INNOVATION & INDUSTRY 4.0

Gléverson Lemos
Head of Industry 4.0

EMBRAER PROFILE

18k Employees worldwide
Leader in the segments we operate
8k+ Aircrafts delivered in 150 countries

COMMERCIAL

EXECUTIVE

DEFENSE AND SECURITY

SUPPORT AND SERVICES

AFILLIATES AND NEW MARKETS

OUR AFFILIATES

atech

TEMPEST

VISIONA
Space Technology

EVE

INNOVATION HORIZONS & AMBIDEXTERITY

H2

H3

NEW MARKETS

H1

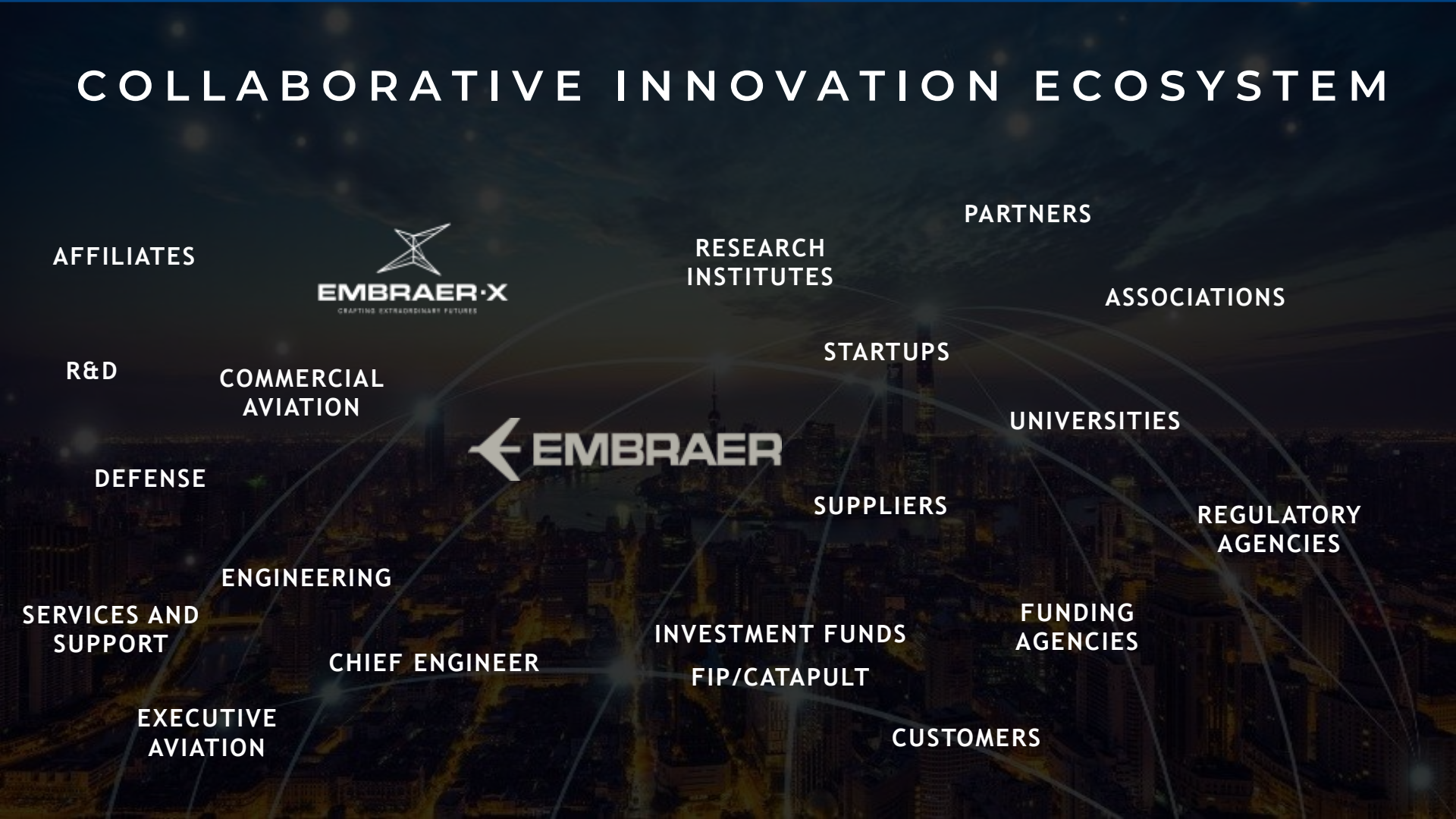
H2

EXISTING MARKETS

KNOWN PRODUCTS AND SERVICES

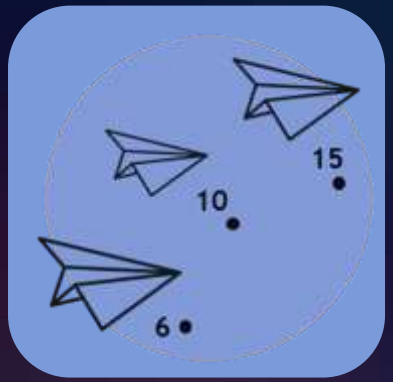
NEW PRODUCTS AND SERVICES

COLLABORATIVE INNOVATION ECOSYSTEM



HOW EMBRAER DEFINE ITS PRIORITIES?

EMBRAER
Strategic Map



Strategic Maps
COMMERCIAL | EXECUTIVE
DEFENSE E SECURITY
INNOVATION | SERVICES AND
SUPORT

+

- TENDENCIES
- EMERGING TECHNOLOGIES
- TRENDS IN THE AEROSPACE INDUSTRY
- NEW BUSINESS

PRIORITIES OF INVESTMENTS IN INNOVATION

INNOVATION VERTICALS

PASSENGER EXPERIENCE

ZERO EMISSION

CYBER SECURITY

AUTONOMOUS FLIGHT

AIRFRAME COMPETITIVENESS

AI & DATA SCIENCE

INDUSTRY 4.0

INDUSTRY 4.0

concept | from supplier to customer

SUPPLIERS AND PARTNERS

DEVELOPMENT

- Design
- Systems & Tools
- Prototyping and Tests

PRODUCTION

- Planning
- Manufacturing
- Quality

LOGISTICS

- Supply Chain
- Warehouse
- Transport

OPERATION

- After-sales services
- Maintenance

CUSTOMERS

INTERNAL PROCESS + INFORMATION FLOWS + IT SYSTEMS

WORKFORCE PLANNING/HR >>> ACCOUNTING >>> R&D >>> LEGAL >>> ...

EMBRAER

value elements

FOR STAKEHOLDERS

- productive efficiency
- robustness of decision - making
- optimized industrial planning
- product - process integration
- customers satisfaction

GROUPING technologies

digital engineering

Digitization, modeling, simulation, optimization and automation of software to anticipate the maturity of processes and products.

