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# Multilateral Interoperability Programme Advancements in MIP Baseline 3

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# Outline

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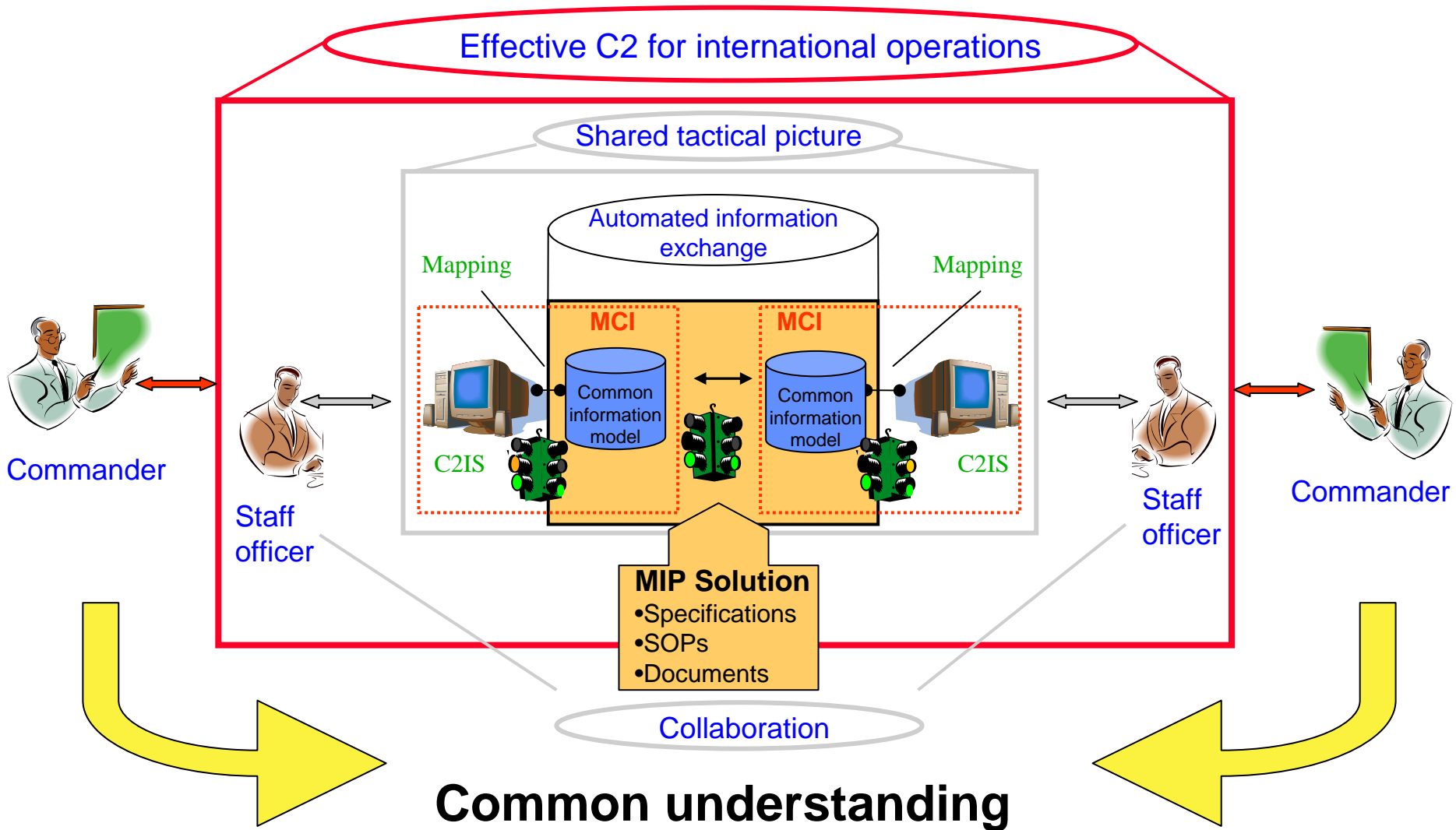
- Introduction
  - ◆ Goals
  - ◆ MIP Solution
  - ◆ MIP Baselines
  
- JC3IEDM
  - ◆ Overview
  - ◆ Data Model Evolution
  - ◆ Selected Extensions in Baseline 3
  
- Data Exchange Mechanism
  - ◆ Overview
  - ◆ Objectives and Concepts in Baseline 3
  
- Summary

# Goals

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- The aim of the Multilateral Interoperability Programme (MIP) is to achieve **international interoperability** of Command and Control Information Systems (C2IS) **at all levels** from corps to battalion, or lowest appropriate level, in order **to support multinational (including NATO), combined and joint operations** and the advancement of digitization in the international arena.

