

Embraer Manufacturer



Sergio Bellato Alves
Market Intelligence Specialist
Embraer



8 December 2023

ANAC- Auditorium
São José dos Campos – Brazil





World Food Programme

SAVING
LIVES
CHANGING
LIVES

EMBRAER INITIATIVES IN THE AIR CARGO MARKET



NICOLE MORAES SARNO
Head of Global Product Marketing for Air Freight
Embraer Commercial Aviation

SERGIO BELLATO ALVES
Head Intelligence, Market & Product Strategy
Embraer Defense & Security

RICARDO GUERLEND
C-390 Millennium Product Strategist
Embraer Defense & Security



BUSINESS UNITS

COMMERCIAL AVIATION



4.100+ DELIVERED AIRCRAFT

80+ COUNTRIES

EXECUTIVE JETS



1.500+ DELIVERED JETS

70+ COUNTRIES

DEFENSE & SECURITY



1.400+ DELIVERED AIRCRAFT

60+ GOVERNMENTS AND ARMED FORCES

attech TEMPEST VISIONA

SERVICES & SUPPORT



1.200+ CUSTOMERS

OGMA



CAPABILITIES FOR DEVELOPMENT

LAST 20 YEARS / 18 FIRST FLIGHT DATES





MEET THE E-FREIGHTERS

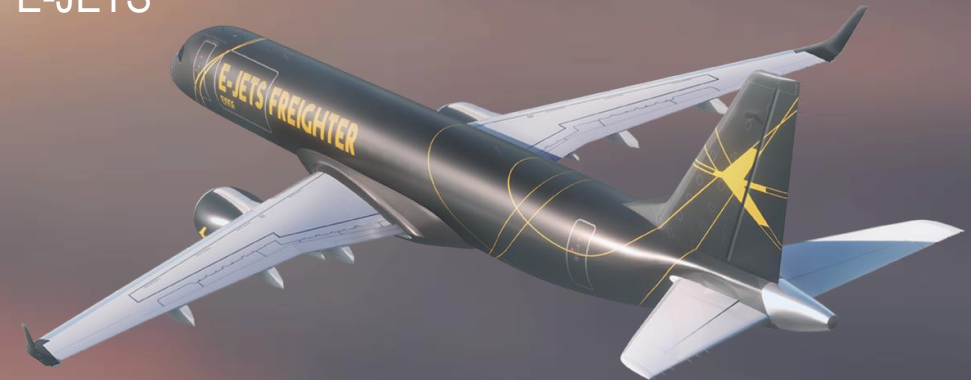
THE E1 FAMILY - THE MOST SUCCESSFUL LINE OF 70 TO 150 SEATS JETS

- 35+ MILLION FLIGHT-HOURS
- 2.2+ BILLION PASSENGERS
- 25+ MILLION FLIGHT-CYCLES
- 80 AIRLINES FLY E-JETS



EMBRAER 195

Cargo Volume 4,170 ft³ (118 m³)
Max Struct. Payload 31,520 lb (14,300 kg)*
2,170 nm range**



EMBRAER 190

Cargo Volume 3,630 ft³ (103 m³)
Max Struct. Payload 29,760 lb (13,500 kg)*
2,590 nm range**



*Based on a typical E190/E195 configuration. May vary depending on pre-conversion aircraft status. **Range @ max vol payload, considering density 104 kg/m³ (6.5 lb/ft³)

E-FREIGHTER MODIFICATION

3Q2023



E-FREIGHTER PRESENTATION TO PUBLIC

4Q2023



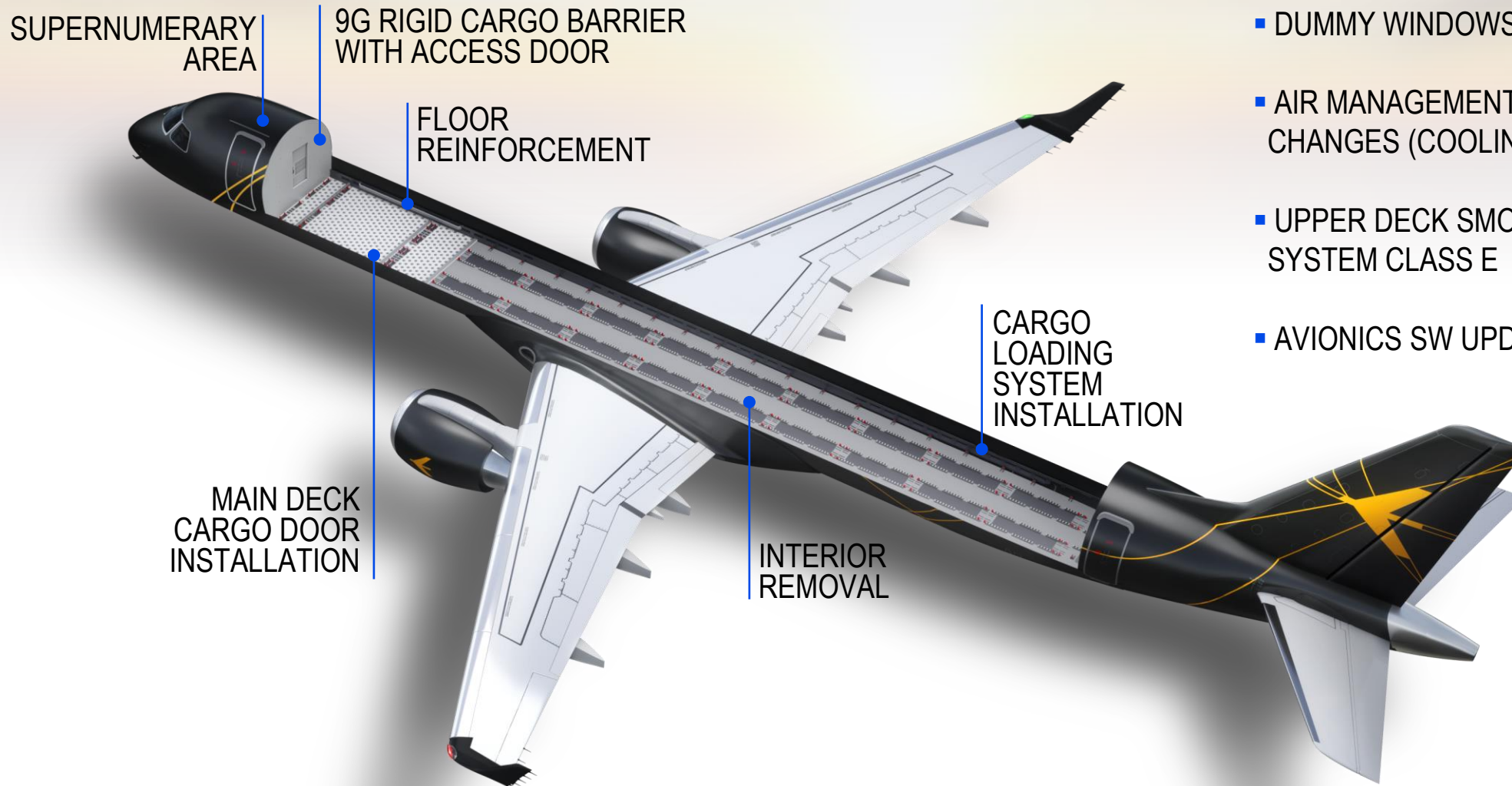
E-FREIGHTER CERTIFICATION TEST CAMPAIGN

2Q2024





FULL CARGO CONVERSION



ADDITIONAL UPDATES:

- DUMMY WINDOWS
- AIR MANAGEMENT SYSTEM CHANGES (COOLING, AIR DISTRIBUTION)
- UPPER DECK SMOKE DETECTION SYSTEM CLASS E
- AVIONICS SW UPDATE

MAIN DECK ENVIRONMENT

AIR MANAGEMENT SYSTEM UPDATES

EXPECTED TEMPERATURE RANGE ON MAIN DECK:

18°C - 29°C

GOODS EXPECTED TO BE TRANSPORTED ON AN E-FREIGHTER:

- LIVE ANIMALS
- FLOWERS
- PERISHABLES
- DRY ICE / VACCINES



OVERVIEW



	E190F	E195F
Max Struct Payload*	29,760 lb (13,500 kg)	31,520 lb (14,300 kg)
Cargo Volume	3,630 ft ³ (103 m ³)	4,170 ft ³ (118 m ³)
Range @ Max vol payload	2,590 nm	2,170 nm
Fixing Positions (88" x 108")	8	9

*Based on a typical E190/E195 configuration. May vary depending on pre-conversion aircraft status.

Range @ max vol payload, considering density 104 kg/m³ (6.5 lb/ft³)

E190/E195 FREIGHTER

VALUE PROPOSITION



MORE FLEXIBILITY TO ADDRESS
NEW MARKET TRENDS



THE MOST COST-EFFICIENT
STANDARD BODY AIRCRAFT



FULLY INTEGRATED OEM
SOLUTION AND SUPPORT



SUSTAINABLE PLATFORM



PROVEN RELIABILITY



C-390 MILLENNIUM

UP TO NOVEMBER 2023

10,700+
FLIGHT HOURS

~80% Availability

99+% Completion Rate



AERIAL
RESUPPLY

AERIAL
ASSAULT

SPECIAL
OPERATIONS

AERIAL
FIREFIGHTING

MEDICAL
EVACUATION

HUMANITARIAN
AID

SEARCH AND
RESCUE

AIR-TO-AIR
REFUELING



19 

Brazil

AIRCRAFT
1ST DELIVERY IN 2019

5 

Portugal

AIRCRAFT
1ST DELIVERY IN 2023
NATO CONFIGURATION

2 

Hungary

AIRCRAFT
1ST DELIVERY IN 2024
NATO CONFIGURATION

5 

The Netherlands

AIRCRAFT
SELECTED
NATO CONFIGURATION

4 

Austria

AIRCRAFT
SELECTED

2 

Czech Republic

AIRCRAFT
SELECTED
NATO CONFIGURATION

3 

South Korea

AIRCRAFT
1ST DELIVERY IN 2026

6 AIRCRAFT IN
OPERATION

1 AIRCRAFT IN
OPERATION



"The Dutch MoD has selected the C-390 Millennium from Brazilian manufacturer Embraer to replace the four C-130H Hercules transport aircraft."

"The Austrian Ministry of Defense announced the decision to select the C-390 Millennium aircraft as its new tactical transport solution."

"The Ministry of Defense and Armed Forces of the Czech Republic announced the start of negotiations on acquisition of the C-390 Millennium."

"South Korea's defense authorities on Monday chose Brazilian company Embraer's C-390 for the Air Force's new large transport aircraft"



E-390 CARGO FREIGHTER

DESIGN HERITAGE



+50 YEAR OF EXPERIENCE

+

1,200 COMMERCIAL JETS
+90 CUSTOMERS

PRESENCE IN + THAN 80 COUNTRIES



C-390

CIVIL CERTIFICATION **FROM START**

STRINGENT **MILITARY REQUIREMENTS**



E-390

MULTI-MISSION AIRCRAFT





E-390 CARGO FREIGHTER

STRATEGY TO E-390 LAUNCHING AT A GLANCE

*C-390 to E-390
CONVERTING*



Product that Meets
Customers Needs

*COMMERCIAL
STRATEGY*



Assess Potential
Launch Customers

*MARKET
CAPTURE*



Program that Meets
Market Needs

SEGMENT

169 m³ Volume | 26,000 kg Payload
with Rear Ramp Door





E-390 CARGO FREIGHTER

SPECIALIZED TRANSPORT CAPABILITIES

HELICOPTERS TRANSPORT



OPERATION ON GRASS



OPERATION ON ICE



OPERATION ON SAND



OIL&GAS/ MINING CARGO TRANSPORT



HUMANITARIAN RELIEF



BULK LOADS / ANIMALS TRANSPORT



VEHICLE TRANSPORT



FIREFIGHTING



TRANSPORT OF TRUCKS



Cargo Volume: 169 m³ (5,970 ft³)

Max Struct. Payload: 26,000 kg (57,320 lbs)

Range: 2,710 nm (@ 14,000 kg | 30,864 lbs)

Range: 1,470 nm (@ Max. Distr. Payload 23,000 kg | 50,706 lbs)

CONDITIONS: MIL-C-5011A reserves / En-route ISA, LRC / En-route
wind: 85% max. wind / Fuel density 6.77 lb/USGal (.811 kg/l)



SPECIALIZED CAPABILITIES

CARGO TRANSPORT

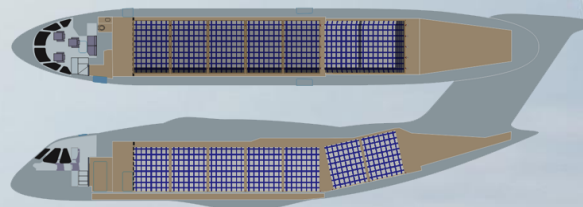
Cargo Volume 5,970 ft³ | 169 m³

Max Struct. Payload 57,320 lbs | 26,000 kg

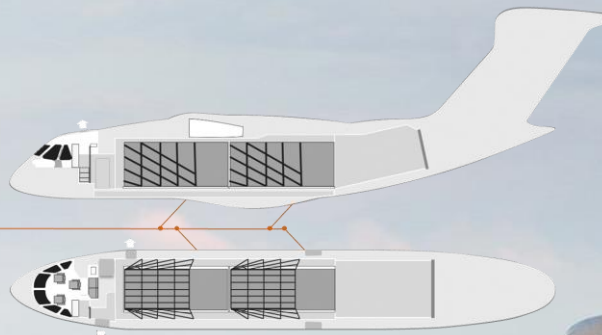
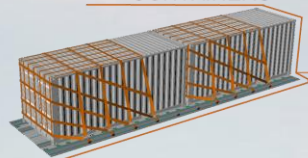
2,710 nm Range @ 30,864 lbs | 14,000kg)

CONDITIONS: MIL-C-5011A reserves / En-route ISA, LRC / En-route
wind: 85% max. wind / Fuel density 6.77 lb/USGal (.811 kg/l)

7 PAG / P1P
PALLETS



2 ISO 20'
CONTAINERS





SPECIALIZED CAPABILITIES

OIL&GAS/ MINING CARGO TRANSPORT

1,470 nm Range @ Max. Distr. Payload
(50,706 lbs | 23,000kg)

CONDITIONS: MIL-C-5011A reserves / En-route ISA, LRC / En-route
wind: 85% max. wind / Fuel density 6.77 lb/USGal (.811 kg/l)





SPECIALIZED CAPABILITIES

VEHICLE TRANSPORT

Long Cargo Ramp with Low Slope Angle 8.5°
to facilitate the boarding of vehicles



SPECIALIZED CAPABILITIES

ANIMALS TRANSPORT

In accordance with the regulations for transport of live animals: balance between compliance with aviation safety requirements and treating animals humanely (temp. control between 15°C and 27°C)



SPECIALIZED CAPABILITIES

HELICOPTERS TRANSPORT

Capacity to load 1x Black Hawk helicopter
or similar-sized helicopters



OPTIONAL SPECIALIZED CAPABILITIES

UNPAVED RUNWAYS

Maximum (worst) semi-prepared runway classification as defined by MIL-A-008866B (10 passes on a CBR 4 soft fields operations)



OPTIONAL SPECIALIZED CAPABILITIES

HUMANITARIAN AID

Cargo Airdrop by Gravity and Extraction
in Low and High Altitudes



OPTIONAL SPECIALIZED CAPABILITIES

FIREFIGHTING

Commercial Off-the-Shelf solution (MAFFS II), roll-on / roll-out system that keeps the aircraft cabin pressurized during the dispersing (up to 3,000 US Gal)



THANK YOU

← EMBRAER

Business opportunity and challenges in WFP Aviation operations



Franklyn FRIMPONG, PhD

Chief of Aviation Service
UN World Food Programme



8 December 2023

ANAC- Auditorium
São José dos Campos – Brazil





WFP Aviation Service

ICAO-WFP Aviation Safety Campaign

December 2023 | Brazil



World Food Programme

SAVING
LIVES
CHANGING
LIVES



World Food
Programme



WHEN DID ALL START?

WFP began its large-scale air operations in the 1980s transporting food and humanitarian workers to countries that included Angola, Ethiopia, Somalia and the Sudan.

Gradually, the WFP Aviation Service shifted the focus of its work from addressing an internal need for food delivery to providing a common service for the overall humanitarian community.



WFP Aviation Service

Vision and objectives



Provide aviation services

Common services

(United Nations Humanitarian Air Service - UNHAS);

On-demand and specialized services

for humanitarian and development organizations;



Act as a facilitator in humanitarian response

Promote collaboration between aviation and humanitarian stakeholders;

Ensure **systematic communication and coordination** among aviation and humanitarian actors.



Strengthen Aviation Systems and Capacity at the Regional and National Levels

Collaborate with international aviation organizations and regulators;

Strengthen partnerships with humanitarian and development actors.

UNHAS presence 2023

Haiti

21 UNHAS operations

UNHAS provides:

- passenger and light cargo air transport
- capacity for medical and security evacuation
- capacity strengthening for staff, partners and local authorities
- airport and airfield rehabilitation



UNHAS
Humanitarian Air Service

WFP Aviation Service Achievements

UNHAS in numbers

January – November 2023

 **350,000**
passengers transported

 **5,800 MT**
cargo transported

 **66**
aircraft deployed

 **400+**
destinations
(regular + ad hoc)

 **700+**
UNHAS users

 **4,000+**
flight performed
per month

WFP-managed EU Humanitarian Aid flight

Active in **DRC** and **Mali** since 2020.
Operated from 2020 to April 2023 in **Kenya**.

Temporarily activated in 2022/2023 in **Madagascar** for the cyclone response and in 2023 in **Chad** in response to the Sudanese refugee crisis and active in **Burkina Faso** to support the response scale up.

January – November 2023

 **18,000**
passengers transported

 **490 MT**
cargo transported

 **4**
aircraft

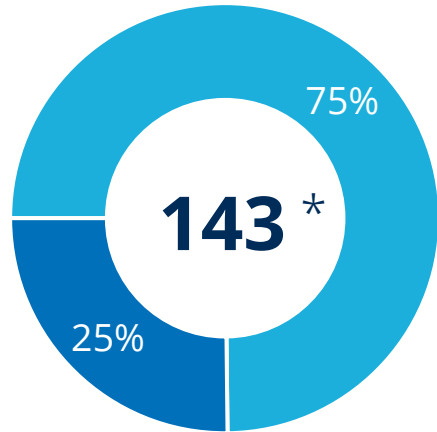
WFP Aviation Environmental and Sustainability programme

Since January 2023, an **Environmental Management System** as a minimum contracting requirement for all chartered air carriers has been enforced.

