Health Manual
 - » Emergency Response Manual
 - » Branch Quality Manuals
 - > **FOQM: Flight Ops Quality Manual**
 - > **Cargo Quality Manual**
 - > **Ground Handling Quality Manual**
 - > **Cabin Services Quality Manual**
 - > **Maintenance Control Manual - amended to include *i*SMS / *i*AMS references**
- Job Competencies developed for **all** managers
- Standardized Safety Reporting Process implemented (both proactive – hazards and reactive – occurrences) via legacy (paper and various dbase) systems and electronic

Integrated AMS Implementation – cont.

- Intuitive Risk Assessment Model (IRAM) adopted and implemented via EtQ Reliance
- Human Factors Analysis and Classification System (HFACS) Root Cause Analysis / Causal Factors Model adopted and implemented via EtQ Reliance
- Standardized Audit Process implemented (EtQ Reliance)
- Standardized Documentation Control implemented (EtQ Reliance)
- Corporate Policies implemented:
 - » Safety Policy
 - » Safety Reporting Policy (Non-punitive)
 - » Quality Policy
 - » Environmental Policy
 - » Security Policy

Integrated AMS Implementation – cont.

- *i*AMS Training provided:
 - » Quality Auditor Training
 - » Investigator Training
 - » *i*SMS Awareness Training
- 3rd tier / code share audits and operational reviews (Domestic and International)
- External Contracts include language re: safety, security, quality, documentation and training requirements
- Establishment of Safety / Quality Managers in all Operational Business Units / Branches ~ Security, ACM, ACTS, Jazz, International, In Flight, Cargo, ACGHS, Flight Ops
- Establishment of Corporate Safety and Quality Oversight ~ Internal Quality Audits, External Quality Audits and Quality Services, OSH, Flight Safety and the development of a Corporate Biennial Audit Program

Integrated AMS Implementation – cont.

- Establishment of Branch internal audit programs
- Implementation of Flight Data Analysis system
- Implementation of Safety Pulse Surveys
- Implementation of Safety Assessments
- Corporate Goals and Objectives
 - » Standardized Safety, Quality, Occupational Health & Safety and Environmental Objectives
 - » Development of Key Performance Indicators in each Business Unit
 - » Performance Management / Measurement Process for the review of all management staff

Integrated AMS Implementation – cont.

- Reformat of Branch and Corporate Safety Board and introduction of the **Annual Ops Review**:
 - » Prepared and presented by each Operating Business Unit Executive with the assistance from Corporate Safety and Environment if requested (data, analysis, etc.)
 - » In line with the philosophy of *i*AMS and IOSA by placing the responsibility for safety of flight, quality, security, environment, and occupational safety & health within the business unit

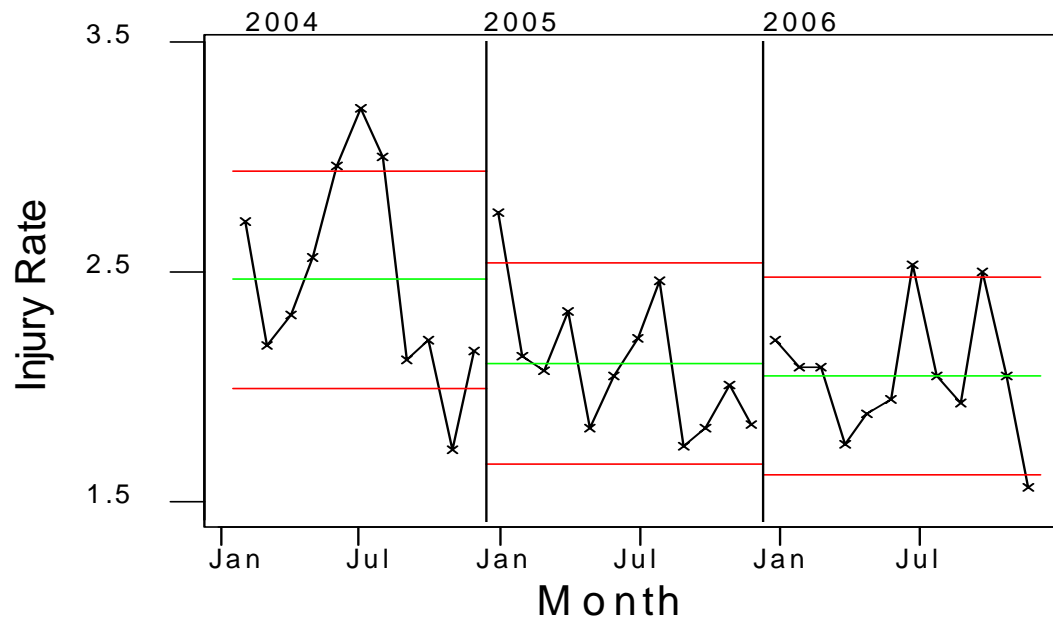
Integrated AMS Implementation – cont. Corporate Safety Board Standing Agenda