# The MIP Solution





# MIP Baselines

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- MIP baselines developed incrementally based upon overlapping blocks
  - ◆ Meet new operational requirements
  - ◆ Respond to the lessons learned
  
- Development phase
  - ◆ Analyze operational requirements
  - ◆ Define the MIP solution
  - ◆ Implement in national systems
  - ◆ Perform interoperability tests
  
- In-service period
  
- MIP Baseline 3
  - ◆ Initial draft specifications published in December 2006
  - ◆ Interoperability tests in September 2007

# Outline

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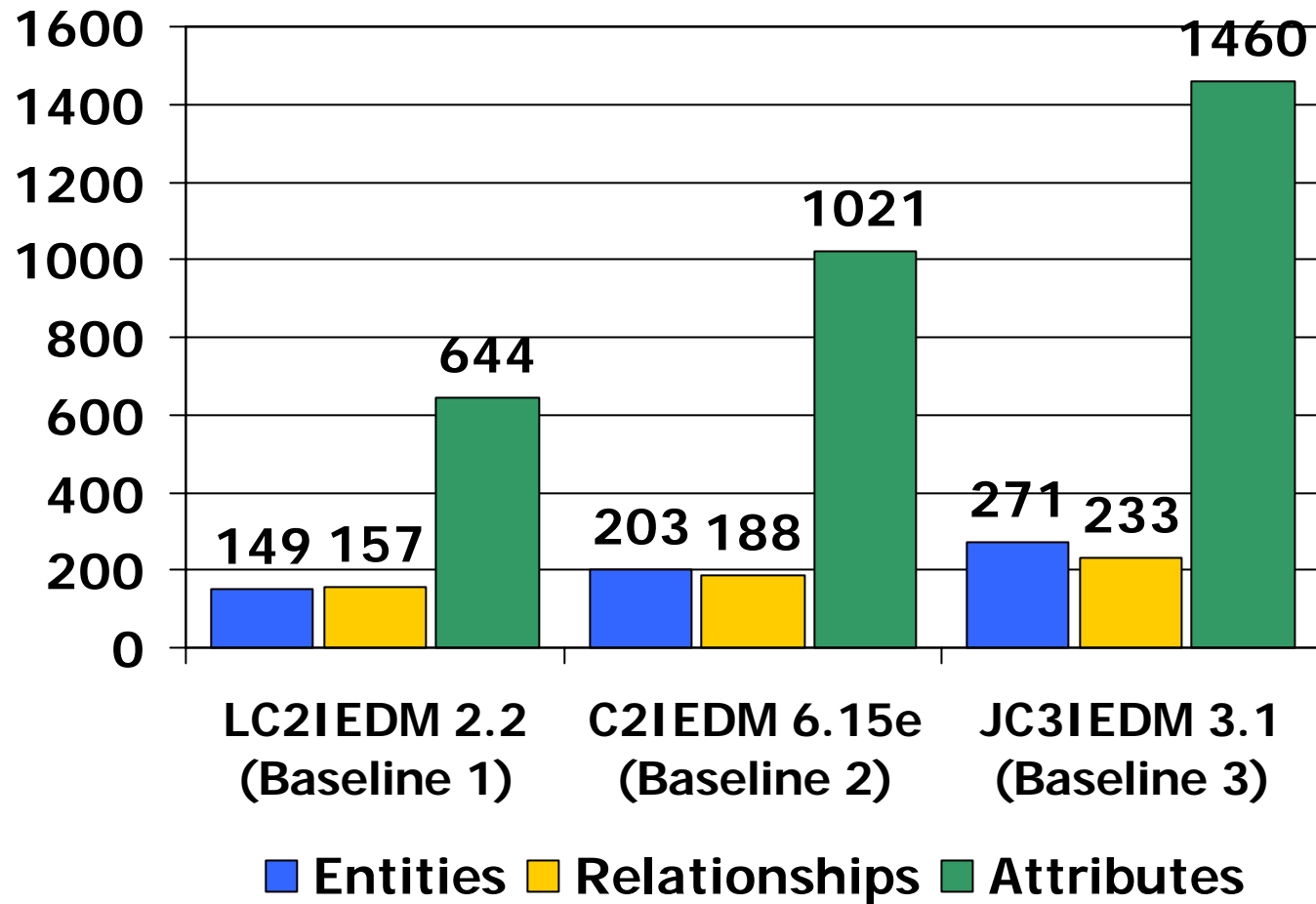
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# MIP Information Exchange Data Model

- JC3IEDM stands for
  - ◆ **Joint Command, Control, and Consultation Information Exchange Data Model**
- Entity-relationship model
  - ◆ IDEF1X notation
  - ◆ Semantic Definitions
  - ◆ Business Rules
- Generic – not derived from any specific system
- JC3IEDM Edition 3.1a published in February 2007



