



Setting the Standard for AutomationTM

MIMOSA 2022 Open Meetings

ISA / MIMOSA Collaborations

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Standards
Certification
Education & Training
Publishing
Conferences & Exhibits

Industry 4.0 Ecosystem

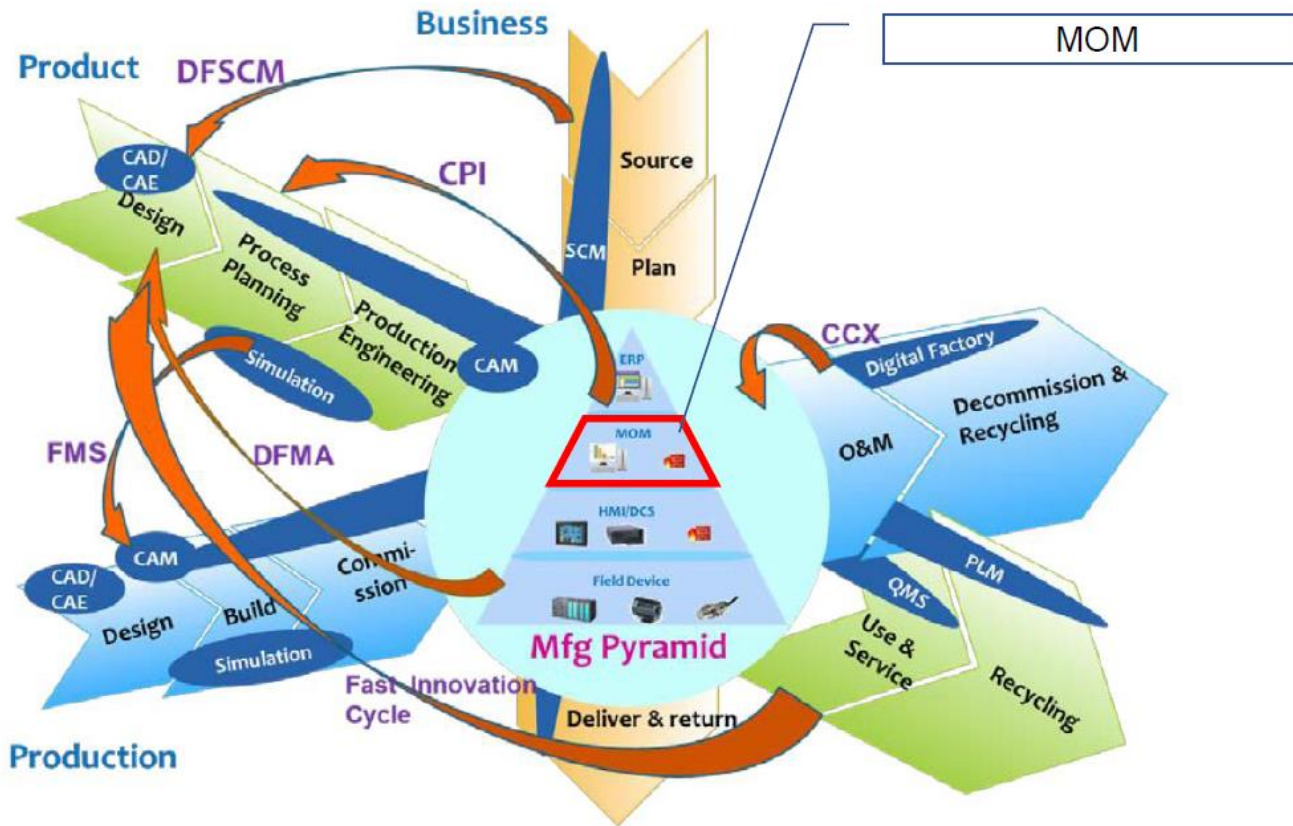


Figure 1. Smart Manufacturing Ecosystem

<https://nvlpubs.nist.gov/nistpubs/ir/2016/NIST.IR.8107.pdf>

Manufacturing Operations Management – at the core of an Industry 4.0 Ecosystem

Key to realizing the goals of Industry 4.0

- Interoperability (IEC 62541)
- Security (IEC 62443 / ISA 99)
- Vertical / Horizontal Integration (IEC 62264 / ISA 95)

IEC 62264 / ISA 95 Enterprise-Control System Integration



IEC 62264 is an [international standard](#) for enterprise-control system integration. This standard is based upon [ANSI/ISA-95](#) (International Society of Automation)