- Review of Minutes and Action Log
- Quality Services Review
- Corporate Security Review
- Corporate Safety & Environment Review
- iSMS Update
- Business Unit Updates
 - » Air Canada Ground Handling Services
 - » Maintenance
 - » Air Canada Technical Services
 - » Cargo
 - » Flight Ops & Dispatch
 - » In Flight Services
 - » International
- Recap of Action Items / Next Meeting

Integrated AMS Implementation – cont. Corporate Safety Board – Business Unit/Branch Update

- Updates on KPIs, yearly goals, objectives and safety initiatives
 - » Progress
 - » Effectiveness
- Statistical process control (SPC) charts
 - » Injury Rates
 - » Disabling Injury Rates
 - » Days lost ~ total and average per injury and cost associated
- Audit updates
 - » IOSA, Transport Canada, Internal (corporate), internal (branch), 3rd party, etc.
- Other updates as required (through action items, investigations, serious accident, directives, etc.)

Integrated AMS Implementation – cont. Corporate Safety Board – Business Unit/Branch Update



Integrated AMS Implementation – cont. EtQ ~ Excellence through Quality

- Implementation of an IT tool to support *i*SMS ~ EtQ
- Three components:
 - » Document Management and Control ~ Completed
 - » Audit and Quality Assurance ~ Completed
 - » Safety Reporting ~ 4 September 2007 (small group trials)



Integrated AMS Implementation – cont. EtQ ~ Excellence through Quality

EtQ Reliance - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://192.168.0.10:8080/reliance30/reliance>

Help Contents
About Reliance

System Usage
System Log

EtQ Home
EtQ Support

[Audits and Surveys](#) [Audits and Surveys Archive](#) [Calibration and Maintenance](#) [Centralized Reporting](#)

[Change Management](#) [Complaints Handling](#) [Corrective Action](#) [Delegation](#)

[Deviation](#) [Document Archive](#) [Document Control](#) [Incidents](#)

[Material Returns](#) [Nonconforming Material](#) [Quality Records](#) [Quality Records Archive](#)