WFP Aviation environmental priorities

Cabin waste management guidelines
Paperless ticket options test phase
Green energy or ground handling equipment
Provision of basic environmental training to staff

WFP Aviation fleet



107 fixed wing
(LTA + Standby/Ad hoc)



36 helicopters
(LTA + Standby/Ad hoc)

Fixed wing fleet



Airbus
A320



ATR
42-500



Beechcraft
1900



Bombardier
CRJ



Cessna
C208



DHC 8
100/200 series



DHC 8
Q400 series



Dornier
228



Dornier
328



Embraer
135



Embraer
145

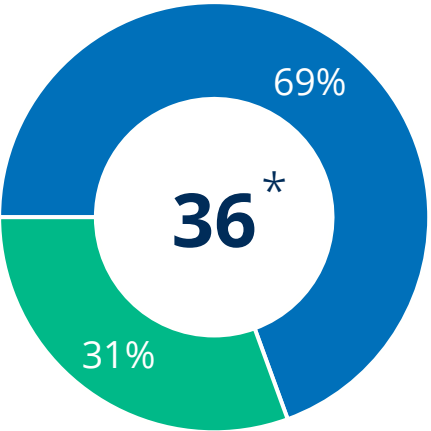


Let 410/420
Turbolet

*as of 29 September 2023

AN-26, Fokker 50 and DHC 5 aircraft are also contracted for cargo operations

Diversification of the fleet



25 helicopters
deployed on LTA



11 helicopters
on Standby/Ad hoc

*as of 29 September 2023

Helicopter fleet



**Airbus
Helicopters
H225**



**Bell
412**



**Boeing-Vertol
234 LR
(Chinook)**



**MBB/
Kawasaki BK**



**Mil
Mi-8**



**Mil
Mi-17**



**Mil
Mi-26**



**Sikorsky
S-61N**

Introduction of a new type
of helicopter in Haiti

Doing business with WFP Aviation

WFP GOODS & SERVICES PROCUREMENT

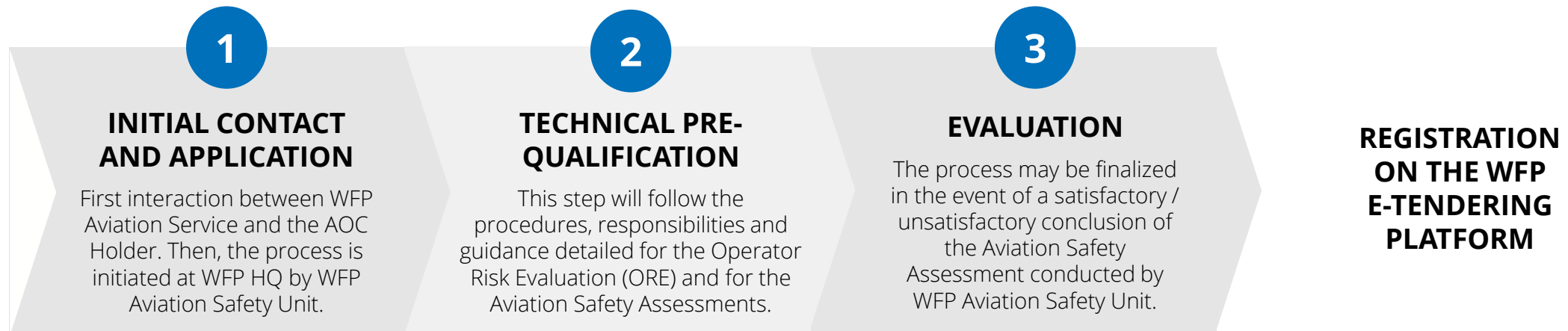
WFP strives to ensure that goods and services are purchased at competitive market prices and delivered in a timely manner. WFP procures goods and services locally, regionally and globally, depending on operational needs.

ROSTER OF SUPPLIERS FOR GOODS & SERVICES

To ensure its quick operational response, WFP maintains extensive lists of registered suppliers grouped in rosters for the wide range of goods and services categories of WFP purchases.

AIR OPERATOR CERTIFICATE (AOC) HOLDER'S REGISTRATION PROCESS

WFP Aviation Service selects an operator of interest (aircraft type, region where it is based, specific capacity and performance, etc) which will be qualified for registration and accepted as a vendor for the organization.



Challenges



ICAO SIGNIFICANT SAFETY CONCERN

Following the ICAO significant safety concern in September 2022, **WFP Aviation Service had to reconfigure its helicopter fleet** in five countries to replace all 16 Russian Federation-registered aircraft, with consequent higher costs for UNHAS operations.



LACK OF AVIATION INFRASTRUCTURES

WFP Aviation Service is looking at opportunities for **sustainable runway rehabilitation** to improve operational sustainability, environmental efficiency, flexibility in assets diversification, have a positive impact on the community and support emergency preparedness.



AVIATION SECURITY CONSTRAINTS

UNHAS prioritizes the management of aviation security risks in all field operations and provides assessments in areas where new air operations are needed, with a view to mitigating risks and putting in place **processes and systems that reduce exposure to security-related incidents.**



CONTINUOUS EVOLVING CONTEXTS OF OPERATIONS

WFP Aviation Service responds to the need for **access to the world's most remote and challenging locations**, often under precarious security conditions and in the event of sudden-onset disasters.

Private sector & technical partnerships

WFP is exploring ways to build solid technical partnerships with the private sector through direct corporate in-kind and/or cash funding.

Potential main areas being assessed include:

- Training in both aviation and non-aviation areas to help strengthen WFP Aviation's capacity – with aviation training including safety, security, norms and regulations, emergency preparedness, airport management, while non-Aviation transversal skills training in problem-solving, conflict resolution, customer service, among others.
- Funding and engineering expertise for infrastructure rehabilitation.
- Technological expertise to test alternative solutions.



WFP Aviation

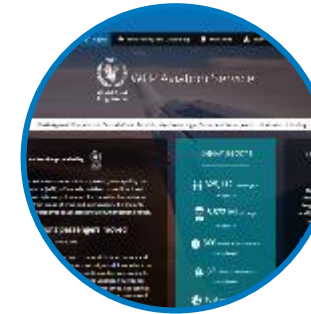
other areas of work



Support to CAA –
National Aviation
industry



Environmental &
sustainability
programme



Digitalization



Infrastructure
rehabilitation



Innovation
Last-mile delivery



Capacity
building



THANK YOU



UNHAS
Humanitarian
Air Service

franklyn.frimpong@wfp.org | Chief of Aviation

oleh.maslyukov@wfp.org | Deputy Chief of Aviation, Operations

karishma.kaur@wfp.org | Deputy Chief of Aviation, Services

Connectivity and Flights Efficiency Plan



Maj Gen (Retired) José Vagner Vital
Business & Innovation Director
SAIPHER ATC



8 December 2023

ANAC- Auditorium
São José dos Campos – Brazil



Saipher ATC
Solutions for Air Traffic and Airports

Airspace Technologies

ATFM – Control TWR - Airports





South America ASC | Essential Airport

Connectivity and Flights Efficiency Plan

Maj Gen (retd) José Vagner Vital - CINO & CBO
vagner.vital@saipher.com.br



SAIPHER

SAIPHER

- Brazilian company. Founded in 1995.
- Located in São José dos Campos – SP.
- Market leader in ATC/ATM solutions based on Flight Progress Electronic Strips
- It manages 99% of the movement of air traffic at airports controlled by Brazil
- Strategic Defense Company in Brazil (EED/PED)
- Certified - NBR ISO 9001:2015
- Certified - NBR ISO 27001:2023

Presença



- 187 Electronic Strips Systems installed (Brazil, Paraguay, and USA)
- The largest worldwide presence of Systems based on electronic strips



Clients



GRU AIRPORT



BH Airport



Socicam



INFRA
FAROL DE SÃO TOMÉ



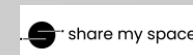
Partners

SITA

THALES

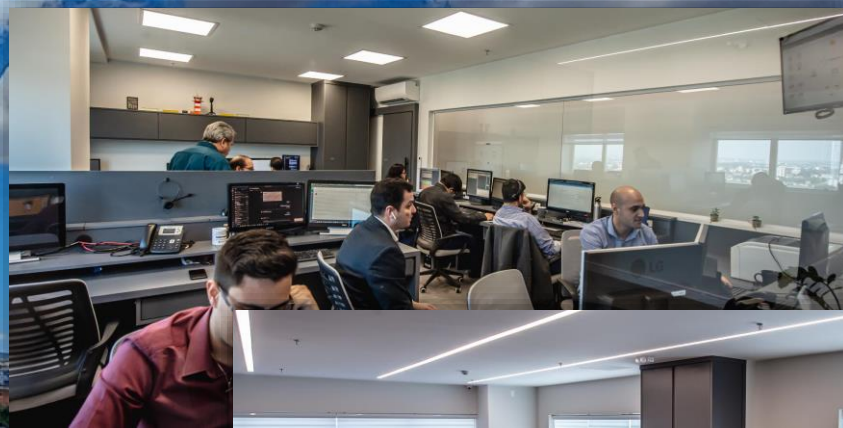


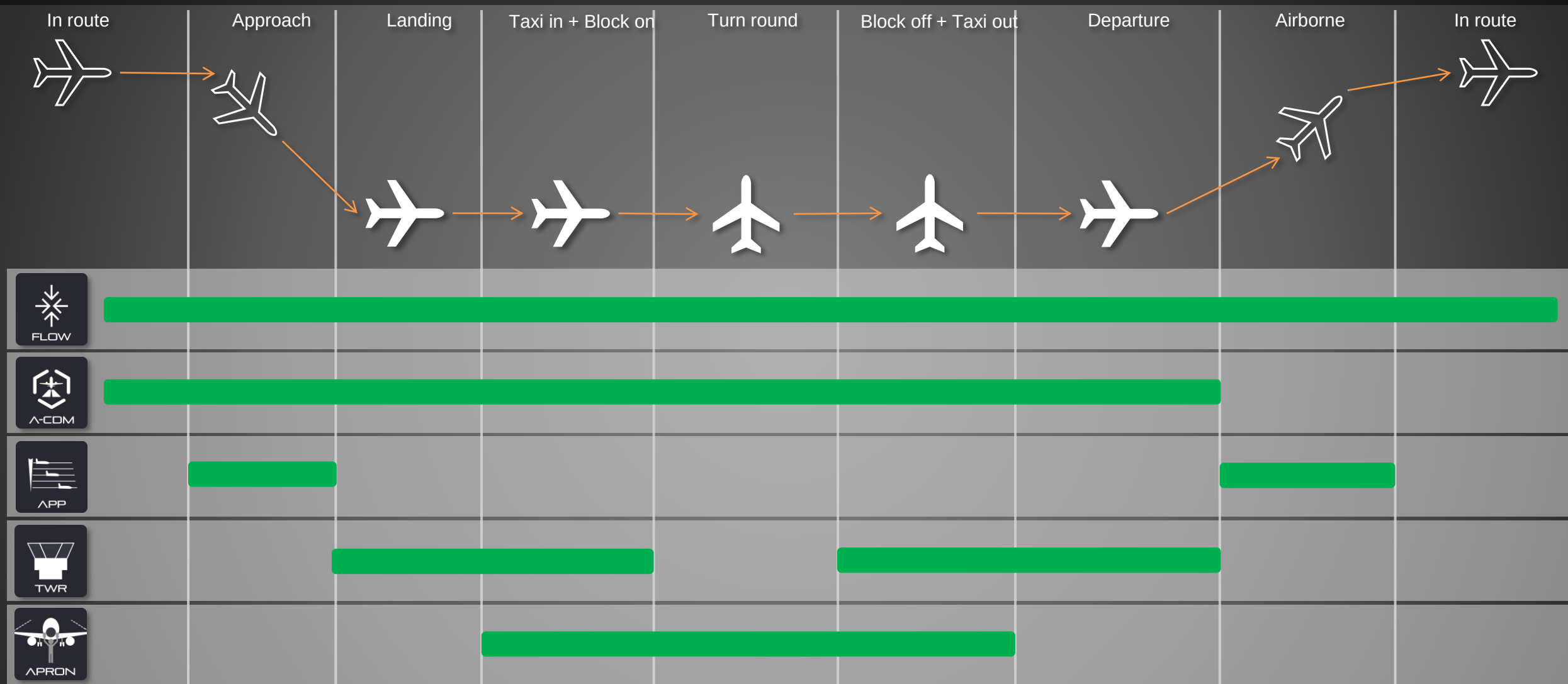
MICRONAV



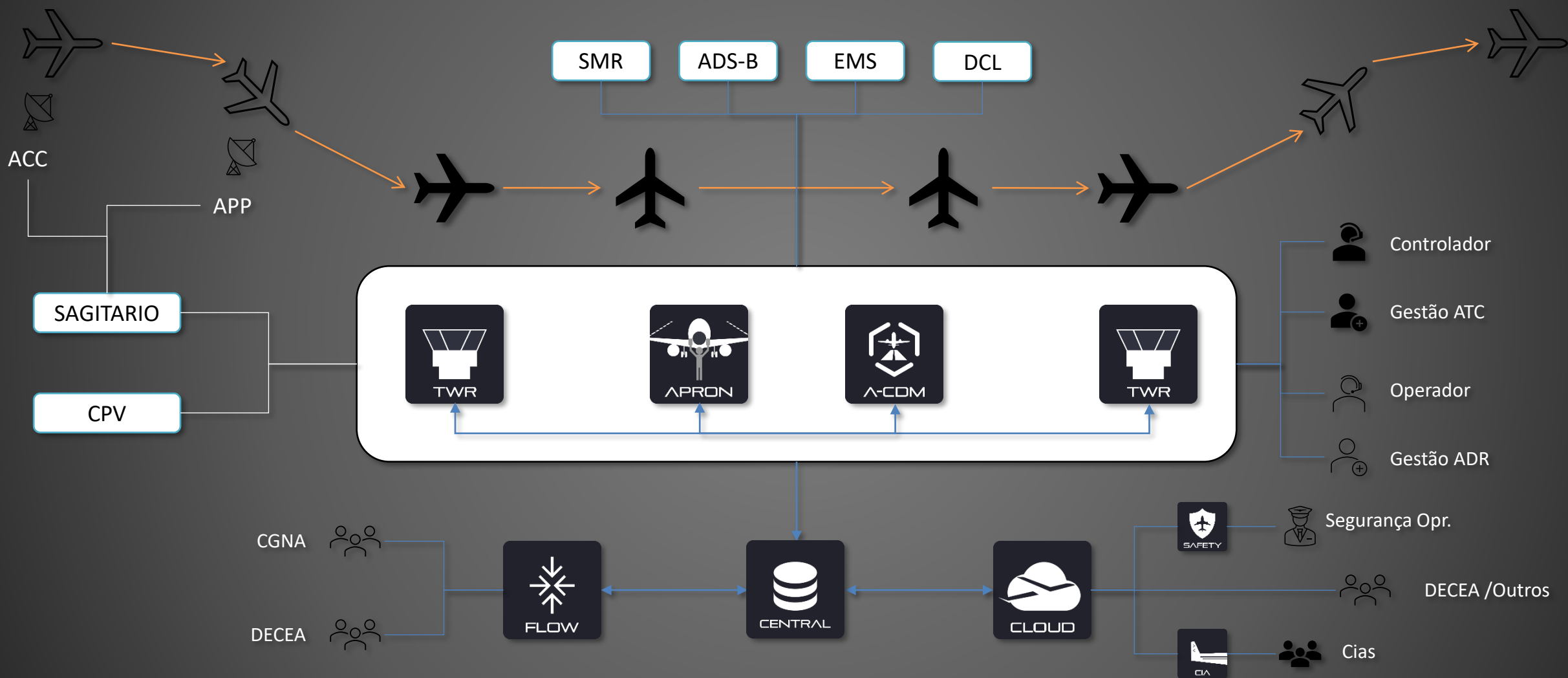
Saipher

Av. São João, 2405, 20º andar
Edifício Helbor Corporate
Jardim das Colinas
São José dos Campos, SP
CEP 12242-000





TATIC - Integration





What makes it possible for private flights or airlines to arrive in small and medium-sized cities?

Even where there is demand, hotels, tourist or economic attractions, adequate infrastructure and technology are needed to attract commercial flights.

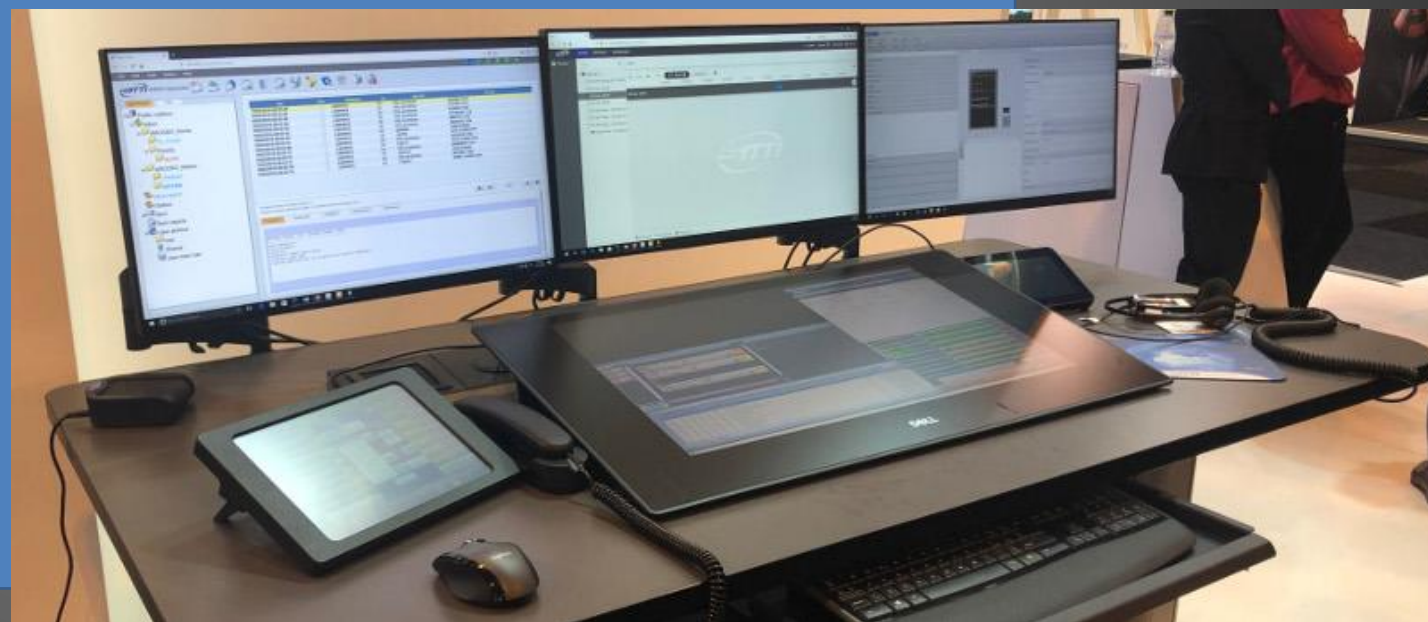
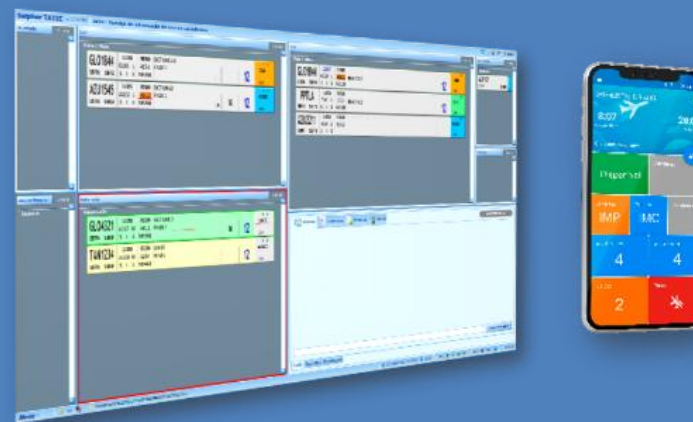


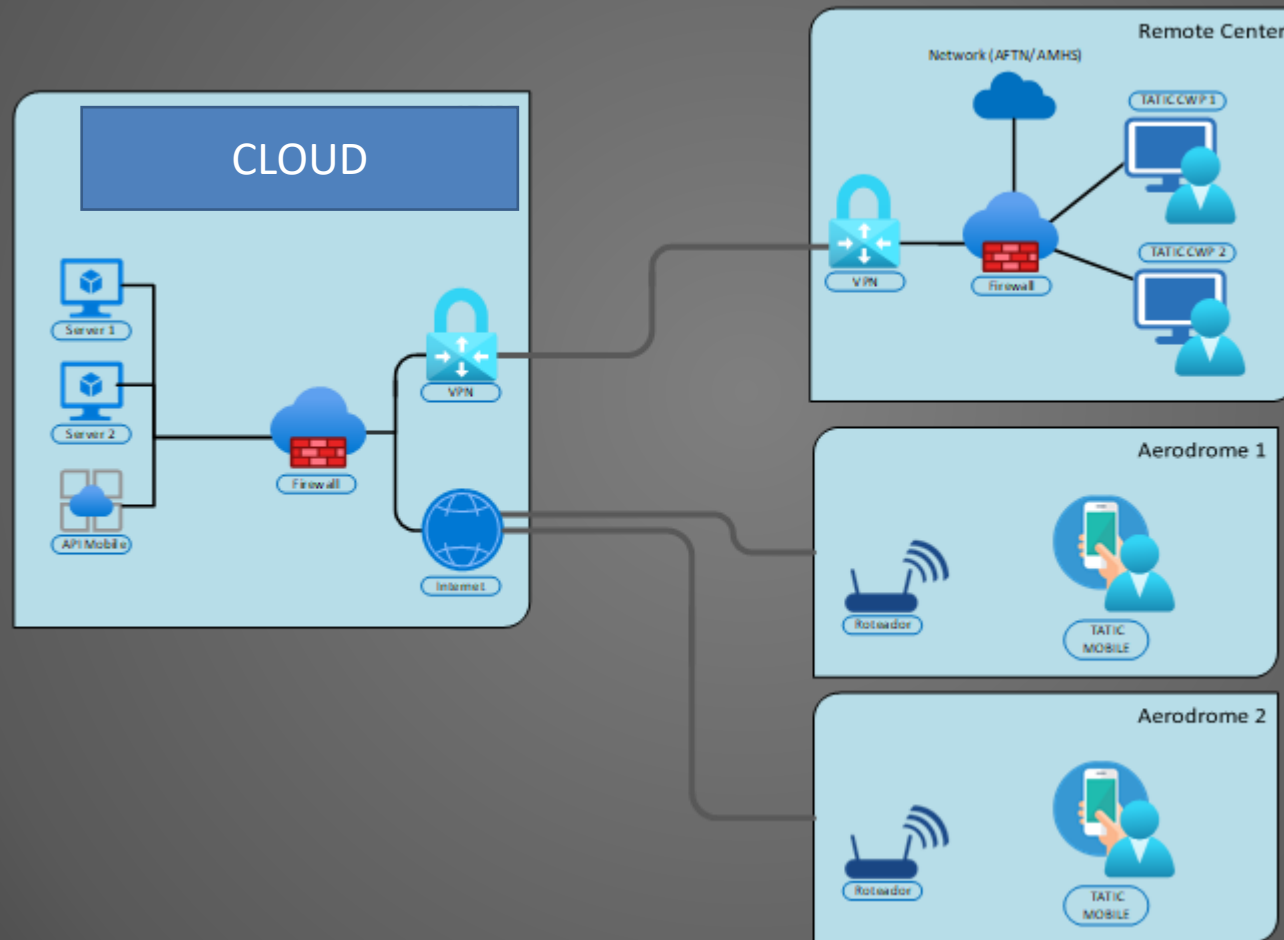
How can we reduce costs, make new revenues viable, achieve an efficient, viable and safe operation for the municipality, the airport, airline operators and, above all, passengers?

