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 Nominee's Signature

6/5/2023  
 Date

Nominee’s Name (please print): Simone Gobo Barcellos

Title (please print): Director, Phenom Program Office

Company (please print): EMBRAER S.A.

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## NOMINATION FORM

Name of Program: Phenom 300E

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Supplier Approved (if named in this nomination form)

o Date: \_\_\_\_\_

o Supplier Contact (name/title/organization/phone): \_\_\_\_\_

**PLEASE REFER TO PROGRAM EXCELLENCE DIRECTIONS  
AS YOU COMPLETE THIS FORM.**

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## **EXECUTIVE SUMMARY: Make the Case for Excellence**

*Value: 10 points*

Use 12 pt. Times Roman typeface.

### **What is the vision for this program/project? What unique characteristics and properties qualify this program for consideration?**



#### **Leadership: The Enduring Vision of the Phenom 300 Program**

The Phenom 300 series has consistently demonstrated its vision to remain at the forefront of the executive aviation industry. A continuous commitment to product evolution and persistent platform upgrades underpins this vision.

The Phenom 300 series leadership is sustained through informed insights from various marketing assessments and a robust Project Portfolio Selection and Management process. This vision to stay competitive has led to significant product enhancements and fleet improvements, increasing the product value and adding lifetime value to the customer. This makes the Phenom 300 series the executive aircraft with the highest residual value in the market.

The recent introduction of the Phenom 300E enhanced model marks a new milestone in Embraer's commitment to innovation and excellence. This refined version of the world's best-selling light jet further solidifies its position in the market, showcasing Embraer's dedication to constantly improving and evolving its products to meet and exceed customer expectations.

#### **Distinctive by Design: The Unique Characteristics of the Phenom 300 Series**

The Phenom 300 series is distinguished by the unique characteristics that have kept it the most delivered light jet for over a decade. The Phenom 300E enhanced model's recent launch in 2020 represented a significant milestone that showcased improvements, such as increased speed, range, and upgraded avionics.

The product requirements definition process is comprehensive and considers a wide array of stakeholders, sources, and trade-offs, ensuring that the final product meets diverse needs. These unique characteristics and dedication to customer satisfaction have enabled the Phenom 300E enhanced model to maintain its position as the industry's best-seller and most-delivered light jet.

#### **Piloting Success: The Management Excellence**

The Phenom 300 series' success is anchored in management excellence. The program execution is a complex project managed by multi-function and multicultural teams, including multi-site engineering, suppliers spread around the globe, and various regulatory authorities.

The projects and portfolio schedules management are based on the Critical Chain Project Management methodology, ensuring timely and efficient delivery. The Program and Portfolio Management System used is PMX, an in-house system developed by Embraer, which oversees requirements, scope, risks, and opportunities.

Despite all challenges, the Phenom 300 series program has been delivered on time, on budget, and in alignment with the defined requirements, exemplifying management excellence.

This paper will present the program efforts related to the OEM/Prime Contractor System Sustainment.

## VALUE CREATION

Value: 15 points

Please respond to the following prompt:

- **Clearly define the value of this program/project for the corporation; quantify appropriately.**

**Brand Reputation and Market Position:** The consistent high-quality product delivery to the customer and high performance of the Phenom 300E have fostered customer loyalty and attracted new clients, strengthening Embraer's brand equity. According to GAMA (2022), Phenom 300 retained 33% of the market share in its segment and help Embraer Executive Jets to achieve 14,3% of the overall market share.

**Financial Performance:** The program's success has translated into financial benefits for the corporation, with the Phenom 300 series contributing significantly to Embraer's Executive Jets revenue and profitability. The Phenom 300 high usage rate by the customer also secures a revenue streamline while the aircraft remains in operation. Of the total number of Phenom 300's delivered, 99,29% remain actively flying.



**Driving Innovation:** The Phenom 300 Program is at the forefront of technological advancement within the company, continually pushing the boundaries of what's possible in light jet aviation. This culture of innovation is crucial for the corporation as it fuels the development of cutting-edge products, keeping Embraer at the leading edge of the industry.

The innovation and product development that arises from the Phenom 300 Program helps Embraer to capitalize on its investments in Research and Development. It allows the corporation to derive tangible returns in the form of advanced products and technologies.

