

How Safe is “Safe”?

Measuring and Mitigating Real Risk



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Overview



1. NAV CANADA
2. Safety Oversight at NAV CANADA
3. Safety Management System Elements
4. Lessons learned

Who We Are



NAV CANADA

- Country's provider of civil air navigation services
- 5,400 employees
- 6.5 million IFR movements per year
- Second largest ANS in world
- Regulated by Federal Government (Transport Canada) on safety performance

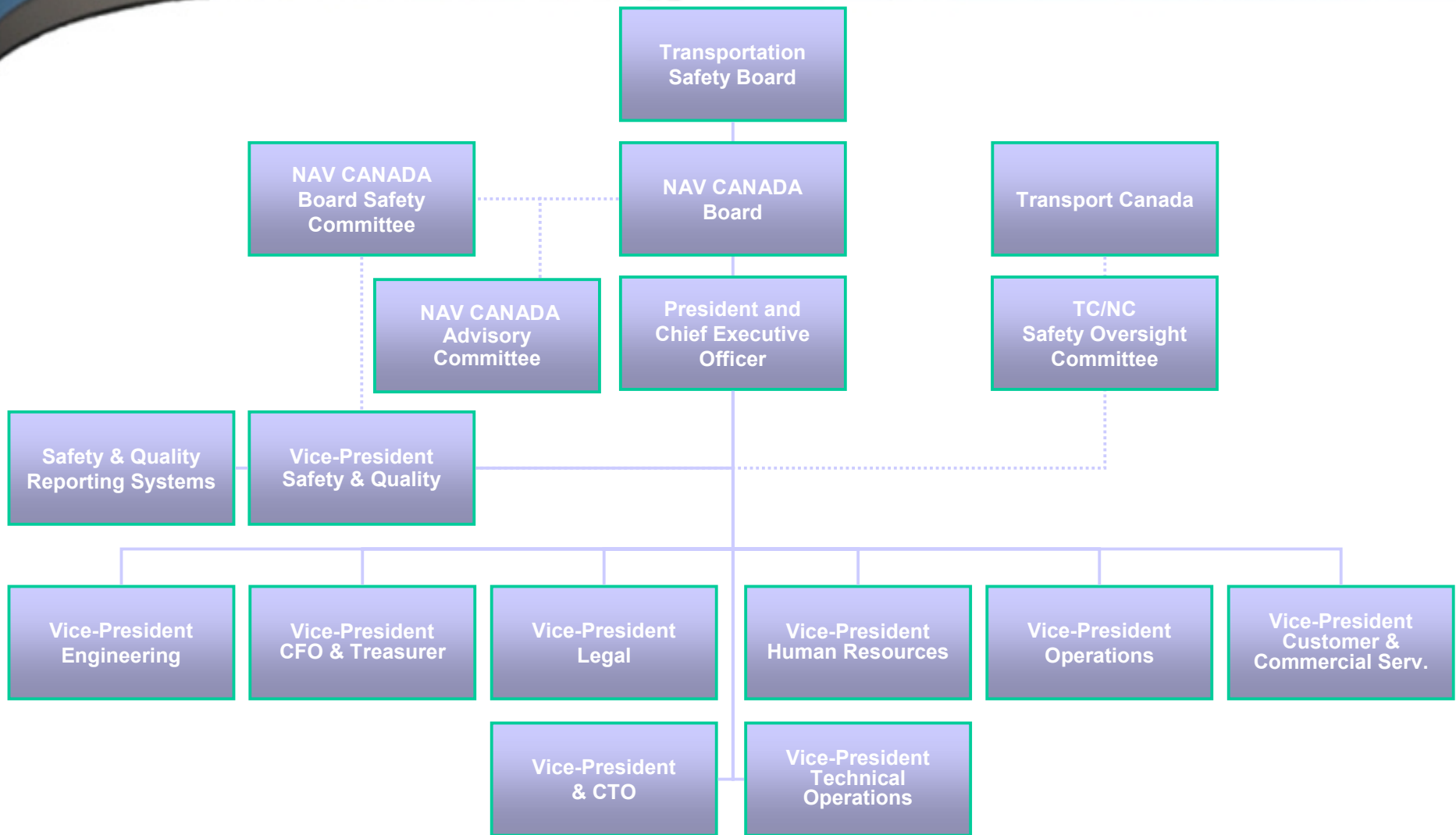
Our Business



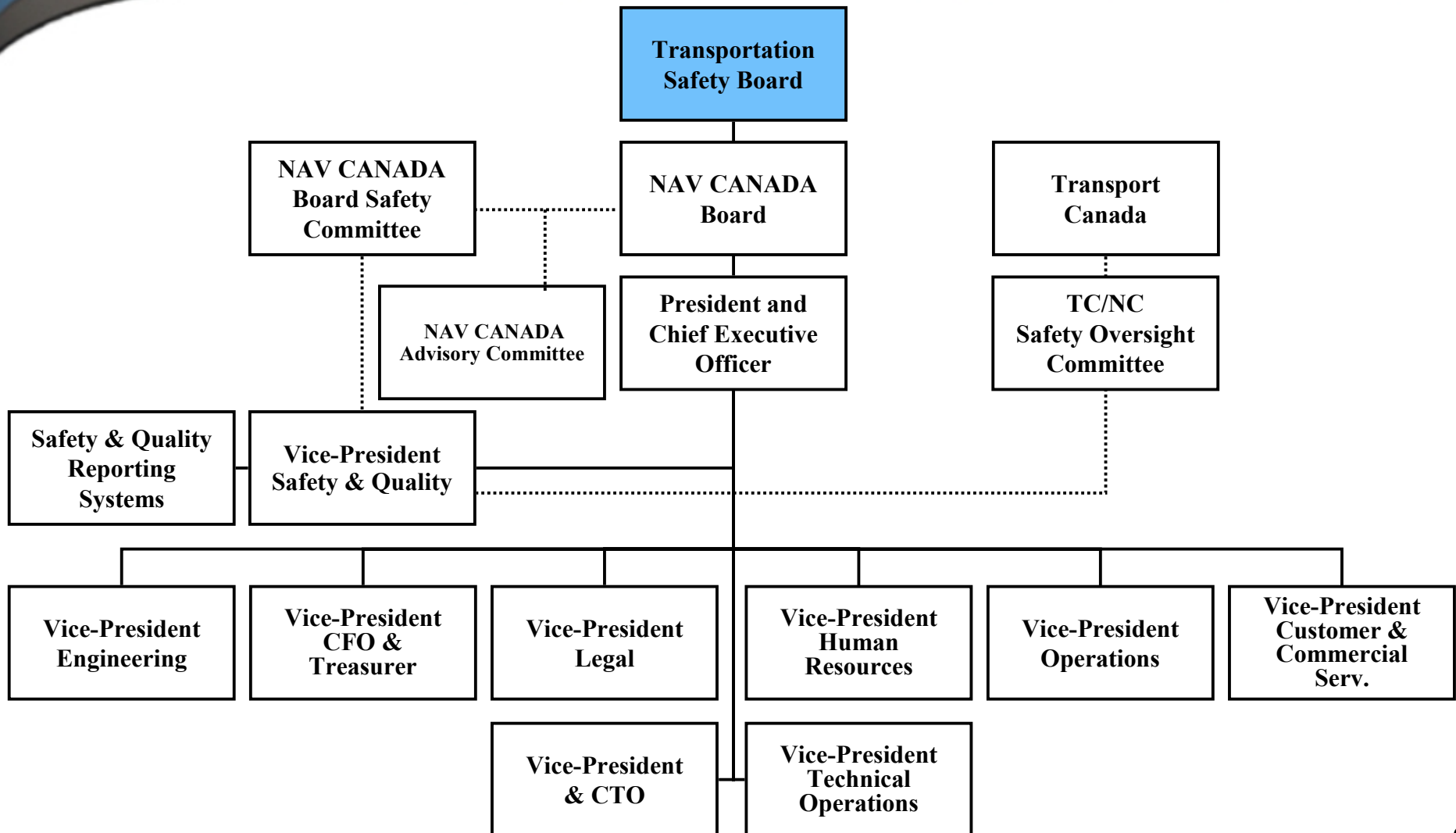
Civil Air Navigation Services (ANS)

- Air traffic control
 - Domestic, International, Transborder
- Flight information & advisory services
- Aviation Weather services
- Electronic navigation aids
- Engineering & systems development
- Technical Operations
- Training
- Aeronautical Information Services