Enable runway, terminal, fare management, air navigation technology and meteorology infrastructure for non-visual flights.

R-AFIS on Integrated Screen

- Several airports and a hub
- Low local involvement
- Operating in 10 locations across 4 CINDACTAS
- Components:
 - Electronic Strip SAIPHER
 - EMS-3 SAIPHER
 - VCS (partners)
- Great interaction with the site team with testimonies that the app added value to the interaction between the remote ATCO and the site's field staff.







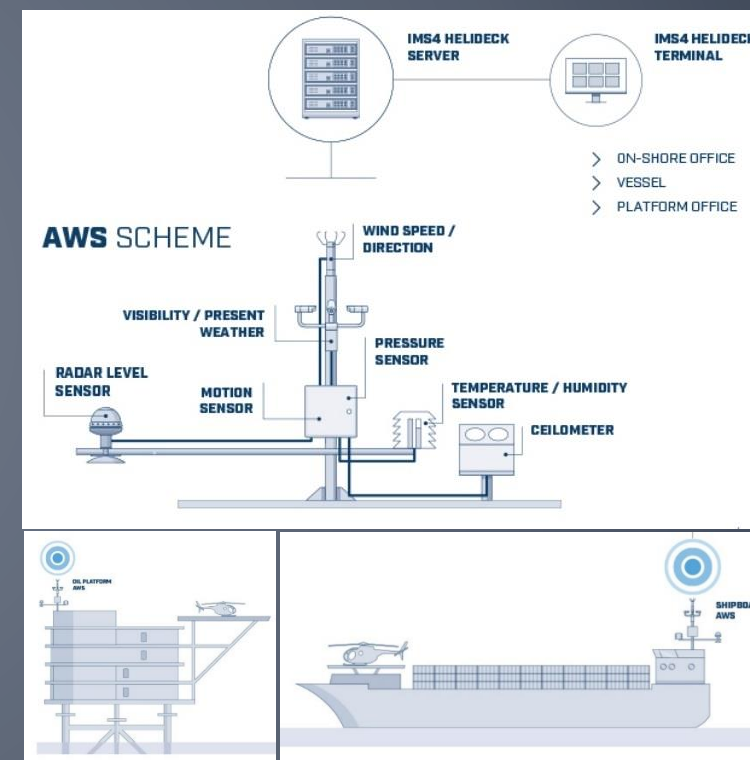
Weather Stations (EMS), with the possibility of using surveillance cameras, battery operation, solar energy and autonomous operation



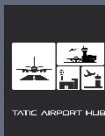
ACIS - Automated Communications and Information System



AWOS – Automated Weather Observation System

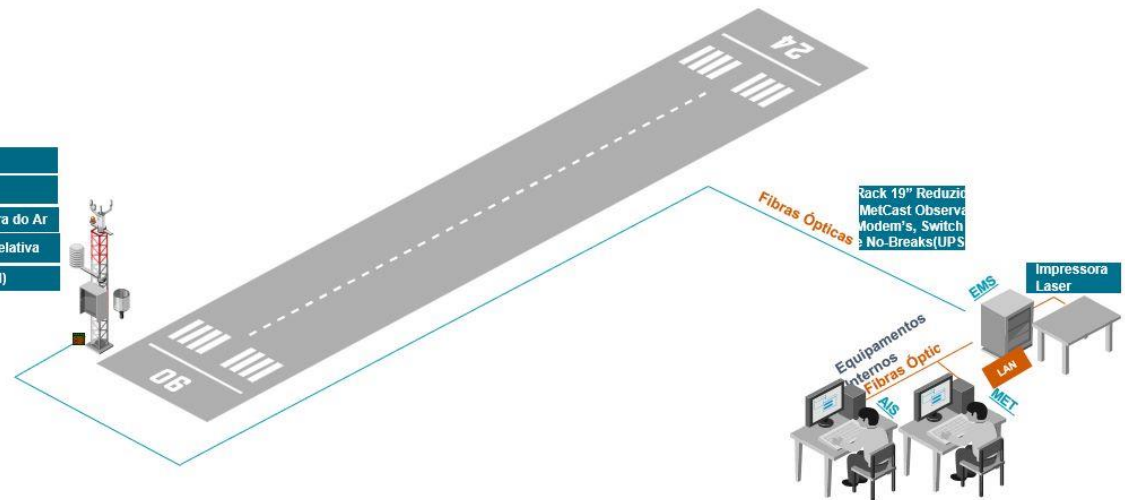


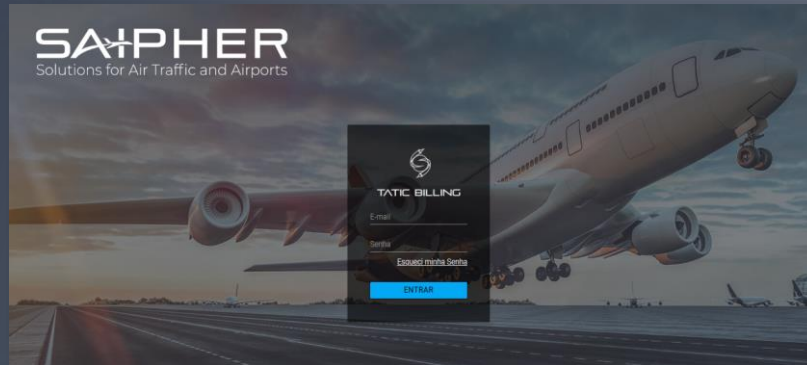
AWOS – Helideck (Heliponto, Plataforma ou Helicopter deck)



EMS -3

- Anemômetro
- Barômetro
- Sensor de Temperatura do Ar
- Sensor de Umidade Relativa
- Pluviômetro (Opcional)

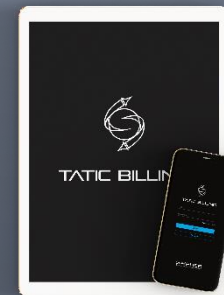
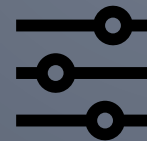
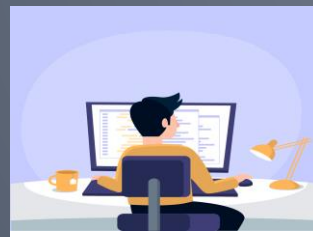




TATIC Billing offers tools for calculating air navigation fees, airport fees and support services.



ANSP



**FÁCIL INTERACCIÓN
INFORMES A PEDIDO
TRANSPARENCIA**



**ADM
AEROPUERTO**

SUCCESS CASE - DECEA

NOTÍCIA DESTAQUE

Vilhena e Oiapoque têm serviços remotos de informações de voos homologados em Manaus

A medida segue a diretriz de reestruturação da Força Aérea Brasileira (FAB) na área de serviço remoto de tráfego aéreo e cumpre, ainda, uma decisão do Departamento de Controle do Espaço Aéreo (DECEA) quanto ao emprego da atividade remota do Serviço de Informação de Voo (AFIS)

publicado: 05/04/2018



SUCCESS CASE - DECEA



Rede de aeroportos VOA-SP exhibe projeto de informações e serviços aeronáuticos

Com o slogan “o futuro começa aqui”, empresa explica que usuários do Aeroporto Campo dos Amarais, em Campinas, poderão contar com auxílio de Central R-AFIS instalada em Jundiaí.



Cel. Marcel Moure, CEO da rede de Aeroportos VOA-SP, explicando sobre o conceito do sistema Central R-AFIS no Aeroporto de Jundiaí. — Foto: VANDER FILHO.

A rede está presente nos aeroportos de:

Ribeirão Preto;

Franca;

São Carlos;

Araraquara;

Bauru-Arealva;

Marília;

São Manoel;

Avaré-Andu;

Sorocaba;

Campinas;

Registro;

Itanhaém;

Jundiaí;

Bragança Paulista;

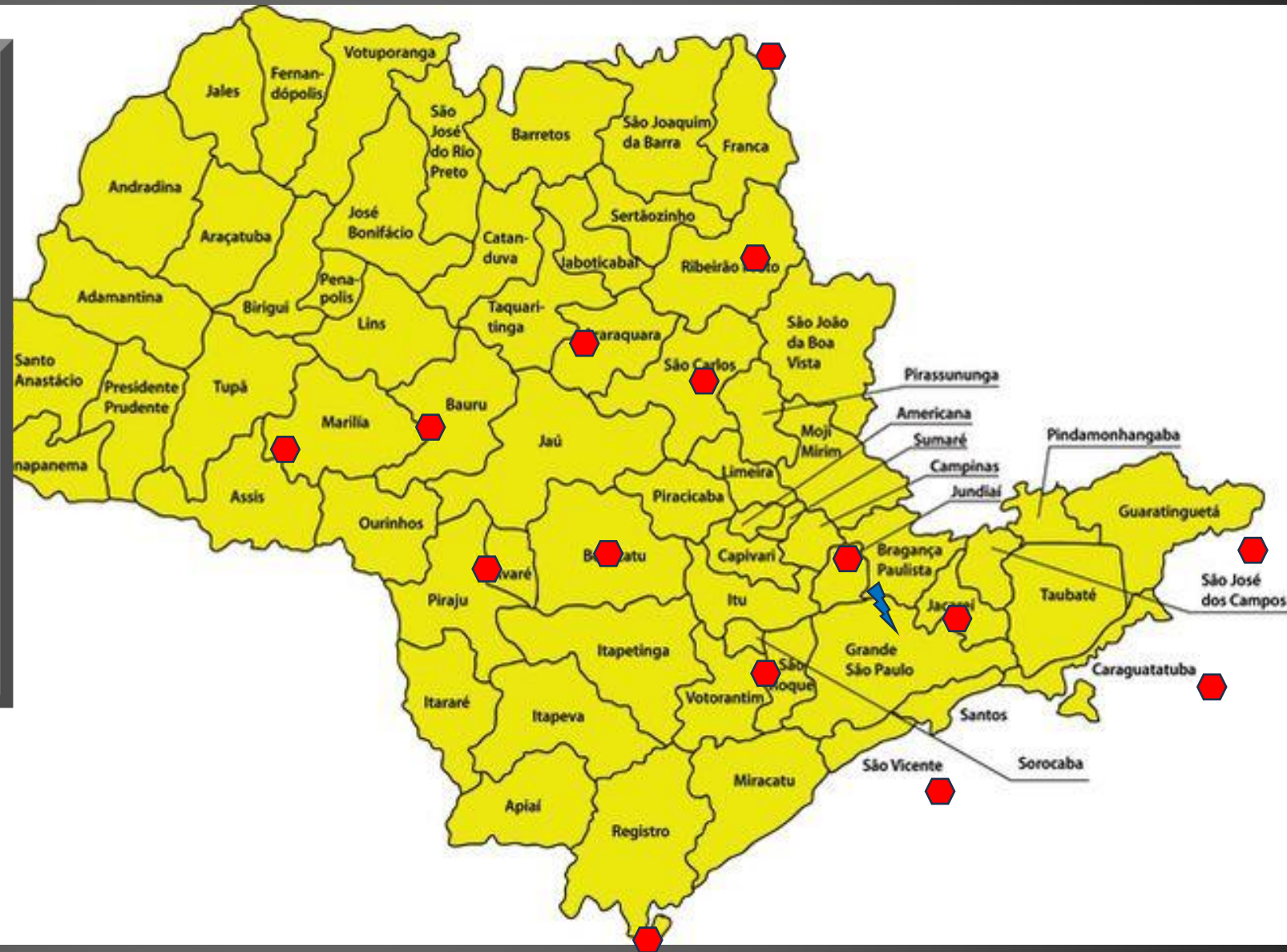
Ubatuba; e

Guaratinguetá.

Target

- 67% reduction in operating costs.
- Increased revenue with increased flight availability and increased tourism in the region.
- Better weather forecast, bringing more security.

Obs: This technology can be used by cooperatives in municipalities benefiting from a regional or sub-regional airport. This helps to make commercial flights viable and increase revenue collection with the movement of the local economy.



Antes da Central de R-AFIS: **75 operadores**

Após a implantação da Central de R-AFIS: **25 operadores**

Maior segurança e controle da operação;

Redução de custos operacionais;

Possibilidade de aumentar a arrecadação com ampliação da oferta de voos, incrementando o turismo na região;

Possibilidade de melhorar a previsão meteorológica;

Possibilidade de redução de custos com a criação de uma cooperativa de municípios.





saipherATC



saipher



saipher



saipher-atc

Obrigado!

Maj Gen (retd) José Vagner Vital - CINO & CBO
vagner.vital@saipher.com.br

Use of applied AI in airport irregular operations management



Fernando Zimmermann

NETVIBES-EXALEAD at Dassault Systèmes



8 December 2023

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São José dos Campos – Brazil





3DEXPERIENCE®

DASSAULT SYSTÈMES A&D

USAGE OF APPLIED AI IN AIRPORT IRREGULAR
OPERATIONS MANAGEMENT

DS DASSAULT
SYSTEMES | The 3DEXPERIENCE® Company



FERNANDO ZIMMERMANN LEITE

Father of two girls, weekend cooker, philosophy and technology enthusiast, I have +30 years of professional experience implementing innovative technologies to sustain complex businesses and support companies on their transformation journey. I am an advanced supply chain planning consultant for capital-intensive companies at Dassault Systèmes® and responsible for segments such as mining, metals (steel and aluminum), rail (passenger, cargo), ports and aerospace (airlines and airports)



TABLE OF CONTENTS

Introduction

WHO is Dassault Systèmes

Introduction to Ground Operations Planning

Demonstration

Conclusion

Q&A

DASSAULT SYSTEMES: THE 3DEXPERIENCE COMPANY

24,500 PASSIONATE PEOPLE

140 nationalities / 195 sites
One global R&D / 69 labs

+310,000 CUSTOMERS

11 industries in 140 countries,
25 million Users
Game-changing
3DEXPERIENCE platform

LONG-TERM DRIVEN

Majority shareholder control
Revenue: €5.6 billion
*Figures as of FY 2022

+17,000 PARTNERS

Software, Technology & Architecture, Content & Online
Services, Sales, Consulting & System Integrators,
Education, Research

SUSTAINABILITY AWARDS



Forbes

WORLD'S TOP 50
BEST EMPLOYERS
(#19, 2021)

CDP
DISCLOSURE INSIGHT ACTION

CARBON DISCLOSURE
PROJECT A- SUPPLIER
ENGAGEMENT RATING
(2021)

S&P Global

ENTERED DOW JONES
SUSTAINABILITY INDEX:
#5 IN SOFTWARE SECTOR
(2021)

DASSAULT SYSTEMES | The **3DEXPERIENCE** Company

UNIVERSE OF EXPERIENCES

With a consistent Software
as a Service **Operator**
Enabling a **Unified Cyber
Governance**



Dedicated Cloud
Confined Collaboration

Sovereign Cloud
Trusted Collaboration

International Cloud
Secured Collaboration

Platform
to connect people,
ideas, and data



3DEXPERIENCE®

**Software
as a Service**

Industry Solution Experiences



Industry Process Experiences

Roles & apps



**Experience
as a Service**

Business Experiences

Content
Services
Partners

VIRTUAL TWIN EXPERIENCE

AUGMENTED WITH REAL WORLD DATA



ENHANCE AIRPORT ENGINEERING AND
OPERATIONS VIRTUALLY FOR REAL OUTCOMES

THE 3DEXPERIENCE AIRPORT TWIN



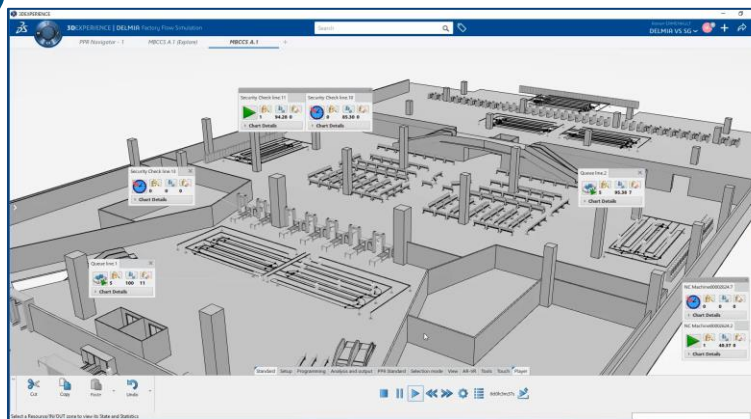
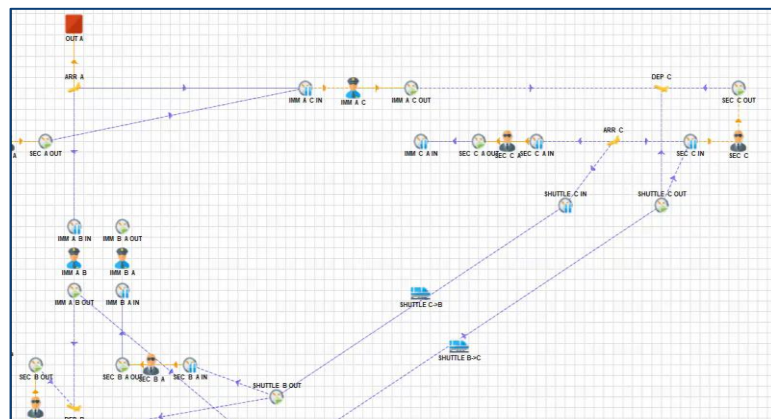
System of Systems
modelling



Airport Behavior
Simulation



Airport Experience



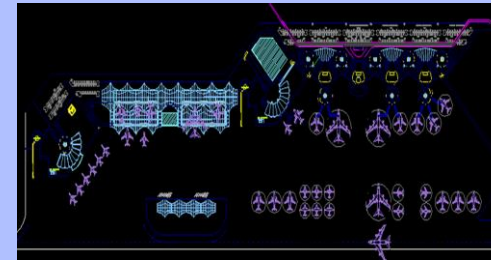
3DEXPERIENCE refers to the capacity to “**Experience**” the airport in a virtual world leveraging modelling and simulation technologies. The **3DEXPERIENCE** platform enables the entire lifecycle of the digital airport, so called “**3DEXPERIENCE Airport Twin**”.