- **Clearly define the value of this program/project to your customer**

**Optimized Comfort and Performance:** Continuous upgrades and enhancements to the Phenom 300 series have yielded an aircraft that marries superior comfort with peak performance. Passengers are treated to a luxurious and smooth travel experience, complete with spacious interiors and state-of-the-art amenities. Simultaneously, pilots benefit from the aircraft's efficient operations, fueled by advanced avionics and a top-of-the-line flight deck. This blend of comfort and performance amplifies the overall travel experience for both passengers and pilots.

**Exceptional Residual Value:** The Phenom 300 series emphasis on continual product evolution has cemented its position as the executive aircraft with the highest residual value on the market. Customers investing in this aircraft can expect a robust return on their investment when they choose to resell or upgrade their aircraft, signifying a powerful value proposition that sets the Phenom 300 series apart in the aviation industry.

**Unparalleled Reliability and Safety:** The program's well-coordinated management and multifunctional teams prioritize safety and reliability at every turn. The Phenom 300 series boasts an impressive dispatch reliability rate, ensuring minimal downtime and maximum availability.

Furthermore, advanced safety features like the Synthetic Vision, Enhanced Vision System and the ROAAS (Runway Overrun Awareness and Alert Aystem) work in tandem to improve situational awareness and safety, providing peace of mind for both passengers and crew.

**Direct Operational Cost Efficiency:** The Phenom 300 series leads the category in operational cost efficiency. Its excellent fuel efficiency and low maintenance costs result in reduced direct operating costs, making it a high-performance jet and a cost-effective choice for operators.

**Remarkable Pilot and Passenger Experience:** The Phenom 300 series delivers an exceptional experience for pilots and passengers. Pilots enjoy the aircraft's advanced flight systems and ease of operation, while passengers revel in the cabin's comfort and luxury. From the top-tier avionics suite to the elegantly designed interior, every aspect of the Phenom 300 series contributes to a remarkable flight experience, making every journey memorable.

➤ **Clearly define the value of this program/project to members of your team; quantify if possible.**

The Phenom 300 series program offers tremendous value to the team members at multiple levels. The high score of 94 (out of 100) in the Engagement survey (Great Place to Work - GPTW) of the Program Management Team is evidence of these values, indicating a level of satisfaction significantly above the market average.



Figure 1 - Phenom 300 Camera Ship - used for the Top Gun: Maverick movie. Source: Kevin La Rosa II

**Sense of Pride:** Being part of the team that has produced the most delivered light jet in the executive aviation industry for over a decade is an immense source of pride. Each team member contributes to a product renowned for its excellence, high performance, and innovative design. This pride enhances job satisfaction and motivates team members to maintain the high standards associated with the Phenom 300 program.

**Professional Development:** Working on the Phenom 300 program allows team members to broaden their skills and expertise. From product design and development to marketing and customer service, team members gain extensive experience in various aspects of the aviation industry. Furthermore, the program's use of cutting-edge project management methodologies allows team members to stay at the forefront of industry practices and technologies.

**Collaboration and Teamwork:** The Phenom 300 is a complex program involving multifunctional and multicultural teams. Working in a diverse and collaborative environment fosters strong teamwork and communication skills. It encourages team members to respect different viewpoints, learn from each other, and work together towards a common goal. This collaborative spirit strengthens the team dynamic and enhances the overall work experience.

**Motivation and Engagement:** Being a part of the Phenom Program provides team members with a profound sense of purpose and motivation. It isn't just about being part of producing a superior aircraft model but also contributing to an innovative product that constantly pushes boundaries and leads the aviation industry. This dynamic environment encourages individual growth and skills development and ignites a sense of accomplishment and personal satisfaction..

In summary, the Phenom 300 series program is more than just a successful product for Embraer. It's a source of pride, a platform for professional growth, and a testament to the power of collaboration for each team member involved.

➤ **Clearly define the contribution of this program/project to the greater good (society, security, etc.)**



**Supporting Emergency Response and Medical Evacuation:** The Phenom 300 series, with its performance and reliability, can serve as a critical resource in emergency response efforts. It can be used for medical evacuations or disaster relief, providing fast and reliable transportation when time is of the essence. Additionally, its capacity to be converted into a medevac configuration underlines its versatility and contribution to societal health needs.