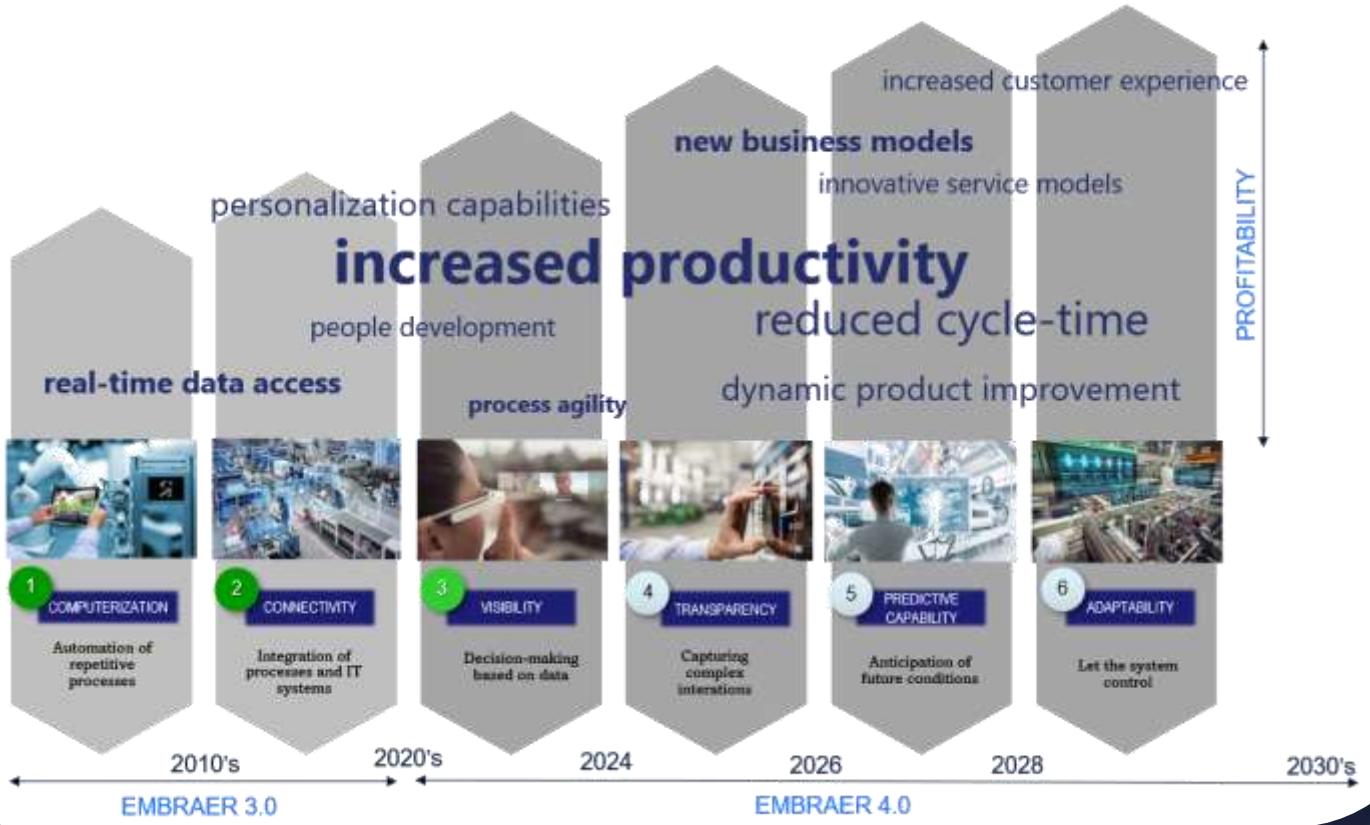
physical technologies

Development and implementation of machines, automated and intelligent devices provided with digital connectivity and capability.

smart industry

Data collection, processing, analysis and use of analytics and artificial intelligence to support data-driven decision making.