AIRPORT EXPERIENCE VALUE INNOVATION SPIRAL

Real

SALES and MARKETING Airport Marketing

Retail & Shopping Experience, Passenger Experience, Employee Experience, Airport Services



OWNERSHIP

Airport Operations and Maintenance

*Manage all operations of Airport Facilities and Services.
Situational awareness, What-if scenarios
Analytics, Predictive Analysis, Operations*

CONSTRUCTION Airport Construction

and execute construction, procurement and logistics



DESIGN and ENGINEERING

*Detailed design of different facilities, spaces, networks and utilities
Multiphysics Simulation under various conditions, what-if analysis, Systems Engineering*

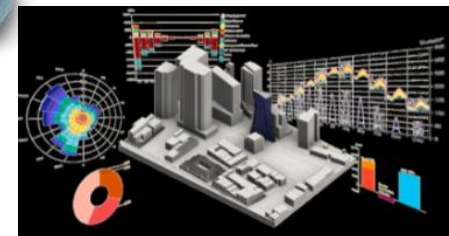


Common Referential – 3D, Systems, Data and Collaborative Business Platform



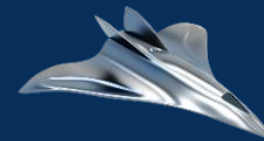
UPSTREAM THINKING

*Ideation of the Airport, Requirements
Master Planning – Facilities and Services
Communications, Permits, Approvals
Security Planning,*



Virtual

WORKFORCE PLANNER at Southwest Airlines USA



Southwest is one of the major airlines of the United States and the world's largest low-cost carrier. It is headquartered in Dallas, Texas and has scheduled service to 121 destinations in the United States and 10 additional countries.

DELMIA Quintiq Offer Workforce Planner

DELMIA Quintiq Users

- >10,000 Ramp Agents
- >4,500 CS agents
- >2,200 Ops agents
- >1,100 Provisioning Agents

Customer Since 2013

Challenge

- **Low degree of automation** and standardization through Excel-based operations.
- Growing **complexity** of operations
- **Disproportionate headcount** across all locations
- No challenge mechanism based on data

"We actually realized inherent value from the tool of things we never imagined in the business case."

Bryan Sharkey
Director of Ground Ops Planning,
Southwest Airlines

DELMIA Quintiq Benefits

- **Improved fit** between demand and shift coverage
- Ability to **simulate impact of decisions** (for example new tech, new equipment, "what if" scenario modelling)
- All constraints and rules accurately modeled
- **Productivity gain** with fair and equitable solutions

DELMIA Quintiq Capabilities

- **Single source of truth** and transparency
- Used in planning headcount and hours in over 86 cities and 21,000 employees
- Used to plan and build annual budget
- Ability to **consume tremendous amounts of standards** that are **highly configurable**
- Ability to **change underlying standards quickly**
- **Configurable dashboard** views with our key productivity metrics



3DEXPERIENCE

DELMIA at

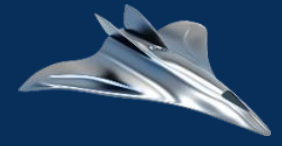
Copenhagen Airports CPH

Having a solution that modeled CPH's unique requirements and constraints gave the airport the assurance of a system that truly fit their operations.

DELMIA

DASSAULT
SYSTEMES

WORKFORCE PLANNER at Copenhagen Airports Denmark



Copenhagen Airport is the main international airport serving Copenhagen, Denmark.

The airport handles over 70 scheduled airlines and serves over 70,000 passengers per day.

It has a maximum capacity of 83 loadings per hour and room for 108 airplanes.

Operational staff planned

1,700

DELMIA Quintiq Offer

Workforce Planner

Customer Since

2013

Challenge

- Sought a resource management system with **common technology platform** for 11 departments
- Support the 11 departments which had **different needs and planning rules**

“Using multiple systems to roster staff in 11 departments and plan their assignments was a very complex process. We chose DELMIA Quintiq’s application as it offers greater visibility and flexibility for handling real-time events, particularly with its mobile application.”

Kristian Durhuus
COO, Copenhagen Airports

DELMIA Quintiq Benefits

- **Increased efficiency**
- **Enhanced customer satisfaction**
- **Improved employee satisfaction** through better management of shift swaps and preferences
- **Compliance with all labor laws and union rules**
- Enables a real-time planning environment for plan accuracy

DELMIA Quintiq Capabilities

- **Integrated workforce planning system** – DELMIA Quintiq Workforce Planner for 11 departments
- DELMIA Quintiq solution was **flexible** enough for a single process across CPH
- Can be **configured** to meet the **specific rules** associated with Denmark’s labor regulations as well as union agreements for each department



3DEXPERIENCE®

DELMIA at *FINNAIR*

“

Not only has the amount of manual work we do been reduced, but we're now able to optimize our processes and end up with better results.



Tiina Lahti

Head of Ground Resource Planning, Finnair

“

DELMIA Quintiq successfully demonstrated how a single system can manage the planning challenges of different departments.



Jaakko Schildt

COO, Finnair

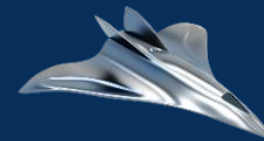
Finnair has configured the DELMIA Quintiq solution to support it's ground operations workforce.



© Dassault Systèmes | Confidential Information | ref.: 3DS_Document_2021

WORKFORCE PLANNING at Finnair

Finland



Finnair flies between Asia, Europe and North America. It's extensive network connects 19 cities in Asia and 7 cities in North America with over 100 destinations in Europe.

Founded in 1923, Finnair is one of the oldest continuously operating airlines in the world.

DELMIA Quintiq Offer

Workforce Planning

Challenge

- Finnair needed a powerful workforce planning solution to manage the **complexity of rostering** hundreds of employees in maintenance, passenger services, cargo handling and catering
- The solution had to be capable of producing efficient schedules, ensuring **compliance with working time regulations, labor laws and individual characteristic** such as skills, shift preferences and vacation leave

DELMIA Quintiq Benefits

- Finnair partnered with and uses the DELMIA Quintiq solution to plan its ground operations workforce
- The **centralized system** provides all the functionality required by the company to handle the planning challenges of different departments, generating rosters that factor in all unique scheduling constraints

DELMIA Quintiq Capabilities

- With its modern planning system, Finnair can optimize its workforce and run leaner, smoother and more **cost efficient** operations
- Finnair planners now use a **single solution** to manage employee schedules across all departments, ensuring everything **complies with all labor** agreements and regulations
- Backed by powerful insights, they can plan ahead strategically and make truly informed decisions

External Use: 2021 [Customer Case Study](#)

WHY DASSAULT SYSTEMES?

Dassault Systemes is a global leader in providing planning & optimization solutions to the aviation industry. Our customers benefit from integrated planning across disciplines and planning horizons, and use our solutions to achieve business benefits, improve passenger service and increase employee satisfaction

America



Europe



Asia



Middle east



Australia



Categories	
	Airframes
	OEMs
	Airlines (Ground Ops, Catering, Cargo...)
	Air Traffic Control
	MROs
	Airport

* = crew planning



what are
irreops?

Fines and penalties:

Violations of aviation regulations can result in significant fines imposed by regulatory authorities, whether for safety issues, scheduling, or other non-compliance with established standards.

Correction costs:

Addressing issues arising from irregular operations can involve additional costs, whether for repairing infrastructure damage, adjusting security procedures, or making investments to comply with regulations.

Loss of revenue:

Disruption of regular operations due to irregularities can lead to a loss of revenue, such as landing fees, passenger fees, and commercial revenues, impacting the airport's earnings.

Additional operational costs:

Maintaining irregular operations may demand extra resources in terms of staff, overtime, equipment, or other unforeseen operational costs.

Reputation damage:

The trust and reputation of the airport can be harmed, resulting in the loss of customers and future business opportunities, affecting long-term profitability.

Legal costs:

Involvement in litigation, legal expenses, and lawyer fees may arise due to disputes or legal consequences of irregular operations.

Ever increasing sources of shocks impacting the execution of the planned schedule



Extreme weather



Climate change



Natural disasters



Pandemic



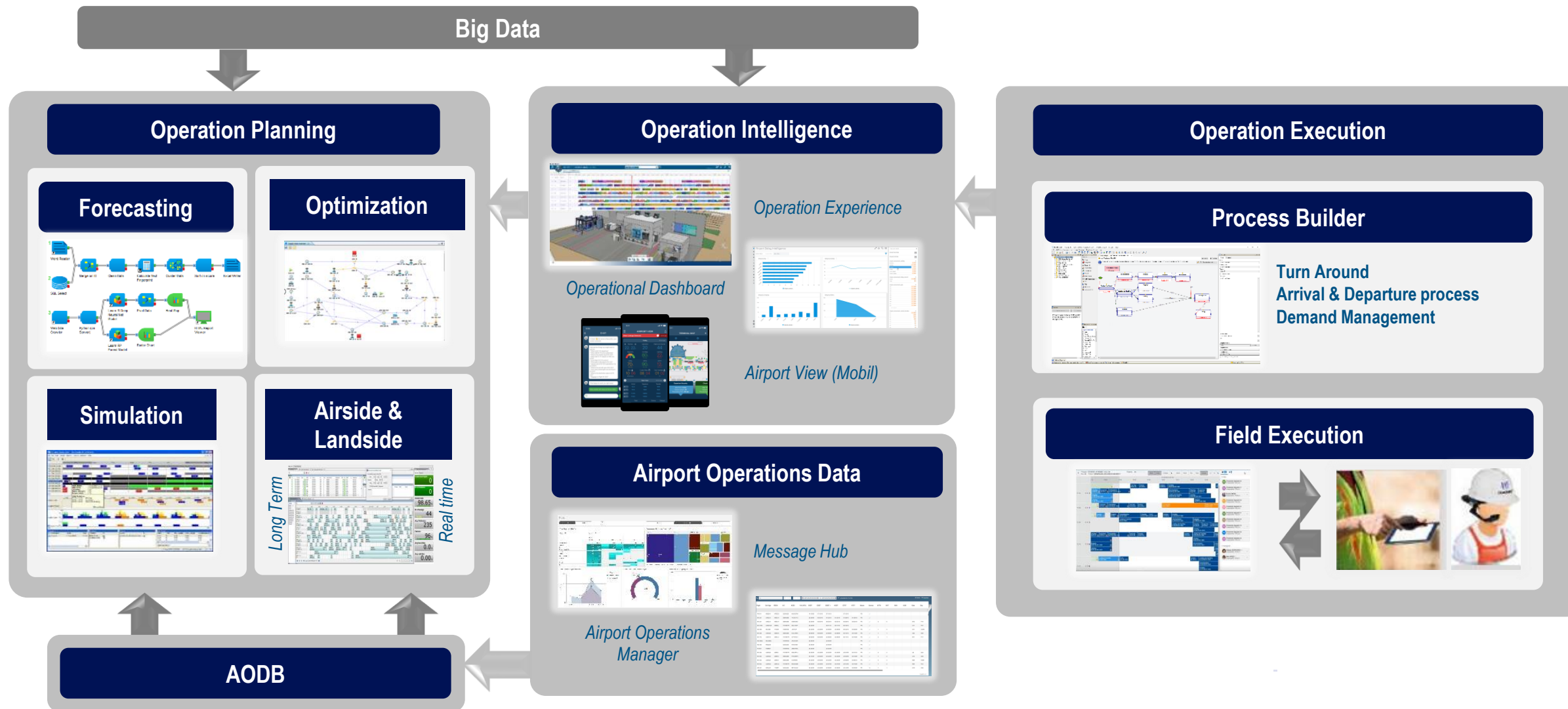
Political turmoil

In irregular operations,
operating costs increase
between US\$ 100 and US\$ 120
per minute

are there tools available to
help us deal with irreops



IN WHICH DOMAINS AI IS APPLICABLE?





AIRPORT EXPERIENCE

Industry Process Experiences (IPE)

-30% Maintenance Cost

Maintenance Operations & Inspection

Keep Airport Functioning

Preventive Maintenance Analytics

Maintenance Work Order Management

Airport Facility Intelligence

Airport Operation Control

3

+10% Passenger satisfaction

Passenger return on Experience

Validate Passenger Experience

Airport Marketing Experience

Passenger Return on Experience

2

-20% Operation Cost

Operation Platform

Optimize Airport resources

Airport Resource Planning

Airport Ground Operation Planning

Air Traffic Control Planning

Airport Demand Forecasting

Airport Operation Control

4

-20% Design Cost

Collaborative Design Environment

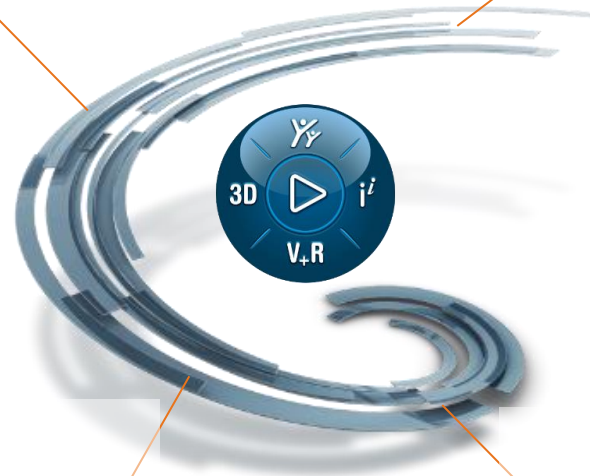
Improve the real

Airport Collaborative Design 3D Validation

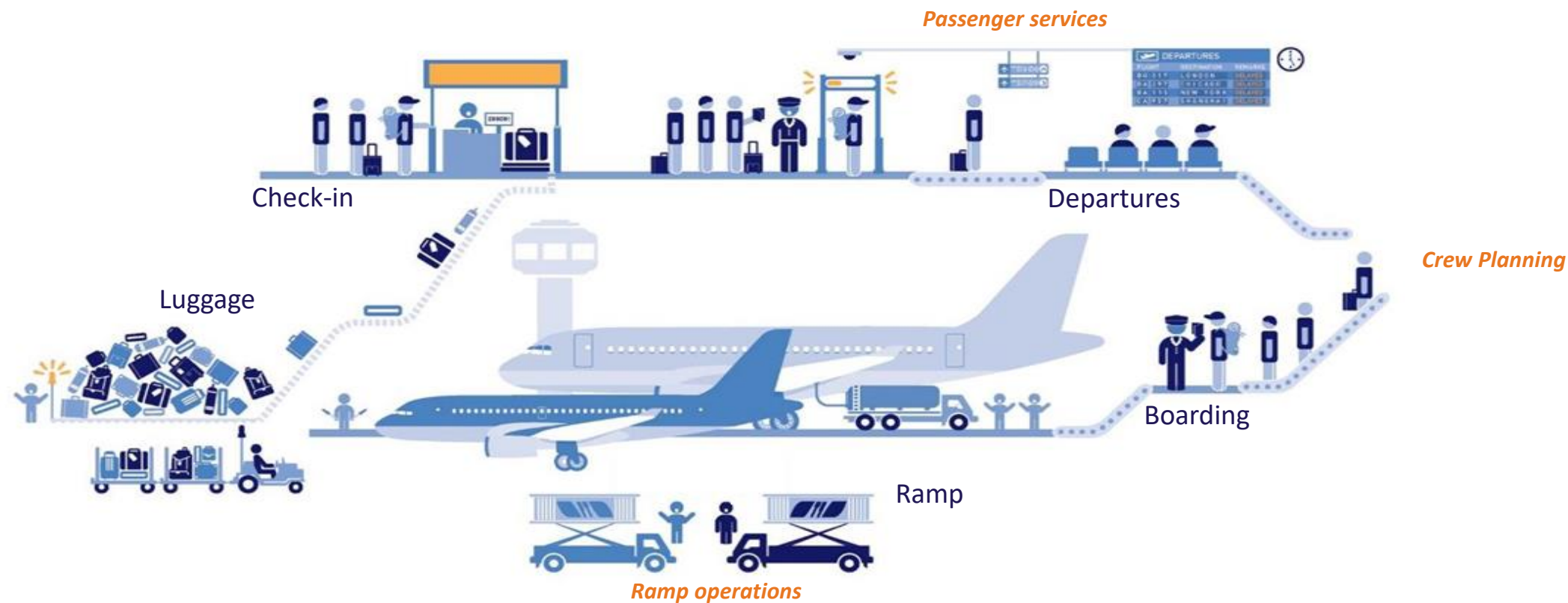
Airport Sustainable Engineering

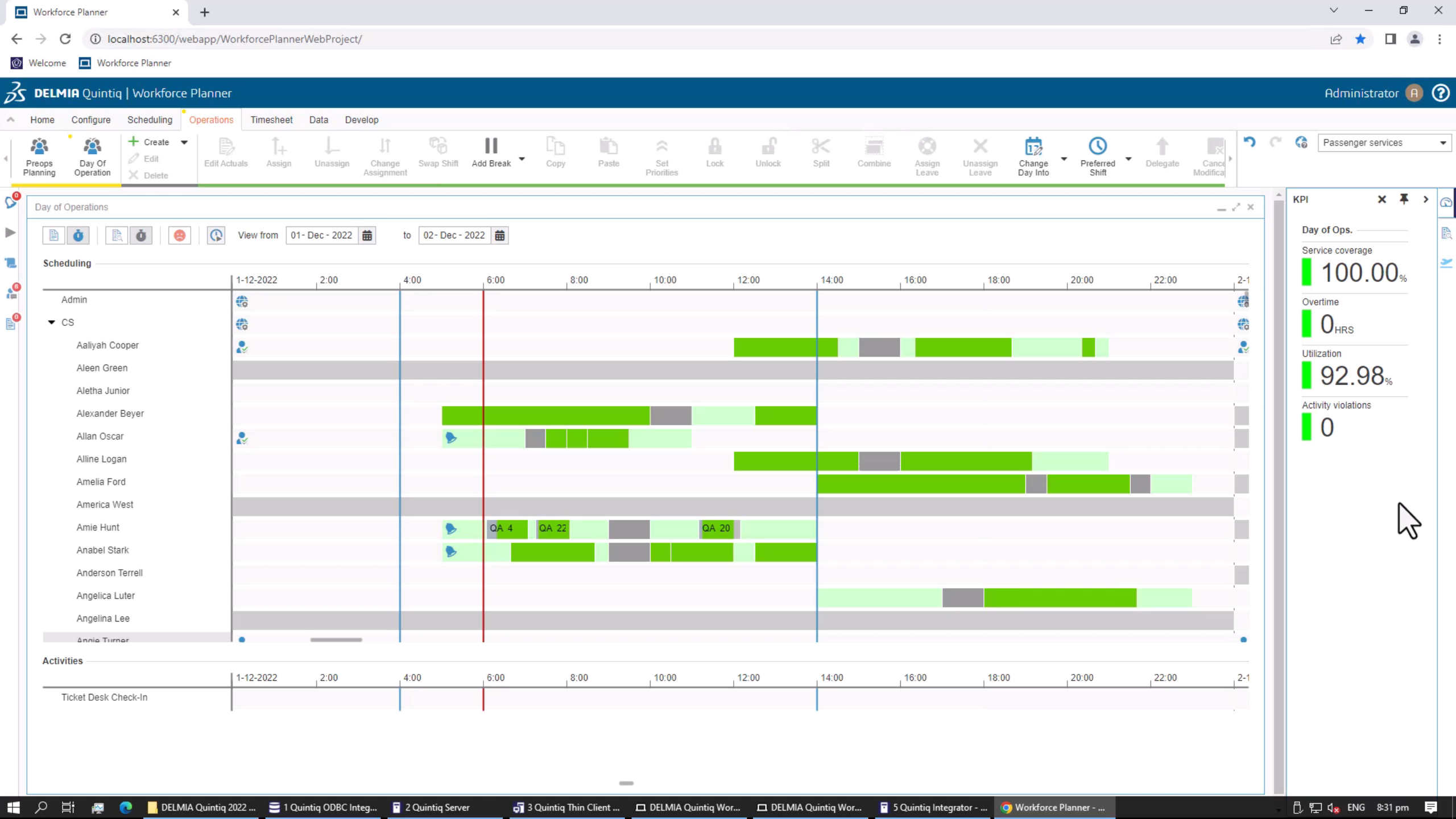
Airport Master Plan

1



AIRPORT GROUND OPERATIONS





Business Value: Disruption Management

Southwest Airlines used a Dassault Systemes solution to manage the enormous disruption caused by the 737 MAX groundings and the current COVID crisis.