- Part 1:2013 Object Models and Attributes of Manufacturing Operations
- Part 2:2013 Object model attributes
- Part 3:2016 Activity models of manufacturing operations management
- Part 4:2015 Objects models attributes for manufacturing operations management integration
- Part 5:2016 Business to manufacturing transactions
- Part 6:2016 Messaging Service Model

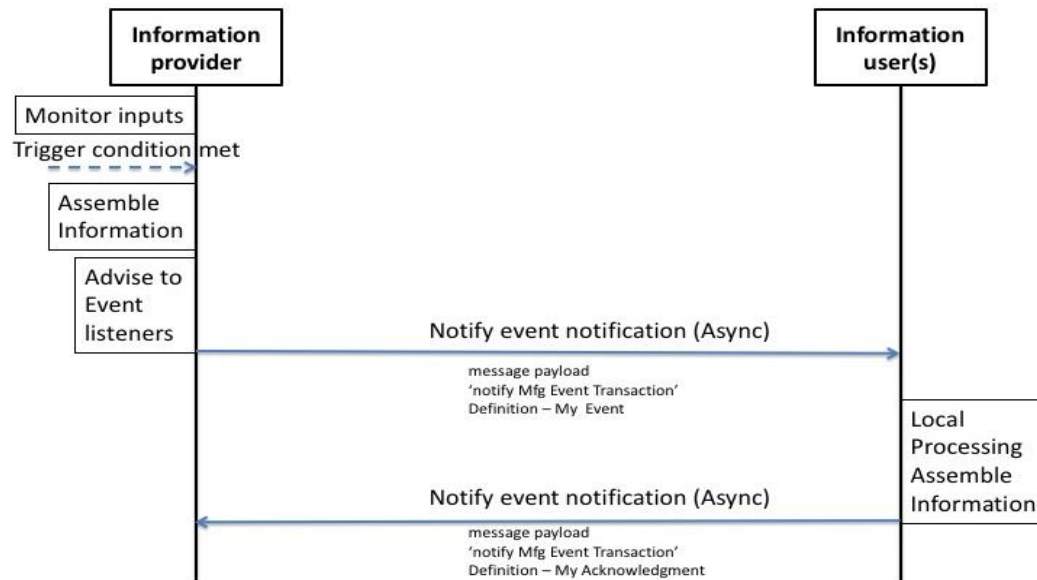
Integration of Enterprise, Manufacturing Operations and Control
Developed and maintained by the ISO/IEC JWG committee and ISA 95 committee

ANSI/ISA-95.00.08-2020, Enterprise-Control System Integration – *Part 8: Information Exchange Profiles*

ANSI/ISA-95.00.07-2017, Enterprise-Control System Integration-*Part 7: Alias Service Model*
Revisions to Parts 2, 4 and 5 (Process Centric Messaging)

Event Driven Architecture (EDA)

- Parts 2, 4 and 5
Operations Events and Notification



Profiles

- Part 8 defines the necessary content and possible scopes of profiles
- Profiles can be Technology Specific
- Profiles can be Industry Specific
- TR-01 (TR01: Profile Template for Data Exchange

1. Introduction

The purpose of this document is to define transaction and message schematics required to support the integration of short term planning and scheduling systems with fleet management systems in a mining environment.

It is the intent of this profile to:

- Provide context on how the ISA-95 standards can be used as a framework to define transactions and messages between two applications
- Allow software vendors to implement the version of the profile and interact with other similar compliant systems

2. Profile

Attribute name	Description
ID	Mining-FCS-FMS
Name	Mining-FCS-FMS-Profile
Version	002
Preferred Acronym	MiningMTL
Organisation	RungePincockMinarco/ Caterpillar
Contact	Andre Britz (abritz@rpmglobal.com)
Description	Profile to define finite capacity scheduling and fleet management systems integration in
Keywords	Mining, FMS, Fleet Management Systems, FCS, Finite Capacity Planning, Short Term Scheduling