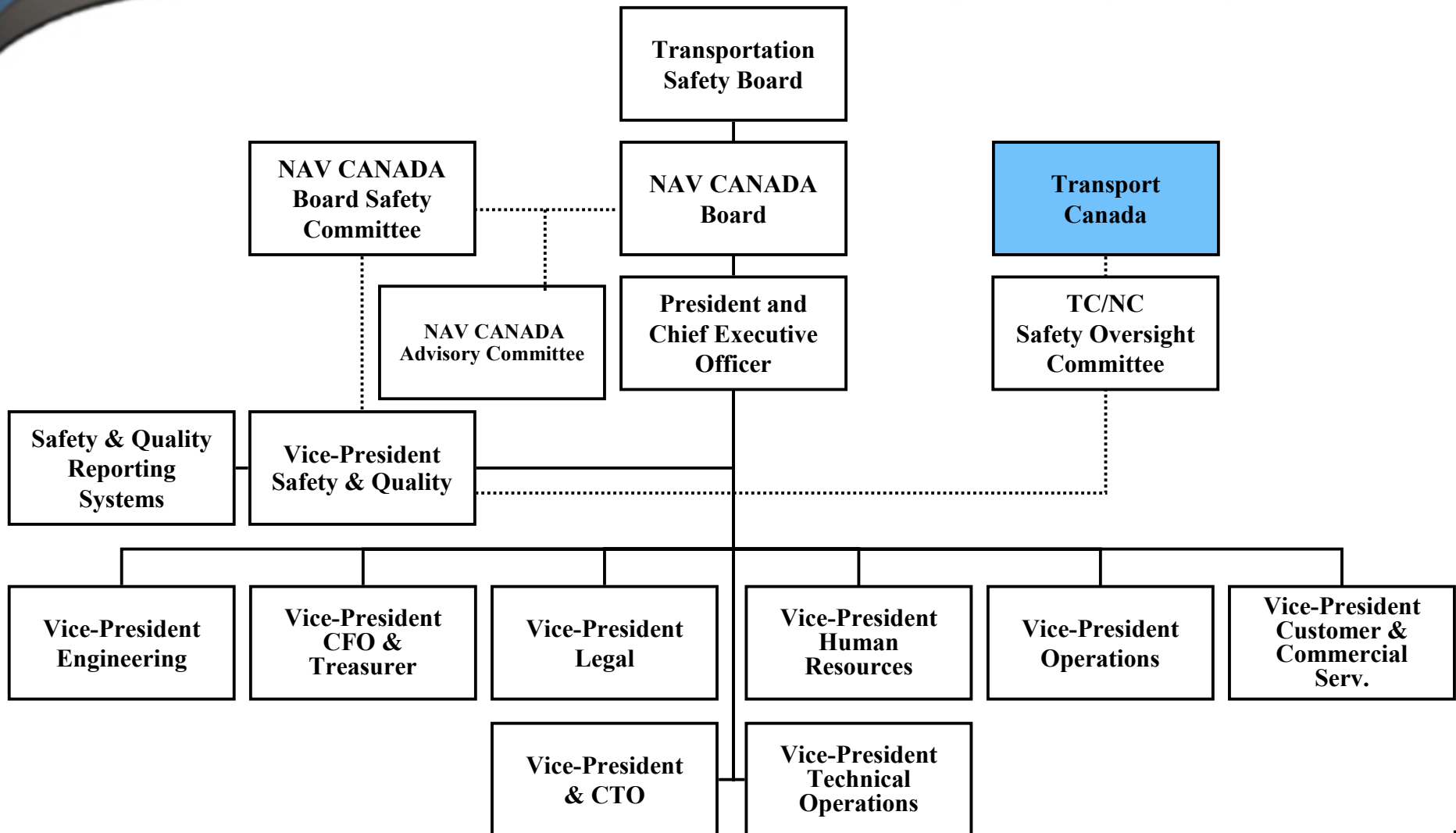
Safety Oversight in Canada Following Commercialization