Business as Usual

Headcount plans were made 6-7 times per year to align with flight schedules

737 MAX Groundings

Headcount plans were executed 30 times per year

COVID

19 headcount plans were ran in 1 day

What used to take 2 weeks, now takes 3 days with Dassault Systemes capability

HANDLING CRISIS LEVERAGING OPTIMIZATION

Without DELMIA Quintiq, our 2019 would have been incredibly more challenging

LOCAL

Southwest Airlines delays MAX return until June

The earliest date Southwest will bring back the MAX airplane now is June 6.

Author: Ryan Wood

Published: 10:34 AM CST January 16, 2020

Updated: 10:34 AM CST January 16, 2020

DALLAS — Southwest Airlines is warning passengers that flight disruptions due to the grounding of Boeing's 737 MAX airplane will last until June.

The Dallas-based carrier announced Thursday that it extended the removal of MAX flights from its daily

Southwest Airlines Reports 47th Consecutive Year Of Profitability

By Southwest Airlines Co. Jan 23, 2020 Updated 12 min ago



Southwest

- In a normal year, our planners would have optimized 6-8 base schedules for cost.
- In 2019, we optimized and ran scenarios over 20-30 different times with the MAX Groundings!!
- All possible by the tools & processes employed by Quintiq and our Workforce Planning teams.

HANDLING CRISIS LEVERAGING OPTIMIZATION

DELMIA Quintiq leveraged to help with planning during the COVID-19 crisis



- Southwest Airlines announced the Southwest Promise in May. This promise includes a commitment to cleanliness and policies around safety in relation to COVID 19.

- Our Quintiq workforce planner software was used to model the requirements of headcount and hours on conducting turn cleans to better determine needs by station and process.

- Over 20,000 Employees at Southwest Airlines have signed up for unpaid time off.

- Our Quintiq workforce planner software was used to model multiple scenarios of headcount and labor needs to determine the range and spectrum of time off programs offered.





CRM Role in Improving the Coordination in Disaster Response



Fernando Colatuono

General Aviation



8 December 2023

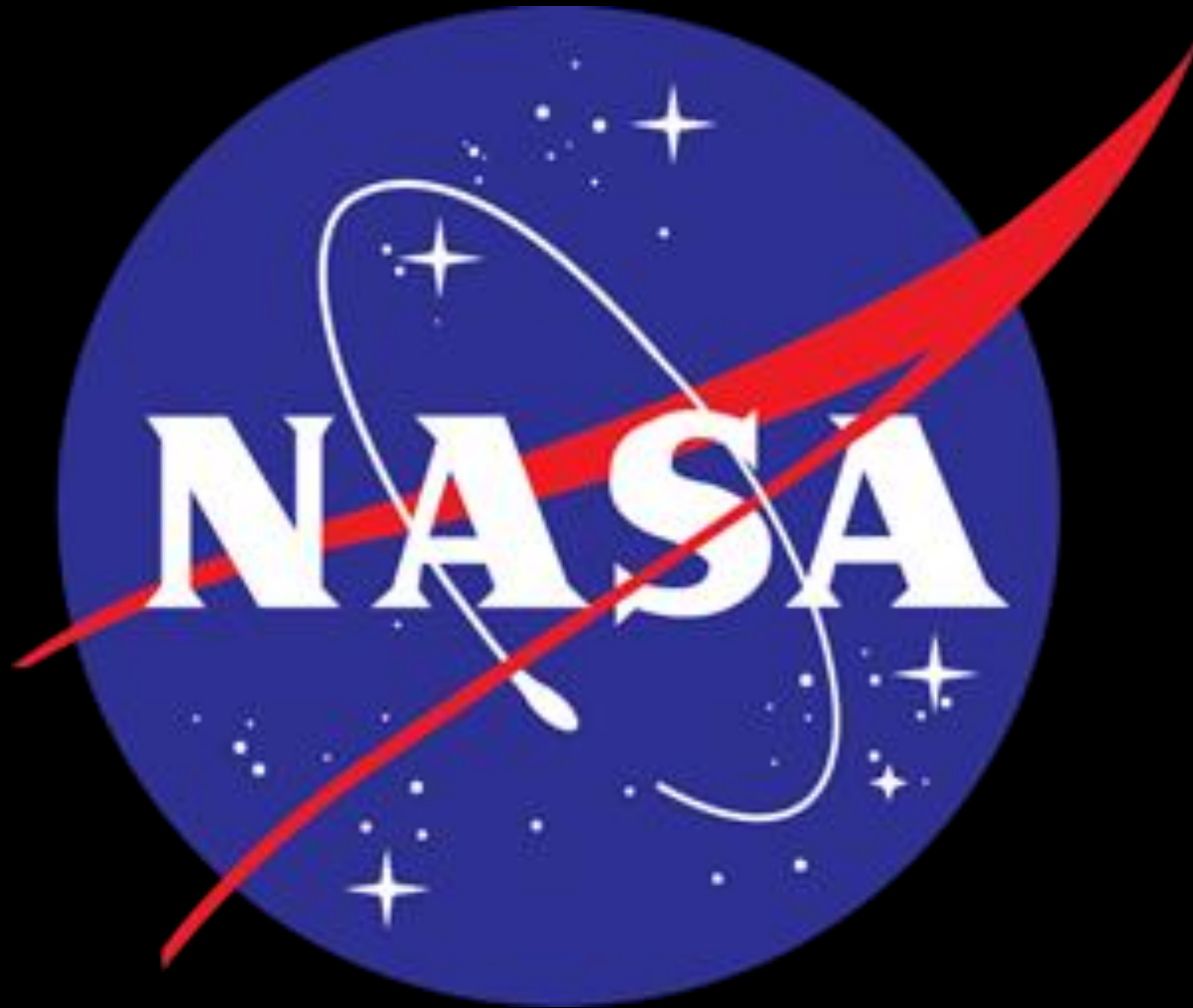
ANAC- Auditorium
São José dos Campos – Brazil





How can we be better
prepared for disasters?





Resource Management
on the Flight Deck

(ICAO)



1979

Workshop NASA
Interpersonal Relationship
Communication
Leadership
Decision Making



CRM

... the effective use of all available resources: human resources, hardware, and information to achieve safe and efficient operation. .

(ICAO, 1998)



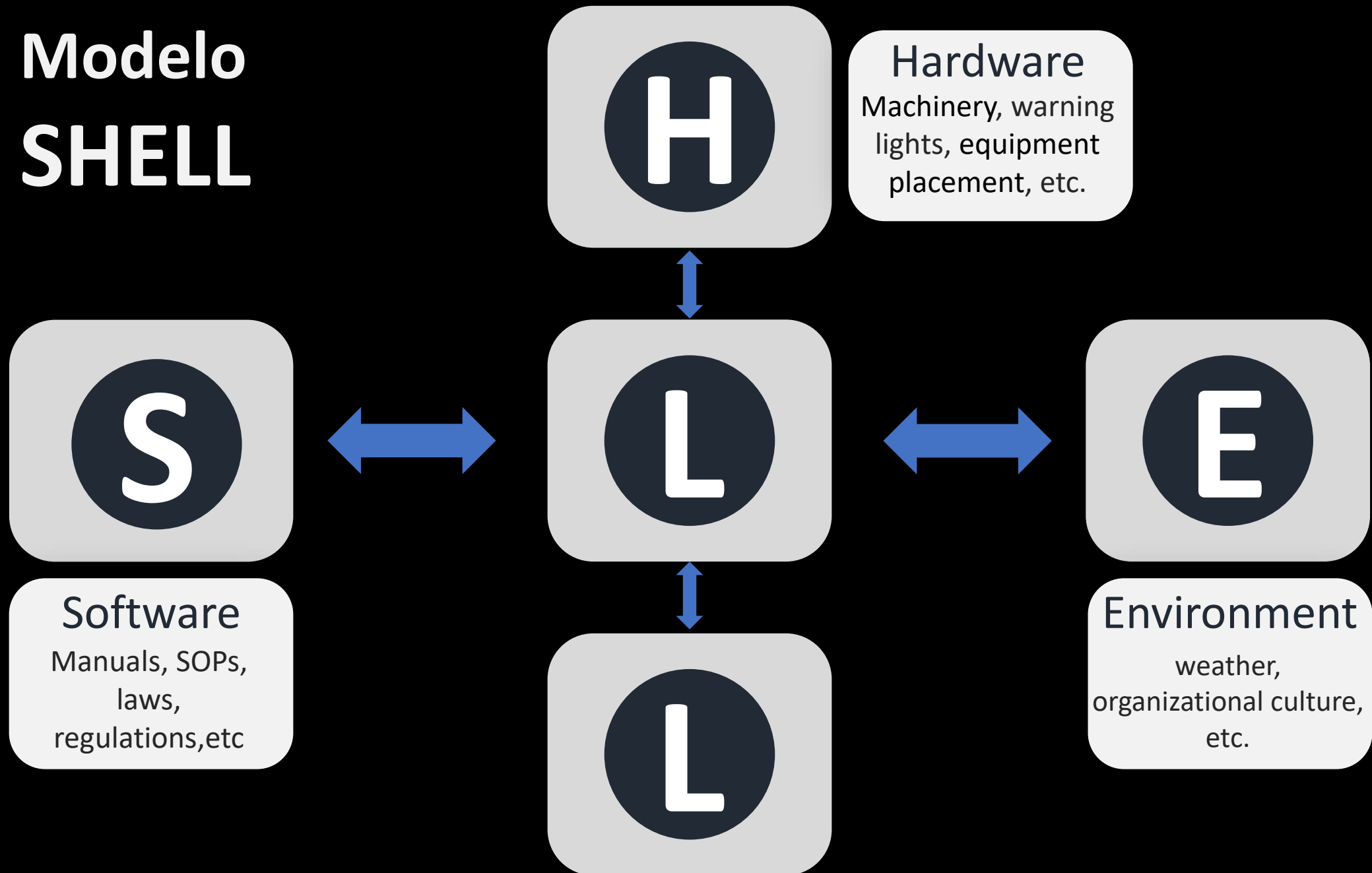
CRM

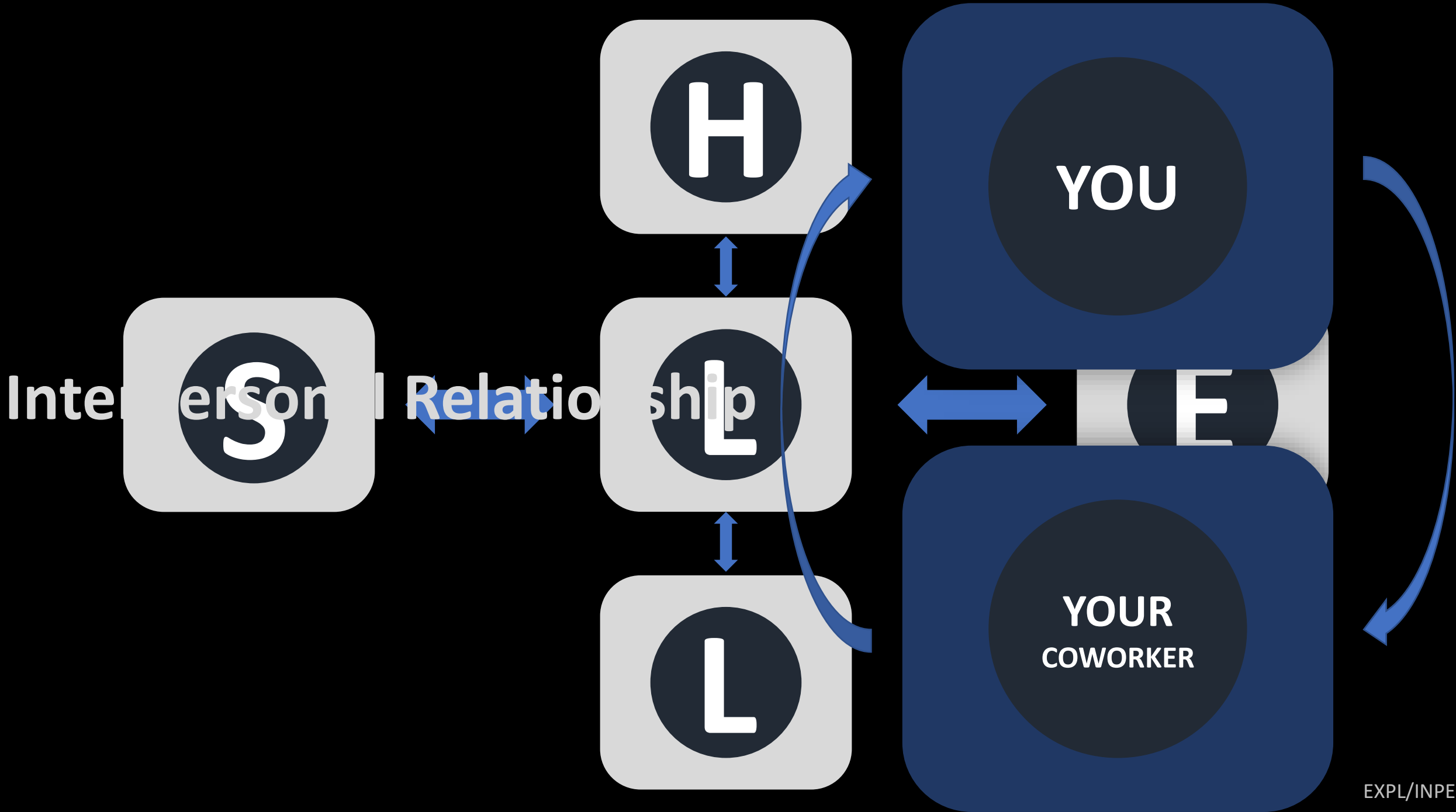
"...methods, techniques, and objectives that define CRM as a training focused on the development of NON-TECHNICAL SKILLS (NOTECHS).

... assumes that each team member is FALLIBLE... (ANAC, 2019)"

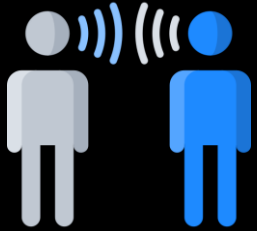


Modelo SHELL





Interpersonal Relationship



Empathy and Social Skills

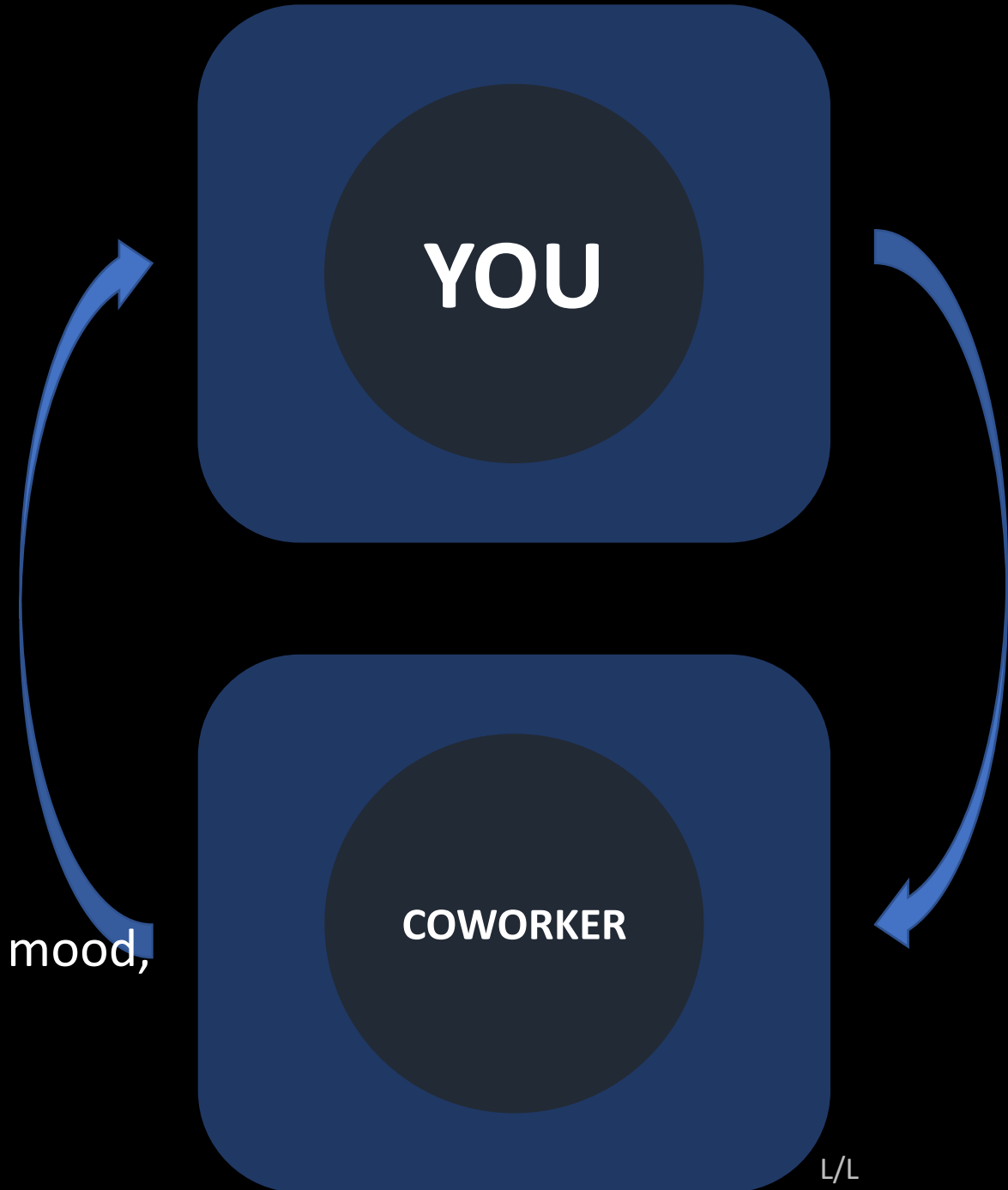
Understanding other people.