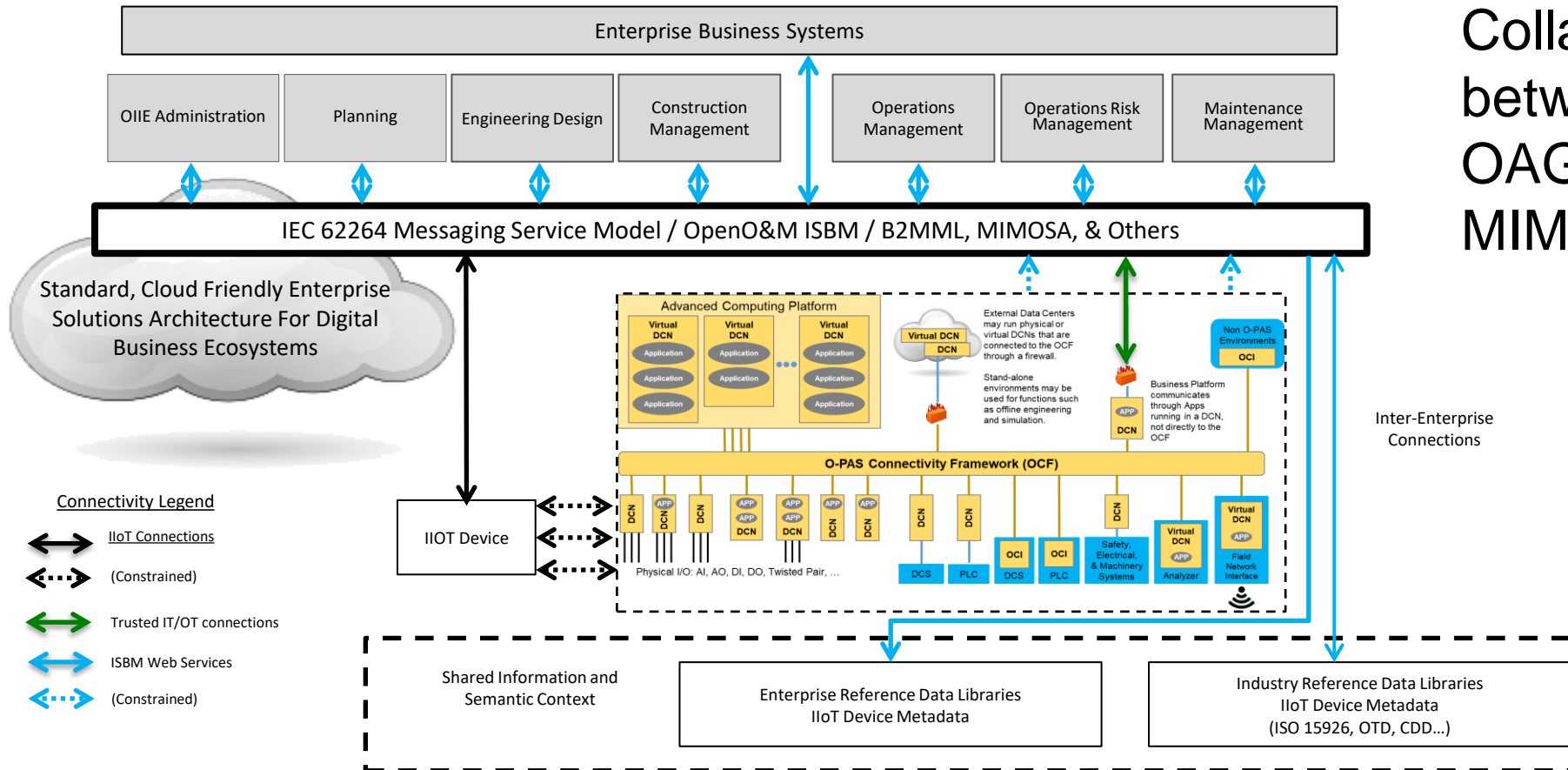
Collaborations

- OpenO&M
 - <http://www.openoandm.org>
- OPC UA IEC 62264 Common Object Model
 - <https://opcfoundation.org/markets-collaboration/isa-95/>
- ISA Smart Manufacturing Division
 - <http://www.isa.org>
- MESA XML Working Group and Smart Manufacturing Model
 - <http://www.mesa.org>

