Projects supporting the Integrated System Plan

- Engineering Roadmap
- Connections
- System Security reports
- ISP actionable projects
- NEM 2025
- Operations Technology Roadmap

Net-zero 2050

Operations Technology Program

Control Room Operations Working Group Overview

18th April 2023

Control Room of the Future (CROF)

Vision Statement

"A secure, flexible, adaptable, space where systems are integrated, interoperable and automated. All resources are maximised, and personnel are highly trained, in simulators to make data-driven decisions based on accurate forecasts."
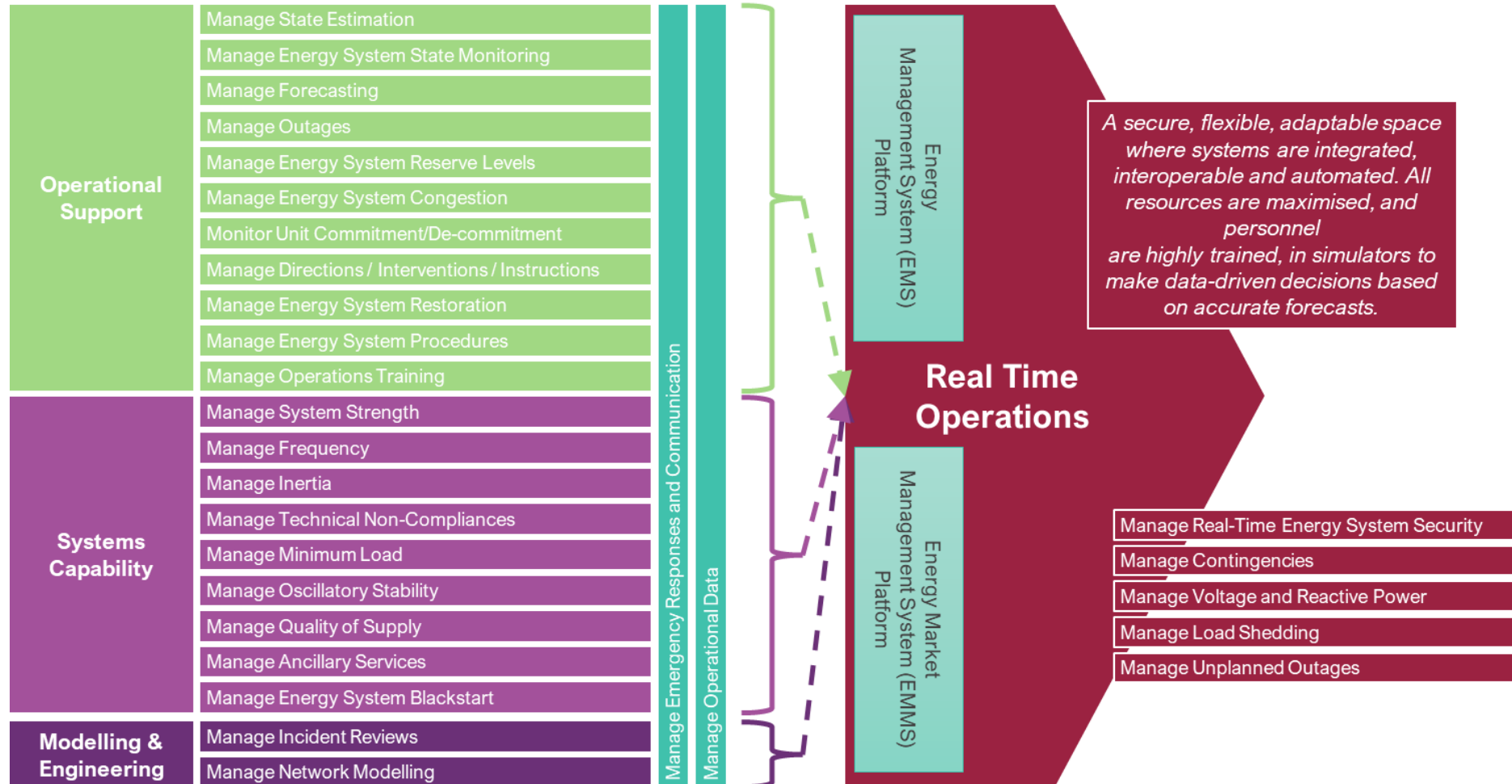
Purpose