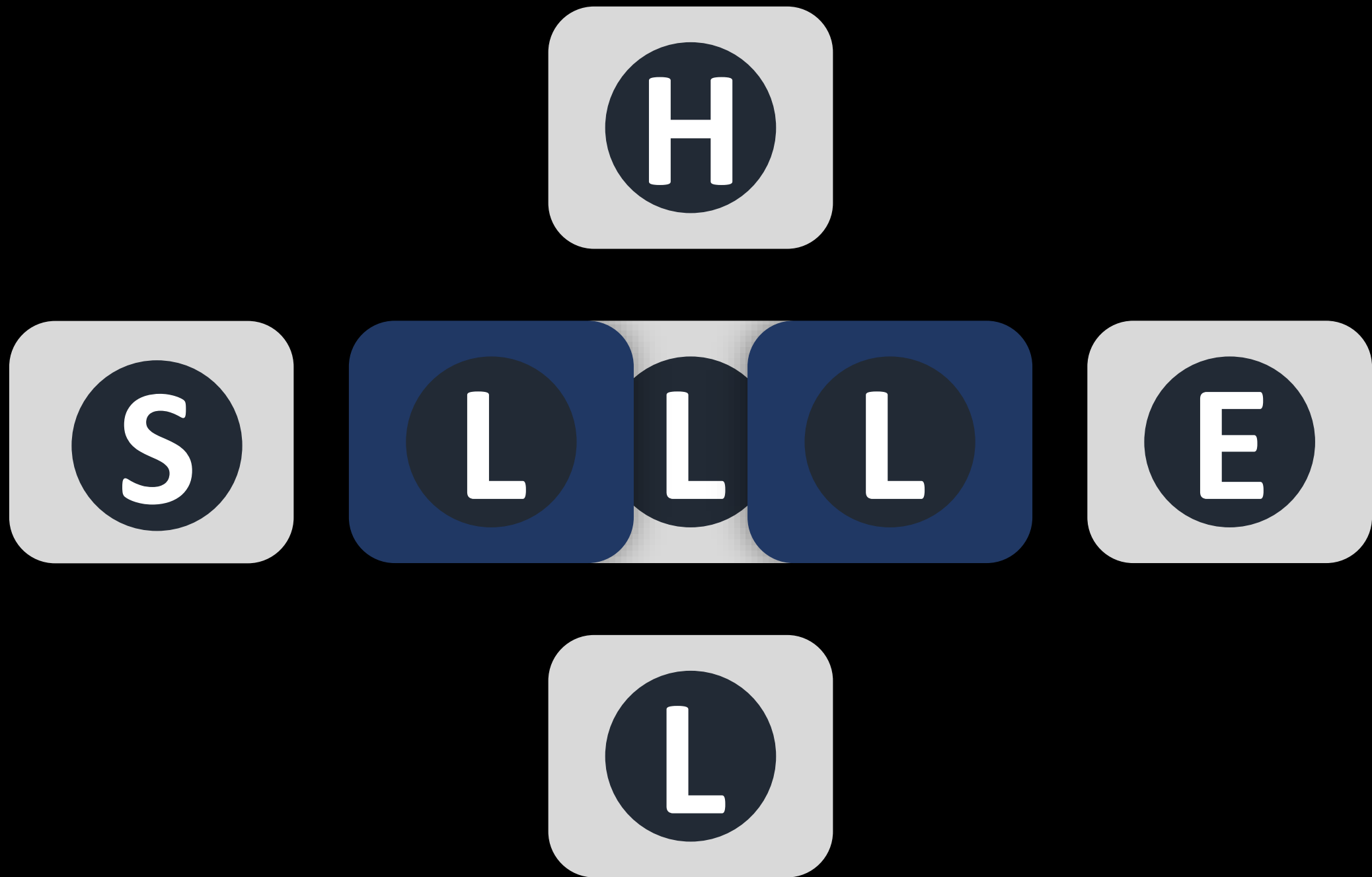
What motivates them.

How they work, how to work with them.

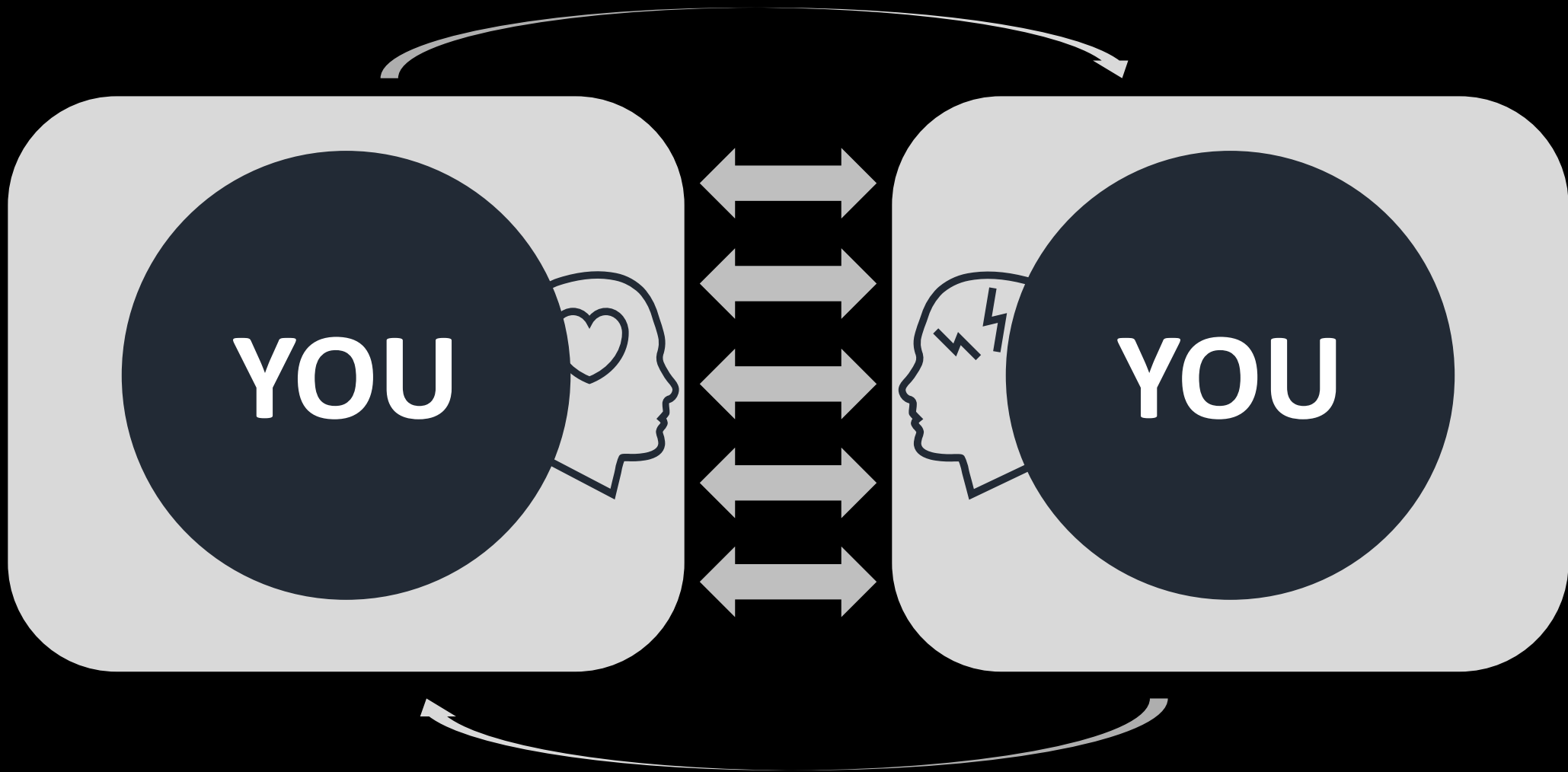
Discerning and responding appropriately to their mood, temperament, and motivation of other people.

(Goleman)

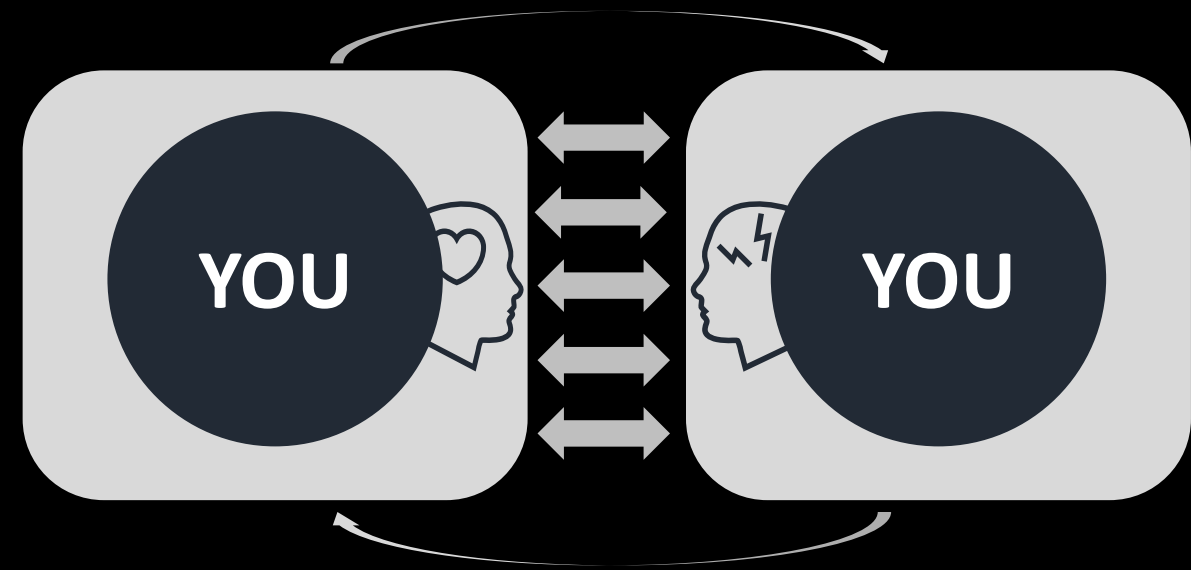




Intrapersonal Relationship



Intrapersonal Relationship



...is an inward-focused aptitude.

...the ability to form an accurate, truthful model of oneself to act effectively in life.

...the key to Selfknowledge.

...contact with our own feelings.

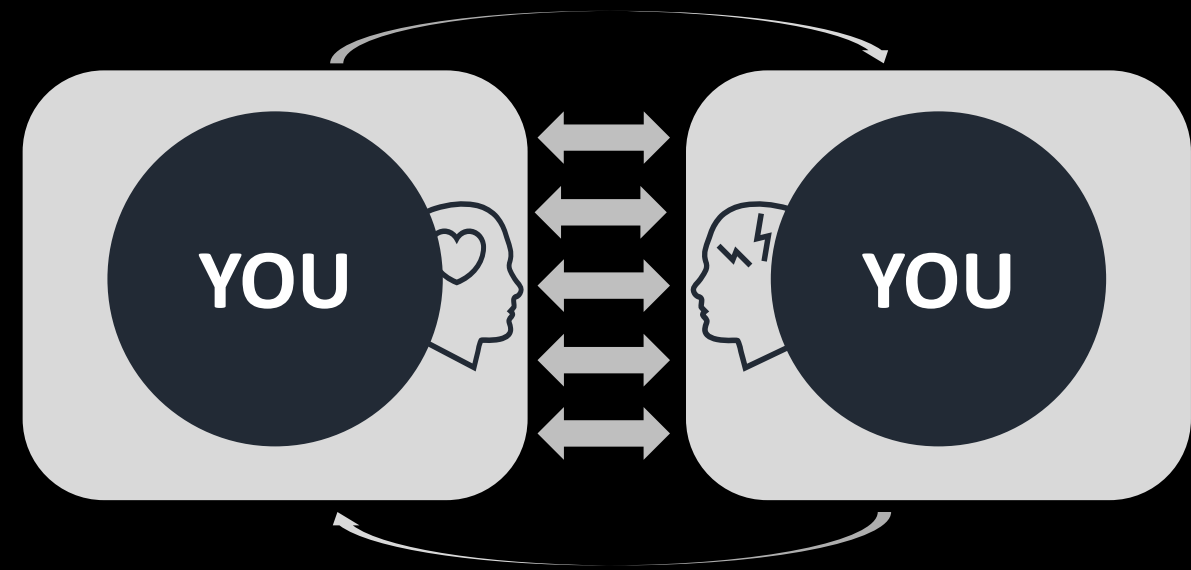
...the ability to use them (your feelings) to guide your behavior.

(Goleman)

Intrapersonal Relationship

Self-awareness

Identifying our emotions and feelings



Self-control

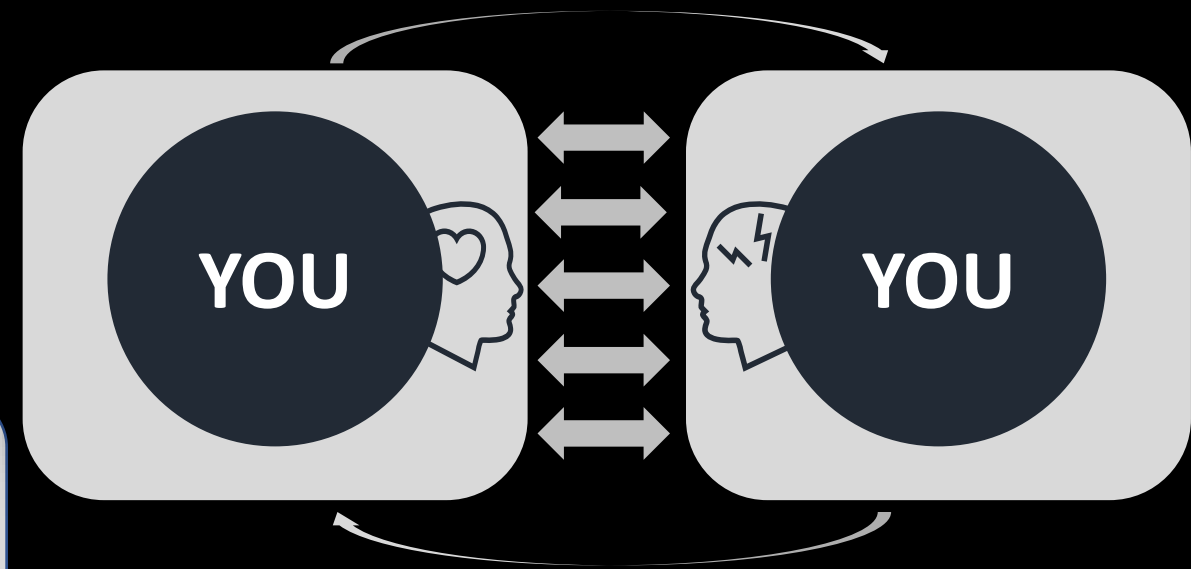
Impulse control. All emotions... lead to one impulse or another to act.

Postponing gratification and restraining the impulsivity that is behind any type of achievement.

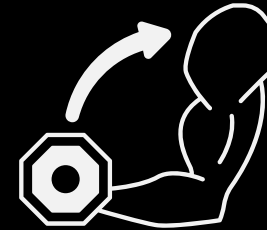
Intrapersonal Relationship

Self-motivation

Seeking within yourself reasons or stimuli to achieve your goals. It involves studying, developing interpersonal and intrapersonal relationships, etc.



ARM



Action → Result → Motivation

DISCIPLINE

Bear in mind...

Hierarchy is not and cannot be compromised.

High degree of technical proficiency is essential for safe and efficient operations.

Demonstrated mastery of CRM concepts cannot overcome a lack of proficiency.

High technical proficiency cannot guarantee safe operations in the absence of effective crew coordination.

5 pacientes/min
40,44 - A320/dia



Thank you!



@inteligenciaaerea



Fernando Colantuono

Aviador | Autor do livro Pane
- Inteligência Aérea. #1 na Amaz...



[linkedin.com/in/fernandu](https://www.linkedin.com/in/fernandu)

Business opportunities in humanitarian operations



Renan Amancio

Air Traffic Controller Helicopter Pilot Financial Advisor

Brazil Airforce



8 December 2023

ANAC- Auditorium
São José dos Campos – Brazil



Humanitarian Logistics

The Last Mile

The Last Mile

TOPICS

■ The World Health Summary

.....

■ The Unreachable

.....

■ Building Bridges

.....

■ Business in Humanitarian Aviation

.....

■ Our Mission

.....

■ The New World

.....

The World Health Summary

We Are Sick !!!

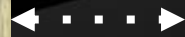
Sick people without **proper sanitation facilities** defecate in or near a water source

Animals defecate in or near a water source

People use **contaminated water for drinking** and food preparation

Farmers use **contaminated water to irrigate** their crops

Families eat and drink **contaminated food and water**



Diarrhea kills 2,195 children every day, it accounts for 1 in 9 child deaths worldwide, making diarrhea the second leading cause of death among children under the age of 5

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention



Diarrhea: Common Illness, Global Killer
Diarrhea kills 2,195 children every day—more than AIDS, malaria, and measles combined.

2,195
Children die daily of diarrhea — that's like losing nearly 32 school buses full of children each day

1 in 9
Child deaths are due to diarrhea

801 thousand
Child deaths from diarrhea every year

Diarrheal diseases account for 1 in 9 child deaths worldwide, making diarrhea the second leading cause of death among children under the age of 5. For children with HIV, diarrhea is even more deadly; the death rate for these children is 11 times higher than the rate for children without HIV. Despite these sobering statistics, strides made over the last 20 years have shown that, in addition to rotavirus vaccination and breastfeeding, diarrhea prevention focused on safe water and improved hygiene and sanitation is not only possible, but cost effective: every \$1 invested yields an average return of \$25.50.

Learn how simple and inexpensive interventions to prevent and treat diarrhea can save the lives of children around the world.

 **CDC**
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

CS229480-A

We produce enough food!

Yet, we starve!



HUNGER STATS

UP TO 783 MILLION

PEOPLE GO TO BED HUNGRY EVERY NIGHT

47 MILLION

PEOPLE IN 54 COUNTRIES AT 'EMERGENCY' OR WORSE LEVELS OF HUNGER.

WORLD HUNGER: CAUSES AND SOLUTIONS

Conflict

Climate change

Disasters

Inequality

Food loss

COVID-19

■ Food And Supply Stolen

■ Corruption

■ Conflicts

■ Infrastructure

and much
more...

'We blame government and aid agencies': Ethiopia food relief thefts leave those in need with nothing

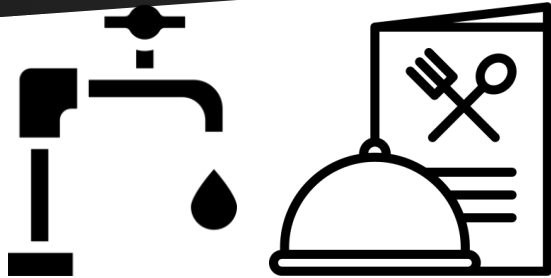
Hunger-related deaths have risen since grain deliveries stopped after a nationwide scheme to steal supplies was exposed



📷 Tigrayan women roast coffee beans over a wood stove in the school that has become home to thousands displaced by the conflict, in Mekelle, Tigray, Ethiopia. Photograph: Ben Curtis/AP

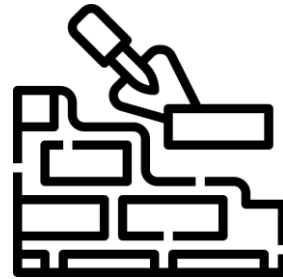
Challenges we are
facing!!!

How can we save those people?



Providing Food and
Water

Access to clean sources



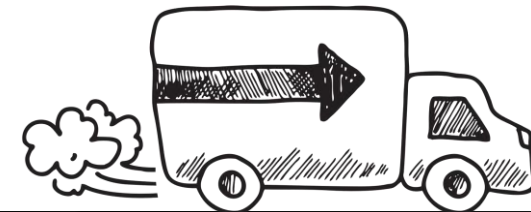
Infrastructure

Build the basics to start a
new community



Supply Operations

Keep the good stuff coming



Today's Technology



Apollo

Moon Mission



ISS

Space Lab



C-390 Millennium

Multi-task airplane

But we still don't know how to take food and water from point A to B

Most Common Disasters

First Response:
Medical Evacuation,
Water and Food Supply



Earthquake

How to deliver the supplies
without roads?