# Evolution of the MIP Data Model

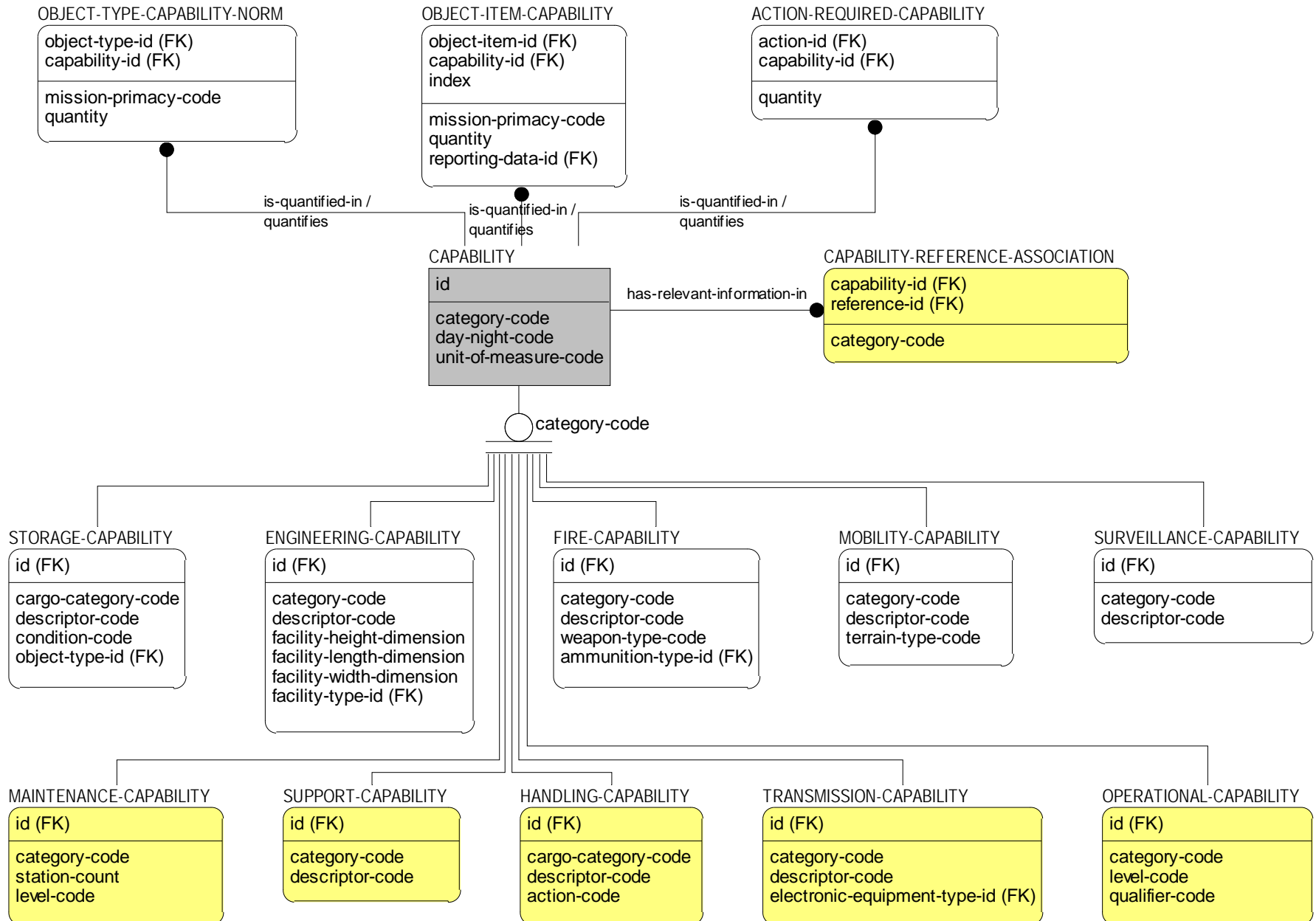


# Extensions in JC3IEDM 3.1

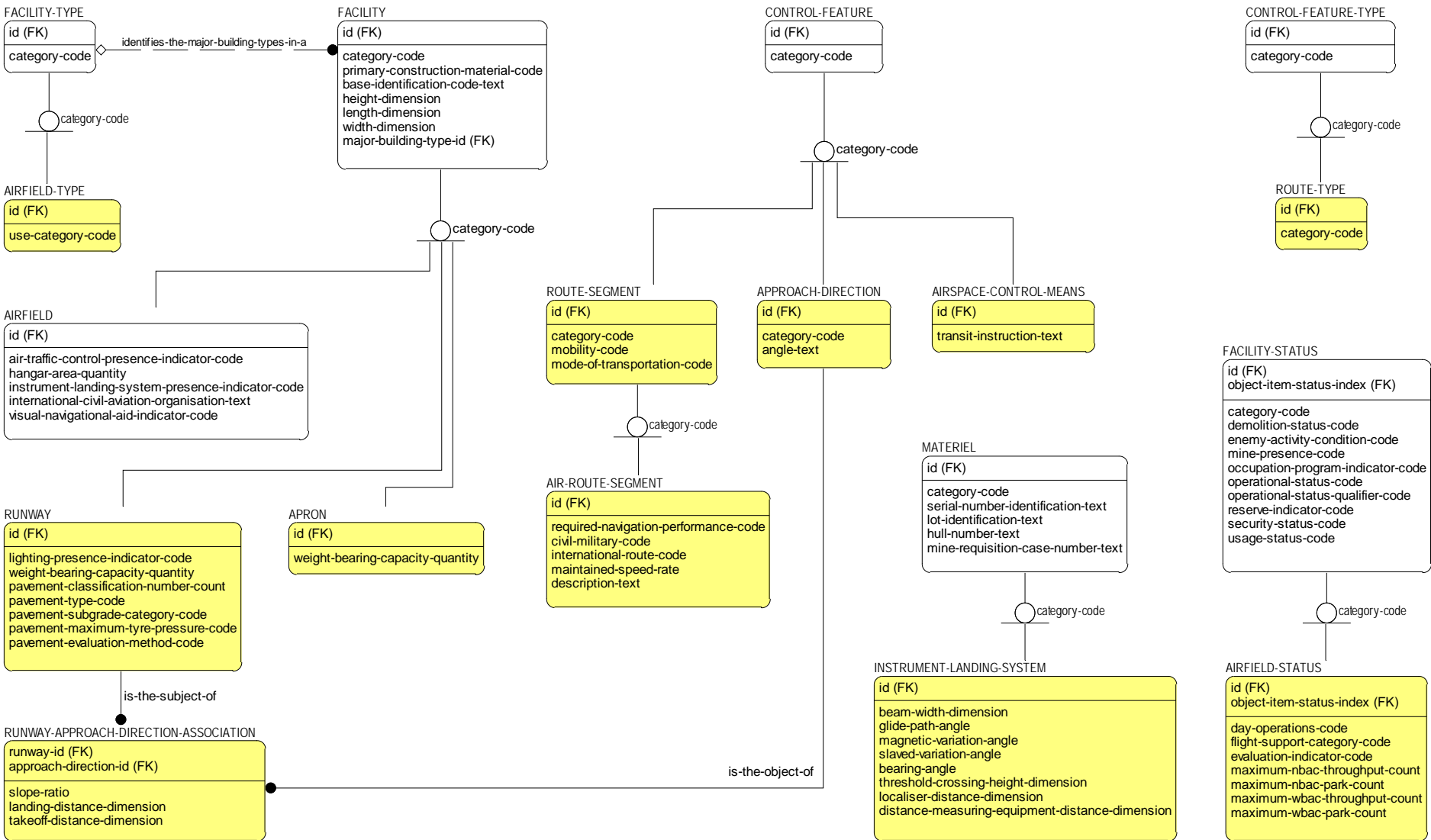
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- Capabilities
- Air Force – Air Tasking Order (ATO)
- Navy – Maritime Mine Warfare
- CBRN – Chemical Biological Radiological Nuclear
- Plans & Orders

