CAAM DIGITALISATION STRATEGIC PLAN

DSP 2024 - 2028

DRIVING DIGITAL TRANSFORMATION TO IMPROVE SAFETY, EFFICIENCY AND SUSTAINABILITY IN AIR TRAVEL

EXECUTIVE SUMMARY

CAAM
Civil Aviation Authority of Malaysia

TEAMCAAM Safe Sustainable Skies

Contents

Digital transformation is reshaping the aviation landscape. We are investing in technology to enhance airport operations, improve passenger experience, and optimise air traffic management

Transform we must.

Message from the CEO

YBhg. Dato' Captain Norazman Bin Mahmud

Chief Executive Officer

At Civil Aviation Authority of Malaysia, we prioritise the importance of providing a positive experience to our valued stakeholders. We continuously seek to enhance our services and are committed to delivering reliable and consistently high-quality service.

Introduction

Air transport is at the heart of global economic growth. The aviation industry plays an important role to facilitate tourism, trade, connectivity, generates economic growth, provides employment, improves living standards, alleviates poverty, provides a lifeline for remote communities and enables a rapid response when disasters occur. The aviation industry, like any other sector, navigates a turbulent landscape marked by economic uncertainties, operational challenges, and environmental pressures. The unpredictable nature of fuel prices, cyclical downturns, and intense competition have eroded profitability, while supply chain disruptions, labour shortages, airport congestion, and escalating cybersecurity risks have hindered efficiency and passenger experience. Hence, it is imperative to address environmental concerns, including carbon emissions, noise pollution and any other arising issues that come our way, in the most efficient, sustainable and safest manner.

CAAM's Role and Digitalisation Strategy

It has been proven that technology has greatly improved the safety and efficiency of aviation. With the implementation of digital transformation and innovation, aviation safety, security and efficiency are enhanced and could modernise aviation infrastructure as well as broaden the benefits of aviation to civil society and businesses.

As part of our continuous effort to adopt technology by driving digital transformation to improve the safety, security and efficiency of air travel, the Civil Aviation Authority of Malaysia (CAAM) is unwavering in its commitment to position Malaysia's aviation sector as a resilient and sustainable economic driver. It is our mission to make Malaysia the premier aviation hub and elevate the country's status as a global transit point. In achieving this goal, CAAM is leveraging cutting-edge technology to help drive growth and efficiency in the aviation industry, with an important focus on promoting environmental sustainability.

It is also part of CAAM's initiative in understanding and reducing carbon emissions, improving fuel efficiency, and minimising environmental impact. This is done by ensuring the aviation industry delivers on the ever-changing needs of the travellers by improving service delivery as technology evolves and grows. Our CAAM Digitalisation Strategic Plan (DSP) 2024 - 2028 is a testament to realising this mission. Aligned with the nation's broader digital transformation agenda, this plan outlines a comprehensive roadmap to elevate our services through technological advancements, human capital development, and enhanced governance. The DSP is more than just a strategic document; it is a catalyst for innovation and collaboration within CAAM. It inspires our teams to harness the power of technology to boost productivity, mitigate challenges, and lead the industry towards a sustainable future. By embracing digitalisation, we aim to create a more efficient, resilient, and environmentally responsible aviation sector that benefits both our nation and the global community.


C11,C13
C15
AIR TRAVEL FAQ

Message from the CDO

Puan DG Siti Noor Jehan Binti AG Mohd Saufi

Chief Digital Officer

As we stand at the crossroads of technological advancement, it is imperative that Civil Aviation Authority of Malaysia (CAAM) embraces the transformative power of digitalisation. In today's world, digital solutions offer unprecedented opportunities to enhance our operations, improve safety, and deliver exceptional services to the aviation industry. By leveraging cutting-edge technologies such as artificial intelligence, machine learning, and big data analytics, we can revolutionize the way we regulate, monitor, and manage the aviation sector. These tools empower us to make data-driven decisions, identify potential risks proactively, and optimize our resource allocation.

However, digital transformation is not just about technology; it is about a cultural shift. As we embrace digitalisation to enhance efficiency and productivity in the workplace, it is essential to recognize that it also presents challenges, particularly regarding workers' adaptability. Therefore, CAAM must implement programs to bolster employees' preparedness. For instance, we should focus on reskilling and upskilling through targeted training programs that help employees adapt to new technologies and transition to roles that emphasize human skills. Additionally, we should encourage critical thinking by integrating problem-solving exercises into workplace training. Finally, fostering digital well-being is crucial; we can promote healthy digital habits by encouraging mindfulness practices.

Digitalisation is not just a trend; it is a necessity for the survival and success of our organisation and our existence. By embracing this transformation, we can create a safer, more efficient, and more sustainable aviation ecosystem that benefits both our organization and the public.

Let us embark on this journey together, harnessing the power of technology to build a brighter future for our beloved aviation industry.

Introduction

About DSP

CAAM Digitalisation Strategic Plan (DSP) 2024-2028 is a comprehensive roadmap outlining CAAM's digital transformation journey by adopting and integrating digital and emerging technologies into CAAM's functions, operations, and processes to achieve its vision and mission.

The DSP aligns with CAAM's Business Strategic Plan (BSP), the Public Sector Digitalisation Strategic Plan (PSDSP), the National Transport Policy (NTP), and the international standards established by ICAO.

Serving as the primary reference for digitalisation strategies, the DSP is pivotal in realising its established vision "Driving Digitalisation Transformation To Improve Safety, Efficiency And Sustainability In Air Travel".

The DSP employs National Digital Department strategic plan guidelines, best practices approach, and Enterprise Architecture (EA) principles.

The DSP leverages the Enterprise Architecture Archimate framework, particularly focusing on Goal Realization, Requirements Realization, Organization, Business Cooperation, Application Usage, Technology, and Information Structure viewpoints.

"Let's get one thing straight. There's a big difference between a pilot and an aviator. One is a technician; the other is an artist in love with flight." - Anonymous

CAAM at a glimpse

The Historical Journey

The history of aviation regulation in Malaysia can be traced back to the Department of Civil Aviation (DCA), which was first established in Singapore in 1947. The DCA was then responsible for regulating civil aviation activities in the Federation of Malays and Borneo.

DCA for Federation of Malaya was later formed in Kuala Lumpur in 1953, placed under the purview of Ministry of Posts and Telecommunications to provide domestic services. DCA Malaysia was later established when the Civil Aviation Act 1969 [Act 3] was promulgated. Its main objective was to administer the country's aviation safety and regulatory programs and to provide systematic air traffic control services to air aircraft in its airspace.

The Civil Aviation Authority of Malaysia (CAAM) was officially established in 2018 under the purview of Ministry of Transport. It was formed through the enactment of the Civil Aviation Authority of Malaysia Act 2017 [Act 788]. The establishment of CAAM marked a significant milestone in Malaysia's aviation industry, aiming to enhance safety, security, and efficiency in civil aviation operations.

Vision

"Safe Sustainable Sky".

Mission

"To Continuously Enhance Safety and Security for a Sustainable Aviation Industry".

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Aviation Authorities in Malaysia

Civil aviation is a highly regulated industry. In Malaysia the aviation industry is regulated by three entities – Ministry of Transport (MoT), The Malaysian Aviation Commission (MAVCOM) and the Civil Aviation Authority of Malaysia (CAAM).

Brief Roles of CAAM

In general, CAAM's role is the Malaysia's Aviation Regulator with respect to Civil Aviation Technical and Safety, which excludes the Regulator Economic function.

Roles of MAVCOM

The Malaysian Aviation Commission (MAVCOM) is an independent entity to regulate economic and commercial matters related to civil aviation in Malaysia. The goal is to promote a commercially viable, consumer-oriented and resilient civil aviation industry which supports the nation's economic growth.

Aviation Industry Stakeholders

Key Malaysia's Aviation Industry stakeholders are as listed below, but not limited to as follows:

1. Aircraft Manufacturer;
2. Aircraft Owner;
3. Airline Operator;
4. Aviation Training Organisation (ATO);
5. Aircrew;
6. Airport Operator;
7. Maintenance Training Organisation (MTO)
8. Maintenance Personnel;
9. Ground Handlers;
10. Unmanned Aircraft System (UAS) Operator;

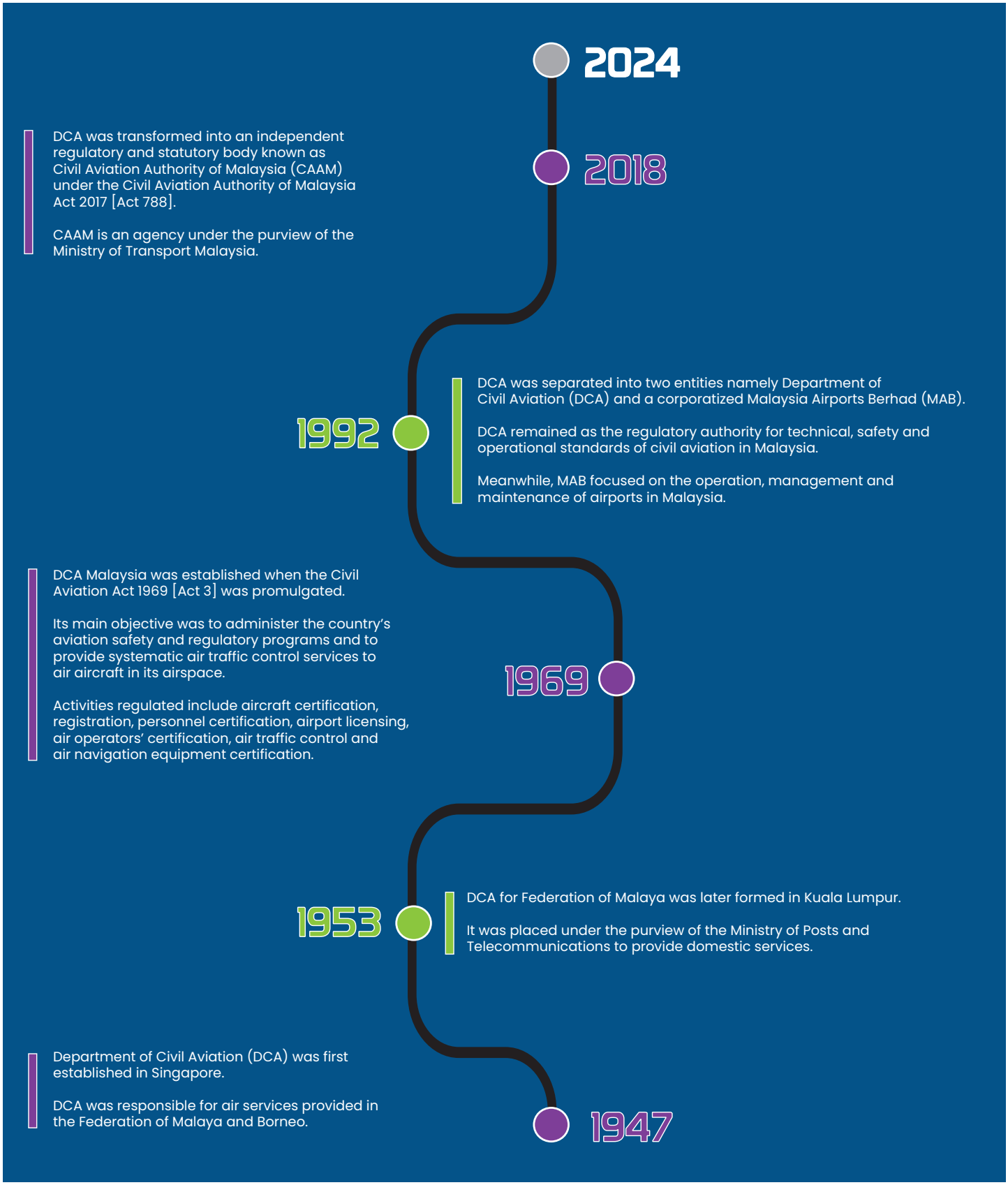

Figure 1: A glimpse of CAAM

11. Air Navigation Services (ANS) Provider – ANSP;
12. ANS Technology Provider;
13. ANS Technical Services Provider;
14. Aviation Supply Chain Contractor; and
15. Aviation Business Community.

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"Great things in business are never done by one person. They're done by a team of people". - Steve Jobs

Business Landscape

Overview

The aviation industry is highly regulated due to several factors. Firstly, it's international and crosses borders, involving the sovereign states of many countries. Secondly, it demands a robust safety management system. Finally, standardization is crucial to ensure interoperability between countries and various aviation systems. Consequently, a stringent, common, and structured framework is required to govern the industry both internationally and domestically.

Figure 2: Overall Malaysia's Civil Aviation Business Framework simplifies Malaysia's Aviation Business Framework. **The International Civil Aviation Organization (ICAO) formulates sets of international aviation standards for civil aviation.** These standards, known as Annexes in the aviation industry, establish the benchmark for compliance by all participating countries (sovereign states).

The Civil Aviation Authority of Malaysia (CAAM) serves as the aviation regulator for the country. As the sovereign state's representative, CAAM oversees the domestic aviation industry, as depicted at Level 3 of Figure 2.

Regulator Roles

The regulator's roles are derived from relevant ICAO definitions, primarily driven by specific ICAO Annexes. Figure 3: Regulator Roles Vs Business Units, provides illustrative examples. For instance, the core regulatory function in Personnel Licensing (PEL) is outlined in ICAO Annex 1. **The Civil Aviation Authority of Malaysia (CAAM) adapted this Annex to align with the nation's specific context, resulting in Civil Aviation Directive (CAD) 1.**

Each CAD is subject to ICAO's Universal Safety Oversight Audit Programme (USOAP), employing a Continuous Monitoring Approach (CMA) through a series of Protocol Questions (PQs). In the case of PEL, the USOAP CMA incorporates PQs from the 3000 series. USOAP audits assess a state's effective implementation of the eight critical elements (CE) comprising a safety oversight system.