ISA Impact on the Digital Ecosystem Using the OIIE/ISO 18101 Architecture



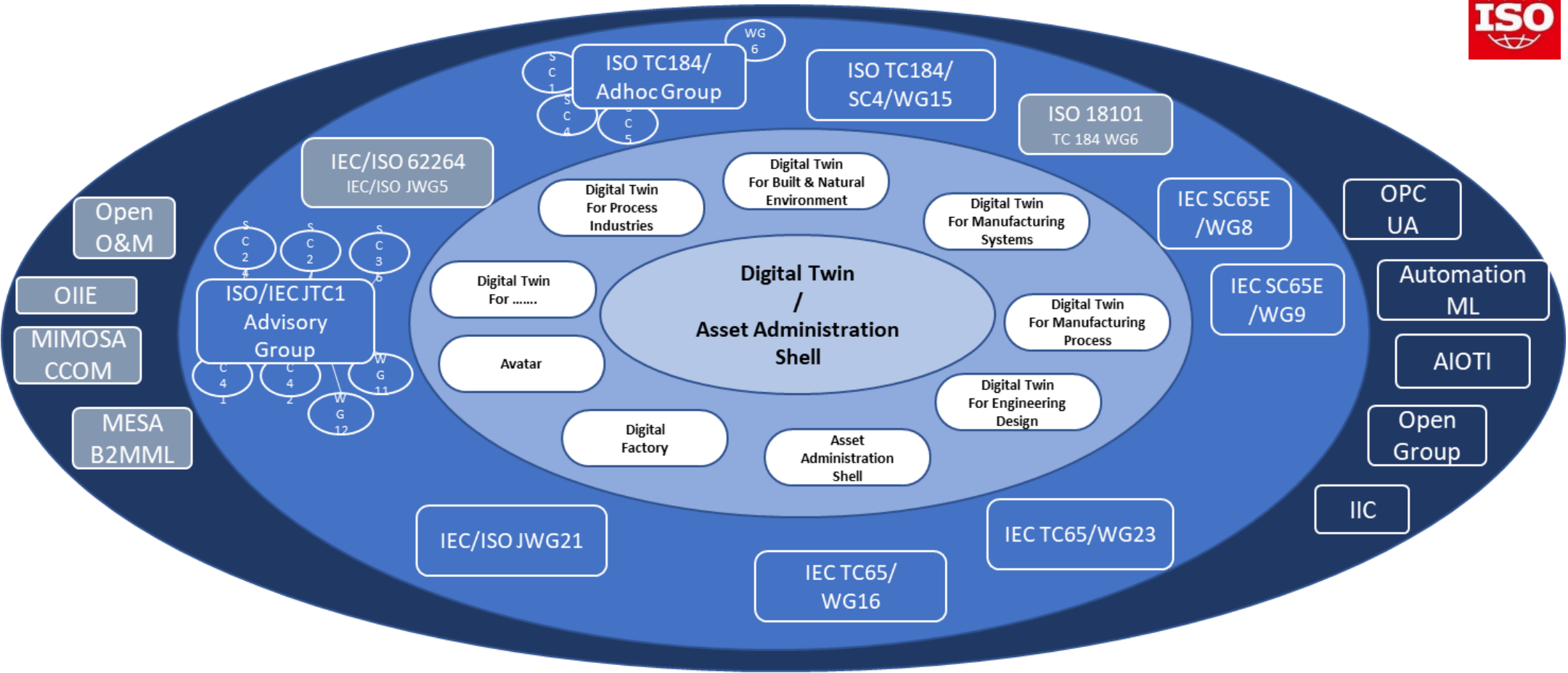
Open Industrial Interoperability Ecosystem (OIIE)



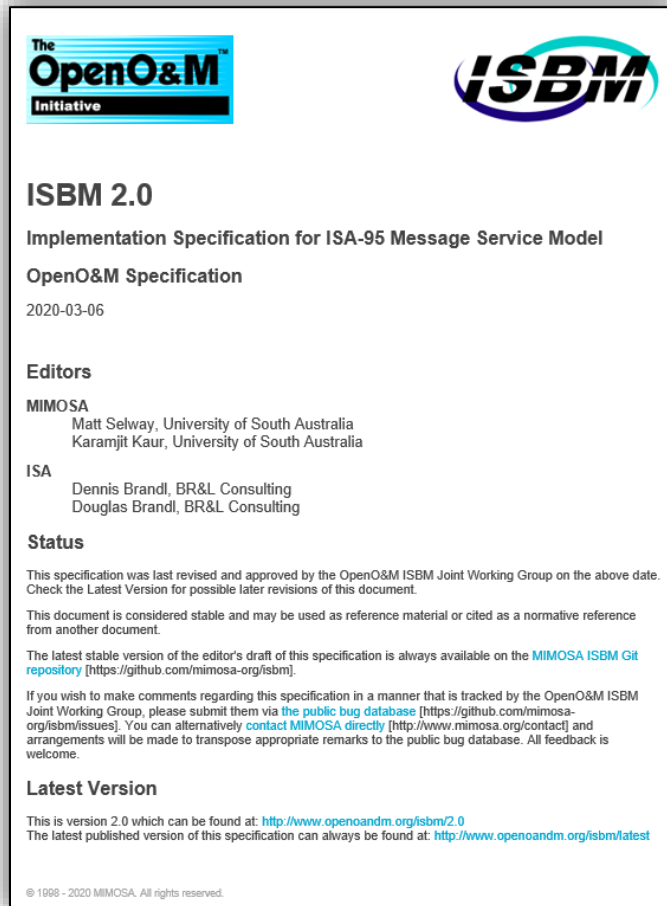
Collaboration
between MESA,
OAGi, OPC,
MIMOSA