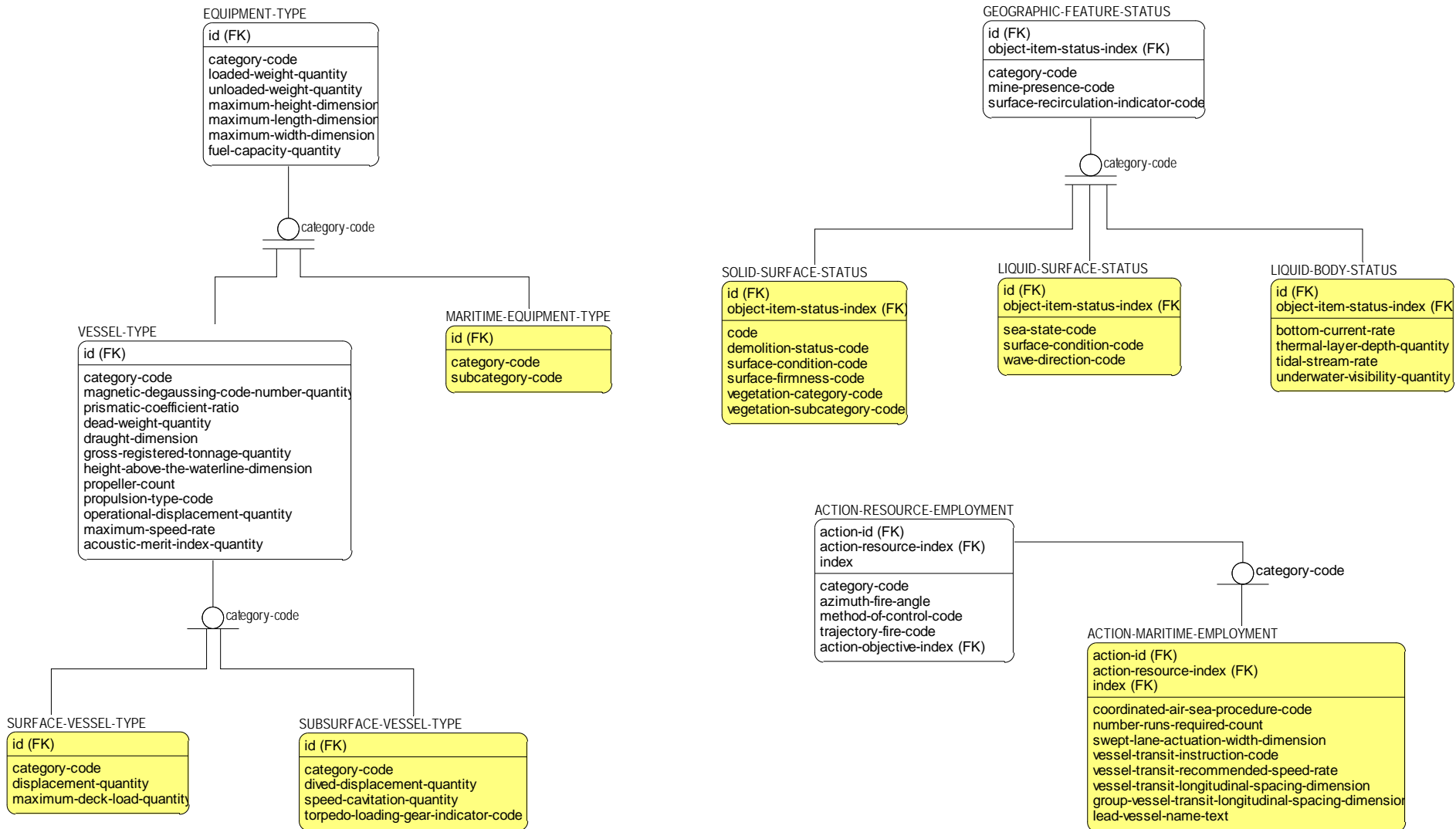
# Extensions – Capabilities