INTERNATIONAL CIVIL AVIATION ORGANISATION - ICAO

FORMULATE INTERNATIONAL AVIATION STANDARDS

MALAYSIA'S CIVIL AVIATION REGULATOR

OVERSIGHT

MALAYSIA'S AVIATION INDUSTRY

AIRCRAFT MANUFACTURER

AIRCRAFT & AIRCRAFT OWNER

AIRLINE OPERATOR

AVIATION TRAINING ORGANISATION (ATO)

AIR NAVIGATION SERVICES PROVIDER (ANSP)

AIRCREW

AIRPORT OPERATOR

MAINTENANCE TRAINING ORGANISATION (MTO)

MAINTENANCE PERSONNEL

GROUND HANDLERS

UNMANNED AIRCRAFT SYSTEM OPERATOR

ANS TECHNOLOGY PROVIDER

AVIATION TECHNICAL SERVICES PROVIDER

AVIATION SUPPLY CHAIN CONTRACTOR

AVIATION BUSINESS COMMUNITY

Figure 2: Overall Malaysia's Civil Aviation Business Framework

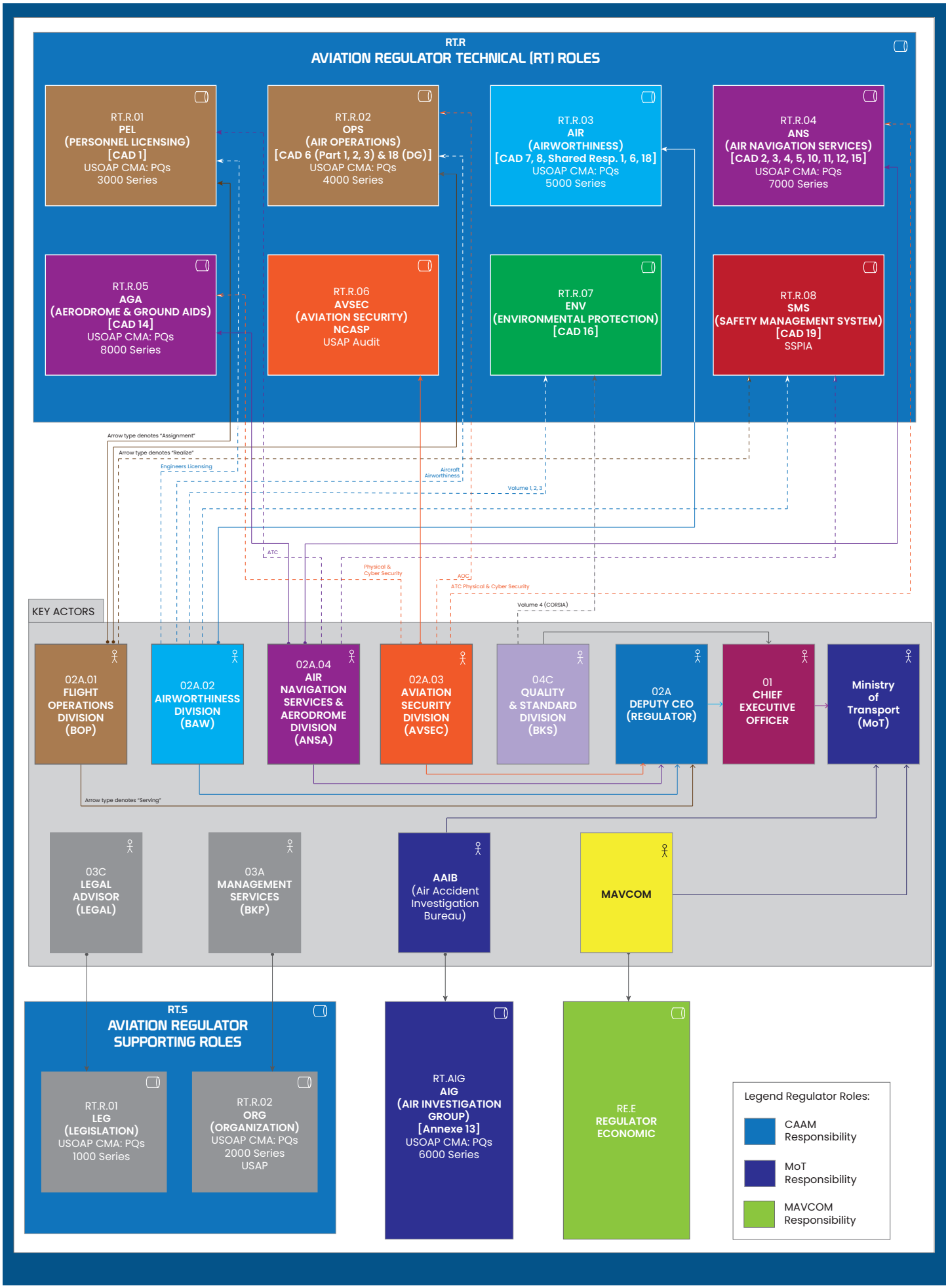

Figure 3: Regulator Roles Vs Business Units

Organisation Environment

Organisation Viewpoint

Organisation Viewpoint in Enterprise Architecture (EA) focuses on capturing the structure, relationships, roles, responsibilities, and interactions within an organization. This viewpoint aims to provide a holistic understanding of the organization's structure, operations, and how its various components interconnect.

CAAM Organisation Viewpoint is illustrated in Figure 4. There are four (4) main components of the said viewpoint:

1) CAAM Organisation;
2) CAAM Stakeholders;
3) CAAM Function; and
4) CAAM Business Support Community.

Organisation

The Authority Members of CAAM functions as the Board, which provides oversight to CAAM management. CAAM Organisation is headed and led by a Chief Executive Officer (CEO), which oversees the following three (3) Wings:

1) Regulator Wing;
2) Operations Wing; and
3) Corporate Services Wing.

The Regulator Wing is headed by a Deputy Chief Executive Officer (DCEO – Regulator), while the Operations Wing is headed by a Deputy Chief Executive Officer (DCEO – Operations). The Corporate Services Wing are the divisions or units that are directly reporting to the CEO.

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"I hated every minute of training, but I said, 'Don't quit. Suffer now and live the rest of your life as a champion.' - Muhammad Ali

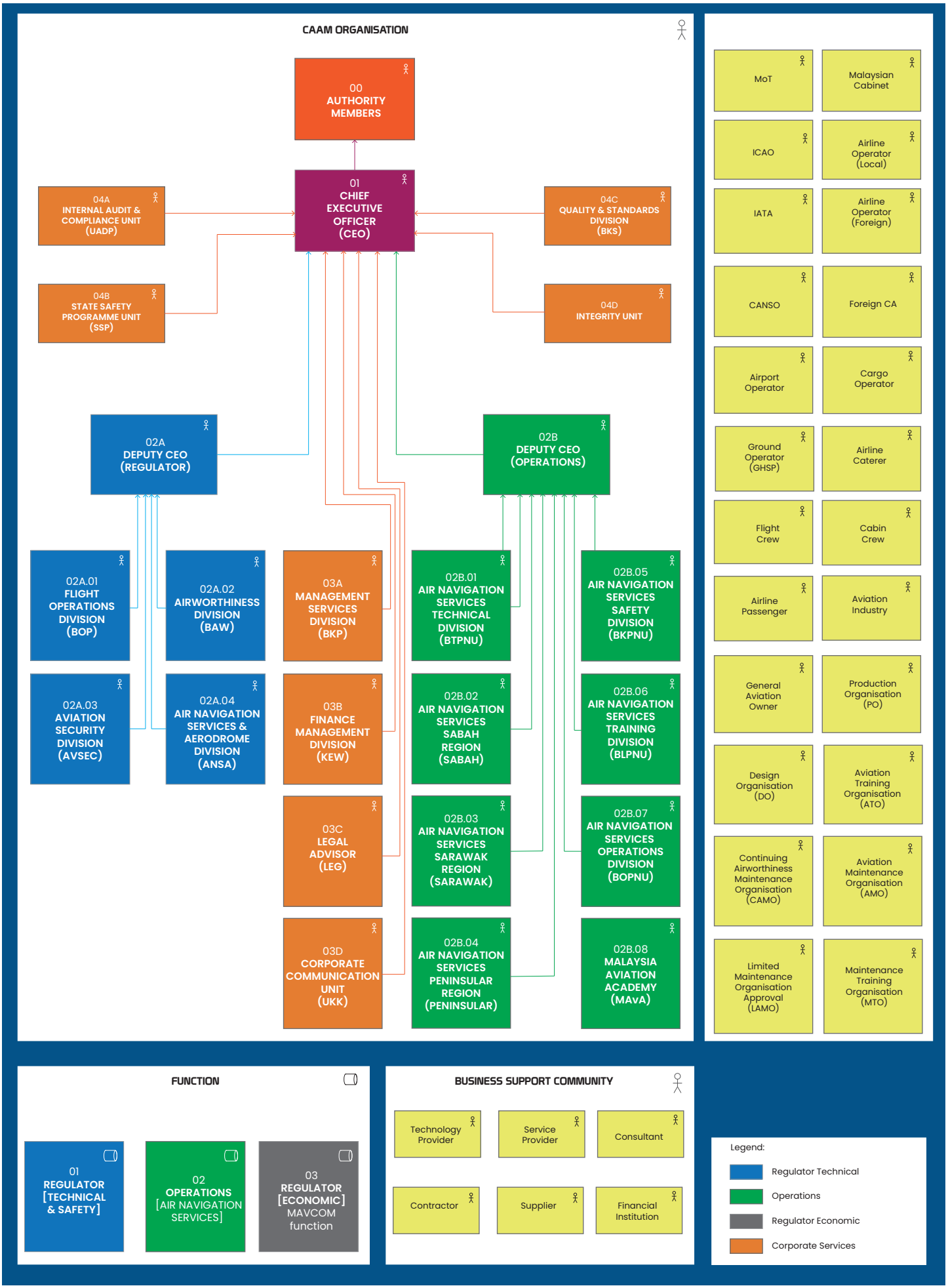


Figure 4: CAAM Organisation Viewpoint

Key Stakeholders

CAAM Key Stakeholders are those CAAM reports to, and to whom they provide their services directly or indirectly, as illustrated in Figure 4: CAAM Organisation Viewpoint

Function

CAAM core functions are generally divided into three (3) categories:

1. **Regulator:** Technical, Safety & Security;
2. **Operations**: Carrying out the role of Air Navigation Services Provider (ANSP); and
3. **Regulator: Economic** (this function is in the pipeline to be part of CAAM, subject to Parliament's approval, where the present MAVCOM function will be merged into CAAM).

Listed below are CAAM Core Functions listed below:

1. Regulate Safety and Security of Civil Aviation;
2. Safeguard Civil Aviation Against Unlawful Interference;
3. Regulate Operations of Aerodrome;
4. Operate Air Navigation Service in Malaysia;
5. Provide Air Navigation Service in Malaysia;
6. Encourage, Promote, Facilitate and Assist in Development and Improvement of Civil Aviation Capabilities and Skills;
7. Provide Technical and Consulting Services;
8. Represent Government Internationally in Civil Aviation Matters;
9. Facilitate Discharge of International Obligations;
10. Promote Education and Training for Civil Aviation;
11. Advise Government on Civil Aviation;
12. Research and Development for Civil Aviation; and
13. Encourage Development of Airways, Aerodromes and Air Navigation Facilities.

Business Support Community

CAAM Business Support Community illustrated in Figure 4 generally falls into the following groups:

1. Technology Provider;
2. Service Provider;
3. Consultants;
4. Contractors;
5. Suppliers; and
6. Financial Institutions.

Business Services

There are a total of **115 key business services** provided by CAAM to its customers (external & internal), broken down by Wing as follows:

- Regulator: **29 key services**
- Operations: **38 key services**
- Corporate Services: **48 key services**

Regulator Services

Essentially there are **29 key services** provided by the regulator divisions to support their roles defined earlier as illustrated in Figure 3: Regulator Roles Vs Business Units. The 29 key business services provided by the respective assigned divisions and relation realizing the eight (8) regulator roles is illustrated in Figure 5: Regulator Business Services Framework.

The said Regulator Services Framework illustrates the relationship between the **eight (8) regulator roles** as follows:

1. PEL (Personnel Licensing);
2. OPS (Air Operations);
3. AIR (Airworthiness);
4. ANS (Air Navigation Services);
5. AGA (Aerodrome & Ground Aids)
6. AVSEC (Aviation Security);
7. ENV (Environmental Protection); and
8. SMS (Safety Management System).