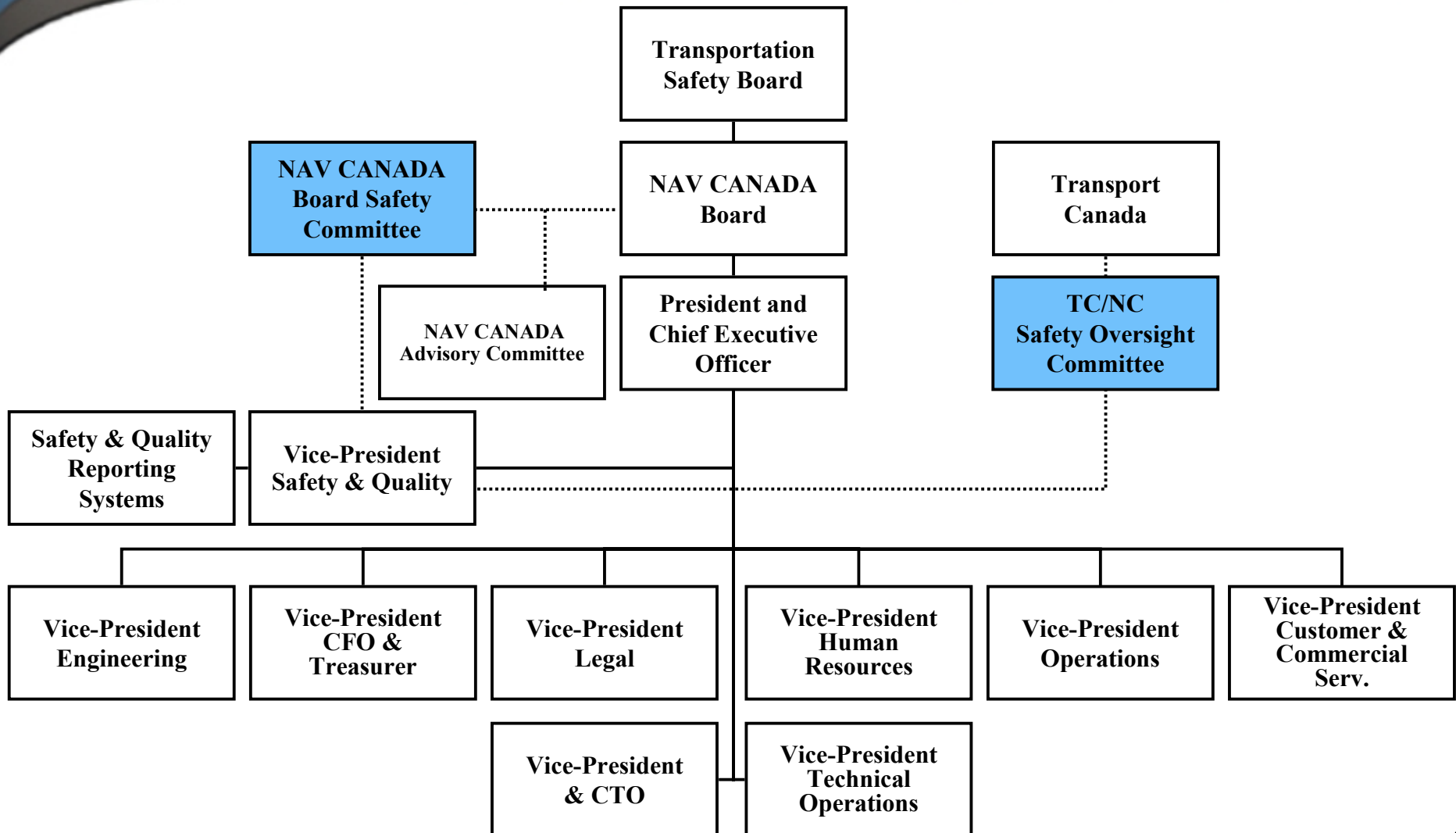
Relationships in Safety Management



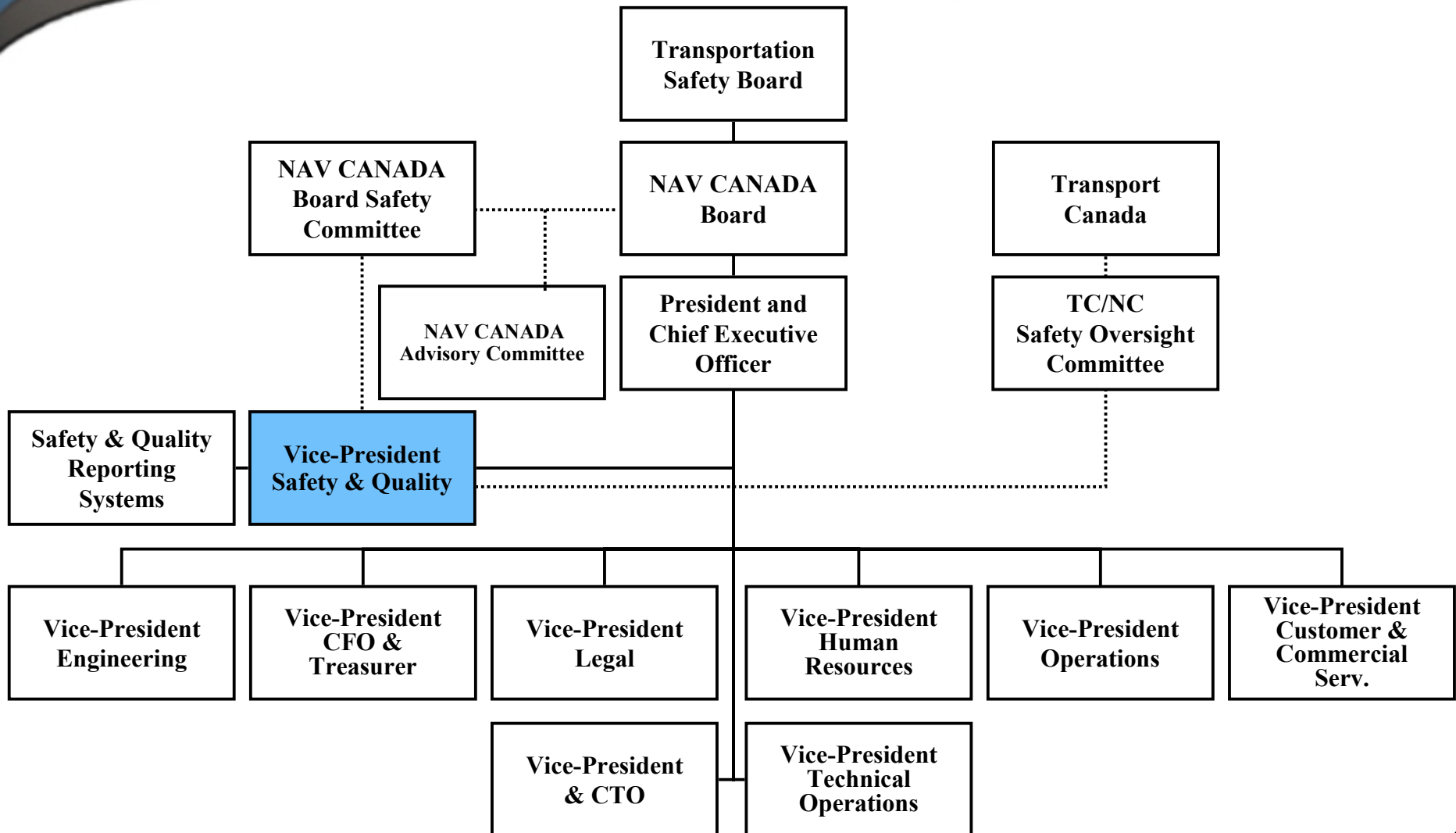
Relationships in Safety Management



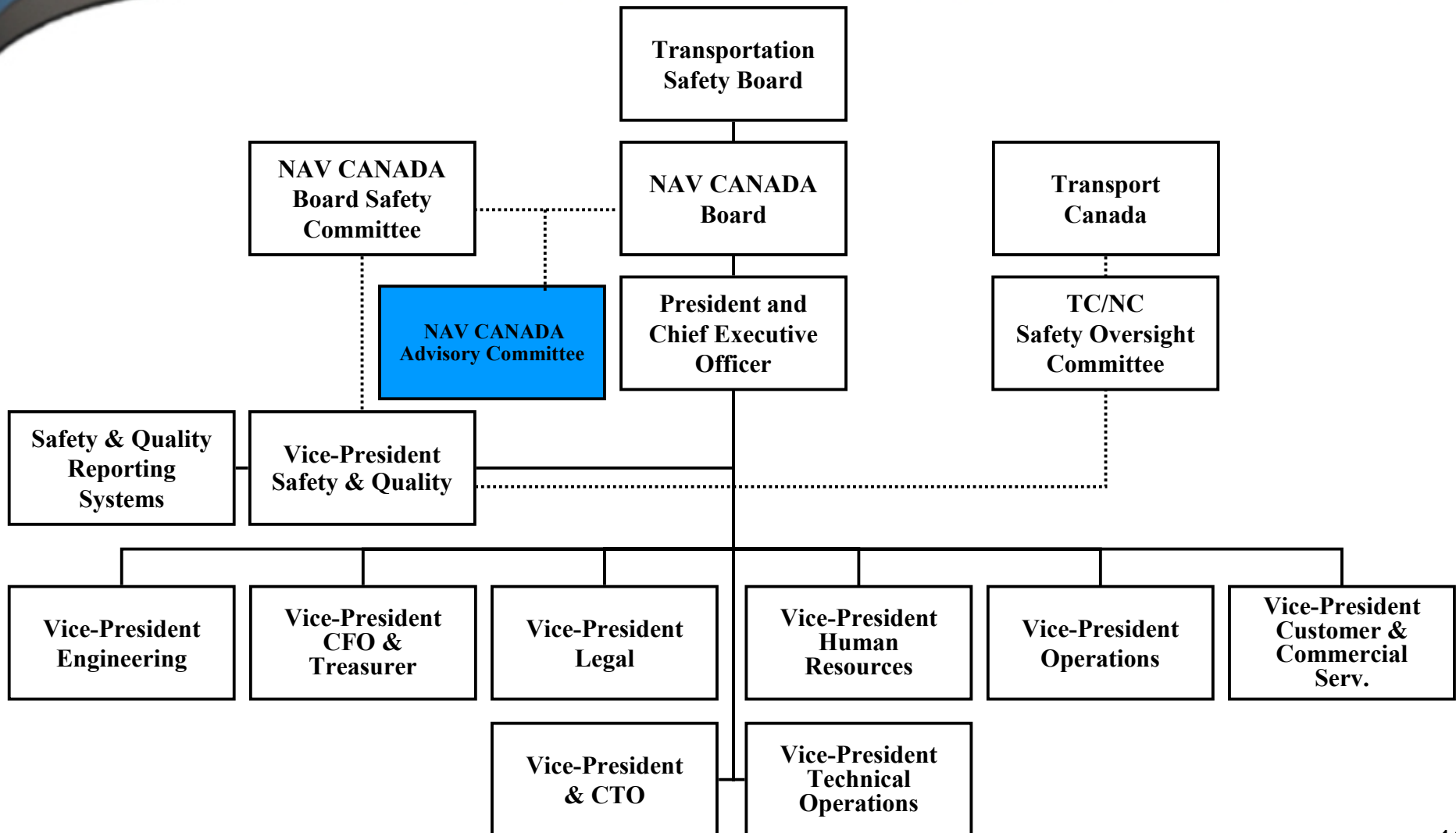
Relationships in Safety Management



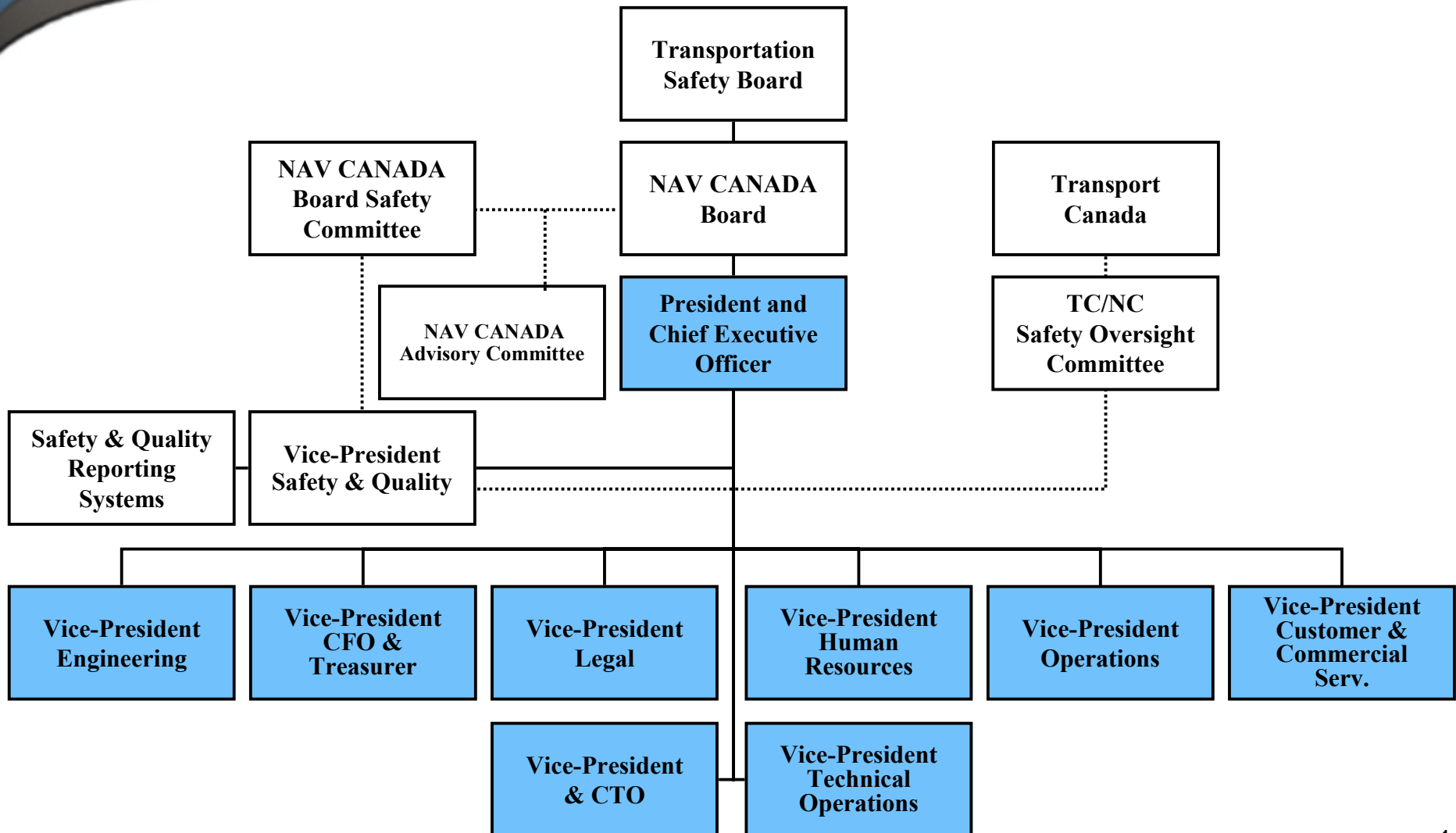
Relationships in Safety Management



Relationships in Safety Management



Relationships in Safety Management



Why a Safety Management System?



Features of a Safety Management System