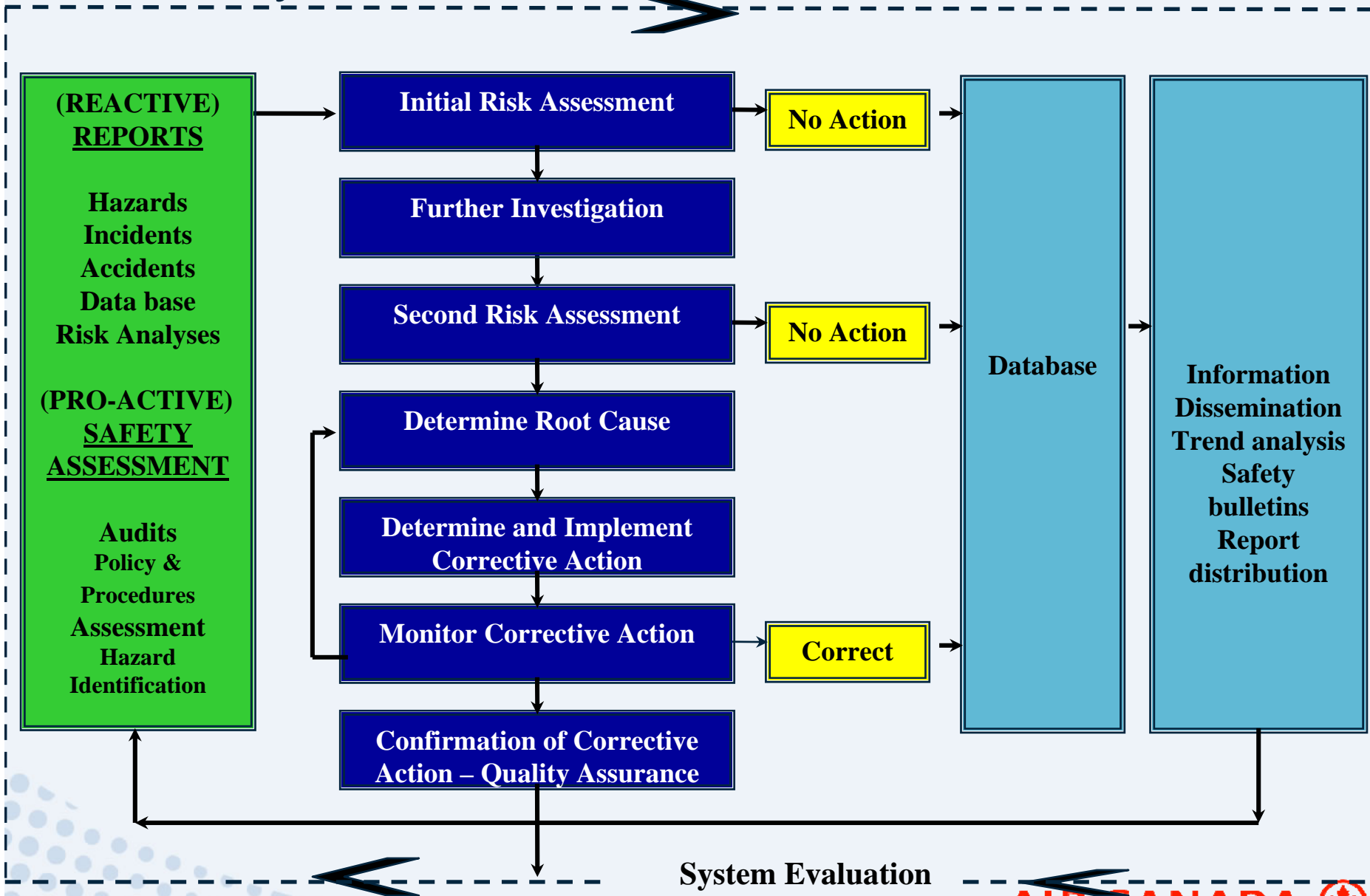
[Reliance Engine](#) [Training](#) [Vacation 1](#)

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Integrated AMS Implementation – cont. EtQ ~ Excellence through Quality

- Document Management and Control
 - » Automates documentation notification, review and approval processes including TC approval
 - » Provides a central repository for archived documents
- Audit and Quality Assurance
 - » Tracks Audit Findings / Observation and Corrective Action Plans
 - » Trends and analyses collected data
- Safety Reporting
 - » Provides a single, reliable and effective mode for reporting events that impact different Branches and Business Units
 - » Uses intuitive Risk Assessment Model (IRAM) and root cause analysis/causal factors model (HFACS)