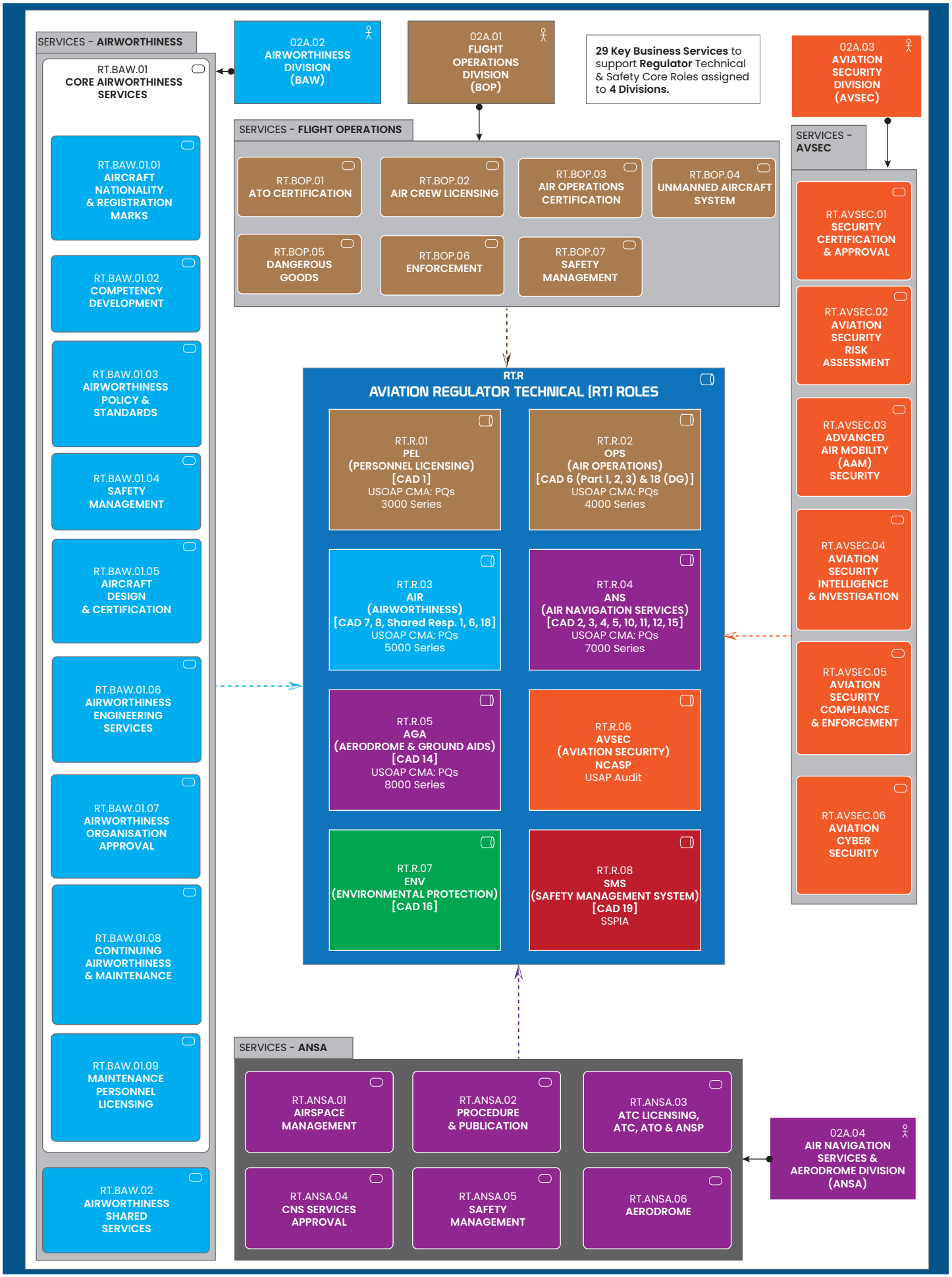


Figure 5: Regulator Business Services Framework

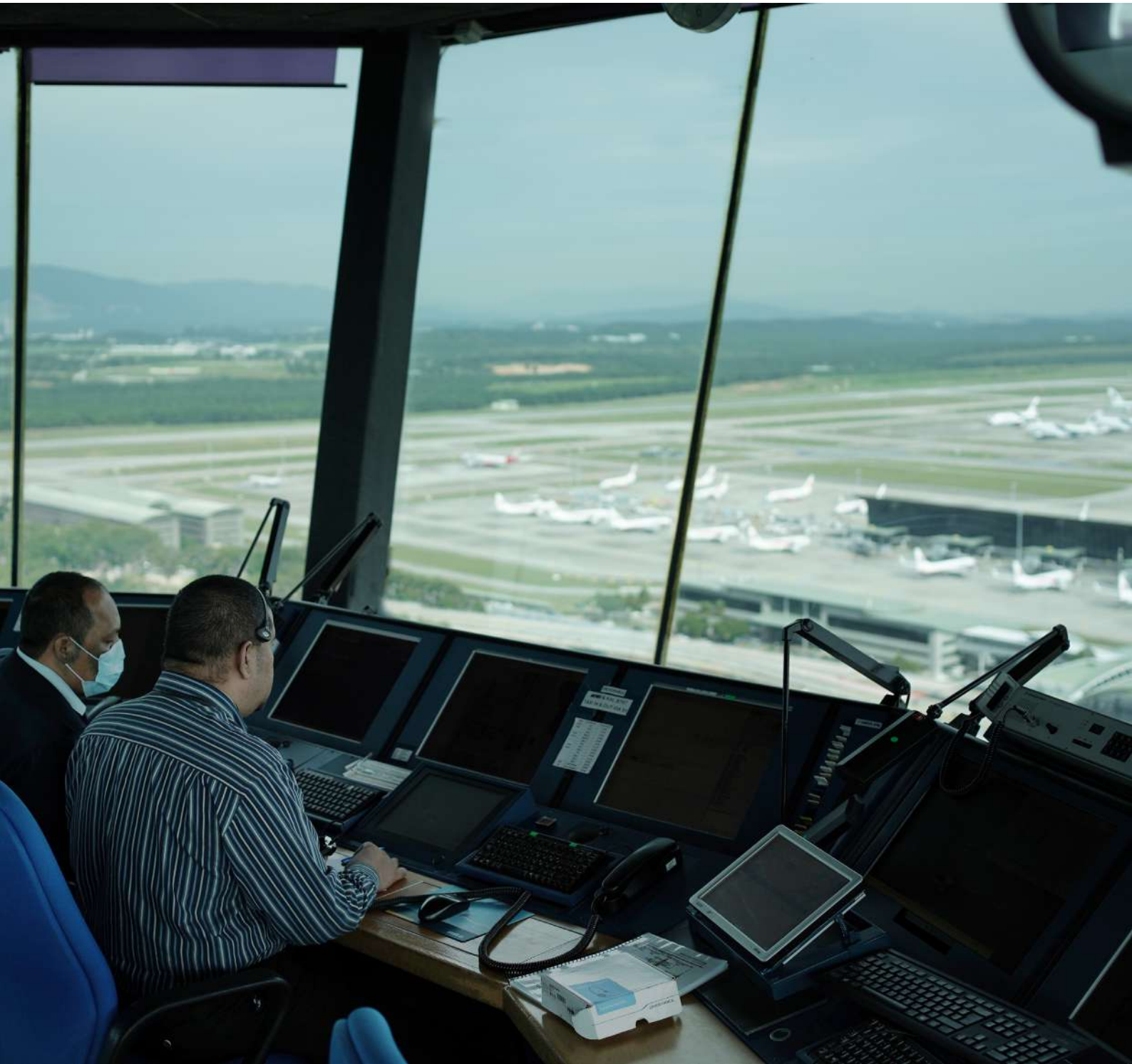
Operations Wing Role

The **Operations Wing serves as the Air Navigation Services Provider (ANSP)** and **is regulated by the Regulator**. As an Aviation Training Organization (ATO) under the Malaysian Aviation Academy (MAvA), the Operations Wing also provides aviation training. **Both roles are strictly separated, and their governance is overseen by the Regulator, ensuring compliance with ICAO standards.** This separation is visually represented in Figure 6: ANS Operations Roles Framework.

Operations Services

Business services provided by the ANS Operations are derived from their Business Roles illustrated in Figure 6. The services are organized by the business units they are being assigned to which also relate to the overall Aviation Operations Key Services.

The Operations Wing provides a total of **38 Business Services.** These services are illustrated in Figure 7: ANS Operations Business Services.



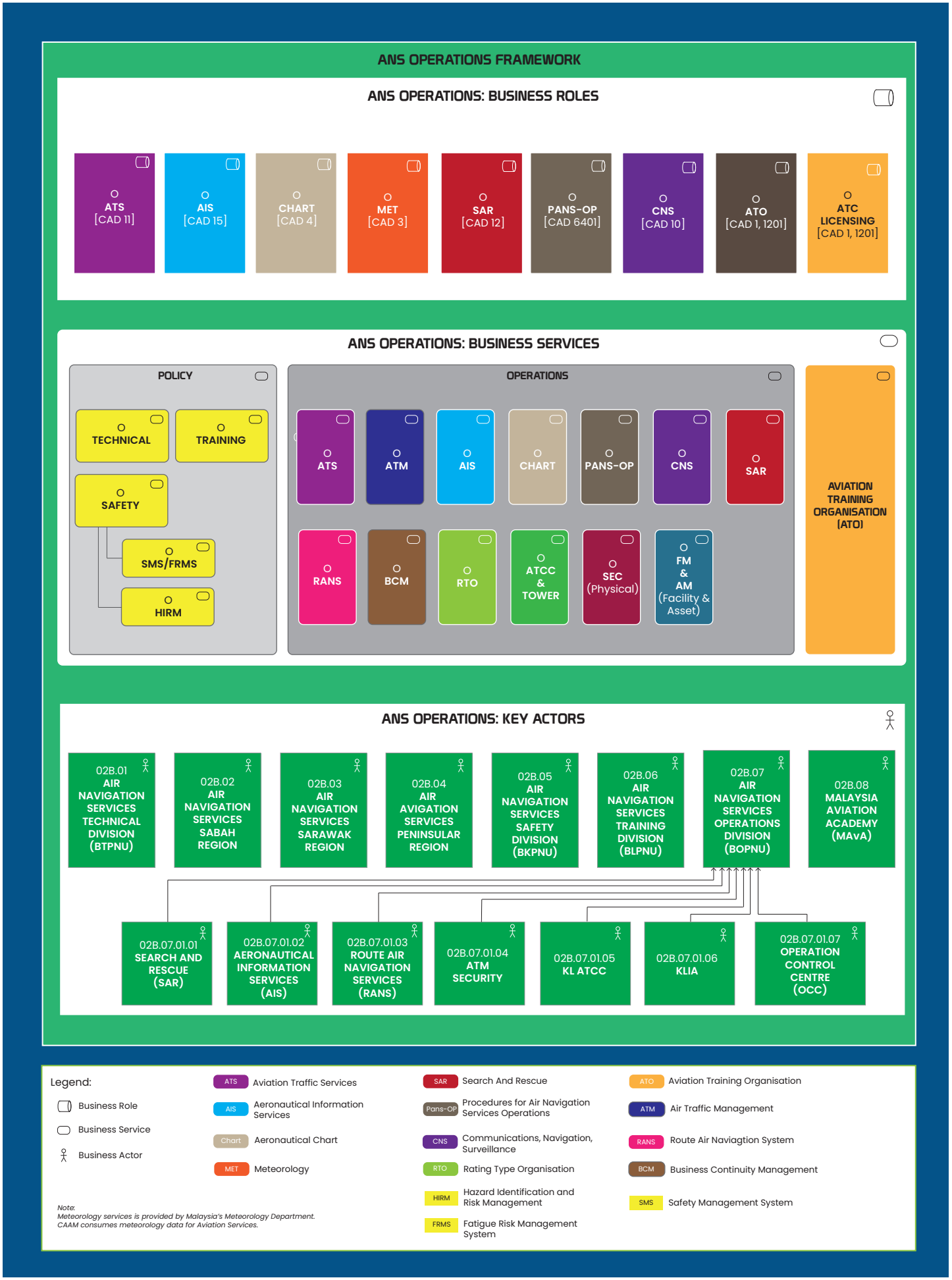


Figure 6: ANS Operations Roles Framework

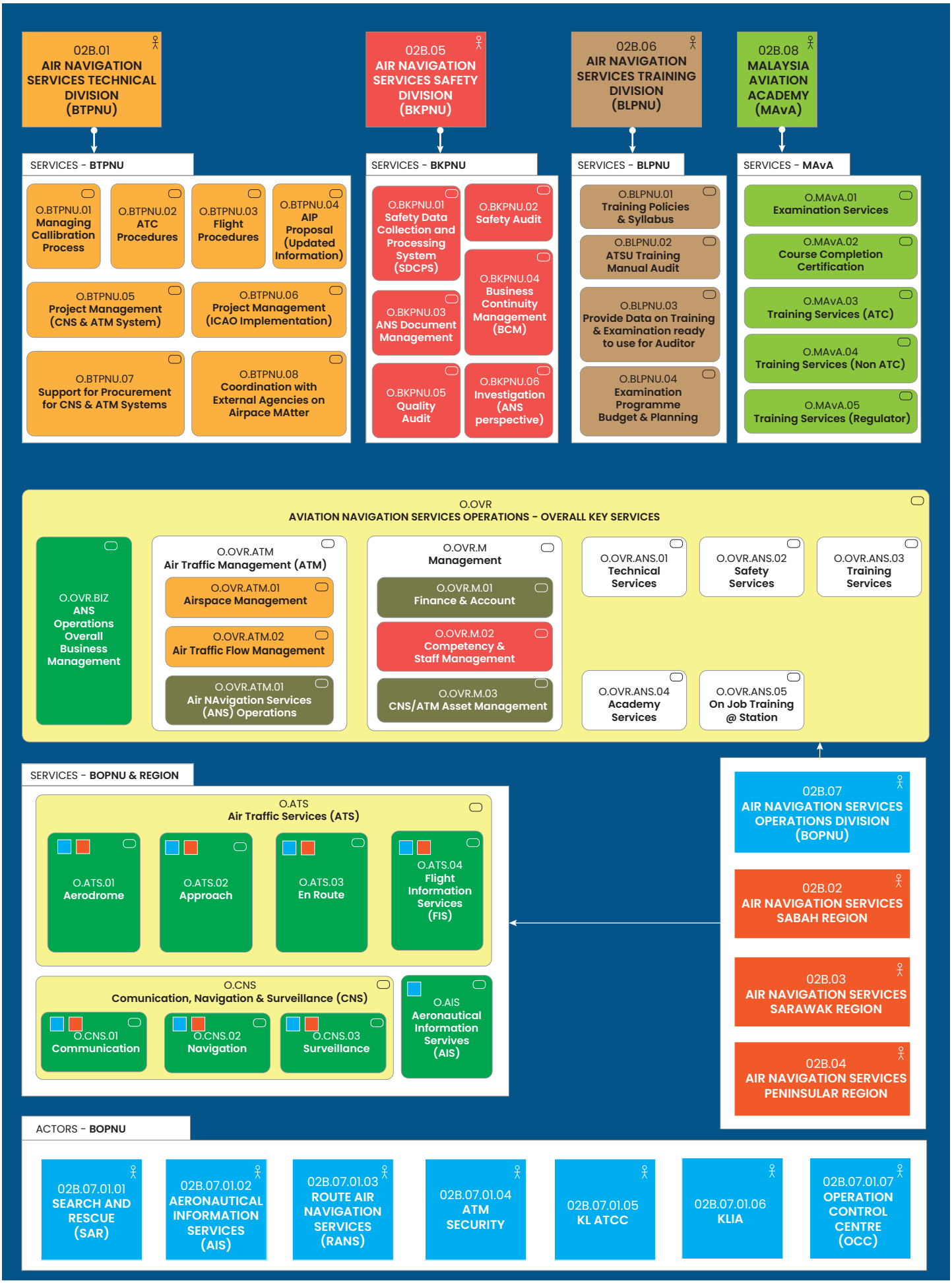


Figure7: ANS Operations Business Services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Corporate Services Wing Role

The basic roles of Corporate Services are derived from the Regulator Roles Framework illustrated Figure 3: Regulator Roles Vs Business Units, supporting Regulator Roles. **This ICAO standards derive the requirements for the provision of support services for Legislation (LEG) and the Organisation (ORG) groups**. They are audited through CMA and PQs of 1000 series and 2000 series respectively. In CAAM, these services are further enhanced to include full Human Capital Services, Information & Communication Technology (ICT) Services and Procurement Services.

The above roles are also expanded to include full-scale corporate support services, not only to support the Regulator Team but the whole Organisation, to ensure effectiveness, efficiency and growth. The expansion of roles includes Corporate Communication, Internal Audit and Compliance, Integrity, State Safety Programme and Quality and Standards.