**Rapid Response for Healthcare Logistics:** Given the speed and efficiency of the Phenom 300 series, it served as a fast transportation vector for vaccines. In times of public health crises, this capability was crucial to ensure timely distribution and accessibility.

**Environmental Responsibility:** The Phenom 300 series also stands out for its commitment to environmental responsibility. It is designed to have low emissions, aligning with global efforts to reduce the environmental impact of aviation. This commitment to sustainability illustrates the program's dedication to the greater good, including initiatives with SAF (Sustainable Aviation Fuel).

**Embraer Foundation Contributions:** The Phenom 300 series also contributes to the Embraer Foundation's efforts to improve lives. The Phenom 300 is one of the aircraft in Embraer's fleet used to transport children who need medical treatment, thus making a difference in individual lives and contributing to broader well-being.

## **ORGANIZATIONAL BEST PRACTICES AND TEAM LEADERSHIP**

Value: 35 points

Use 12 pt. Times Roman typeface

Please respond to the following prompts:

➤ **15 points: Describe the innovative tools and systems used by your team, how they contributed to performance and why**

**Using the PMX System:** The Phenom 300 series program took full advantage of Embraer's in-house Program and Portfolio Management system, PMX. Tailored to manage project requirements, scope, and opportunities, PMX served as a unified platform that streamlined project management. By centralizing information and improving communication lines across diverse, multi-functional teams, PMX elevated the efficiency and synergy of the project's execution.

**Applying Critical Chain Project Management (CCPM) Methodology:** The application of CCPM, grounded in the Theory of Constraints, proved transformative for the project's schedule management. This approach focuses on strategic resource allocation and the critical path, which are the most significant constraints in a project timeline.

By identifying and addressing these bottlenecks, CCPM allows for the optimization of project timelines and ensures the most efficient route towards project completion. This methodology helped the team prioritize and sequence tasks effectively, thereby streamlining workflows and minimizing delays.

In the Phenom 300 series program, the CCPM methodology was fundamental to the successful delivery of the Phenom 300E enhanced model. Despite the complexity and potential challenges, the program was executed on time and within budget, a testament to the power of CCPM in overcoming constraints and achieving project goals.

**Leveraging JIRA for Real-Time Project Oversight:** The project further benefitted from the integration of JIRA, a leading project management tool. This software provided real-time and online visibility of the project's status, fed directly by task executors and seamlessly linked to the CCPM schedule database. This integration interconnected the entire project schedule, prioritizing resources based on real-time updates. Moreover, JIRA facilitated precise allocation of working hours and enabled accurate cost tracking throughout the project. By the application of JIRA, the project team could maintain a tight grip on the project's progress, costs, and resources, enhancing the overall project management excellence.

The Phenom Program also adopted a forward-thinking approach by integrating the principles of Agile project management, specifically Scrum Sprints, with Critical Chain Project Management (CCPM) boosting the capabilities of JIRA. In conclusion, the Phenom Program's innovative integration of JIRA, Agile Scrum Sprints, and CCPM served to strengthen project efficiency, responsiveness and success.

**Harnessing Business Intelligence:** The project leveraged Business Intelligence (BI) tools to drive data-driven decision making and optimize project outcomes. These tools facilitated the creation of custom reports, revealing new data relations and uncovering existing correlations. By visualizing data trends and patterns, the team could more easily anticipate budgeting requirements, control cost allocations, and identify areas for operational efficiency. This use of BI tools not only helped the team stay on top of current project statuses but also provided predictive insights for future planning, ultimately maximizing project results. This systematic and strategic use of data transformed raw information into valuable insights, contributing to the project's overall management excellence and financial success.

➤ **10 points: Define the **unique** practices and process you used to develop, lead and manage people?**



The team forms the core structure at Embraer, creating a synergy that fuels our capacity to meet challenges and innovate. Our team is not only a functional unit executing tasks but also a dynamic assembly of diverse professionals. We are engineers, project managers, designers, and more, each contributing unique expertise and viewpoints. This diversity strengthens our ability to approach problems from various angles, fostering innovative solutions and continually driving our standards of excellence higher. Through mutual respect, shared goals, and a culture of collaboration, the team navigates complexities and thrives in the rapidly evolving aviation landscape.