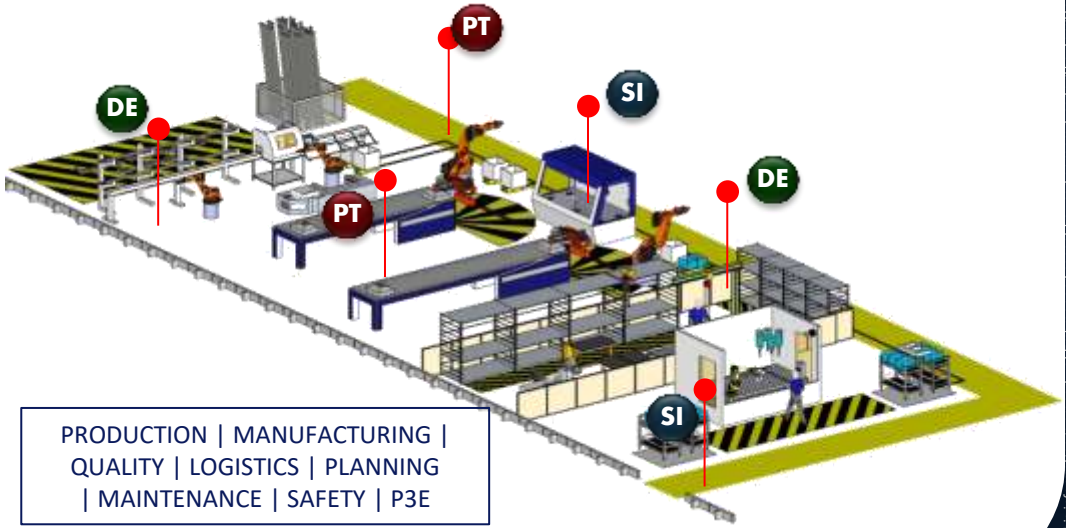
roadmap



BRONWFIELD

industry 4.0

MAPA 4.0

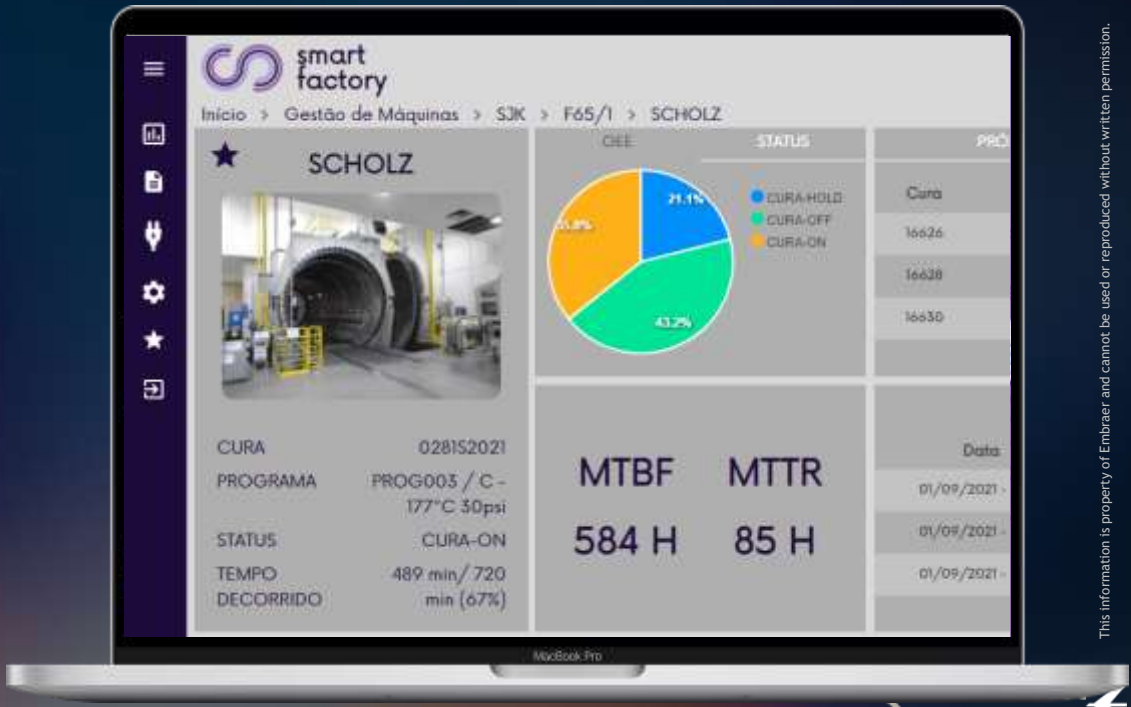


PRODUCTION | MANUFACTURING | QUALITY | LOGISTICS | PLANNING | MAINTENANCE | SAFETY | P3E

SMART FACTORY

IOT PLATFORM FOR INTEGRATED MANUFACTURING MANAGEMENT

- ✓ OPERATIONS OPTIMIZATION
- ✓ MACHINE DATA CONSOLIDATION
- ✓ DATA ANALYSIS AND MONITORING
- ✓ ASSET AND PROCESS TRACEABILITY