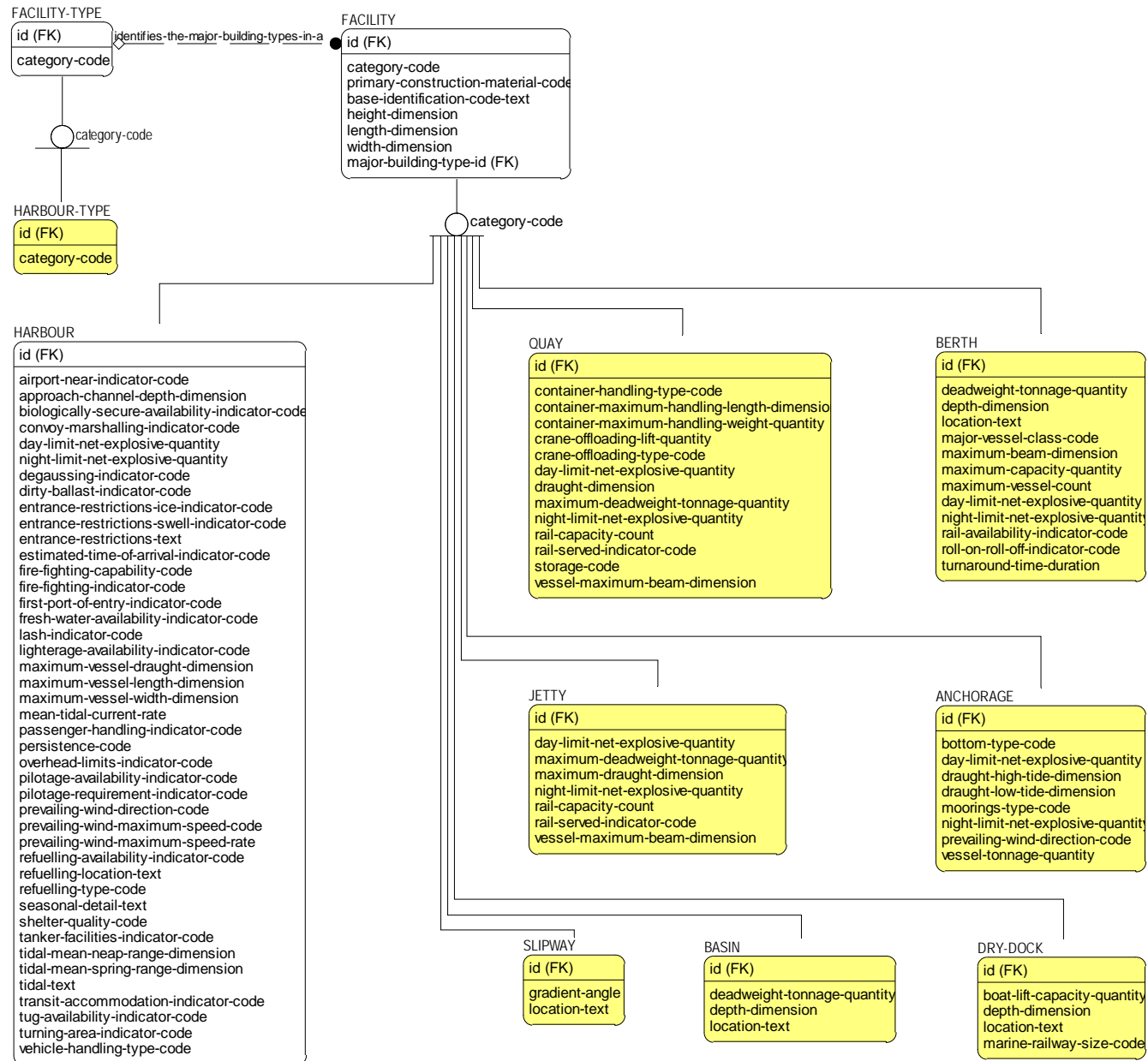
# Extensions – Air Force



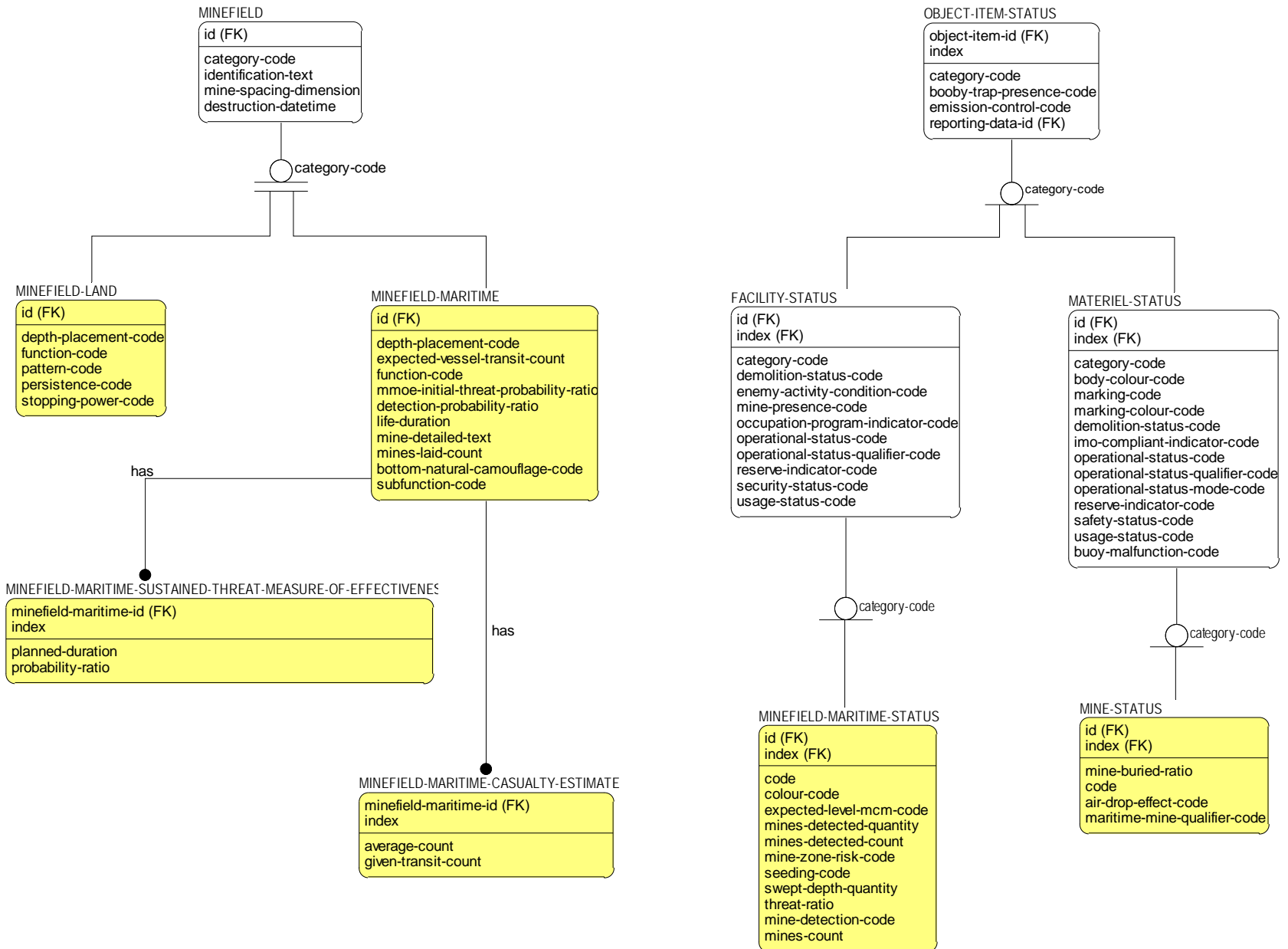