Corporates Services Wing Services

Business services provided by the Corporates Services Wing are derived from their Business Roles illustrated in Figure 9. The services are organized by the business units they are being assigned to which also relate to the Corporates Services Wing Key Services.

The Corporates Services Wing provides a total of **48 Business Services.**

Staff Statistics

CAAM employs 1,317 staff as of November 2023, the majority of whom are in **Operations Group [1,110 (84%)]** while **the regulator group comprises of 125 (9%)** and **corporate services with 72 staff (5%)** of the total. The numbers are made up of 44% (579) management group (executive and above) and the rest are non-executives (grade 39 and below). Please refer to illustration in Figure 8.

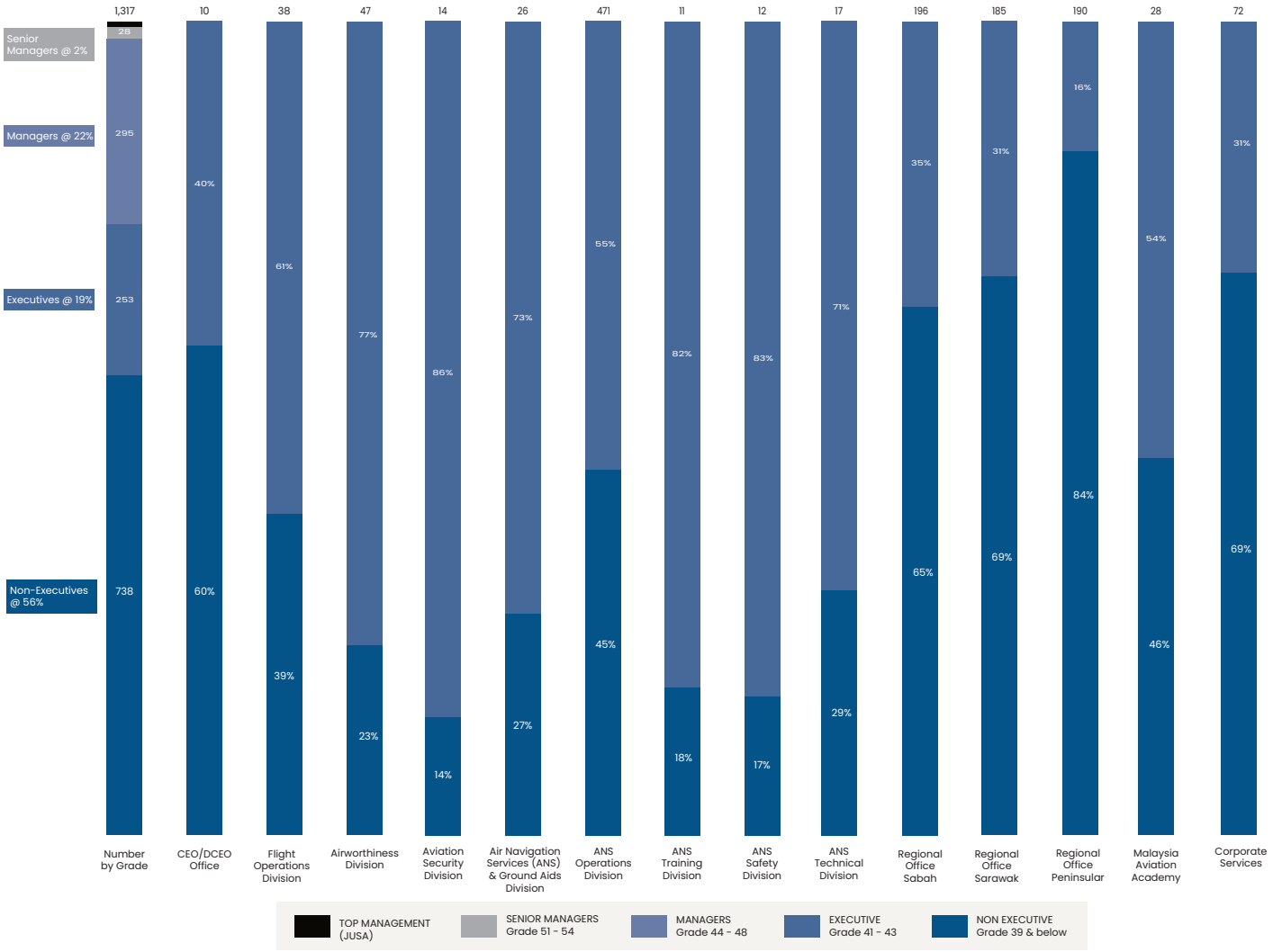
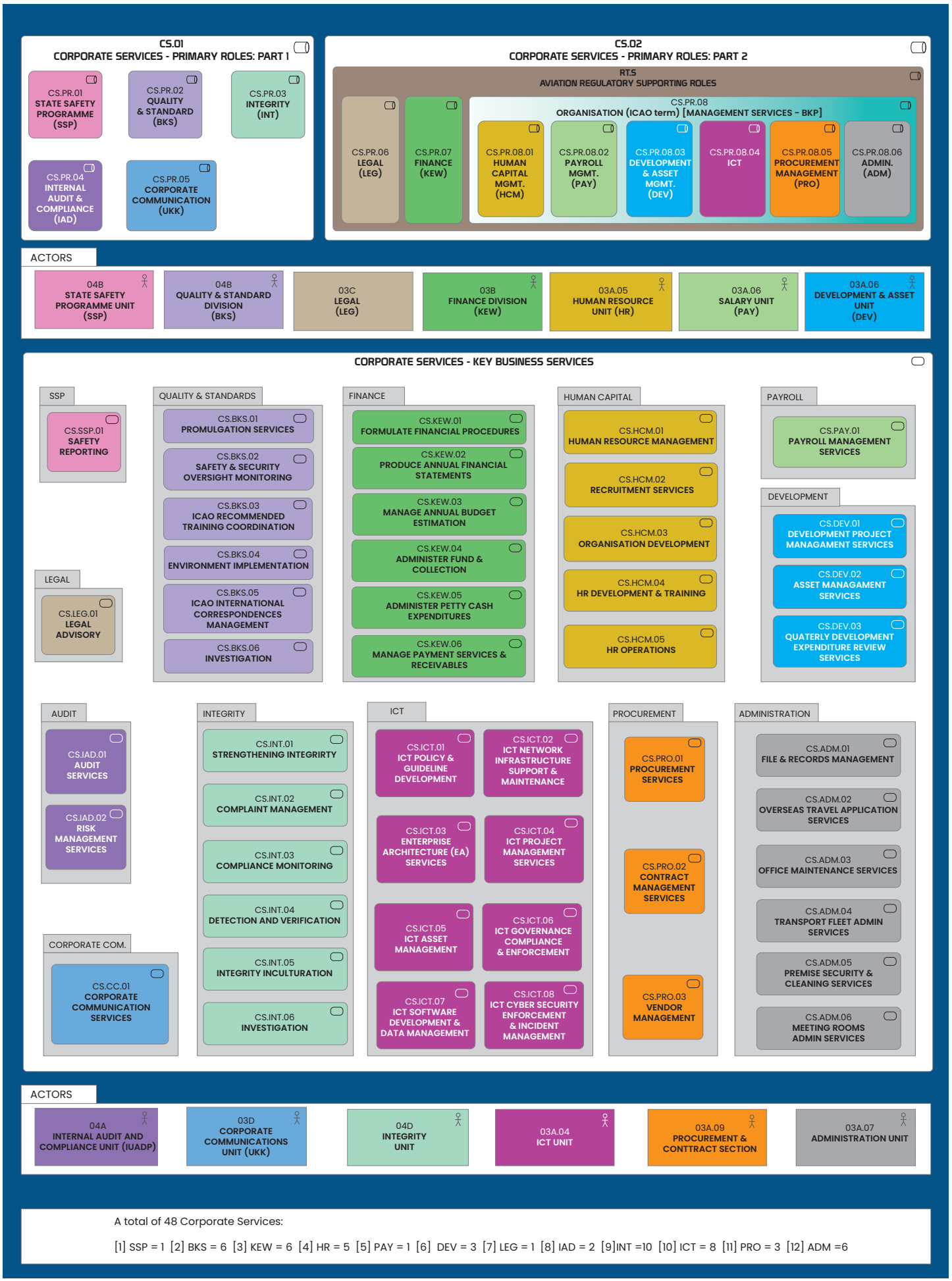


Figure 8: Staff Statistics by Grades Category



A total of 48 Corporate Services:

[1] SSP = 1 [2] BKS = 6 [3] KEW = 6 [4] HR = 5 [5] PAY = 1 [6] DEV = 3 [7] LEG = 1 [8] IAD = 2 [9]INT =10 [10] ICT = 8 [11] PRO = 3 [12] ADM =6

Figure 9: Corporate Services Business Services Framework

Key Findings Shaping Digitalisation Direction

The interview sessions, informal discussions with the management team and during the DSP workshop, draw the following key findings:

Present Digitalisation Perception

1. **Current digitalisation landscape is uneven**. While the Operations Wing has a comprehensive digital infrastructure, the lack of digital solutions within the Operations Business Solutions unit is hindering overall efficiency.
2. **Support functions are underserved by digitalisation.** Both the Aviation Regulator Wing and Corporate Services Wings lack the necessary digital tools to optimize their operations.
3. **System redundancy and data isolation prevail.** The Operations Wing employs multiple systems for similar functions, leading to inefficiencies. Valuable data is siloed within core business areas, limiting analytical capabilities.
4. **Digitalisation initiatives lack strategic direction.** Existing initiatives often operate in isolation without a clear overarching vision.
5. **ICT capabilities are insufficient.** The ICT team's skills and competencies do not align with the organization's digital aspirations.
6. **Past failures erode confidence.** A history of unsuccessful digitalisation projects has negatively impacted stakeholder trust.
7. **Security compliance is inconsistent.** Current digital initiatives do not fully adhere to CGSO security guidelines.

Digitalisation Expectations

1. **A comprehensive digitalisation strategy and roadmap is required.** This should outline how digital technologies will enhance CAAM's capabilities.
2. **Digitalisation should foster collaboration**. It should facilitate seamless collaboration within the Malaysian aviation industry.
3. **CAAM's digital transformation should enhance its brand.** Digital initiatives should showcase the organization's values and competencies to stakeholders.
4. **The ICT team must be empowered.** A new approach is needed to strengthen the ICT team's effectiveness and capabilities.
5. **Enterprise-wide digital solutions are essential.** Cross-divisional collaboration and integration should be prioritized.
6. **Strong governance and partnerships are crucial.** Leveraging best practices and strategic partnerships while maintaining strict governance is vital.
7. **Digital solutions must be adaptable.** Robust, agile, and scalable solutions are necessary to meet evolving needs.
8. **Data analytics should drive value.** Data-driven insights should be used to create value for stakeholders.
9. **A robust cybersecurity framework is essential.** The cybersecurity policy must be aligned with CGSO guidelines while remaining practical.

Digitalisation Aspiration

1. **CAAM aims to be a regional leader in aviation authority digitalisation.**
2. **Digitalisation will enhance service delivery.** Improved professionalism, service quality, and response times for stakeholders are key objectives.
3. **Operational efficiency is a priority.** Digitalisation will optimize resource utilization.
4. **New revenue streams will be explored.** Digital services will create additional value.
5. **A unified organizational culture will be fostered.** Digitalisation will promote consistency and collaboration across CAAM.

6. **Data analytics will drive innovation.** Insights from data will unlock new opportunities and improve stakeholder value.

7. **The ICT team will be a strategic partner**. The team will be agile and responsive to business needs.

8. **A world-class cybersecurity posture will be achieved.** Full compliance with NACSA and ICAO regulations will be ensured.

"The sky is the limit, but maintenance keeps us grounded." - Anonymous

CAAM Strategic Plan Framework

Enterprise Architecture (EA) employs a "Goal Realization Viewpoint" to align strategic objectives with architectural decisions and initiatives. This holistic approach integrates business processes, information flows, technology infrastructure, and organizational structure with overall goals. By ensuring that the enterprise architecture directly supports strategic business objectives, the Goal Realization Viewpoint becomes the cornerstone of CAAM's EA Strategic Plan Framework.

CAAM's Goal Realization Viewpoint is derived from the Business Strategic Plan (BSP), with the organizational vision serving as the overarching goal. This framework comprises three strategic goals, as illustrated in Figure 10: CAAM Goal Realization Viewpoint – Digitalisation Related, supported by the six key perspectives.

Each perspective is further divided into sub-components aligned with specific strategic goals. Certain sub-components within these perspectives directly impact digitalisation, as outlined in Figure 10.