Secure, reliable, resilient, safe and flexible operations, which facilitate a goal of 100% renewable operation

Control Room of the Future (CROF)

Secure, reliable, resilient, safe and flexible operations, which facilitate a goal of 100% renewable operation

Operational Support
- Manage State Estimation
- Manage Energy System State Monitoring
- Manage Forecasting
- Manage Outages
- Manage Energy System Reserve Levels
- Manage Energy System Congestion
- Monitor Unit Commitment/De-commitment
- Manage Directions / Interventions / Instructions
- Manage Energy System Restoration
- Manage Energy System Procedures
- Manage Operations Training

Systems Capability
- Manage System Strength
- Manage Frequency
- Manage Inertia
- Manage Technical Non-Compliances
- Manage Minimum Load
- Manage Oscillatory Stability
- Manage Quality of Supply
- Manage Ancillary Services
- Manage Energy System Blackstart

Modelling & Engineering
- Manage Incident Reviews
- Manage Network Modelling

Manage Emergency Responses and Communication

Manage Operational Data

Energy Management System (EMS) Platform

Energy Market Management System (EMMS) Platform

Real Time Operations

A secure, flexible, adaptable space where systems are integrated, interoperable and automated. All resources are maximised, and personnel are highly trained, in simulators to make data-driven decisions based on accurate forecasts.

- Manage Real-Time Energy System Security
- Manage Contingencies
- Manage Voltage and Reactive Power
- Manage Load Shedding
- Manage Unplanned Outages

Aligning our Capabilities to an integrated Future Mode of Operation

Control Room of the Future (CROF)

Secure, reliable, resilient, safe and flexible operations, which facilitate a goal of 100% renewable operation

Operational Support
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Modelling & Engineering
- Manage Incident Reviews
- Manage Network Modelling