Flooding

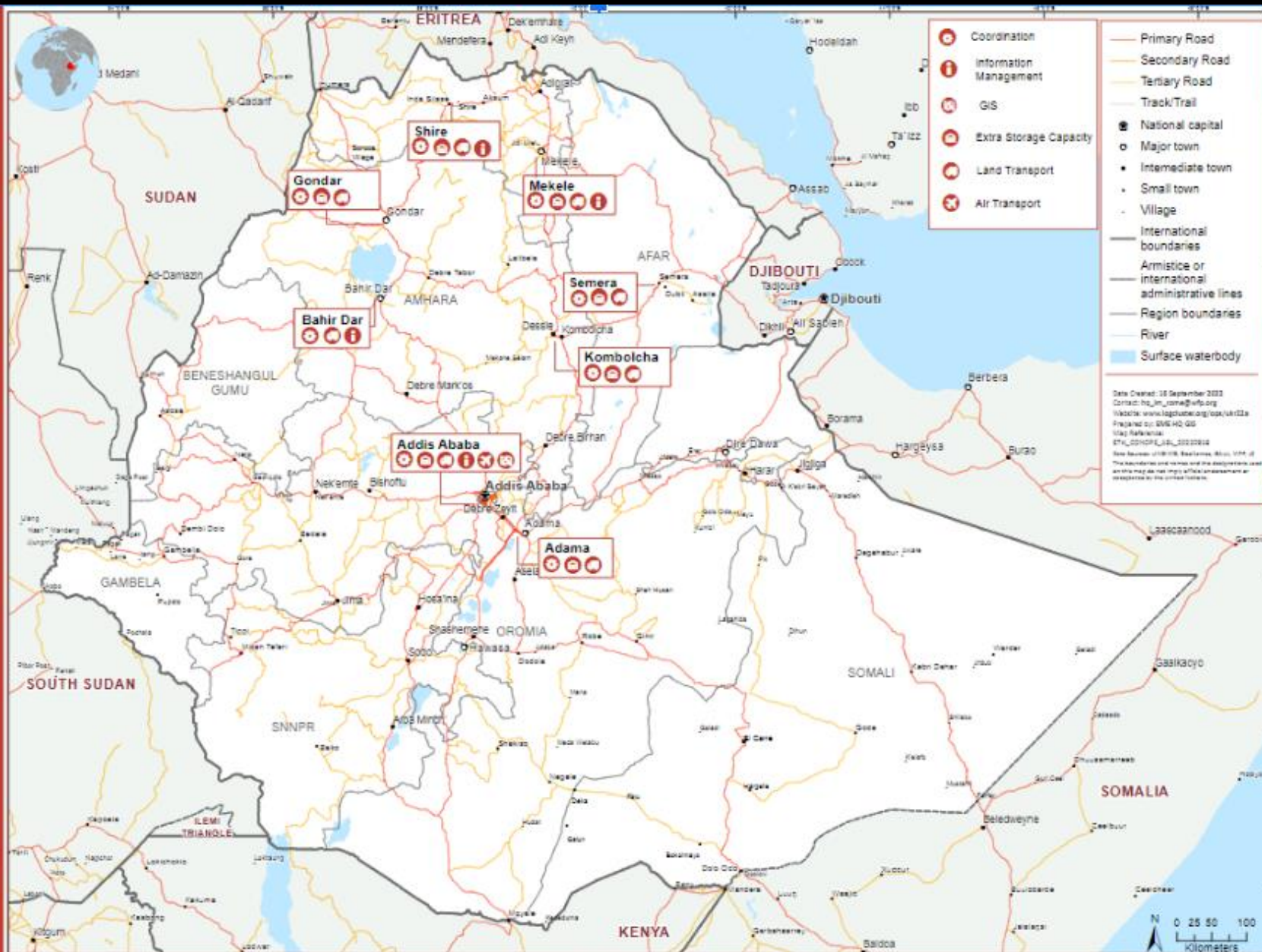
No roads and no dry land.
Isolated people!

Billions Spent Every Year

How can we
grab a portion of
that?

ETHIOPIA

Logistics Cluster ConOps - September 2022

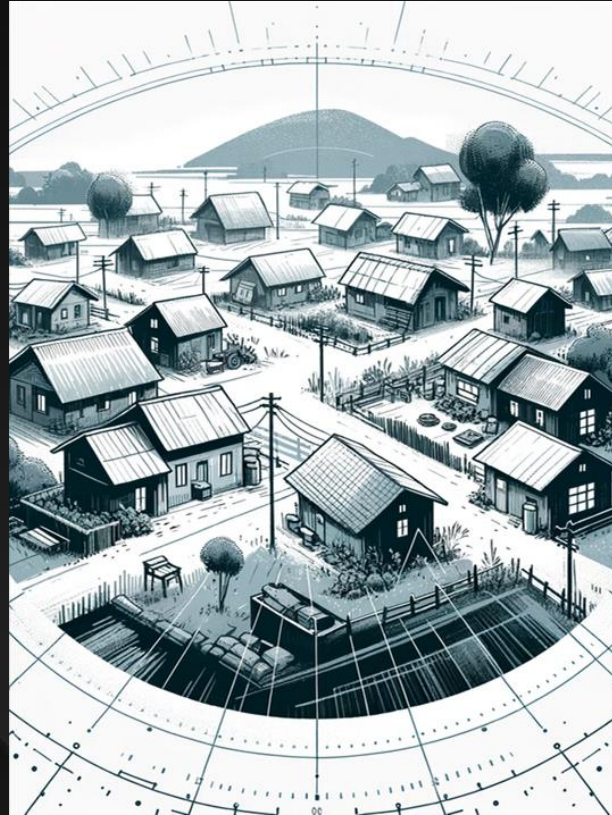


Business Opportunities



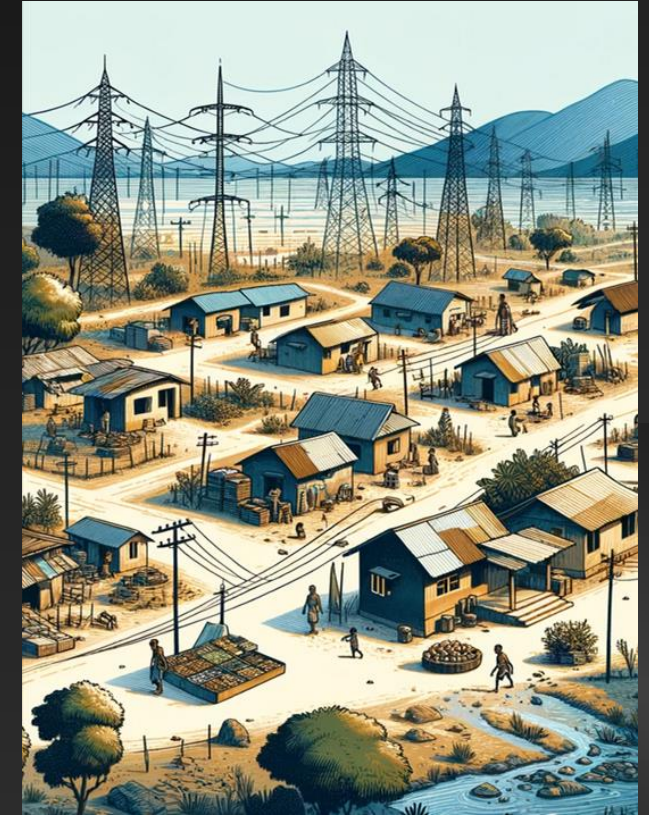
The rise of a new community

By the time a community thrives,
it becomes a new market.



Start with the basics

Houses, power grid, clean water
source...



Develop the community

Improve the power grid, grow
crops, provide medical
assistance, access to
education...

PPP: Public-Private-Partnership



Brainstorm

Infrastructure	Education	Farming	Medical	Tech
RailRoads	Schools	How to grow crops	Hospitals	Internet
Roads	Universities	Handle Crops		Automation
Ports	Online Classes	Animals		Transportatio n
Power Grid				Software
City at all				

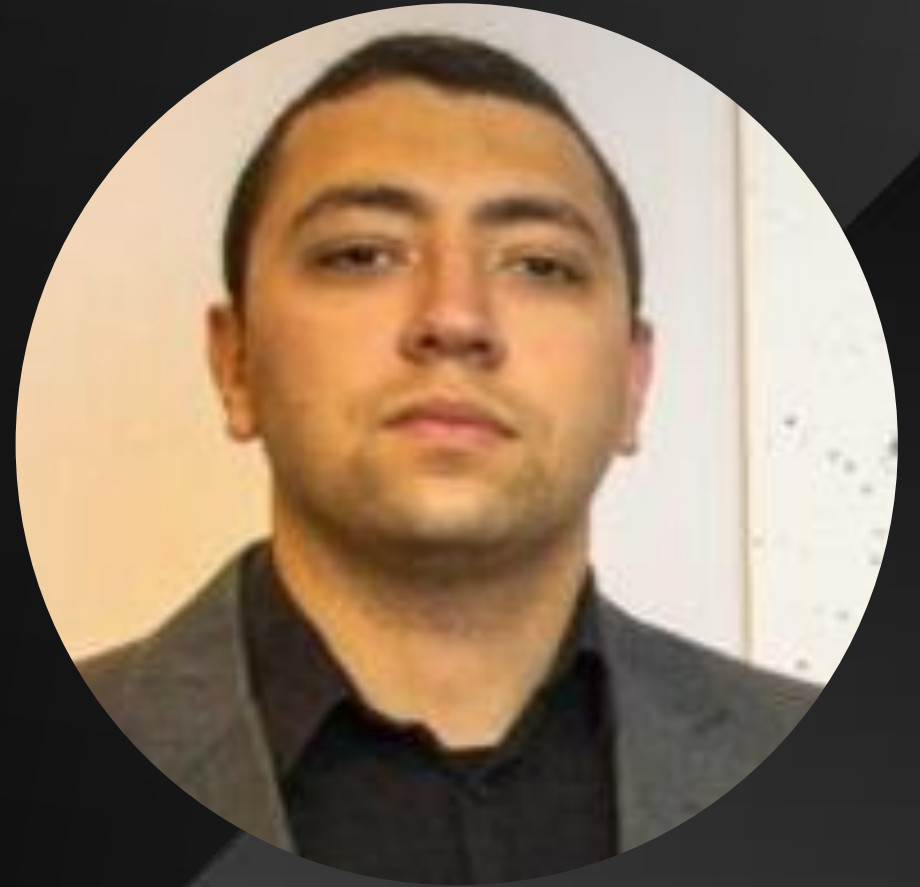
A HOW ? B



Renan Amancio

amancioram@gmail.com

+55 (11)97413-6171



Search and Rescue – Emergency Response Coordination



Potiguara Campos

Strategy & Intelligence Consultant



8 December 2023

ANAC- Auditorium
São José dos Campos – Brazil





Search And Rescue

Disaster Response
& Humanitarian Relief Coordination



A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.

<https://www.fema.gov>

Disasters are **serious disruptions to the functioning of a community that exceed its capacity to respond using** its own resources.

<https://www.fema.gov>

A disaster may be relatively sudden, such as an earthquake or an oil spill, or it may unfold over a longer period, such as the effects of an ongoing pandemic or climatic disruption. Severe droughts, wildfires, floods, landslides, and volcanic eruptions are often considered examples of natural disasters.

<https://www.fema.gov>



POMPEII (VESUVIO ERUPTION) – 79 AD
DEATHS - UNKNOWN



LISBON EARTHQUAKE – 1775
40.000 DEATH TOLL



JAPAN EARTHQUAKE AND TSUNAMI – 2011
19,759 deaths, 6,242 injured, and 2,553 missing

Depending on place or time, a disaster
leads to a humanitarian crisis

A humanitarian crisis is a generalised emergency situation that affects an entire community or a group of people in a region, which involves high levels of mortality or malnutrition, the spread of disease and epidemics and health emergencies

<https://www.icrc.org>



HAITI EARTHQUAKE – 2010
300.000 DEATHS



MOZAMBIQUE IDAI CYCLON – 2019
510 deaths, 1.200.000 DISPLACED



HURRICANE KATRINA – 2005
DEATHS – 1.833

AVIATION AND MARITIME DISASTERS

CHALLENGES:

- LOCATE
- RESCUE
- MEDICAL ASSISTANCE



ALTA FLORESTA - BRAZIL

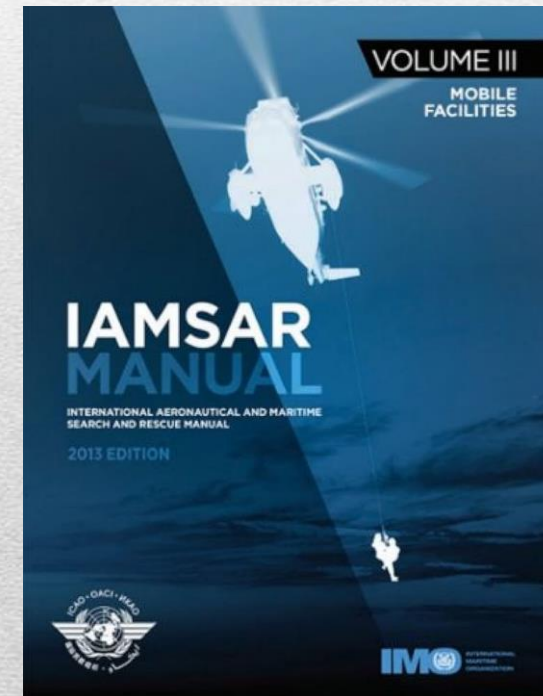
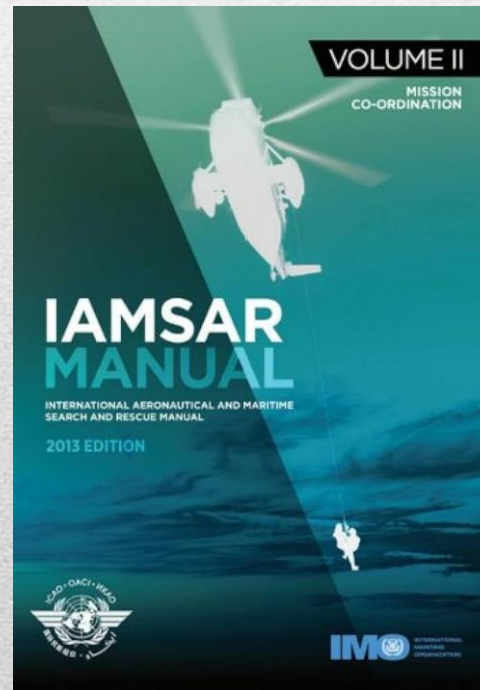
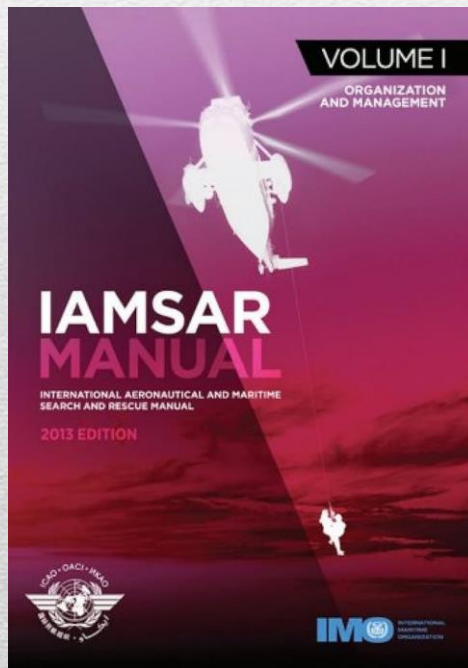


PT-JUM SAR OPERATION - 2006

OACI CONVENTION

ANNEX 12 – SEARCH AND RESCUE

AMSAR:
“INTERNATIONAL AERONAUTICAL AND MARITIME SEARCH
AND RESCUE MANUAL”