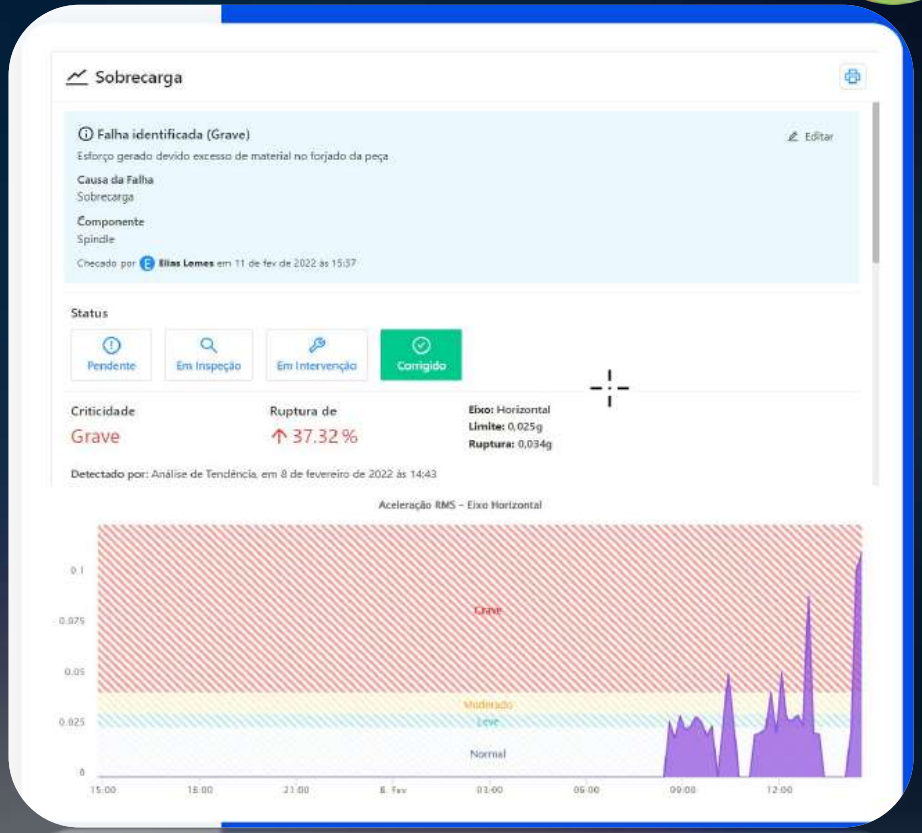


TRACK AND TRACE

ASSET TRACEABILITY AND MONITORING

- ✓ REDUCTION OF ASSETS AND CONSUMABLES' LOSSES
- ✓ DECREASE ASSET-SEARCH-TIME
- ✓ REDUCE MAN-HOUR TO INVENTORY
- ✓ DATA AVAILABILITY TO PROCESS IMPROVEMENT THROUGH ANALYTICS