Manage Emergency Responses and Operational Data

Energy Management System (EMS) Platform

Energy Market Management System (EMMS) Platform

Algorithms

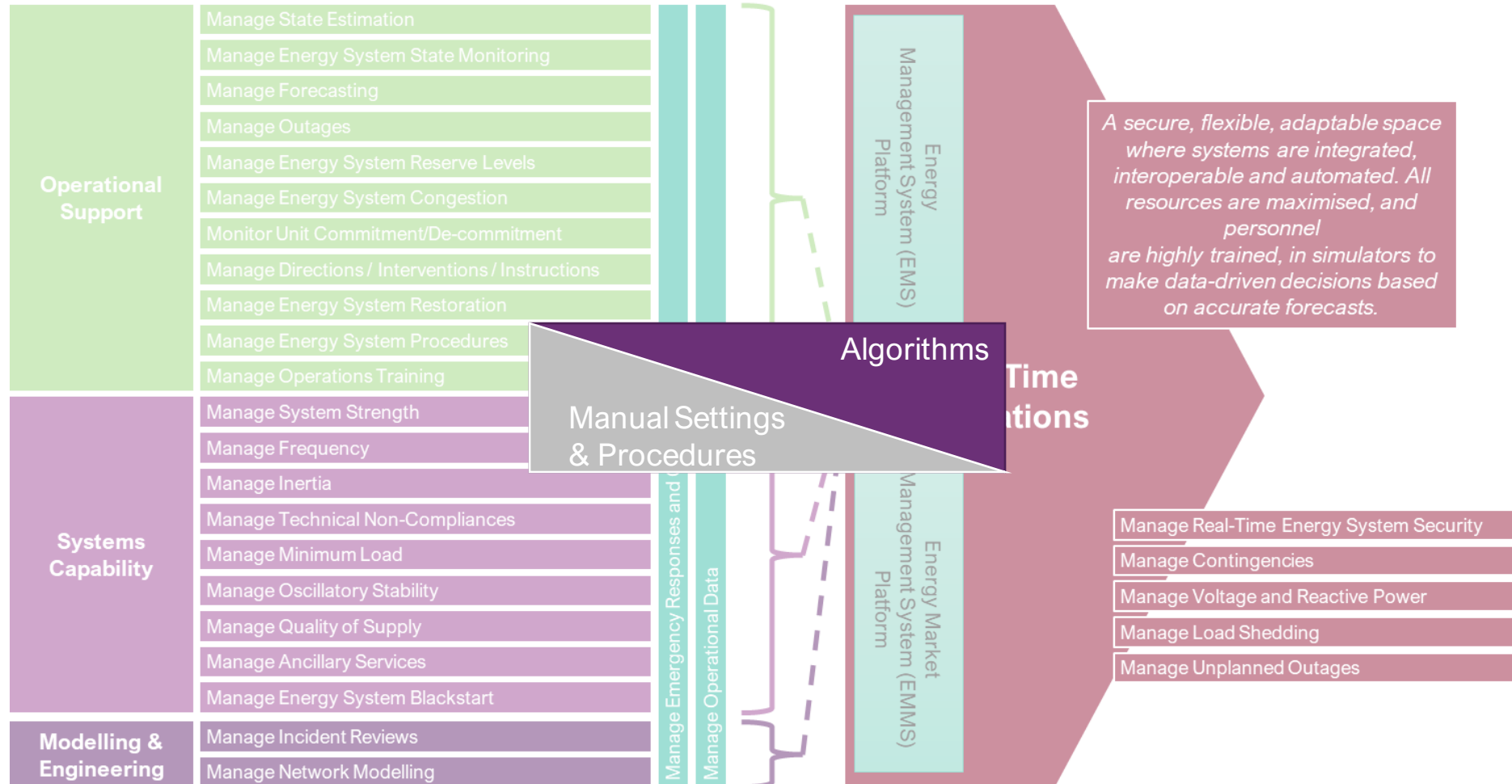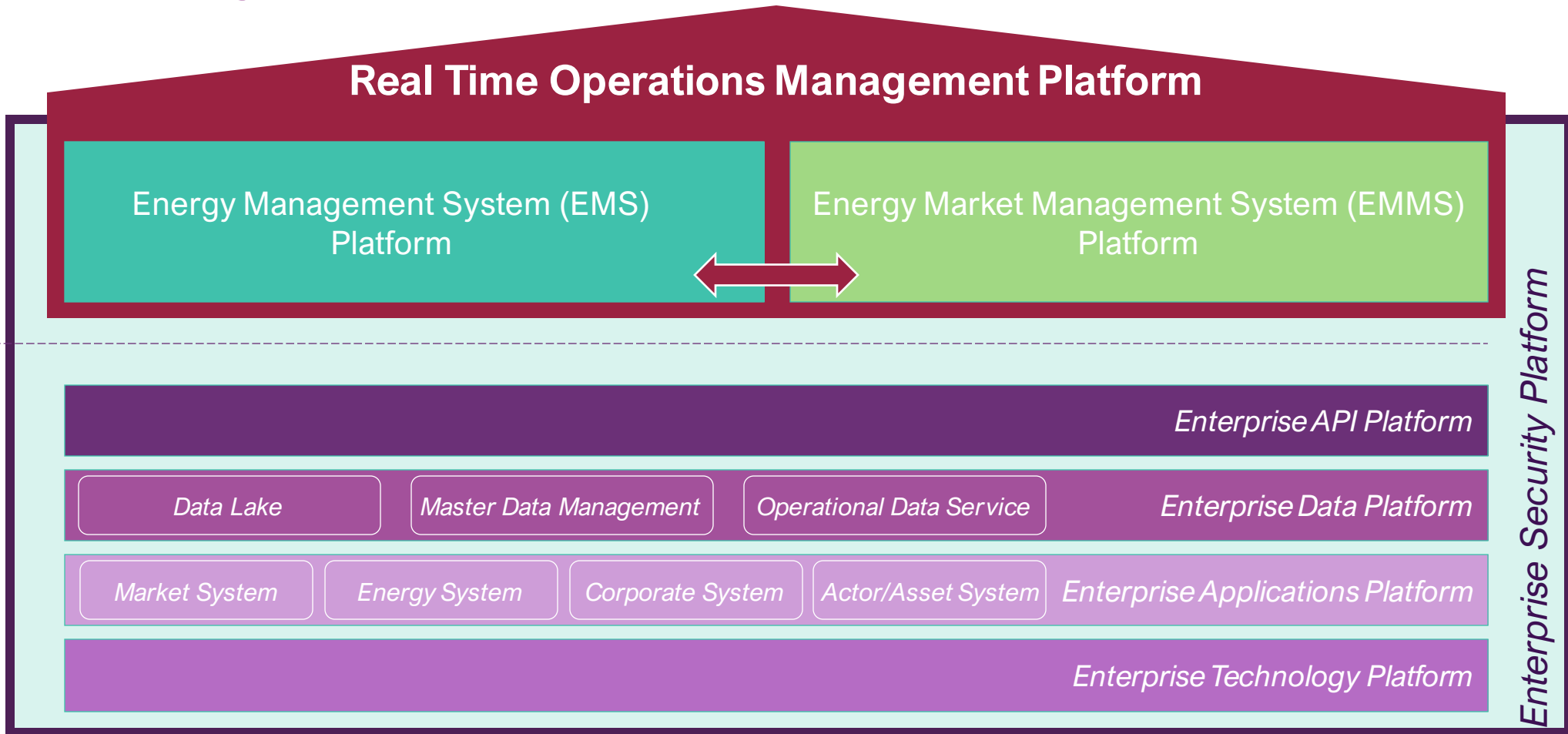Manual Settings & Procedures