- Top down commitment and ownership of processes by management and staff.
- Proactive, systematic, consistent and coordinated management of safety-risks.
- Consistent application of sound risk management techniques employing system safety and human factors concepts.
- Coordinated, consistent, rigorous risk and safety management decisions subject to independent scrutiny.
- Measurement and reporting of safety performance.

NAV CANADA's Safety Management System



Safety Philosophy

accidents are organizationally based and as such SMS must integrate technical and operational systems with financial and human resource management

Safety Policy Level

Safety Goal

to reduce safety risks resulting from the provision by NAV CANADA of air navigation services and products to a level as low as reasonably achievable

Safety Priority

safety is afforded the highest priority over commercial, operational, environmental or social pressures

Safety Responsibility

everyone has a responsibility to contribute to the achievement of the safety goal

Safety Management

proactive, systematic, explicit and coordinated management of safety risks

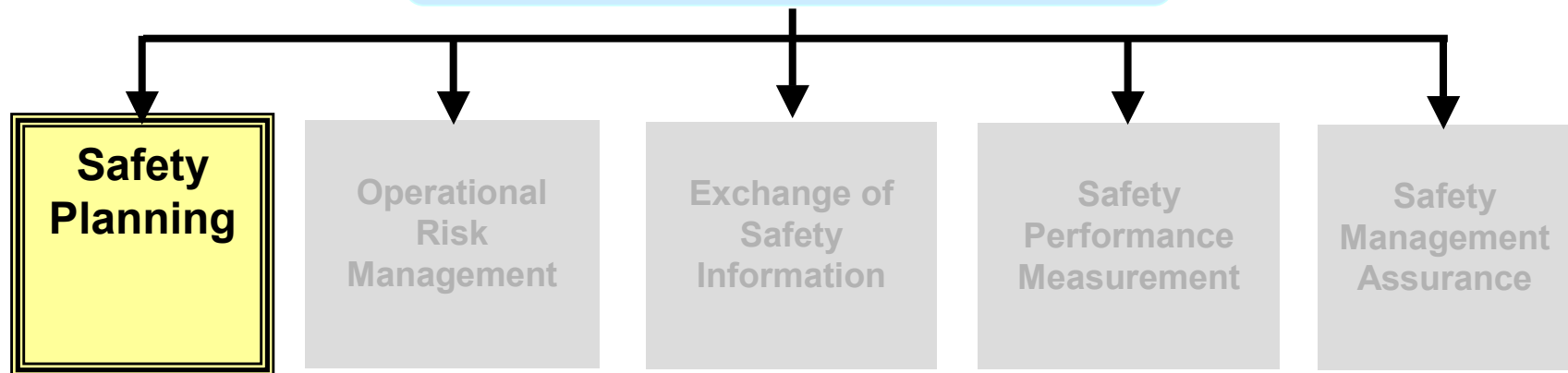
Safety Management System

The systematic and comprehensive processes and procedures for the proactive management of safety risk to ensure that safety management at NAV CANADA is proactive, robust, effective, efficient and integrated across groups and functions in order to achieve the safety goal