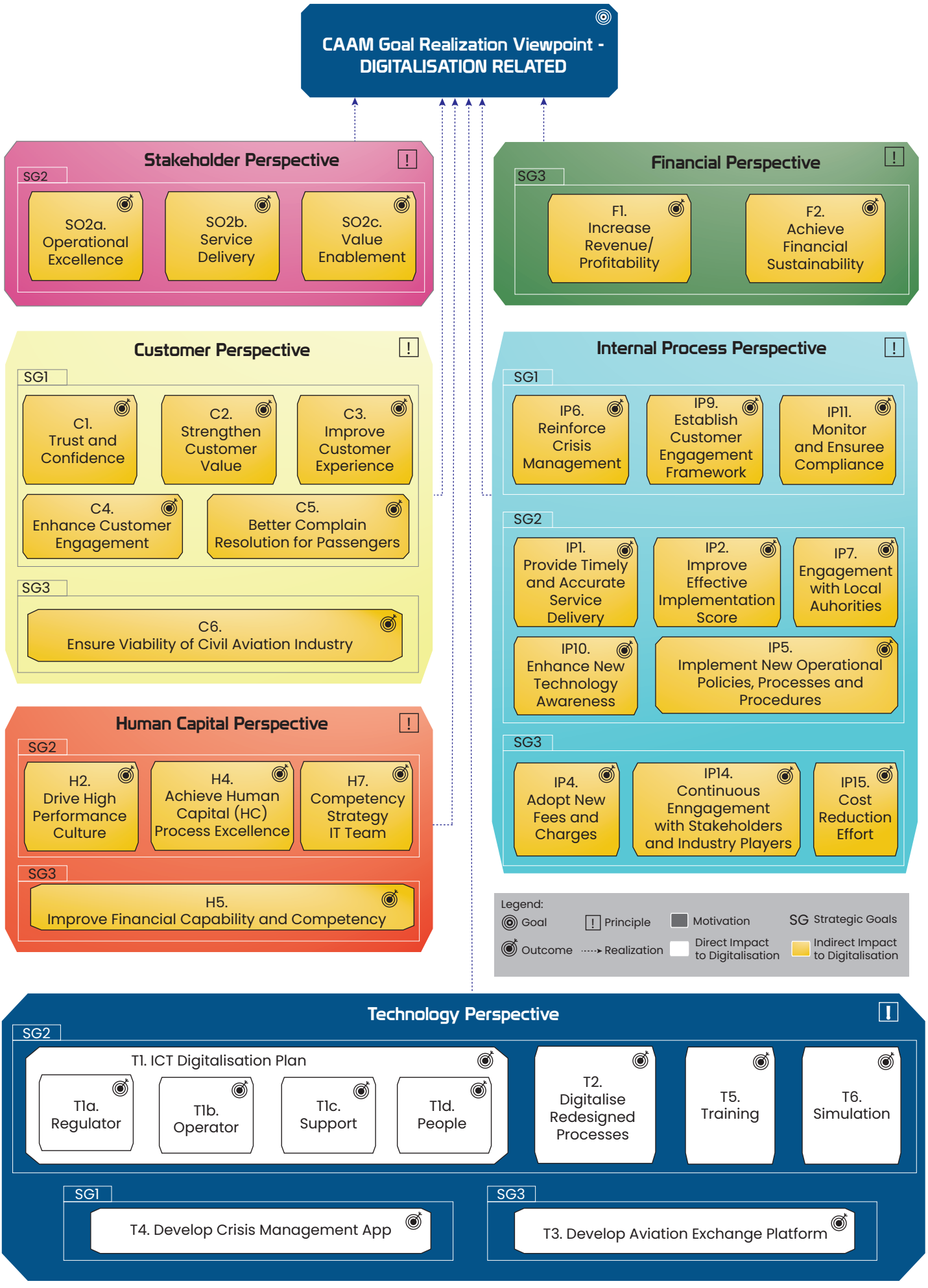


Figure 10: CAAM Goal Realization Viewpoint – Digitalisation Related

05

"My attitude is that if you push me towards something that you think is a weakness, then I will turn that perceived weakness into a strength". - Micheal Jordan

Present Digitalisation Environment

CAAM's DSP Objectives

CAAM's Digitalisation Strategic Plan (DSP) must address these challenges. It needs to:

1. Capture organizational knowledge in a structured manner.
2. Continuously evolve and improve to become a single source of reference for digitalisation knowledge, design architecture, and project implementation information.
3. This revised version clarifies the original scope of the DSP and the challenges posed by CAAM's unique situation. It also outlines the new objectives of the plan.

DSP as the master Digitalisation Document

This DSP focuses on digitalisation strategies and specific initiatives designed to elevate CAAM's business and operational capabilities. It aims to ensure safety and promote a sustainable aviation industry. This DSP will serve as a comprehensive reference document, mapping and correlating with other CAAM initiatives related to aviation domain digitalisation. It strives to be the primary guiding document for CAAM's Digitalisation Strategic Plan. Chapter 5 provides a more detailed exploration of the Digitalisation Strategic Direction.

Present Digitalisation Status

CAAM's Digitalisation landscape can be categorized into four (4) primary areas:

1. **Core Business: Regulatory Digitalisation**

   These Digitalisation facilitate CAAM's regulatory function, which perform an oversight of Malaysia's Aviation Industry including an oversight function of the ANS Operations.

2. **Core Business: ANS Operations Digitalisation**

   These Digitalisation manage essential day-to-day operations for the ANS Operations or known as the Air Navigation Services Provider (ANSP).

3. **Corporate Services Digitalisation**

   This category includes Digitalisation that supports internal administrative, and infrastructure needs within CAAM.

4. **Enterprise Digitalisation**

   These Digitalisation support broader organisation functions across CAAM.

Regulatory Wing Digitalisation

Generally, services offered by the regulator group are currently not fully digitalised. Only 24% of the services are partly digitalised work in progress and 17% of the services shall be fully digitalised soon (currently work in progress). **Slightly more than half (59%) of the 29 services offered by the Regulator group are not digitalised.** Please refer to illustration in Figure 11: Regulator Wing Digitalisation Status

ANS Operations Wing

ANS Operations providing **38 Key Services**, mostly are highly technical and complex only **14% are fully digitalised**. These 6% are services offered by MAvA. 41% services are partially digitalised and in use and **44% are done manually without any Digitalisation**. The Digitalisation status is shown in Figure 12. **The partial Digitalisation is mainly Digitalisation in the context of ANS Infrastructure.** However, in most cases for the ANS Operations, the Digitalisation is to support the business process within the Wing and across the Organisation is done manually using from multiple platforms of digital means.

Corporate Services Wing

Of the **48 Key Services** offered by the Corporate Services. 75% of Corporate Services still has no digitalisation. Please refer to illustration in Figure 13.

"In essence, if we want to direct our lives, we must take control of our consistent actions. It's not what we do once in a while that shapes our lives, but what we do consistently".
- Tony Robbins