Real-Time Operations

A secure, flexible, adaptable space where systems are integrated, interoperable and automated. All resources are maximised, and personnel are highly trained, in simulators to make data-driven decisions based on accurate forecasts.

- Manage Real-Time Energy System Security
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The trend over time must be a reduction in manual activities as we increase our use of algorithms and automation

Real Time Operations Management Platform

Conceptual Design

Real Time Operations Management Platform

Energy Management System (EMS) Platform	←→	Energy Market Management System (EMMS) Platform

System of Experience

Systems of Record

Enterprise API Platform

| Data Lake | Master Data Management | Operational Data Service | *Enterprise Data Platform* |

| Market System | Energy System | Corporate System | Actor/Asset System | *Enterprise Applications Platform* |

Enterprise Technology Platform

Enterprise Security Platform

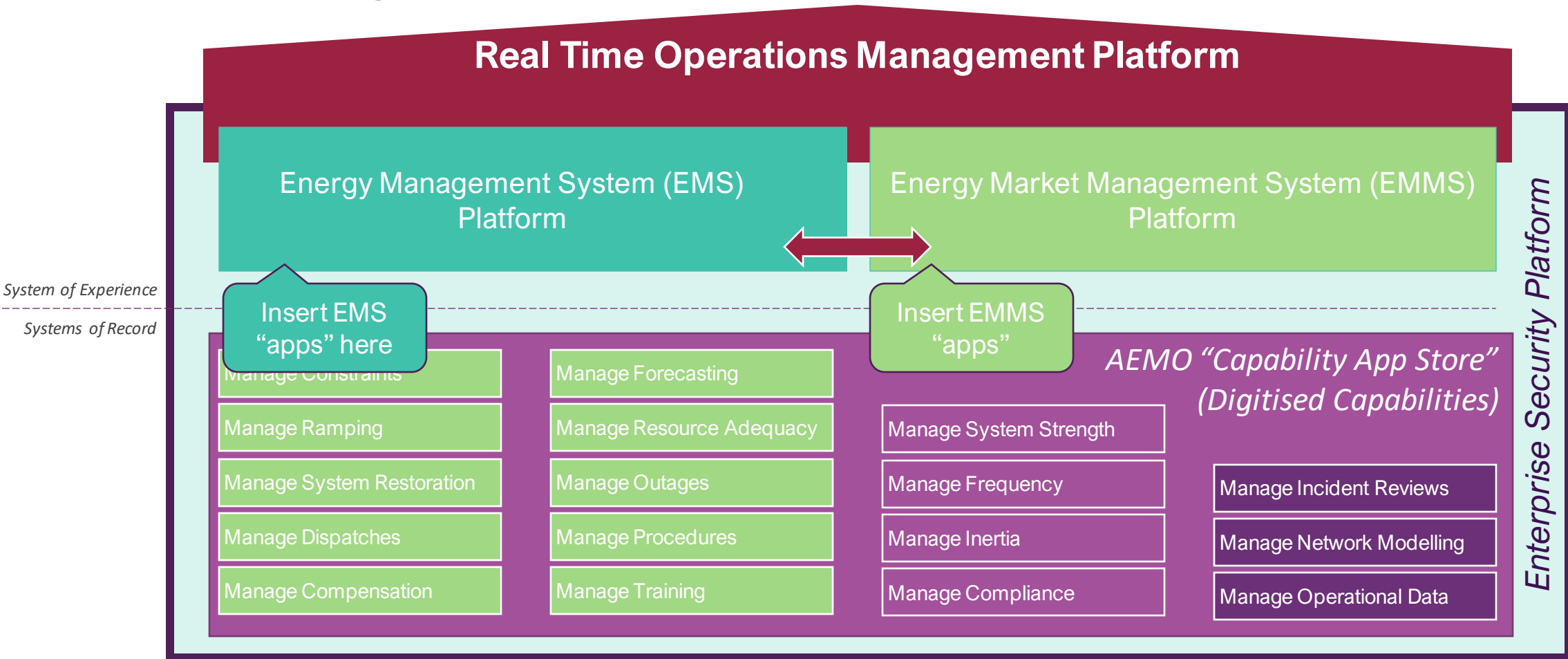*Aligning with Digital, we can quickly bring the vision to life based on the work products developed in the Operations Decision Making Tools project.*

Real Time Operations Management Platform

Conceptual Design

Real Time Operations Management Platform

Enterprise Security Platform

Energy Management System (EMS) Platform

Energy Market Management System (EMMS) Platform

Insert EMS "apps" here

Insert EMMS "apps"

System of Experience

Systems of Record

AEMO "Capability App Store" (Digitised Capabilities)

Manage Constraints	Manage Forecasting
Manage Ramping	Manage Resource Adequacy
Manage System Restoration	Manage Outages
Manage Dispatches	Manage Procedures
Manage Compensation	Manage Training