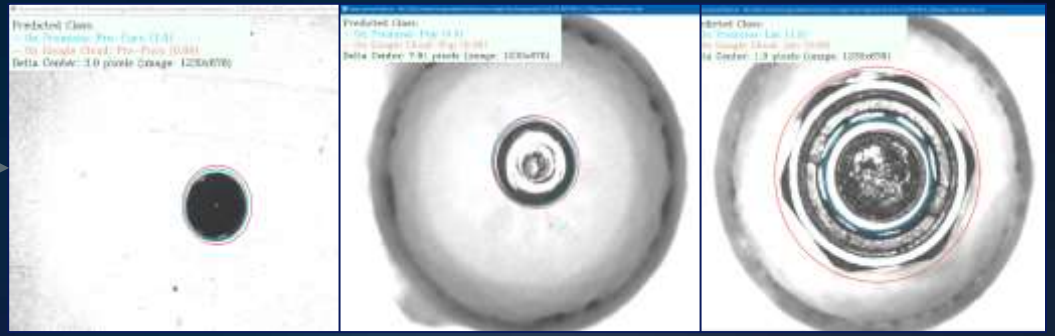
PREDICTIVE MAINTENANCE – IOT



- ✓ AUTOMATIC STATUS DETECTION PER ASSET
- ✓ DETECT FAILURES EARLY ON
- ✓ NO MORE UNEXPECTED BREAKS

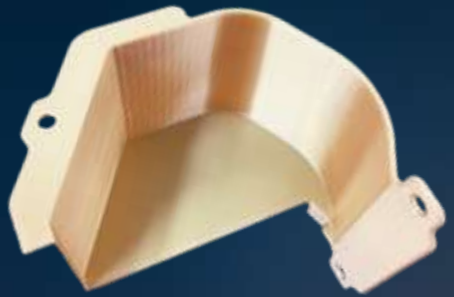
AI FOR ROBOT REFERENCE DETECTION

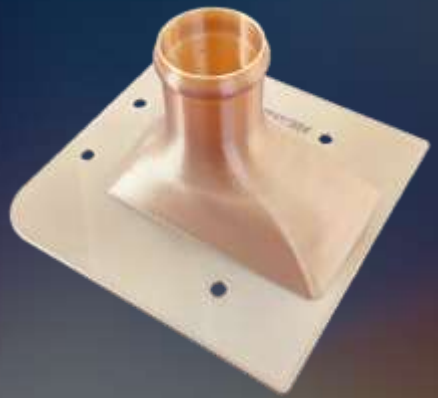
NEURAL NETWORK



- ✓ ROBOT ROBUSTNESS AND AUTONOMY ON RESYNC OPERATIONS
- ✓ REDUCE OF HUMAN INTERVENTIONS, TIME AND COLLISION RISKS

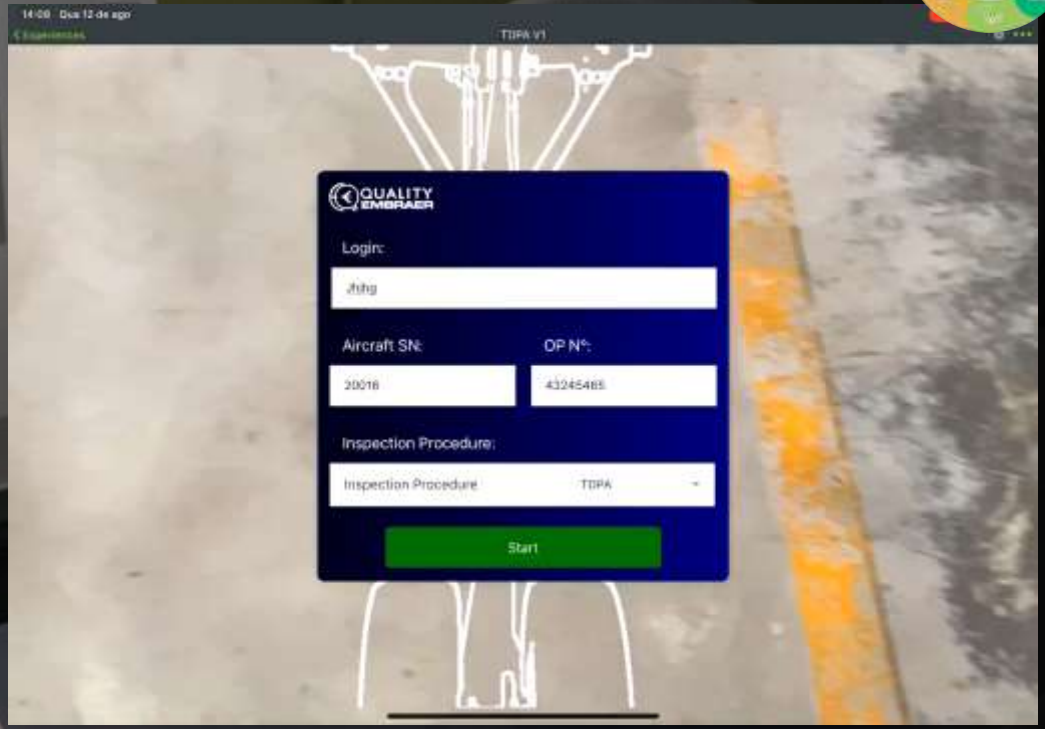
ADDITIVE MANUFACTURING





- ✓ ORGANIC STRUCTURE
- ✓ COMPONENT INTEGRATION
- ✓ MATERIAL SAVINGS

AUGMENTED REALITY



CORPORATE INNOVATION

EMBRAER R&D

GREEN LIGHT

ESP

EMBRAER VENTURES

EMBRAER STARTUP PROGRAM

Startups Service Hiring
Fast, Simple, Compliant And Democratized

CUSTOMER NEEDS

EMBRAER INTERNAL NEEDS

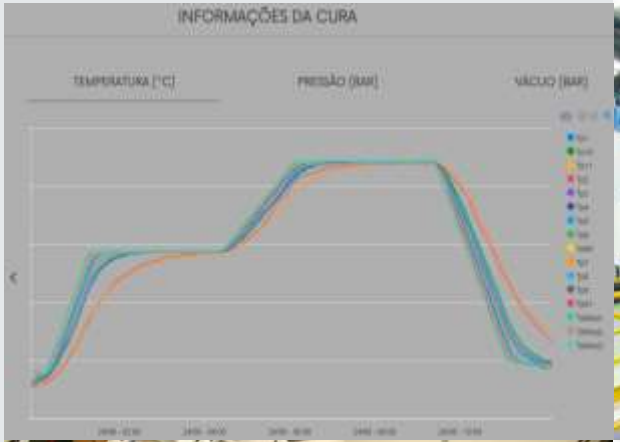
degreed
GUPY
Relativity6
conversica
Salesvue
EMOTION RESEARCH LAB

NEAR EARTH AUTONOMY
intervyo
igti
IRIS AUTOMATION
AEVO
Delfos