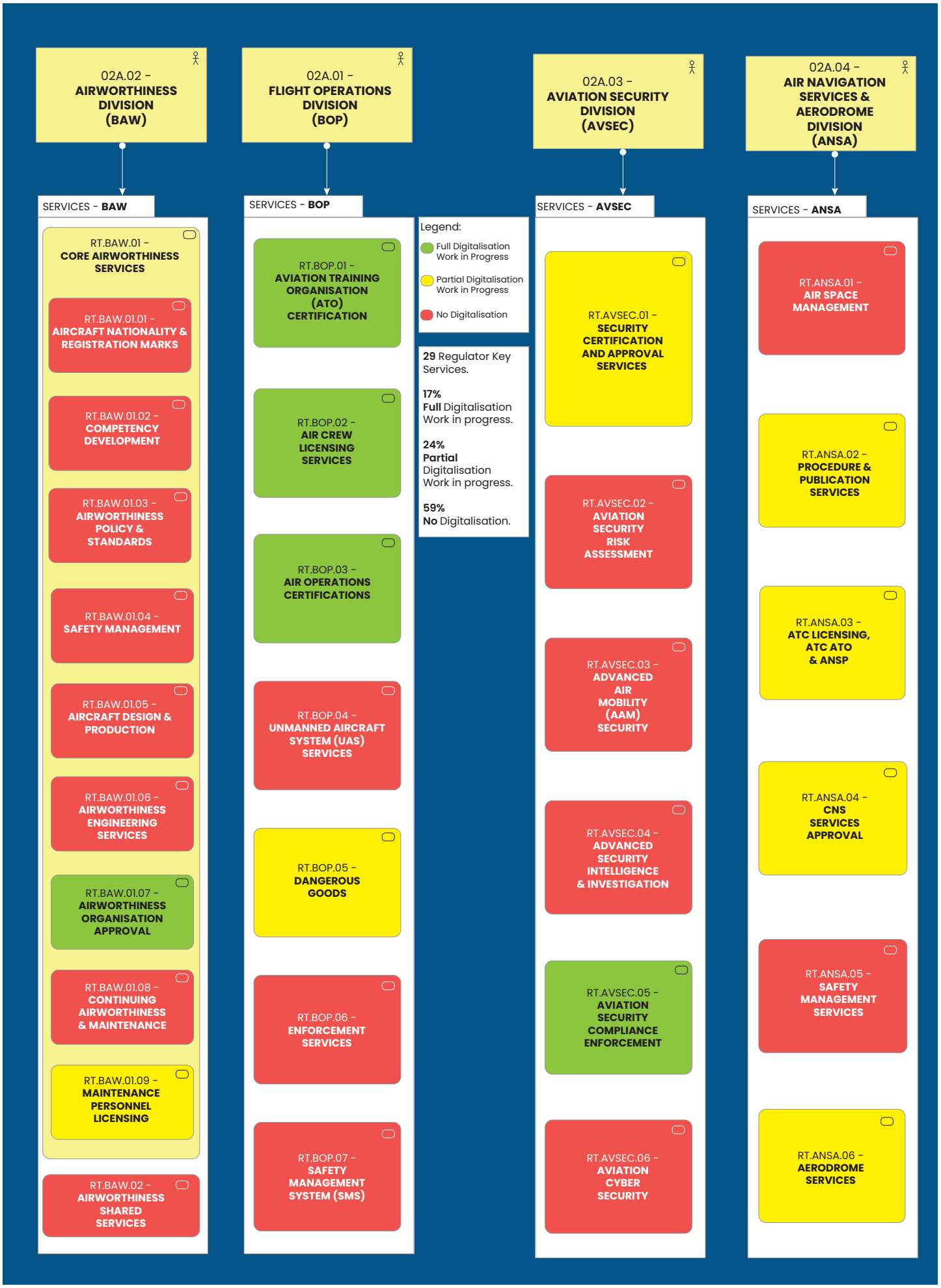


Figure 11: Regulator Wing Digitalisation Status

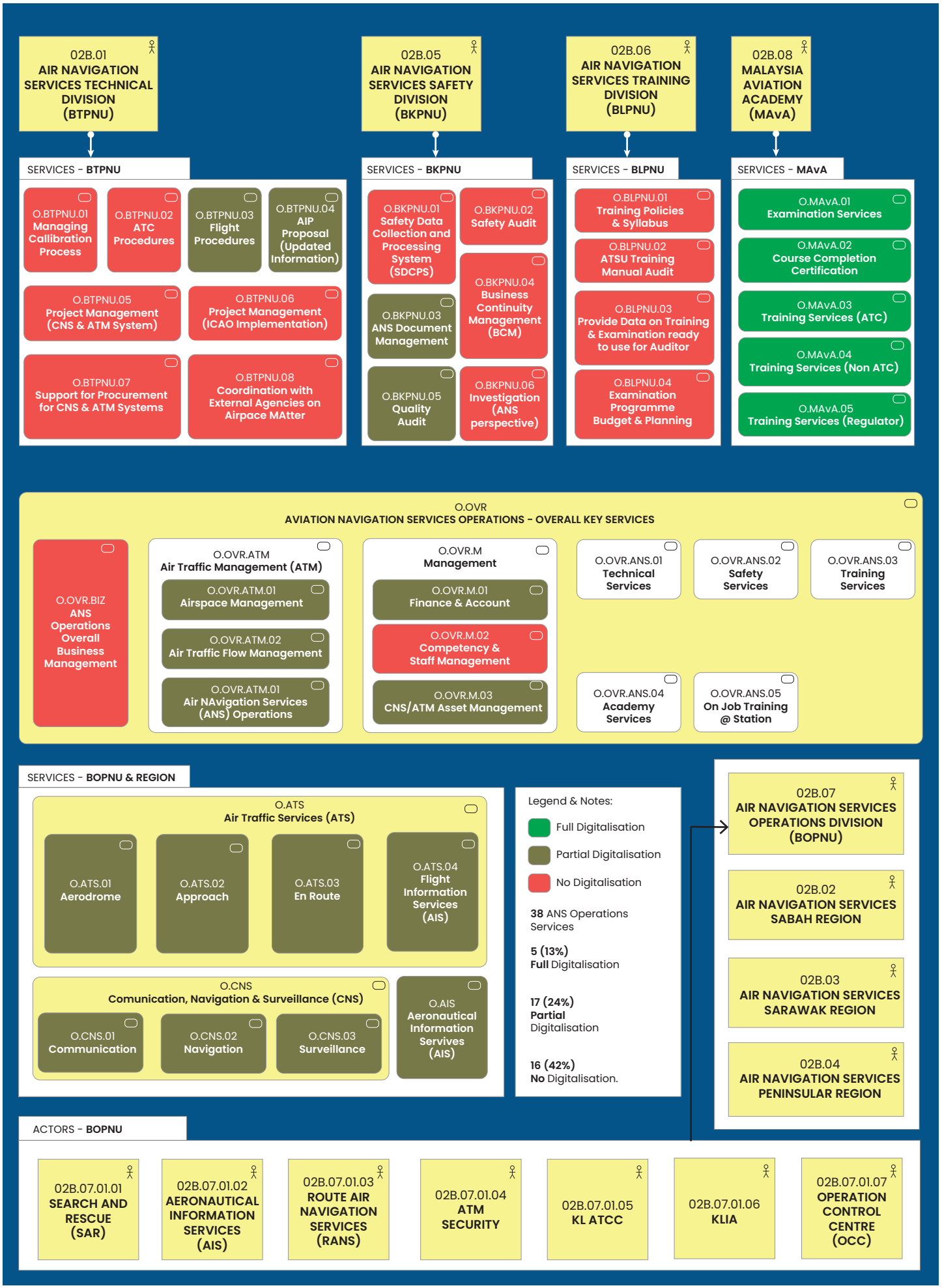


Figure 12: ANS Operations Wing Digitalisation Status

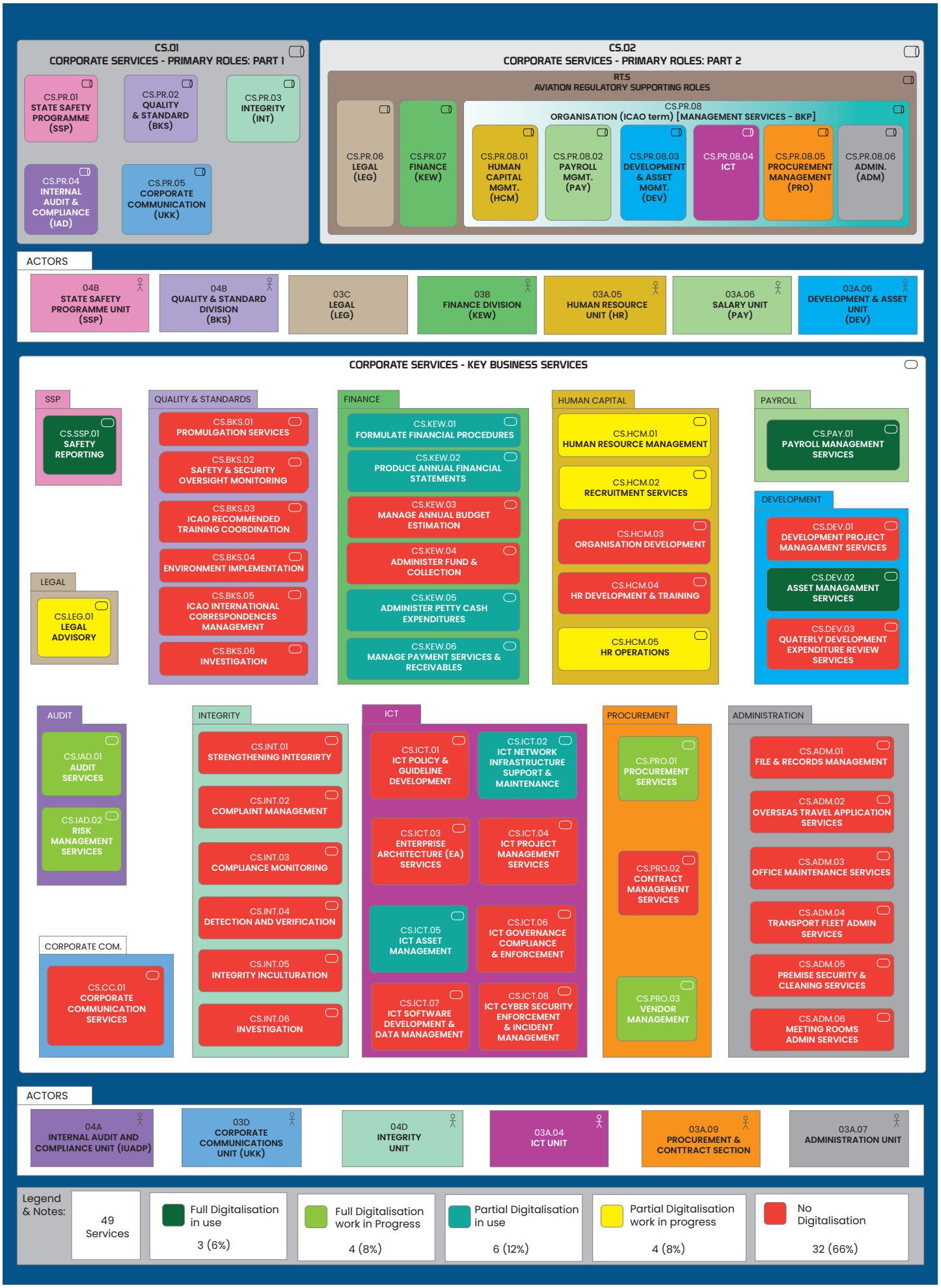
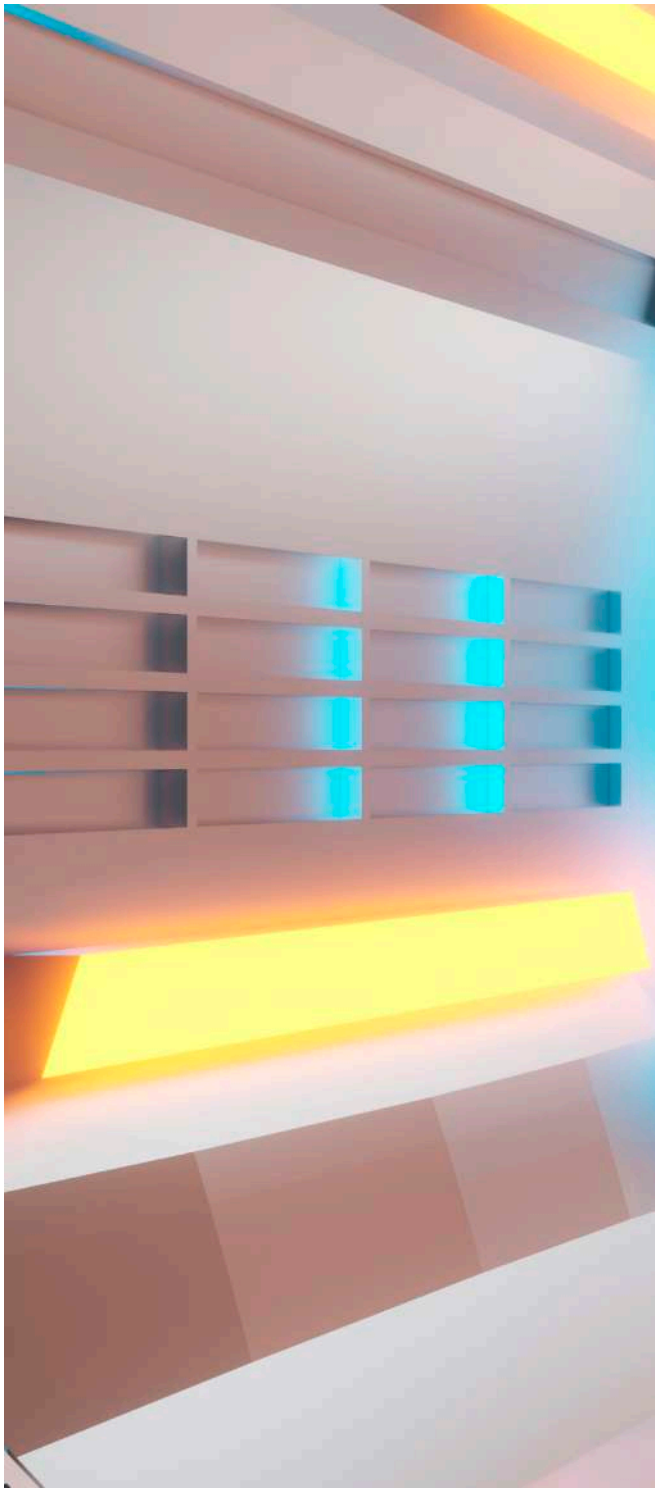


Figure 13: Corporate Services Wing Digitalisation Status

Digitalisation Strategic Direction



Digitalisation Approach

CAAM's Business Strategic Plan forms the foundation for the Digitalisation Strategic Plan (DSP) 2024 - 2048. From the said Business Strategic Plan, the following elements are the key drivers for the Digitalisation Strategic Plan (DSP):

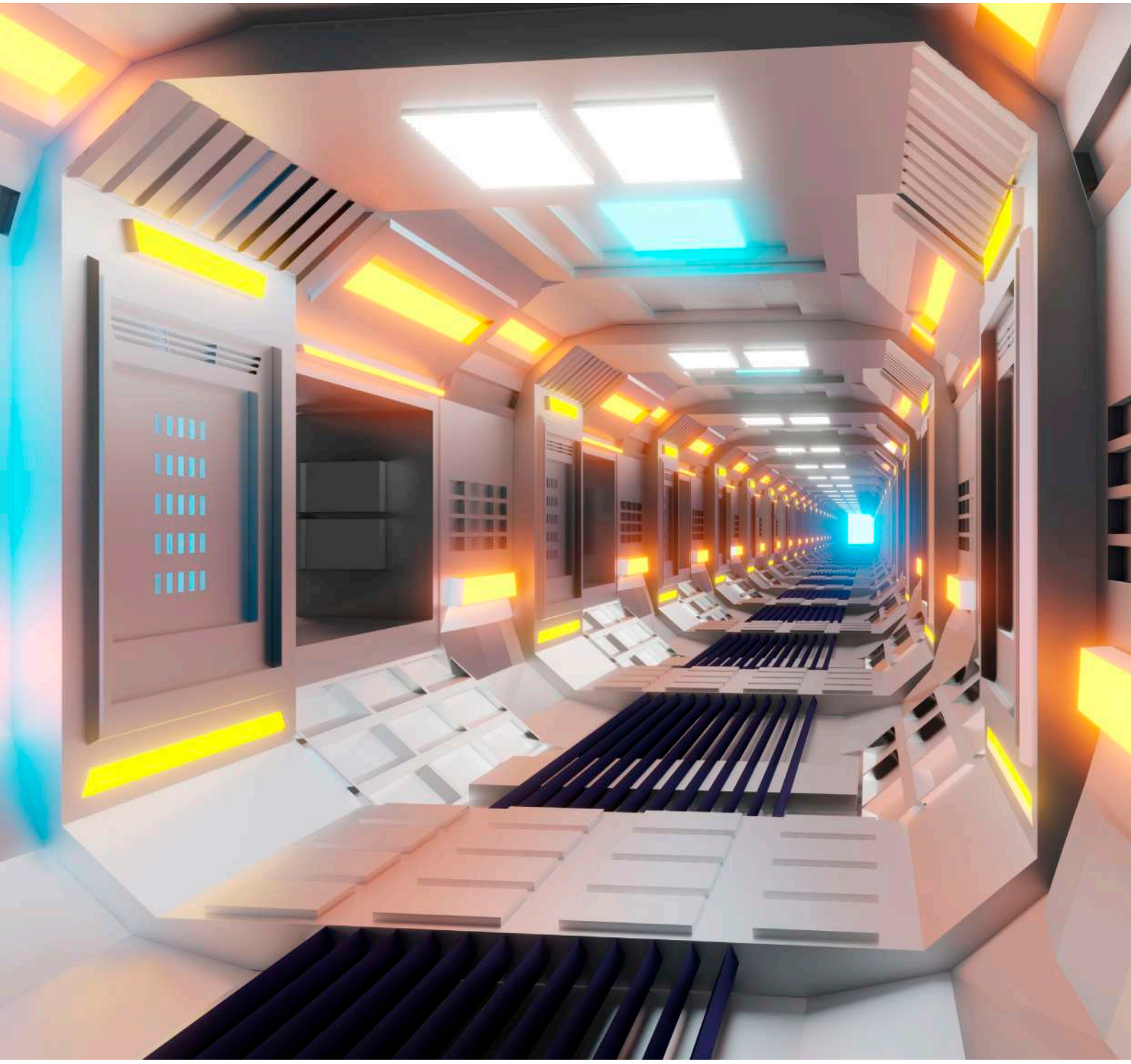
1. Safety & Security;
2. Operational Efficiency;
3. Innovation;
4. Value Enablement; and
5. Engage Collaboratively.

Digitalisation Strategies

Digitalisation Strategies adopted are as follows:

1. **Strategic Agility:** Shift from reactive to tactical, enhancing responsiveness and adaptability;
2. **Customer-Centricity:** Always keep the customers' benefits at the forefront of every decision;
3. **Tech Mastery:** Capitalize on cutting-edge technology, leading innovation rather than following it;
4. **Grounded Optimism:** Be realistic, balancing ambition with feasibility for sustainable growth;
5. **Learning & Evolution**: Overcome and leverage past lessons to forge a path of continuous improvement; and
6. **Organizational Growth:** Cultivate a dynamic and evolving organizational model poised for expansion.

06



"Innovation distinguishes between a leader and a follower."

- Steve Jobs

Objective of the Digitalisation Strategic Plan (DSP)

The Digitalisation Strategic Plan (DSP) is formulated with the aim of transforming manual processes within CAAM to achieve the following objectives:

1. **Enhanced service delivery:** By digitizing manual processes, CAAM can streamline operations and improve the efficiency and responsiveness of its services;
2. **Operational efficiency:** The DSP will focus on initiatives that optimize resource allocation and reduce redundancy, leading to a more cost-effective operation;
3. **Value enablement:** The plan will identify opportunities to leverage digital technologies to create new value propositions for stakeholders within the aviation industry;
4. **Fostering innovation:** The DSP will cultivate a culture of innovation by encouraging the exploration and adoption of emerging technologies;
5. **Increased productivity**: By automating tasks and optimizing workflows, the DSP aims to address manpower shortages and enhance overall productivity within CAAM. and
6. **Strengthened engagement with the aviation industry:** The plan seeks to establish a more user-friendly and interactive experience for stakeholders within the aviation sector.

Prioritization within the DSP

It is important to acknowledge that the DSP will prioritize initiatives that have the most significant impact on achieving the aforementioned objectives. Business functions characterized by low volume and minimal impact on these goals may not be included in the initial phase (DSP 1.0) of the digitalisation effort. These functions will be reevaluated for potential inclusion in subsequent phases based on their evolving role and potential for digital optimization. This approach ensures that the DSP focuses its resources on initiatives that deliver the most substantial benefits to CAAM and the aviation industry as a whole.

Shaping the Digitalisation Strategic Direction

The following elements are considered, from business perspective to shape CAAM's Digitalisation Strategic Direction as follows:

1. CAAM Overall Business Perspective;
2. Regulator Wing;
3. ANS Operations Wing; and
4. Corporate Services Wing.

Organisation Assessment and Present Digitalisation Environment Assessment serves the foundation in shaping the Digitalisation Strategic Direction, which in turns translated into CAAM Digitalisation Strategic Framework (2024 – 2028).

Digitalisation Strategic Framework

CAAM's Digitalisation Strategic Framework is illustrated in Figure 14.

The DSP Framework

Vision: "Driving Digital Transformation to improve safety, efficiency and sustainability in Air Travel".

Strategic Thrust: 7 Digitalisation Strategic Thrust.

Guiding Principles: 7 Guiding Principles.

Enabling Ecosystem: **7 Enabling Ecosystem.**

Vision

The vision statement "Driving Digital transformation to improve safety, efficiency and sustainability in air travel" outlines the desired future state of air travel achieved through the use of digital technologies.

1. **Driving Digital Transformation:** This refers to actively embracing and integrating digital technologies throughout all aspects of air travel, from operations to passenger experience;

2. **Improve Safety:** Digital tools can enhance safety by providing real-time data and analytics to pilots, maintenance crews, and air traffic controllers;

3. **Enhance Efficiency:** Streamlining processes through digital solutions can lead to shorter wait times, better resource allocation, and overall smoother operations; and

4. **Promote Sustainability:** Digital technologies can contribute to a more sustainable air travel industry by optimizing flight paths, reducing fuel consumption, and managing waste more effectively.