Safety Data Process Flow



Integrated AMS Implementation – cont. EtQ ~ Excellence through Quality

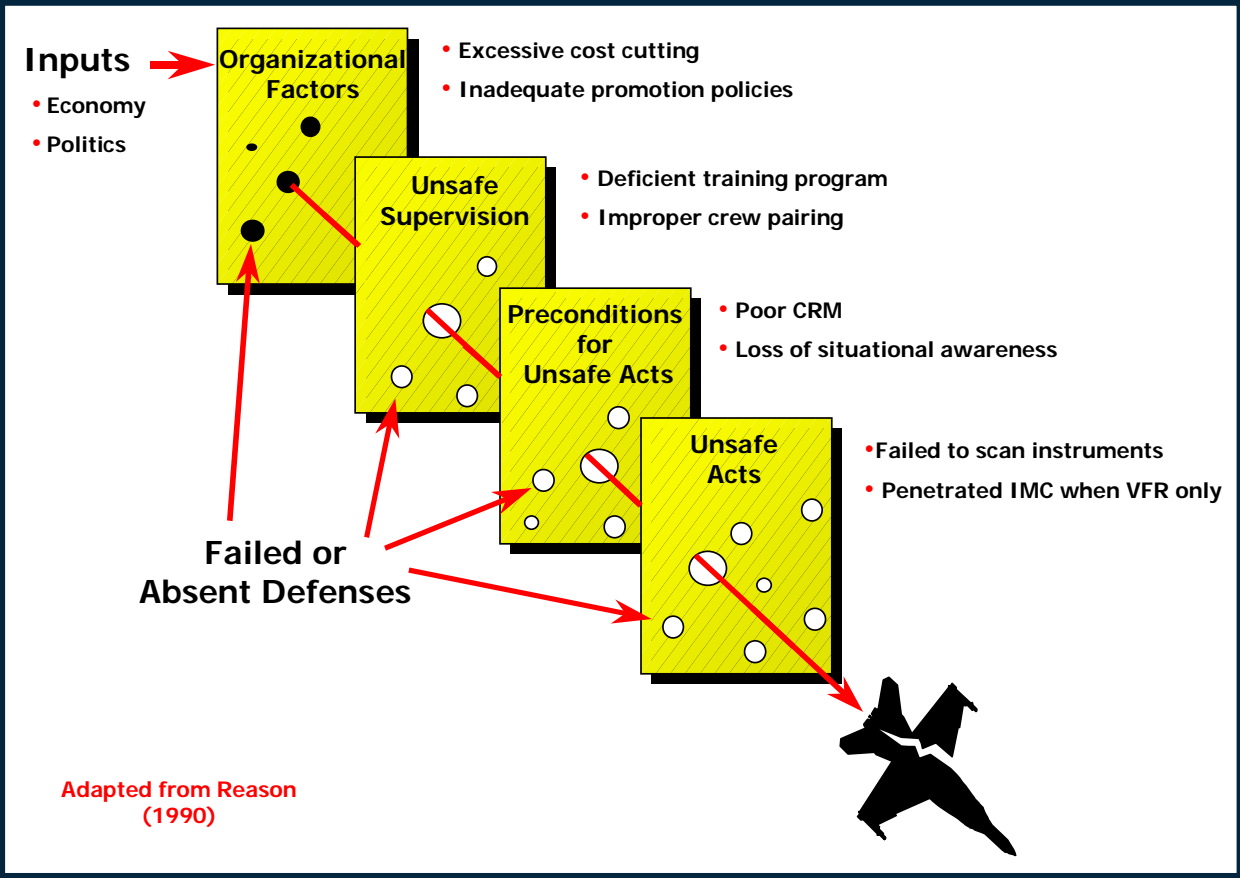
S E V E R I T Y	Critical	A	A	A
	High	C	B	A
	Medium	D	C	C
	Low	D	D	C/D
IRAM		Unlikely	Occasional	Frequent
		PROBABILITY		

- Intuitive Risk Assessment Model (IRAM)
- AC defines a level of tolerable risk as that in which a condition is allowed to exist without taking action beyond recording, monitoring and trend analyzing the condition
- Examples of this level of tolerability are conditions that fall within Direction D of IRAM
- Also adapted for Management System (documentation and implementation)



HIFACS[®]