<https://www.mimosa.org/open-industrial-interoperability-ecosystem-oiie/oiie-information-and-systems-architecture/>

Partial view of the Ecosystem Standards for Digital Twin – JWG21 / TF8 Digital Twin



ISA 95 Messaging Service Model



This is version 2.0 which can be found at: <http://www.openoandm.org/isbm/2.0>

Currently working on version 2.1 with Intra-Enterprise Interoperability

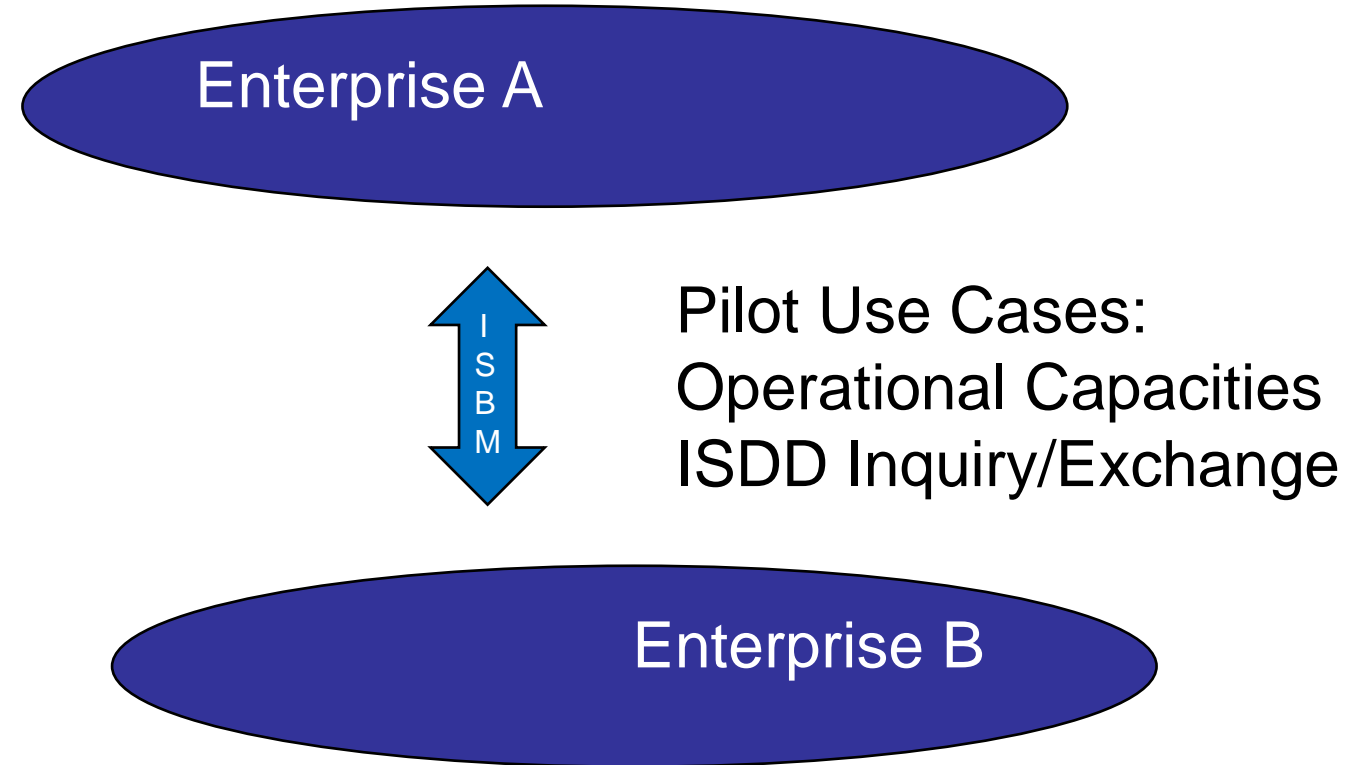
The latest published version of this specification can always be found at: <http://www.openoandm.org/isbm/latest>

Defines standard APPLICATION interfaces for

- publish/subscribe,
- query response,
- end-point independent,
- multiple publishers & providers,
- message content independent,
- full security specification,
- WEB/SOAP and REST interfaces

Allows one application code set and architecture to work across any asset owner defined infrastructure.

- ISBM 2.1
 - Secure
 - Deterministic
 - Technology Agnostic
 - AMQP
 - .NET
 - Jakarta
 - Python



Questions



Automated Control Concepts, Inc.
Smart solutions.

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