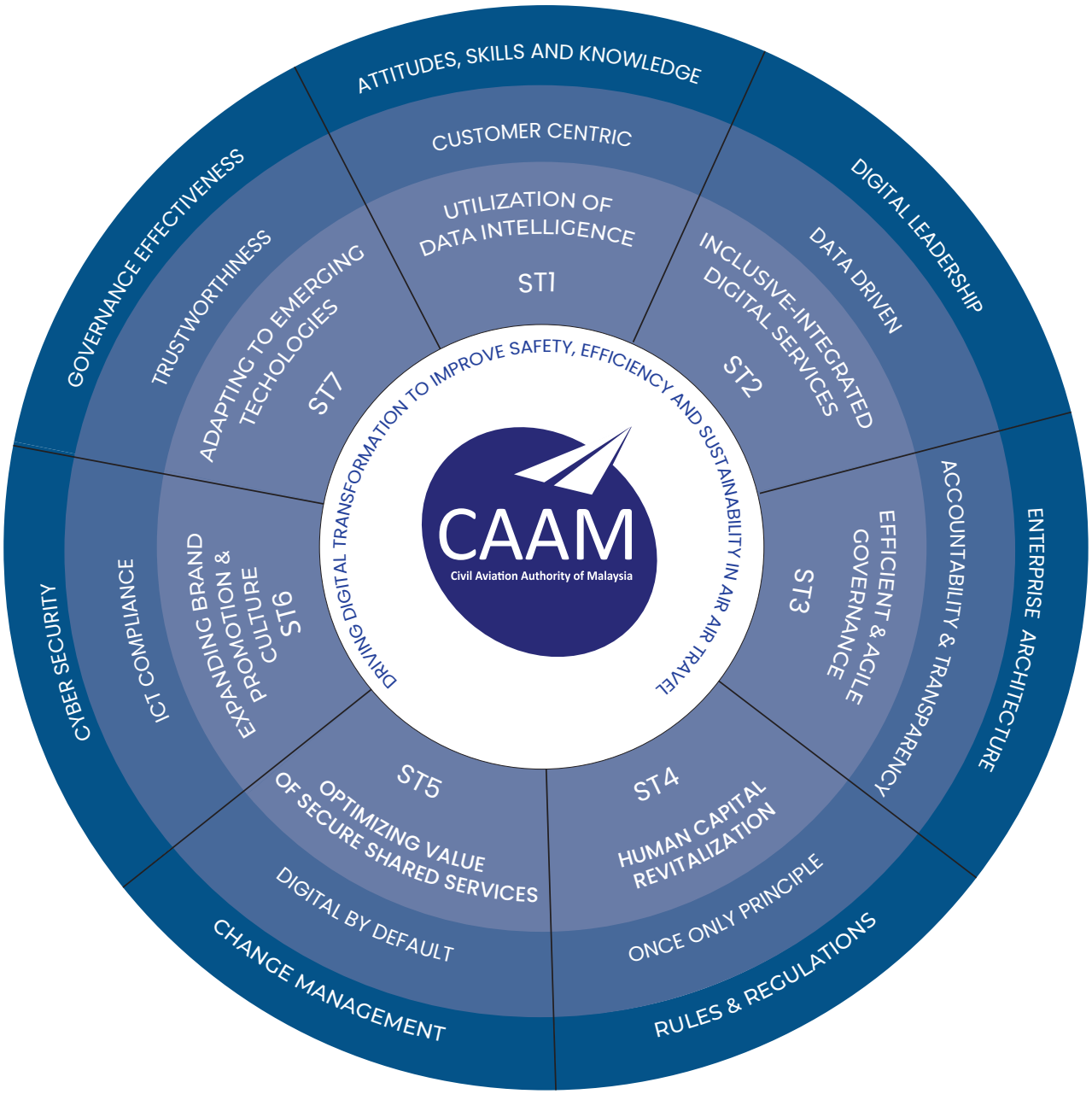


Figure 14: CAAM's Digitalisation Strategic Framework (2024 - 2028)

07

"Technology is supposed to make our lives easier, allowing us to do things more quickly and efficiently. But too often it seems to make things harder, leaving us with fifty-button remote controls, digital cameras with hundreds of mysterious features and book-length manuals, and cars with dashboard systems worthy of the space shuttle".

- James Surowiecki

Digitalisation Initiatives

Initiatives Summary

The Digitalisation Strategic Plan DSP (2024 – 2028) initiatives summary, is illustrated in Figure 15. There are 7 Thrusts, 14 Strategies, 20 Programs and 45 Initiatives to be carried out over five years.

Strategic Thrusts

T1: Utilization of Data Intelligence

The definition of Utilization of Data Intelligence, is as follows:

1. Strengthen data management and coordination; and
2. Improve planning, policy development, strategy and decision making based on data intelligence.

T2: Inclusive-Integrated Digital Services

The definition of Inclusive-Integrated Digital Services, is as follows:

1. Foster a creative digital service delivery system; and
2. Leverage emerging technologies for impactful smart applications.

T3: Efficient & Agile Environment

The definition of Efficient & Agile Environment, is as follows:

1. Establish comprehensive digitalisation governance; and
2. Enhance CAAM's digital capabilities.

T4: Human Capital Revitalization

The definition of Human Capital Revitalization is, upskill CAAM personnel for digital leadership.

T5: Optimizing Value of Secure Shared Services

The definition of Optimizing Value of Secure Shared Services is, enhance ICT sharing services with cutting-edge, relevant technology for sustainability and security.

7 THRUSTS **14 STRATEGIES** **20 PROGRAMS**

45 INITIATIVES **11 CATEGORIES** **96 PROJECTS**

THRUST 1
UTILIZATION OF DATA INTELLIGENCE

2 - STRATEGIES
4 - PROGRAMS
4 - INITIATIVES

THRUST 2
INCLUSIVE-INTEGRATED DIGITAL SERVICES

2 - STRATEGIES
4 - PROGRAMS
13 - INITIATIVES

THRUST 3
EFFICIENT & AGILE GOVERNANCE

3 - STRATEGIES
3 - PROGRAMS
13 - INITIATIVES

THRUST4
HUMAN CAPITAL REVITALIZATION

2 - STRATEGIES
4 - PROGRAMS
2 - INITIATIVES

THRUST 5
OPTIMIZING VALUE OF SECURE SHARED SERVICES

2 - STRATEGIES
4 - PROGRAMS
8 - INITIATIVES

THRUST 6
EXPANDING BRAND PROMOTION & CULTURE

2 - STRATEGIES
2 - PROGRAMS
4 - INITIATIVES

THRUST 7
ADAPTING TO EMERGING TECHNOLOGIES

1 - STRATEGY
1 - PROGRAM
1 - INITIATIVE

Figure 15:CAAM DSP 2024 - 2028 Initiatives Summary

T6: Expanding Brand Promotion & Culture

The definition of Expanding Brand Promotion & Culture, is as follows:

1. Boost digital service branding, expansion, and promotion for customers and the community; and
2. Fortify change management and cultivate digital culture.

T7: Adapting to Emerging Technologies

The definition of Adapting to Emerging Technologies is, leverage emerging technologies to optimize Digitalisation efforts.

Programs

The 20 Programs are as follows:

1. Optimizing Data Governance Framework;
2. Enhancing the Data Sharing Hub and Management;
3. Developing Big Data Analytics for CAAM;
4. Empowering social media Listening & Analytics;
5. Enhancing CAAM's Digital Services;
6. Enhancing CAAM's Digital Services Through MyGovEA Adoption;
7. CAAM Delivery System Mobile App Enhancements;
8. Strengthening Digital Services to Foster a Conducive Work Environment for CAAM Personnel;
9. Establishing a Framework for Digital Initiative Policy and Guidelines;
10. Optimizing the Structure and Functionality of CAAM Digital Services;
11. Lead ICT Transformation to Drive CAAM's Digitalisation and Service Delivery;
12. Enhance digital leadership skills to retain top talent;
13. Effective human capital management fosters career development, bolsters IT service personnel talent, and upskills them through targeted programs;
14. Leverage MyGovCloud@PDSA for public sector data center services;
15. Adopt public cloud services;
16. Fortify cybersecurity through enhanced services management, robust compliance practices, and proactive threat prevention measures;
17. Bolster CAAM's network and communication infrastructure to ensure it can effectively support current demands and the upcoming initiatives outlined in the new Digitalisation Strategic Plan (DSP);
18. Boost awareness and adoption of CAAM's digital services through enhanced branding and promotion;
19. Foster a Digital Culture through Collaborative Networks. Strengthen Change Management for Digital Services and Culture; and
20. Leverage emerging technologies to propel CAAM's digital initiative forward.

Initiatives

The 45 Initiatives, denoted in I#1 - I#45 are as follows:

Strategic Thrust 1: Utilization of Data Intelligence
S1: Enhancing Data Governance
P1: Optimizing Data Governance Framework
I#1 Leverage Existing Committees or Establish Dedicated Teams to **Develop Data Ownership & Sharing Policies**
P2: Enhancing the Data Sharing Hub and Management
I#2 Enhancing the Effectiveness of the **CAAM Website & Portal**
S2: Empowering Data Intelligence-Based CAAM Delivery
P1: Developing Big Data Analytics for CAAM

I#3	**Implementing KPIs for the Aviation Enterprise Data Warehouse (EDW) with BI software** will optimize outcomes for CAAM and its customers. This **data-driven approach unlocks a potential revenue stream** by offering clients access to valuable insights for nominal fees. This not only promotes long-term sustainability for digitalisation initiatives but could transform them into a profit center, representing a crucial step towards Big Data Analytics capabilities.
P2: Empowering social media Listening & Analytics	
I#4	**Leverage social media listening tools and analytics** to inform CAAM's social media strategy across listening, planning, management, publishing, and analysis.
Strategic Thrust 2: Inclusive-Integrated Digital Services	
S1: Enhancing Customer Experience Through Optimized Digital Service Delivery	
P1: Enhancing CAAM's Digital Services	
I#5	**To achieve trusted, enterprise-wide data for informed decision-making**, CAAM will develop regulator systems aligned with the Aviation Regulator Framework. This comprehensive approach integrates data across systems, fostering collaboration with internal and external stakeholders. This collaboration results in value for the aviation industry.
I#6	**To enhance the accessibility and comprehensiveness of aviation safety information**, a centralized information system will be established for the Civil Aviation Authority of Malaysia (CAAM) to house all aviation safety-related data.
I#7	**Develop a unified ANS Operation Digitalisation Blueprint incorporating all ICAO digitalisation directives** (ASBU, SWIM, ATM Blueprint) for seamless integration with the CAAM Digitalisation Strategic Plan (DSP Blueprint). This comprehensive, single point of reference will leverage Enterprise Architecture (EA) and capture ANS Operations OT knowledge into the CAAM Organizational Knowledge Base.
I#8	**Modernize ANS Operations infrastructure and business applications** to support a cohesive digitalisation strategy.
I#9	**Align ANS Operations infrastructure technology refresh with ICAO directives**, prioritizing solutions based on lifecycle stage, technology refresh and operational needs.
I#10	**Customer Facing Application** – Customer Service Management
P2: Enhancing CAAM's Digital Services Through MyGovEA Adoption	
I#11	The full IT lifecycle will embrace enterprise architecture-driven design - **Embrace EA & MyGovvEA**
P3: CAAM Delivery System Mobile App Enhancements	
I#12	**Mobile by Default** – For all applications
I#13	**MyCAAM** - Streamline customers interaction with CAAM by utilizing MyCAAM, **a unified Mobile App**, the all-encompassing mobile app designed to centralize access to all CAAM services.
S2: Fostering a Digital Work Environment for CAAM Personnel	
P1: Strengthening Digital Services to Foster a Conducive Work Environment for CAAM Personnel	
I#14	**Elevate Finance System capabilities** to Meet Evolving CAAM and Finance Requirements
I#15	The current HR system lacks the scope and functionality needed for modern Human Capital Management (HCM) practices. **HR requires a comprehensive HCM platform that integrates best practices, simplifies workflows, and seamlessly handles all aspects of the employee lifecycle**, including overseas travel. While customizations may be necessary to meet CAAM's specific needs, we should explore cost-effective alternatives to achieve optimal results.
I#16	**Utilize the Malaysian Government's compliant document management system** for efficient document sharing with ministries and agencies. This system streamlines typical operational documentation management needs.
I#17	**Promote the standardization and digitalisation of collaborative work environments** across CAAM.
Strategic Thrust 3: Efficient & Agile Environment	
S1: Strengthening Digital Governance	
P1: Establishing a Framework for Digital Initiative Policy and Guidelines	
I#18	**Application Development Architecture:** Policy and Guidelines.
I#19	**Programming Language and Software Standardization:** Policy, Guidelines enterprise-wide common tools.
I#20	**Backup Strategy:** Policy and Guidelines

I#21 **MyGovCloud@PDSA and Public Cloud Strategy:** Policy and Guidelines

P2: Optimizing a Digital Service Quality Assurance Framework

I#22 **Leverage JDN's Quality Assurance Guidelines** to ensure the successful implementation of digital projects.

P3: Elevating Digital Project Procurement Governance

I#23 Establish **streamlined procurement procedures for fast-track projects** requiring highly skilled implementers to meet concurrent digitalisation needs.

S2: Empowering the Modernization Management Ecosystem for Digital Transformation

P1: Optimizing the Structure and Functionality of CAAM Digital Services

I#24 **Restructure the ICT Unit into a Division with direct reporting to the CEO's Office**, ensuring greater accountability and positioning ICT at the forefront of digital initiatives.

I#25 **Establish a Data Manager Role within new ICT Division as per PSPSA 2021-2025** Strategic Thrust 3, Strategy 3, Program 2, Initiative A3 Recommendations.

I#26 **Forge a Strategic Alliance** for the Delivery of Digital Support Services

S3: Cultivating Digital Leadership within the Strategic Framework

P1: Lead ICT Transformation to Drive CAAM's Digitalisation and Service Delivery.

I#27 **Enhancing Project Management Capabilities** for Successful Digitization Initiatives

I#28 **Implement the proposed Digital Governance Framework**, enforcing adherence to its key components (roles, structure, competencies) to prevent accountability lapses and leverage past lessons learned.

I#29 **Implement Design Management Office Function** continuing design updates into EA, manage overall design, enforcing design compliance, validating design to achieve a cohesive and integrated design for CAAM.

I#30 **Implement Digitalisation Strategic Plan (DSP 1.0) Review every two years** to reflect technological, business environment and situational changes.

Strategic Thrust 4: Human Capital Revitalization

S1: Invest in digital leadership development to cultivate and retain top talent.

P1: Enhance digital leadership skills to retain top talent

I#31 To drive successful digital transformation, **organizations must cultivate the capabilities and competencies of digital leaders** by integrating leadership and soft skills development programs into their initiatives.

S2: Empower IT service personnel management to optimize talent retention strategies.

P1: Effective human capital management fosters career development, bolsters IT service personnel talent, and upskills them through targeted programs

I#32 **Upskill IT service personnel and solidify the succession plan** to ensure specialist skill continuity

Strategic Thrust 5: Optimizing Value of Secure Shared Services

S1: Consolidate CAAM's Cloud Computing Infrastructure

P1: Leverage MyGovCloud@PDSA for public sector data center services

I#33 Establish a strategic application selection process to **maximize utilization of MyGovCloud@PDSA** services.