# Extensions – Navy (1)



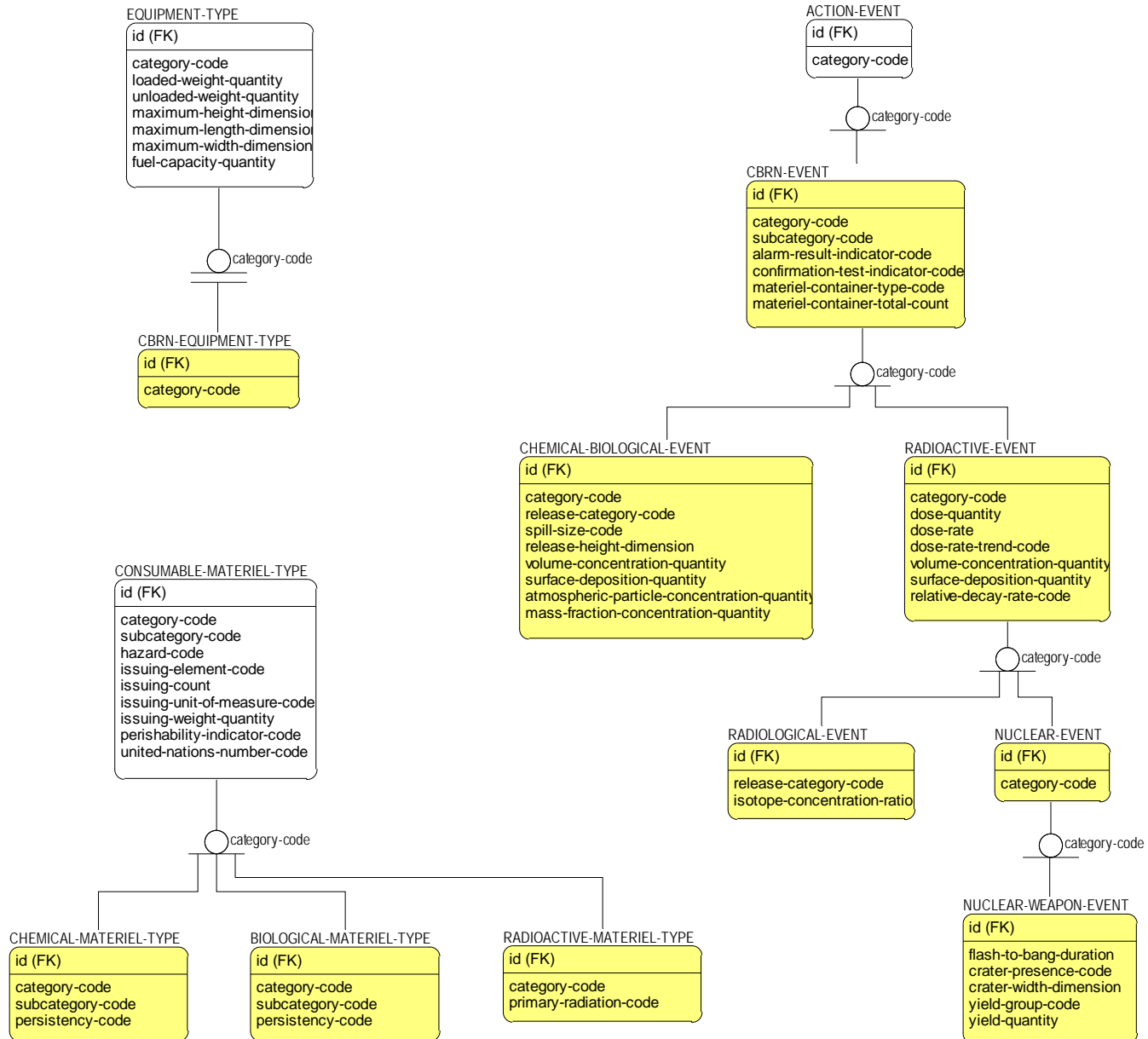
# Extensions – Navy (2)