AUTOCLAVE PLANNING BY REINFORCEMENT LEARNING

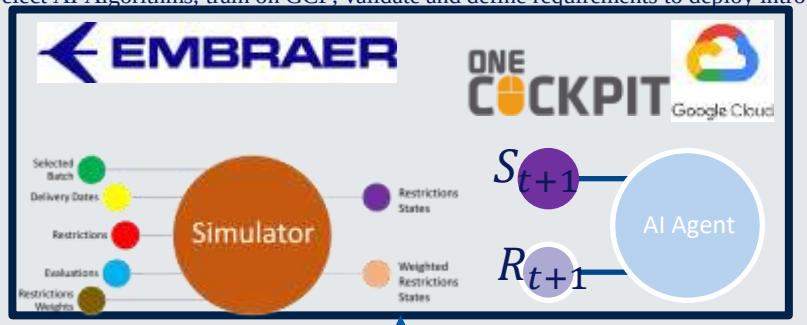
Objective

Develop a Proof of Concept capable of optimizing and programming autoclave cures with their geometric constraints and energy efficiency, as well as part constraints: dimensions and tooling, curing curves and DANE.



AUTOCLAVE PLANNING BY REINFORCEMENT LEARNING

Select AI Algorithms, train on GCP, validate and define requirements to deploy intro Cockpit



AUTOCLAVE

UNIFESP

State-of-the-art AI algorithms and processes. Academic roadmap and use cases.

MipWise

Simulator will integrate data into a model capable of answering the question: “how optimal is the selected batch of products against the restrictions?”

EMBRAER VENTURES

Corporate Venture Capital (Cvc)

EMBRAER VENTURES

- FUNDO AEROESPACIAL
- CATAPULT I
- CATAPULT OPPORTUNITIES
- CATAPULT II
- MSW II
- SAF/UNITED
- DIRECT INVESTMENT

THANK YOU!

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