P2: Adopt public cloud services

I#34 Implement a strategic application selection process to **optimize Public Cloud utilization.**

S2: Enhance network capabilities to bolster digital communication effectiveness.

P1: Fortify cybersecurity through enhanced services management, robust compliance practices, and proactive threat prevention measures.

I#35 **Bolster information leakage protection** and engage certified security experts to assess CAAM's cybersecurity posture.

I#36 **Enhance risk governance and security compliance**, while implementing ICT equipment security assurance to fortify information assets against malware, ransom ware, and virus threats.

I#37 **Deploy comprehensive endpoint and network security solutions**, including antivirus protection and a web application firewall (WAF).

P2: Bolster CAAM's network and communication infrastructure to ensure it can effectively support current demands and the upcoming initiatives outlined in the new Digitalisation Strategic Plan (DSP).
I#38 **Upgrade CAAM's LAN** for better performance and user experience.
I#39 Rental Based End User Computing Devices
I#40 **Enhance CAAM's Virtual Private Network (VPN) capabilities** to optimize performance, strengthen security protocols, and ensure alignment with the new Digitalisation Strategic Plan (DSP) initiatives.
Strategic Thrust 6: Expanding Brand Promotion & Culture
S1: Elevate CAAM's digital service brand through strategic development and enhanced promotion initiatives
P1: Boost awareness and adoption of CAAM's digital services through enhanced branding and promotion.
I#41 For impactful digital service branding and promotion, prioritize user-centered **design with clear messaging, a professional visual identity, innovative UI/UX elements**, and multi-channel marketing to effectively communicate the value proposition to CAAM target audience.
I#42 **Secure branding IP, intensify multi-channel promotion, and forge aviation partnerships** to perfectly align CAAM's offering with target user preferences.
S2: Enhance digital service cultivation and change management programs
P1: Foster a Digital Culture through Collaborative Networks. Strengthen Change Management for Digital Services and Culture.
I#43 **Fortify governance for change management and digital culture**, implement CAAM's digital service communication plan, and solidify a comprehensive change management strategy for all digital services.
I#44 **Equip and empower content creators** to produce digital content rapidly and consistently.

Strategic Thrust 7: Adapting to Emerging Technologies
S1: Transform CAAM's digital service delivery by leveraging emerging technologies to achieve business goals.
P1: Leverage emerging technologies to propel CAAM's digital initiative forward.
I#45 Implement a comprehensive strategy to **identify, apply, and continuously monitor relevant emerging technologies** for CAAM's digital initiatives.

Initiatives Category

Digitalisation Strategic Plan Projects by initiatives category are illustrated in Figure 16.

"What you get by achieving your goals is not as important as what you become by achieving your goals".

- Zig Ziglar

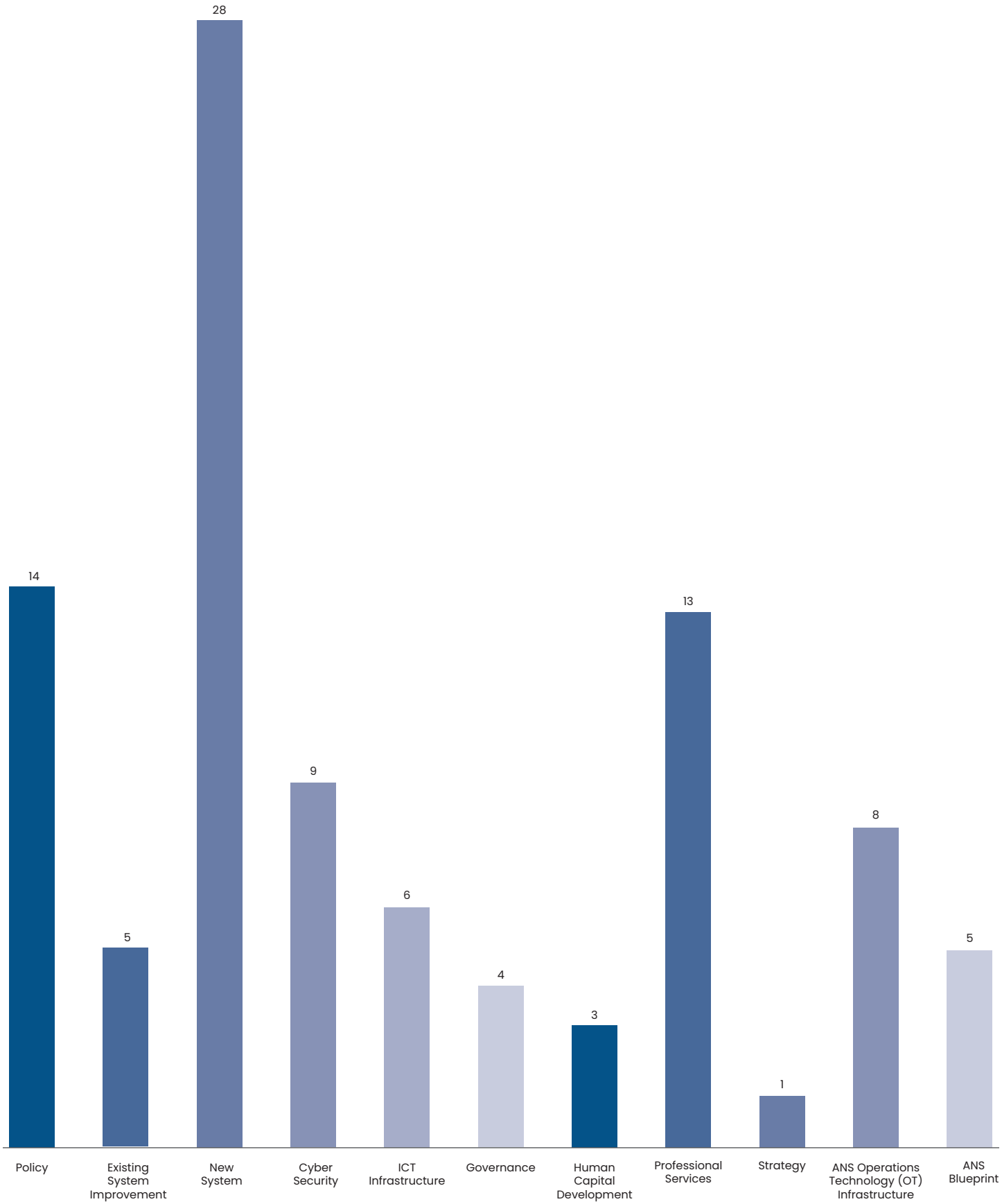


Figure 16: DSP Projects by Initiatives Category

Implementation Plan

Implementation Approach

The implementation of Digitalisation Strategic Plan is divided into the following phases:

1. **Phase 1: Establish a Solid Foundation;**
2. **Phase 2: Quick Win, High Impact Projects and Pre-requisites**; and
3. **Phase 3: Leveraging the experience and value gained, posed to tackle more sophisticated projects and more internal team driven.**

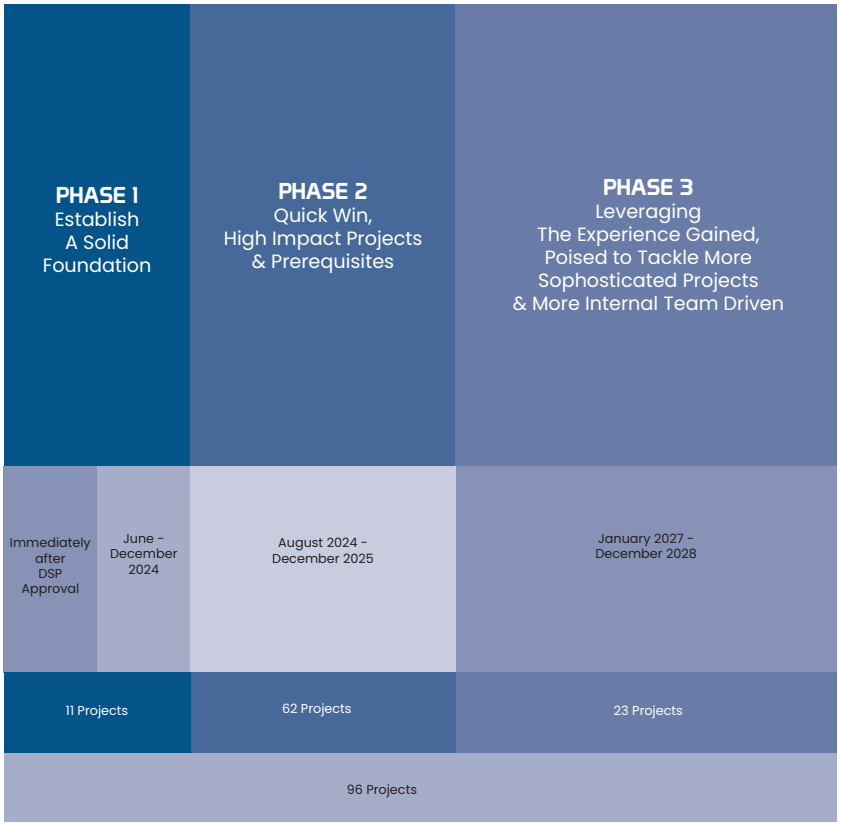


Figure 17: DSP Implementation Approach & Schedule Summary

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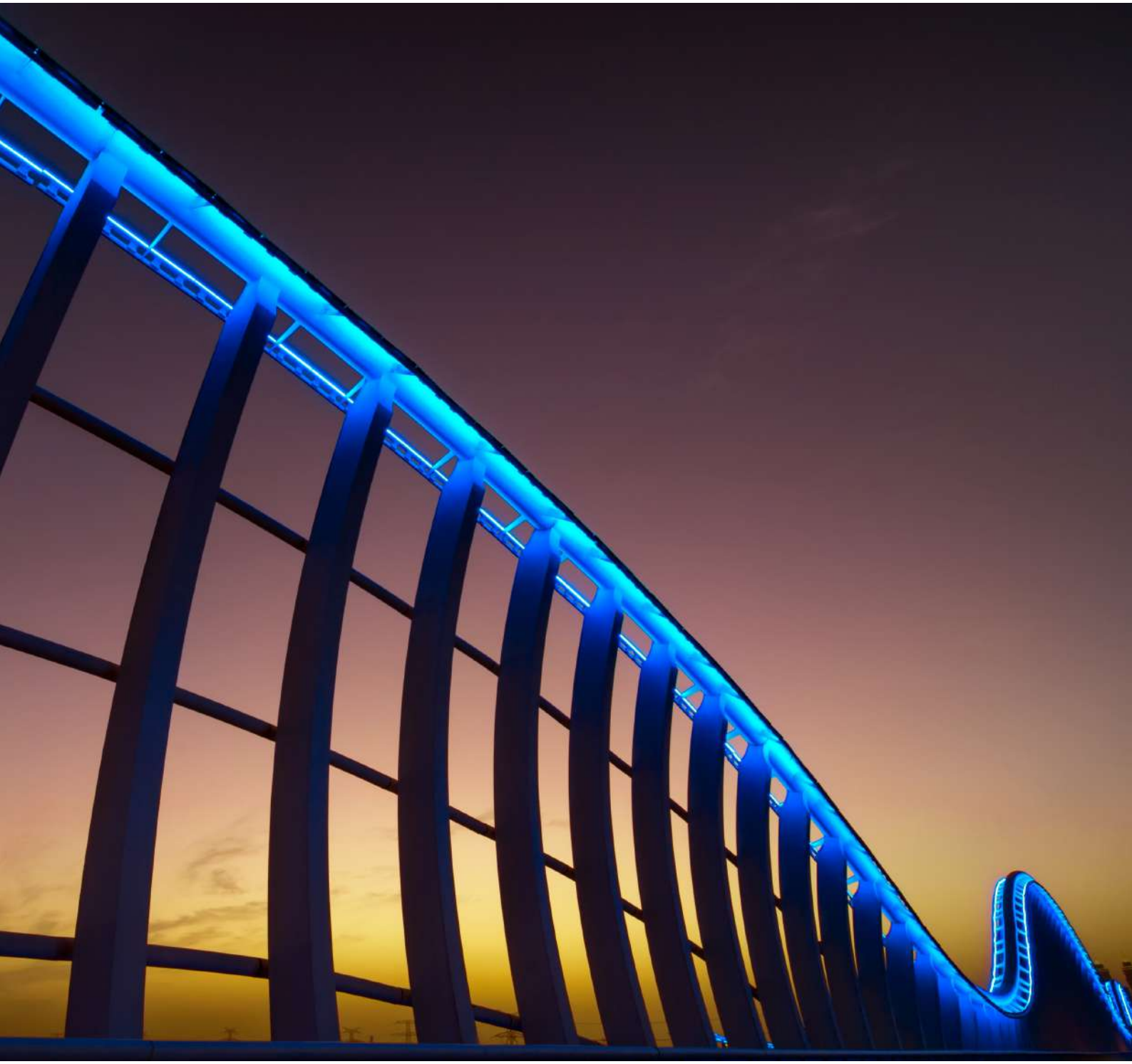

"The journey of a thousand miles begins with one step".

- Lao Tzu

Moving Forward

Plan vs Actual

Establishing a strong foundation is paramount to the success of the DSP 1.0 initiatives. Phase 1 lays the groundwork for this crucial step, as the proposed initiatives represent a significant advancement from CAAM's current AS-IS state to the envisioned TO-BE environment.

The proposed initiatives and projects are interdependent and mutually supportive. While CAAM's dynamic business environment may necessitate adjustments to project priority as they are implemented, a careful assessment shall be conducted to ensure these adjustments do not negatively impact the interconnectedness of the initiatives and projects.

A measured approach is essential for digital transformation, as it hinges on human factors and the readiness for change.

Challenge of ICT Team

Insufficient ICT personnel and the demands of new DSP projects necessitate a substantial overhaul of current operations. To address these challenges effectively, a structured approach aligned with the DSP Phase 1 plan is imperative.

Challenge of Increased Workload

Digital transformation invariably demands significant time and commitment from all stakeholders. Successful DSP implementation is crucial for streamlining workflows and propelling CAAM to a leadership position in the world's aviation.

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"He who is not courageous enough to take risks will accomplish nothing in life".

- Muhammad Ali

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