Safety Planning



Safety Management System



Safety Planning

The planning and management of corporate, group and project safety management activities to ensure that safety management activities are integrated, purposeful, appropriate and measurable.

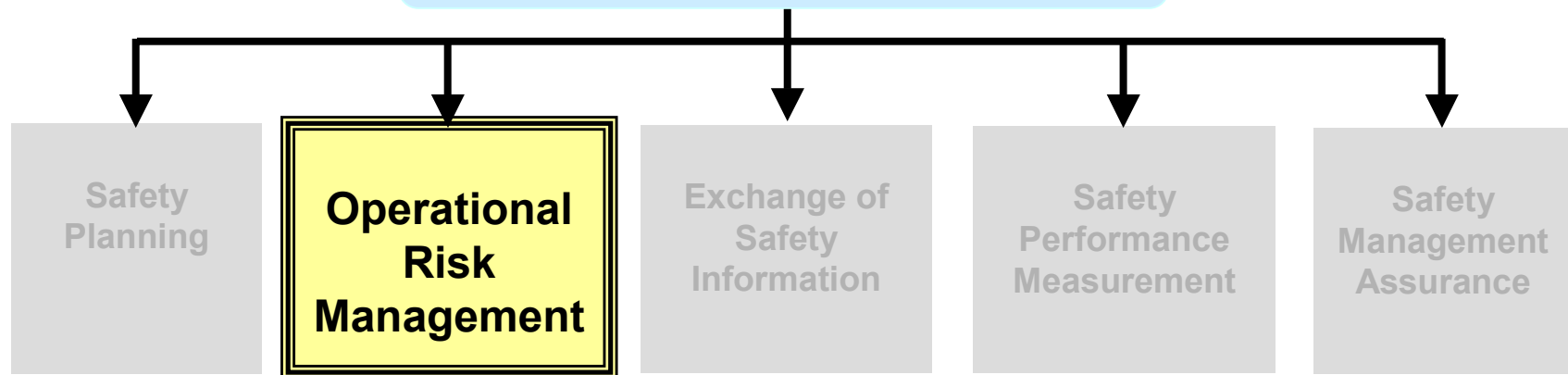
Examples

Annual Corporate Safety Plan, Group Safety Plans, Project Safety Management Plans

Operational Risk Management



Safety Management System



Operational Risk Management

The systematic and effective application of suitable risk-management techniques, employing system safety and human factors concepts to reduce the safety risks resulting from the provision, by NAV CANADA, of air navigation services and products to a level as low as reasonable achievable (ALARA).

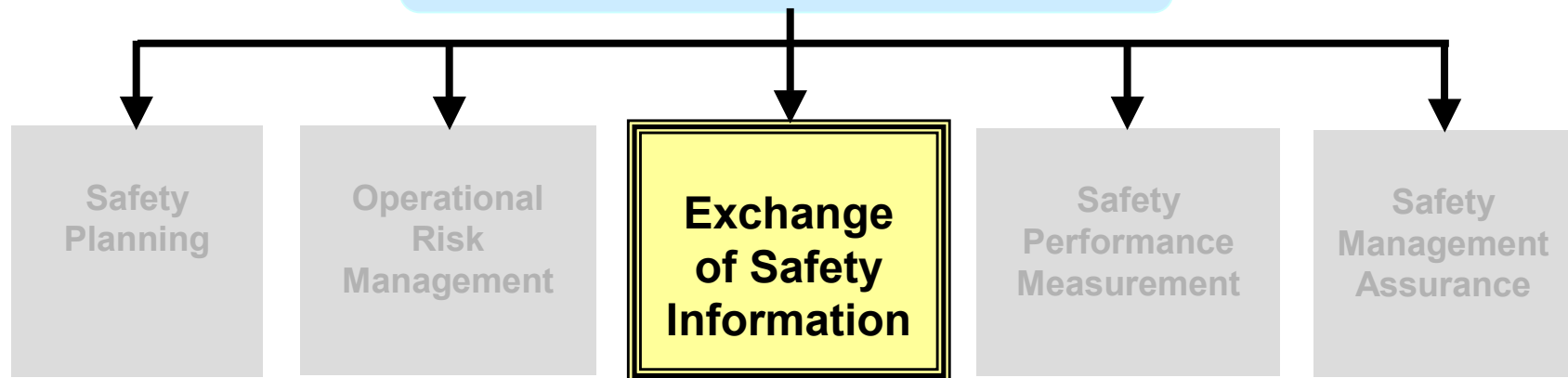
Examples

System Safety Analysis, Aeronautical Studies, Project Safety Management

Exchange of Safety Information



Safety Management System



Exchange of Safety Information

The processes used to openly exchange safety-related data and knowledge both externally and internally to the company to share data regarding hazards and system safety deficiencies thereby ensuring risks are ALARA and to promote a strong safety improvement culture within the company.