Manage System Strength

Manage Frequency

Manage Inertia

Manage Compliance

Manage Incident Reviews

Manage Network Modelling

Manage Operational Data
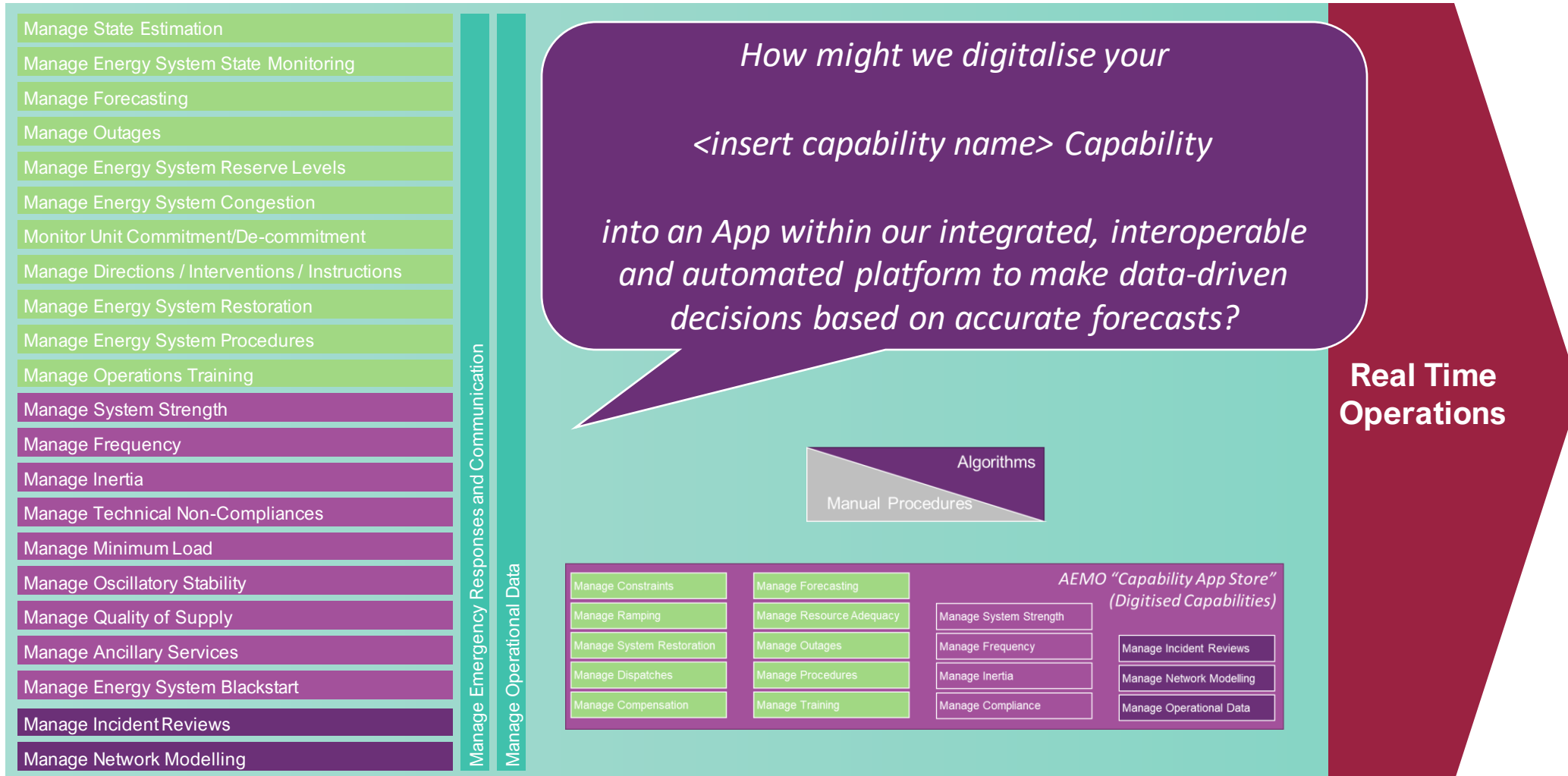
AEMO

How might we digitalise critical capabilities and serve that into the Real Time Operations Management Platform. Working together, we are in the process of determining which capabilities are the most important.
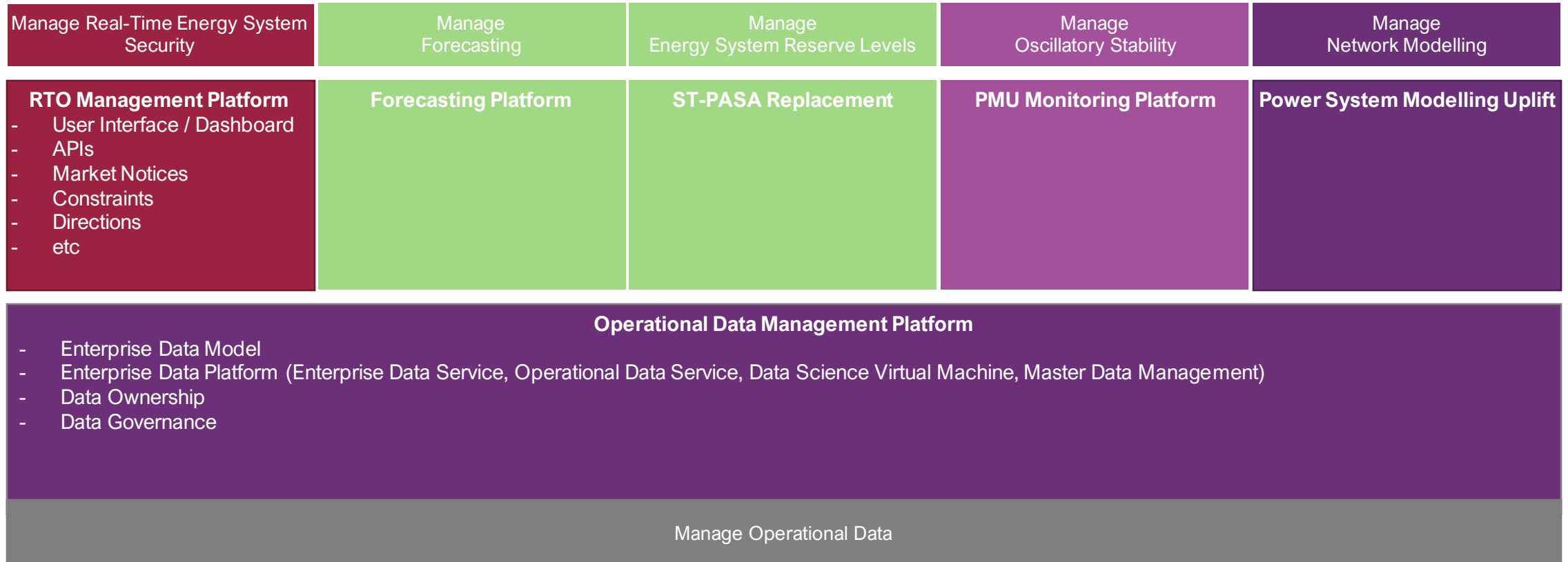
6

Operations Technology Program

Capability Transformation Objective

Manage State Estimation
Manage Energy System State Monitoring
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Manage Operational Data

How might we digitalise your

<insert capability name> Capability

into an App within our integrated, interoperable and automated platform to make data-driven decisions based on accurate forecasts?

Real Time Operations

Algorithms

Manual Procedures

AEMO "Capability App Store" (Digitised Capabilities)

Manage Constraints	Manage Forecasting	
Manage Ramping	Manage Resource Adequacy	Manage System Strength
Manage System Restoration	Manage Outages	Manage Frequency
Manage Dispatches	Manage Procedures	Manage Inertia
Manage Compensation	Manage Training	Manage Compliance

Manage Incident Reviews
Manage Network Modelling
Manage Operational Data

Operations Technology Program

FY23/24 Major Projects

Manage Real-Time Energy System Security	Manage Forecasting	Manage Energy System Reserve Levels	Manage Oscillatory Stability	Manage Network Modelling
RTO Management Platform - User Interface / Dashboard - APIs - Market Notices - Constraints - Directions - etc	**Forecasting Platform**	**ST-PASA Replacement**	**PMU Monitoring Platform**	**Power System Modelling Uplift**

Operational Data Management Platform

- Enterprise Data Model
- Enterprise Data Platform (Enterprise Data Service, Operational Data Service, Data Science Virtual Machine, Master Data Management)
- Data Ownership
- Data Governance

Manage Operational Data

For more information visit

aemo.com.au