# Extensions – Navy (3)



# Extensions – CBRN





# Extensions – Plans & Orders

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- MIP Tactical C2IS Interoperability Requirements:
  - ◆ The MIP Solution shall support the exchange of
    - A complete Plan or Order
    - Elements of a Plan or Order
  - ◆ Structure according to STANAG 2014
    - Header, main body, annexes, appendices, paragraphs, subparagraphs
  - ◆ Content:
    - Free text
    - Overlays
    - Action tasks

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# Data Exchange Mechanism

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- All MIP gateways form a distributed database
  
- Data exchange via publish/subscribe mechanism
  - ◆ Partial replication of database content
  - ◆ Based on subscriptions of Operational Information Groups (OIGs)
  
- Predefined OIG categories
  - ◆ Friendly and Neutral (Non-Aggregable / Organizational)
  - ◆ Enemy and Unknown (Uncorrelated / Correlated)
  - ◆ Globally Significant
  - ◆ Plans & Orders

With specific content and distribution rules

# DEM in Baseline 3

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## ■ Challenges

- ◆ Simplified technical implementation
- ◆ Easier administration and operation
- ◆ Enhanced reliability and robustness
- ◆ Reduced bandwidth requirements

## ■ Improvements

- ◆ Automated connection information exchange
- ◆ Revised and simplified DEM protocol stack
- ◆ Reduced number of optional features
- ◆ Features for (future) backward compatibility

# Connection Information Exchange

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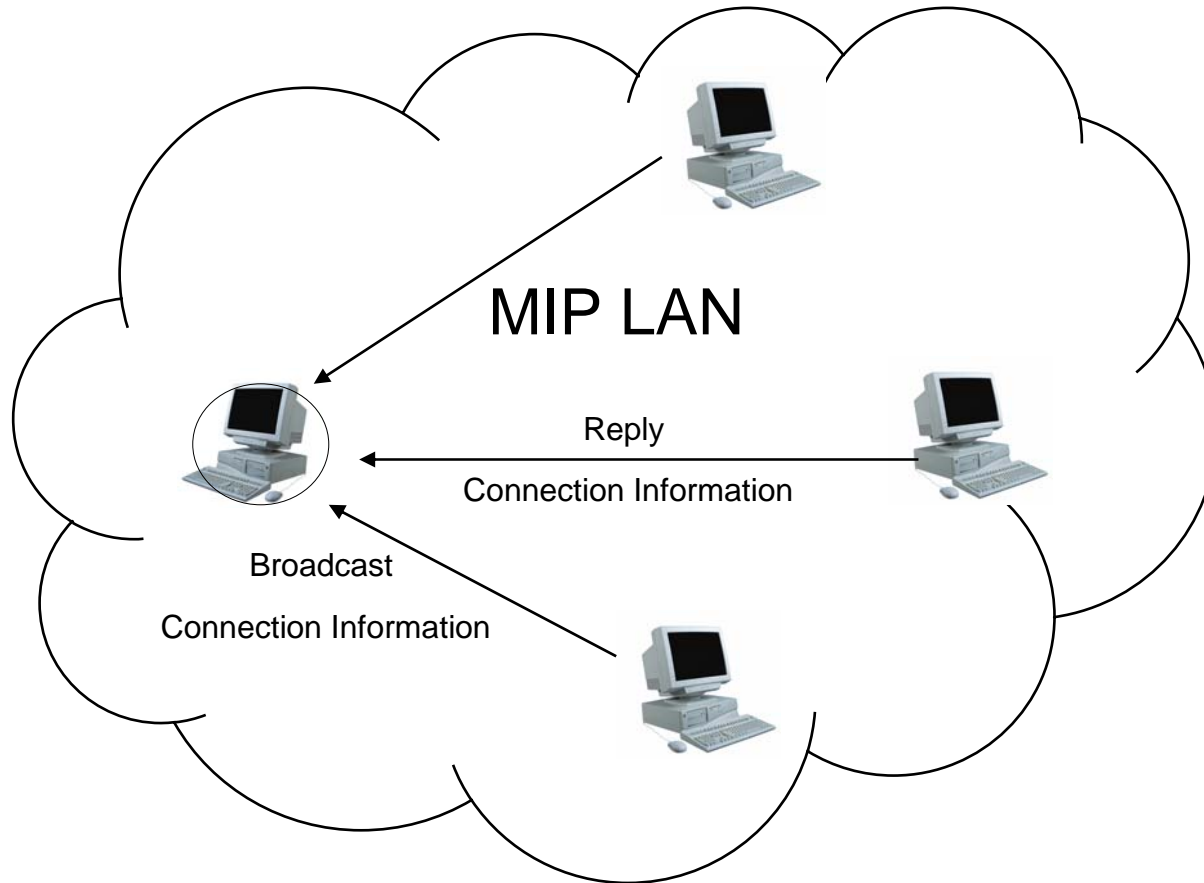
## ■ MIP Gateway Information

```
<?xml version="1.0" encoding="utf-8"?>
<DEMConnectionInfoDoc>
  <scope>ANNOUNCE</scope>
  <DEMConnectionInformation>
    <NodeID>261000001</NodeID>
    <ReplicationNodeIPAddress>192.168.10.80</ReplicationNodeIPAddress>
    <ReplicationNodePort>53343</ReplicationNodePort>
    <ResponsibleOrgName>FKIE</ResponsibleOrgName>
    <DEMVersionNumber>DEM-3.2</DEMVersionNumber>
    <DataModelVersionNumber>JC3IEDM-3.1a</DataModelVersionNumber>
  </DEMConnectionInformation>
</DEMConnectionInfoDoc>
```