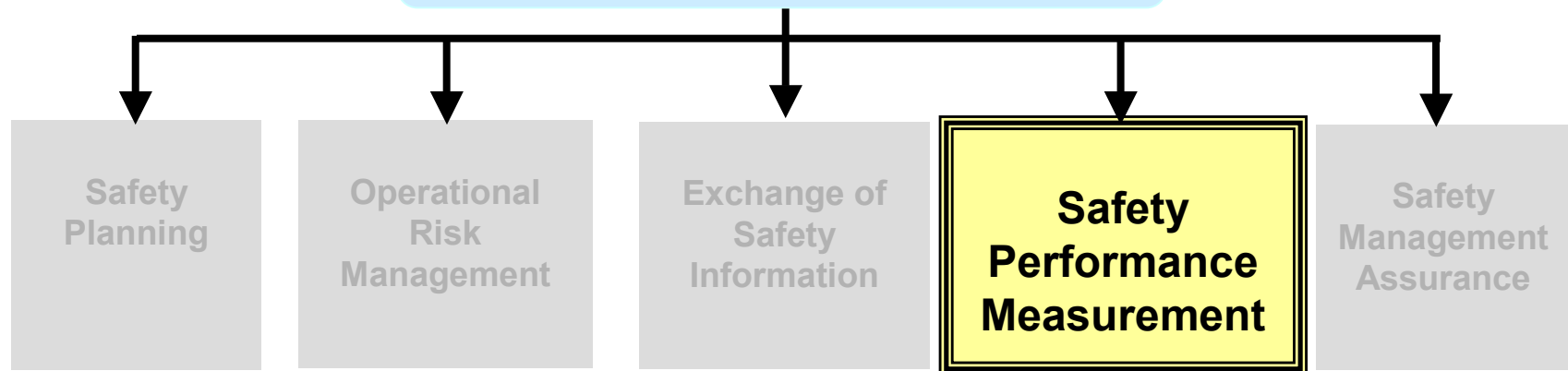
Examples

Confidential Safety Reporting System, Safety Committees, NAV CANADA Aviation Safety Tracking System, Safety Management Training

Safety Performance Measurement



Safety Management System



Safety Performance Measurement

The development, review and analysis of safety performance measures at all levels of the company to provide the executive and management with meaningful feedback that can be used to enhance safety performance throughout the company.

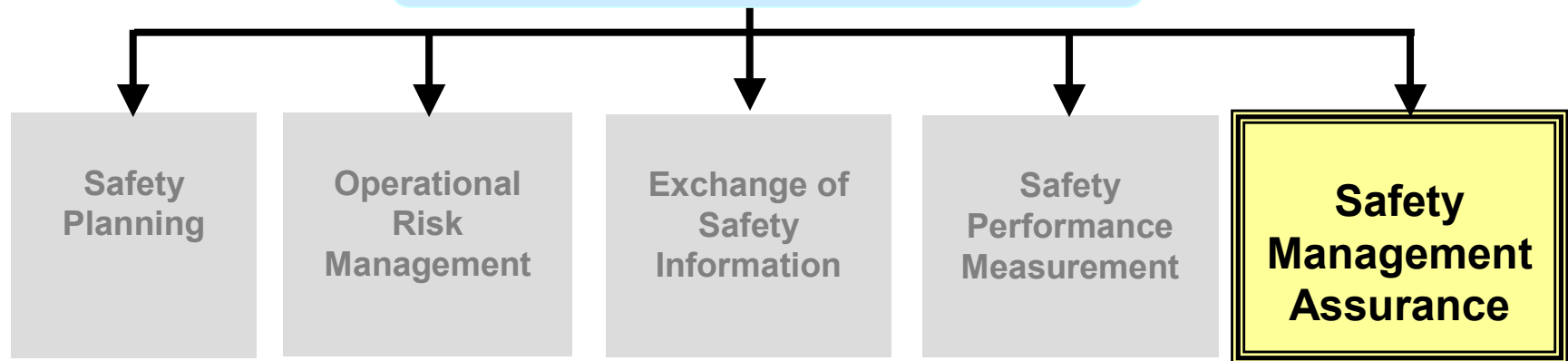
Examples

Corporate Performance Measures, tools/data such as MAXIMO, UCR/CPs for trend analysis

Safety Management Assurance



Safety Management System



Safety Management Assurance

The means for providing assurance that risks are being properly managed to ensure that risk management and safety management decision-making is consistent, rigorous and subject to independent scrutiny and challenge.

Examples

Safety Reviews, Operational Safety Investigations, No Notice Emergency Response Audits, Safety Surveys

Lessons Learned



Evolutionary

**Hazards Identification and
Risks Analysis (HIRA's)
embedded in decision making**

**What is acceptable today may
be unacceptable tomorrow**