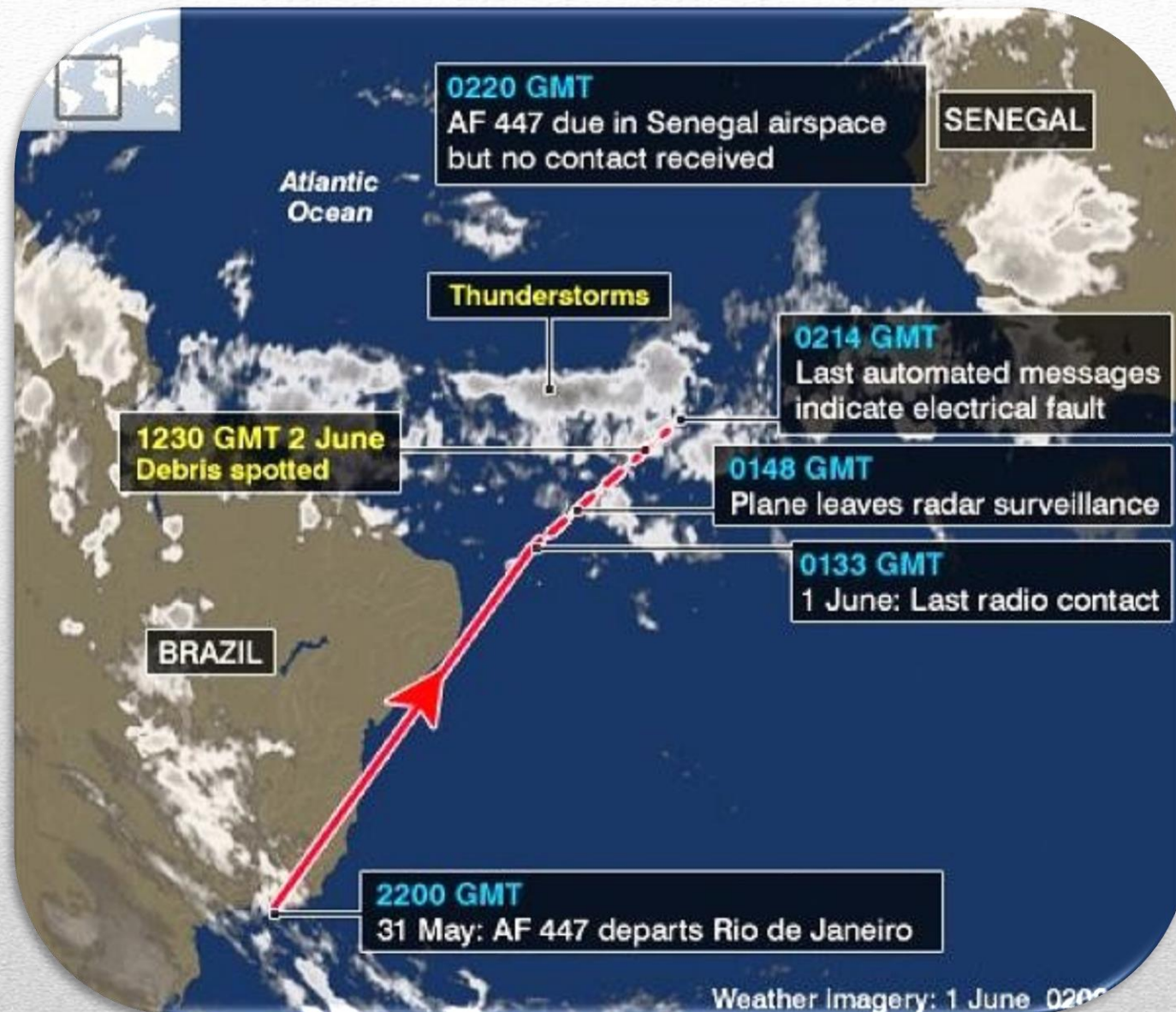


ATLANTIC OCEAN – 1228 KM FROM NATAL



DEATHS – 228
RECOVERED – 54

AF 447 SAR OPERATION – JUNE 2009



SÃO FELIX DO XINGU- BRAZIL



154 DEATHS

GOL 1907 SAR OPERATION – 2006



SÃO FELIX DO XINGU- BRAZIL



PP-VMK SAR OPERATION - 1989

SÃO FELIX DO XINGU- BRAZIL



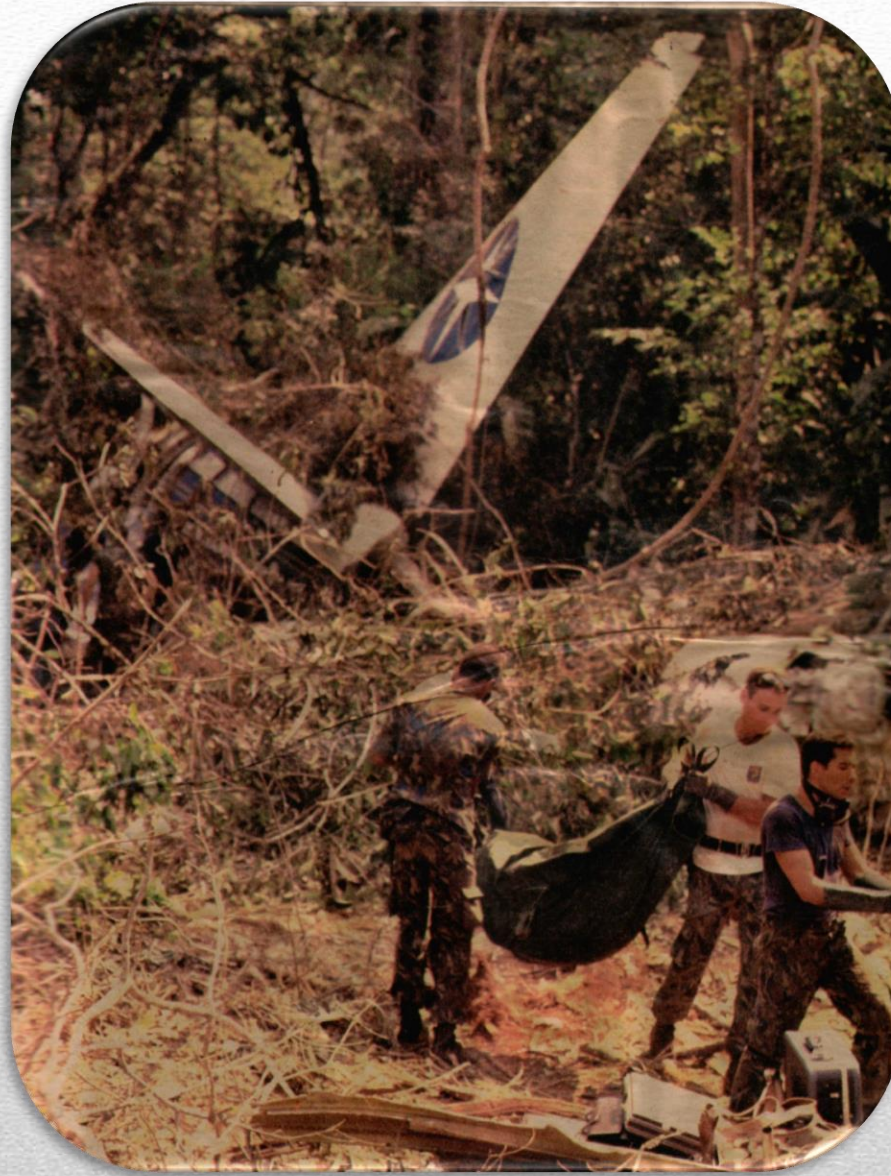
54 POP

1 DEATH ON IMPACT

11 DEATHS WAITING FOR ASSISTANCE

42 RESCUED

PP-VMK SAR OPERATION - 1989







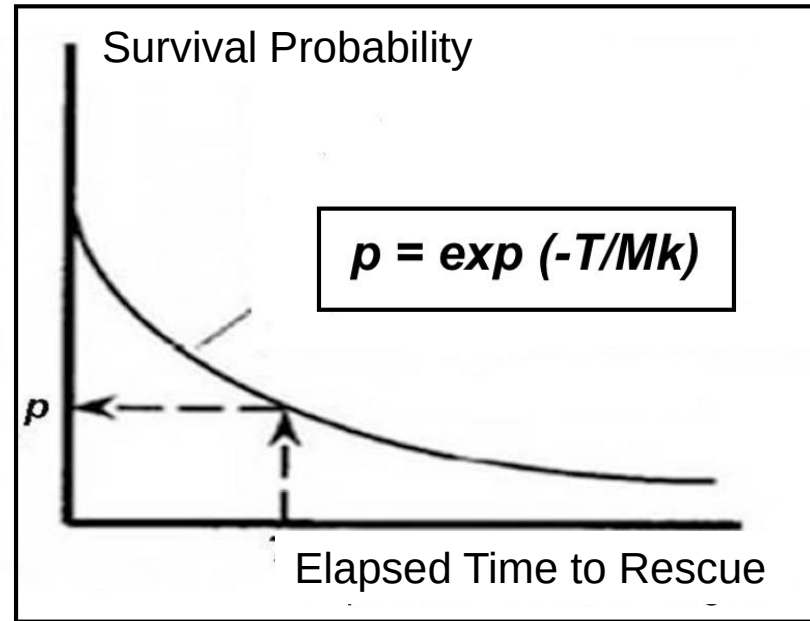








SURVIVAL CURVE



Mk – Survival Time

THOMPSON (1999)

TEMPO DECORRIDO ATÉ O RESGATE (T)

$$T = K + r/S + q$$

K – NOTIFICATION AND MOBILIZATION TIME;

R – DISTANCE ;

S – SEARCH AND RESCUE UNITS SPEED

q – TIME TO REACH MEDICAL ASSISTANCE.

THOMPSON (1999)

SUVIVAL TIME (Mk)

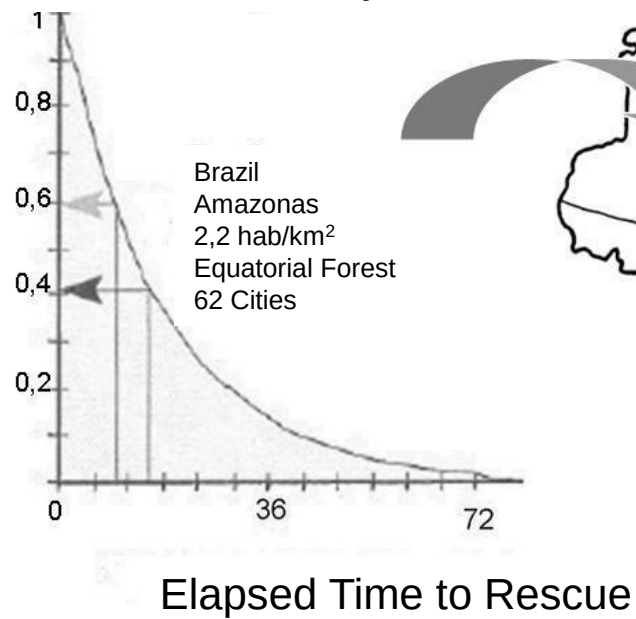
DEPENDS ON:

- CLIMATE
- GEOGRAPHIC
- EQUIPMENT
- PHISIOLOGY
- PSYCHOLOGICAL

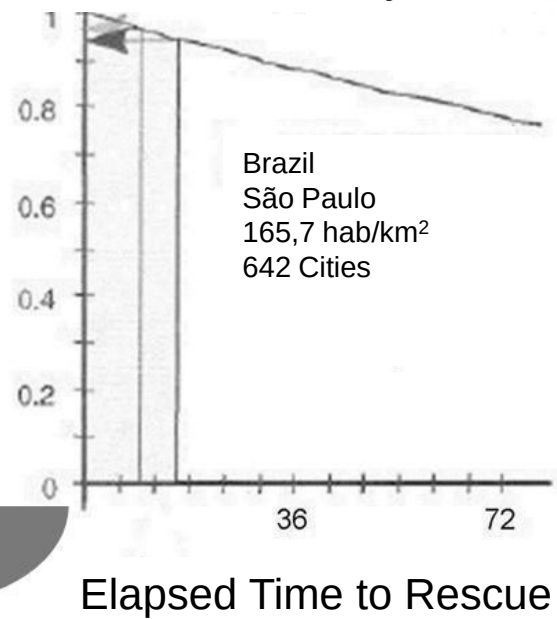
Mk IS VARIABLE!

INFLUENCE IN SURVIVAL CURVE

Survival Probability



Survival Probability





AMAZONAS



SÃO PAULO



TIME IS THE FACTOR!

KEY TO OPERATIONAL REDINESS:



SAR UNITS TRAINNING

KEY TO OPERATIONAL REDINESS:



SAR UNITS TRAINNING

KEY TO DECREASING TIME:

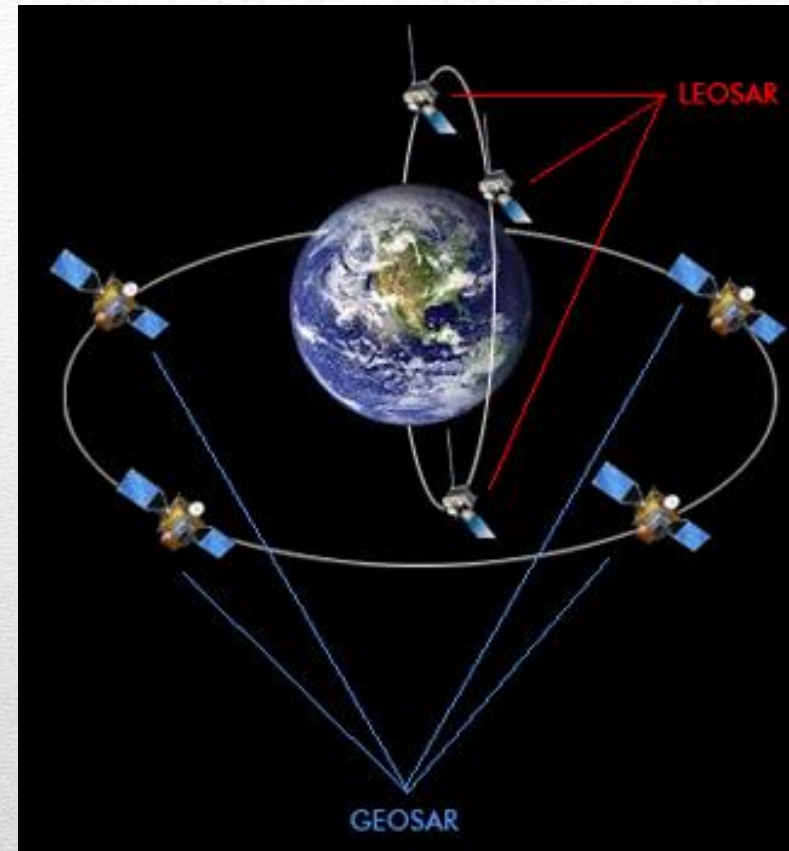


COORDINATION

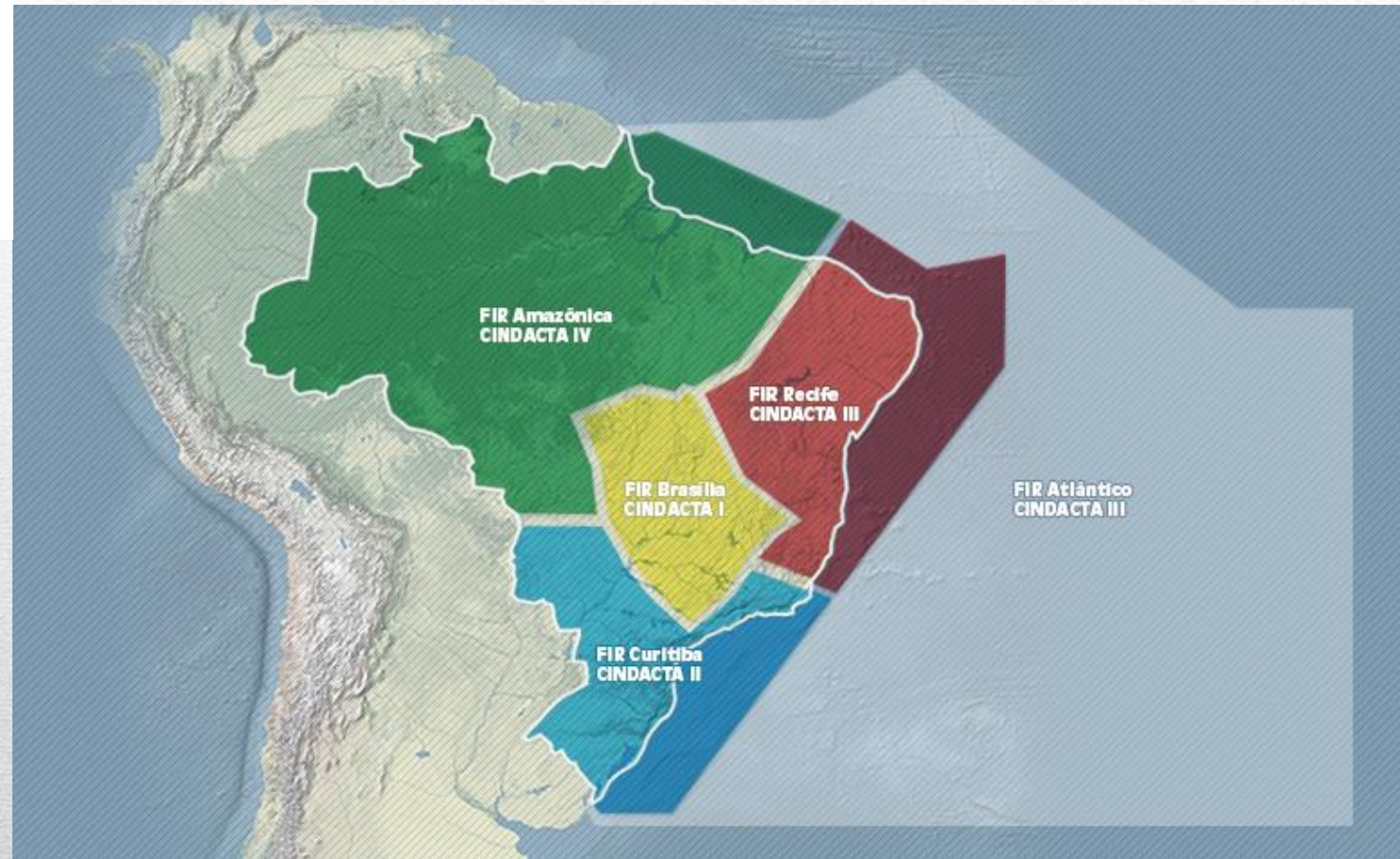


SEARCH AND RESCUE REGIONS

COSPAS SARSAT SYSTEM



BRAZIL SRRs & RCCs (SALVAEROS)



SEACH AND RESCUE REGIONS

BRAZIL SAR UNITS



BRAZIL SAR UNITS



COORDINATION



SC-105 : PT-HNA



RESGATE

SINOP-MT



PT-NEB

SINOP-MT



PT-NEB



KEY TO OPERATIONAL REDINESS:



CREW COMMITMENT

THESE THINGS WE DO...



THAT OTHERS MAY LIVE!



THANK YOU!

potiguara.campos@gmail.com

Sustainable Aviation Fuel (SAF) utilization in humanitarian aviation



Darlan Silva dos Santos
ANAC



8 December 2023

ANAC- Auditorium
São José dos Campos – Brazil



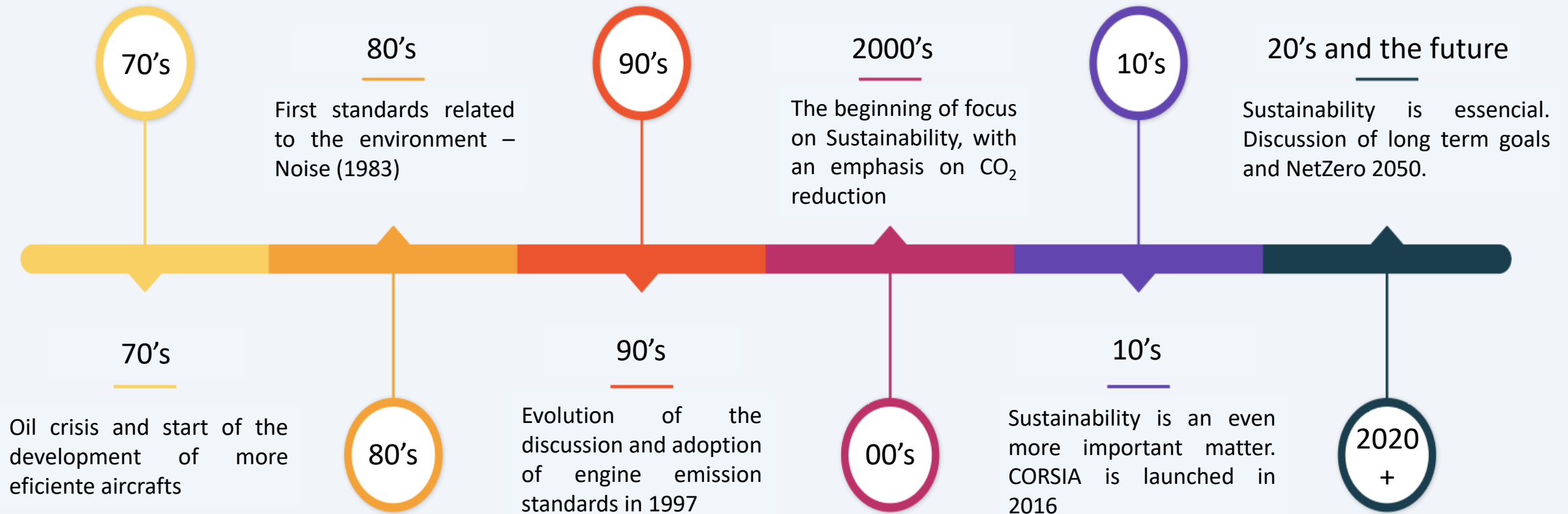
Aviation Safety Campaign

**SAF - How to involve
the stakeholders in
the decision making
process**

Brazilian Strategy



Sustainability in Aviation



Map

Satellite

Race for decarbonization



Map with the availability of SAF in airports around the world



**We need to
incentivize SAF**

How to do it?

- **Public policy: Laws and regulation**
- **Research and Development: Technical alignment between the countries**
- **Strategic partnerships: market and industries incentives**
- **Awareness and Education: Encouraging the population**



Brazilian strategy

Strategy

PILLARS

Thematic pillars, on which the policy premises will be elaborated

POLICY

Law

Regulations and standards

Propose new normative text or changes to existing texts to enable the implementation of the policy according to premises

PROBIOQAV

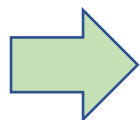
Contributions and technical data provided by stakeholders

PREMISES

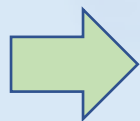
Statement of the premises selected for each pillar of public policy

Construction

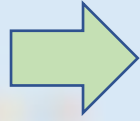
16/09	23/09	30/09	07/10	15/10	21/10	28/10	25/11	02/12	23/12
2	1	3	3	4	3	5	3	5	1
									



Meetings with *stakeholders* (+ than 60 agents each meeting)



Formal presentations by the *stakeholders*



Studies, reports and Papers on the subject

Results



- **Bill that establishes a mandate for the airlines to reduce emissions through the use of SAF**
- **Alignment with CORSIA and ICAO requirements**
- **Do not exclude any feedstock or pathway**
- **More cost-efficient model – market mechanisms such as Book&Claim**

**Thank you for
your attention**

Darlan Santos



ANAC

AGÊNCIA NACIONAL
DE AVIAÇÃO CIVIL