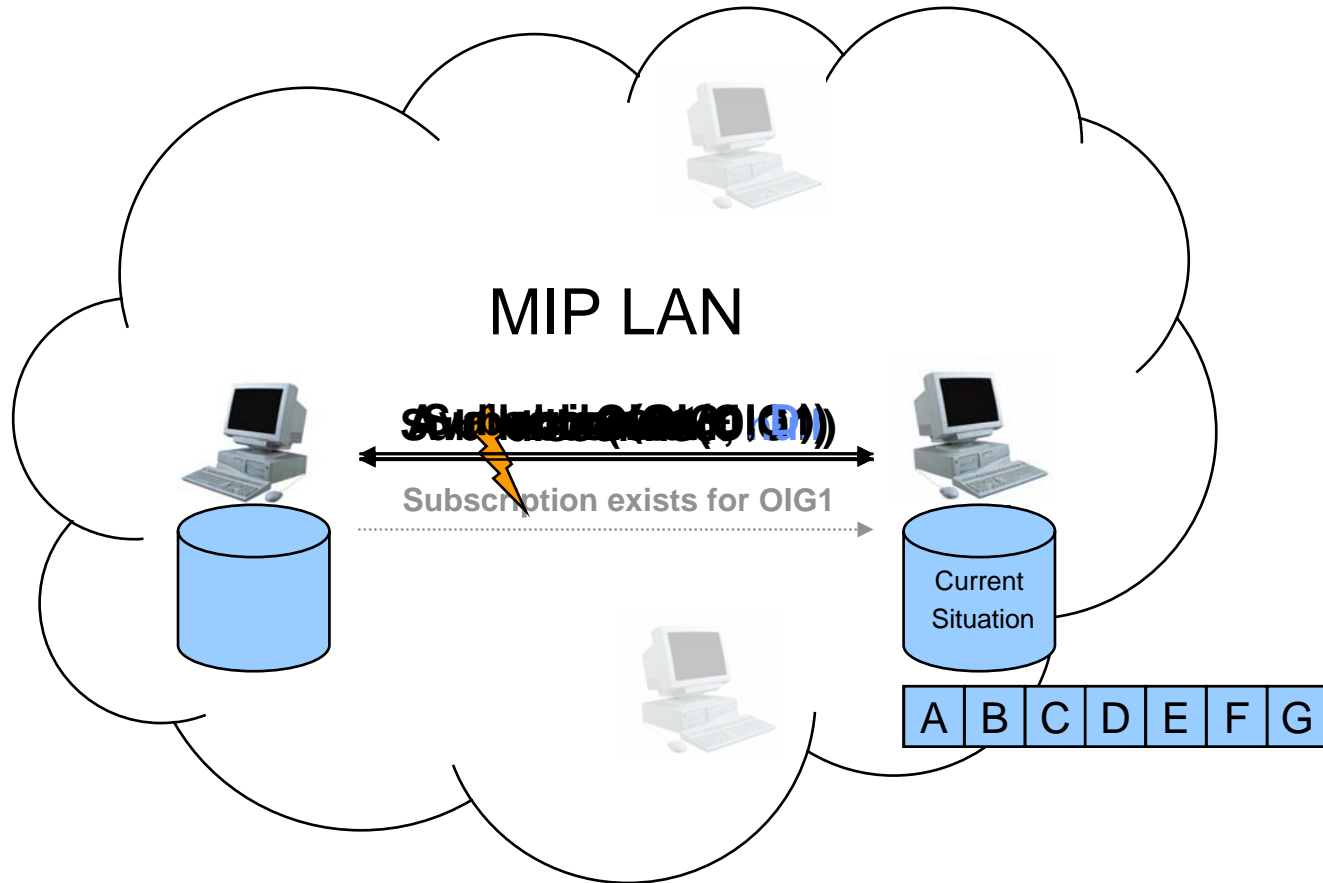
## ■ Offline and automatic connection information exchange

# Automatic Connection Information Exchange

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# Operational Data Exchange



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- Extensions to the MIP Data Model
  - ◆ Merger of MIP C2IEDM and NATO Corporate Data Model
  - ◆ Additional joint requirements considered for air force and navy
  - ◆ Plans and orders
  
- Revised Data Exchange Mechanism
  - ◆ Simplified technical implementation
  - ◆ Easier administration/operation of MIP gateways
  - ◆ Enhanced reliability and robustness
  
- Draft specifications available at <http://www.mip-site.org>
- MIP tests starting in September 2007
  - ◆ MIP Test Reference System to support automated testing

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Thank you for your attention!