Human Factors Analysis and Classification System

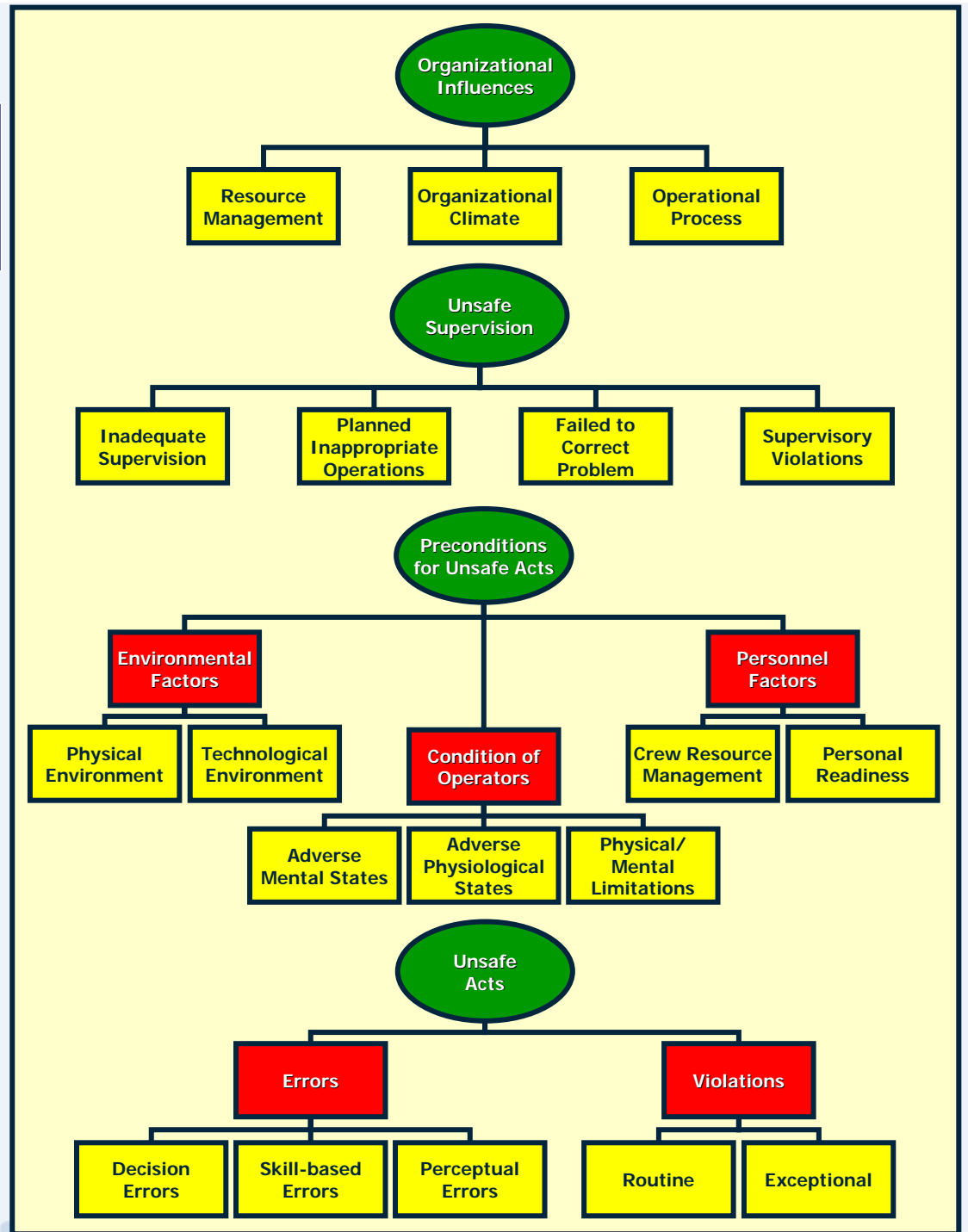




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<http://www.hf.faa.gov/Portal/ShowProduct.aspx?ProductID=54>



Integrated AMS Implementation: Ongoing Activities (Branches and Corporate)

- EtQ Enhancements and leverage into other areas of the airline (HR, finance)
- Ensuring the ongoing delivery of *i*AMS training to management and employees (initial and recurrent)
- Ensuring the dissemination of *i*SMS awareness material for all levels of employees in the organization including senior management
- Ensuring the ongoing evaluation of the effectiveness of Continuous Improvement Cycle (ISO - plan, do, check, act)
- Conducting safety assessments on high risk initiatives (IRAM & HFACS)
- Discuss safety and quality issues and trending of emerging issues
 - » Local management forums, Branch, Business Unit and Corporate Safety Boards
- Utilization of real time safety & quality data to make educated business decisions

Integrated AMS Implementation: Ongoing Activities (Branches and Corporate) – cont.

- Demonstrate consistent commitment to *i*SMS
 - » Encourage and support uninhibited reporting
 - » Ensure Safety Awareness and information sharing
 - » Provide feedback to employees who submit safety reports
 - » Implementation of Branch & Business Unit safety targets and objectives (Key Performance Indicators)
 - » Promotion of Safety and Safety Reporting Policies
- Participation in industry and regulatory forums to ensure conformity with emerging industry standards, norms and best practices
- Enterprise Risk Management (ERM)

Final Thought

- If *Integrated* AMS causes safety, quality, security and environmental performance to improve, then business performance improves.
- There is no doubt that the marketplace rewards improved business performance!

Questions

- Questions?