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**Core Team Meetings:** A critical tool in our project management approach, these meetings offer a regular forum for discussion, decision-making, and strategy formulation. Our team members from different specialties come together to share updates, discuss challenges, and align on project direction. It's in these sessions that our diversity truly shines, as varied perspectives interplay to yield fresh insights

and innovative solutions. By fostering open communication and collaboration, these meetings empower our team to navigate complexities effectively, keep the project on track, and adapt swiftly to any changes or challenges in the rapidly evolving aviation landscape.

**Program Excellence Manual:** This resource serves as the comprehensive repository of top-tier practices within Embraer, specifically curated for the program management environment. It's not just a manual, but a dynamic knowledge hub that condenses the program collective knowledge, experience, tools, and practices.

Conceived as a virtual platform, the Program Excellence Manuals enable the seamless exchange of best practices among different Embraer programs. This organized integration facilitates the application of successful strategies and solutions across the company. In essence, it's a key feature for our continuous learning culture, ensuring that the innovative and efficient solutions developed within one program can be utilized for the benefit of all. It fuels our commitment to continuous improvement and relentless pursuit of excellence.

**Embraer Leadership Academy:** an internal initiative designed to nurture and develop both existing and new leaders within our company. Positioned as a cornerstone of our people management practices, the Academy offers an all-encompassing training curriculum that includes leadership skills, industry best practices and essential soft skills.

The program not only enhances our leaders' managerial abilities but also enhances their soft skills, building well-rounded leaders equipped to meet the challenges of the dynamic aviation industry. This balanced approach to leadership development ensures that our leaders are poised to guide their teams effectively, driving both personal and professional growth.

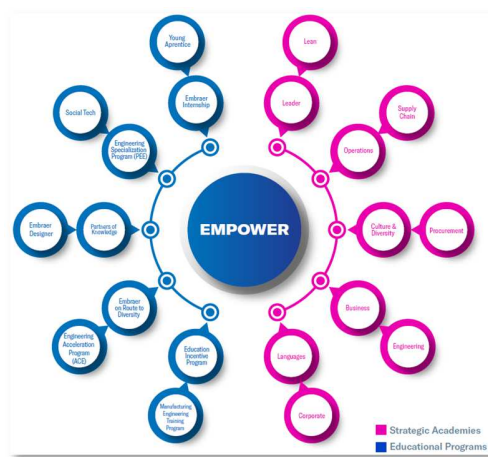


Figure 2 - Empower Education Ecosystem

**The Empower Women Program & Embraer Embrace:**

These programs aim to foster diversity across all levels of the organization, including senior leadership, guided by the targets set in the corporate ESG program. These initiatives are designed to foster professional growth and advance career trajectories.

Within the Phenom program, members have actively coordinated the Embrace initiative, ensuring its successful implementation across the company. In addition, the program adopts a mentoring approach among women, where established leaders within the organization act as mentors for early-career professionals. This exchange of mentorship facilitates a culture of continuous learning, empowerment, and inclusivity, driving individual and organizational success.

Leaders and aspiring leaders within the Phenom program are given the tools and guidance needed to develop their leadership skills, preparing them for more senior positions within the organization. This approach cultivates a robust pipeline of future leaders, ensuring Embraer's continued growth and success in the aerospace industry.

➤ **10 points: How did you leverage skills and technologies of your suppliers?**



## Fit for Growth (F4G): Embraer's Strategic Pursuit of Excellence

Since 2019, Embraer has been executing a strategic program known as Fit for Growth (F4G). Crafted with the primary objectives of Performance Excellence, Efficiency, and Value Addition, F4G was designed by Embraer Procurement to foster integrated supplier management across various Embraer departments, ensuring adherence to four core pillars of the program.

Governance of the F4G program is meticulous, with Embraer's working teams meeting every week to evaluate supplier performance and explore new opportunities. Additionally, quarterly executive meetings with supplier leaders foster open process enhancements, competitiveness, sustainability, innovation, and potential collaborations.

F4G operates on the strength of a multidisciplinary team, the WTTs. The WTT consolidates a collaborative approach, common goals, and setting key performance indicators (KPIs). In addition, each WTT is sponsored by an Embraer director, ensuring the allocation.

facilitating crucial discussions, establishing program's sustainability and appropriate resource



Figure 4 - Work frame of the Fit for Growth

The Fit for Growth (F4G) program aims to nurture a cooperative relationship between Embraer and its suppliers. By fostering supplier capabilities, we ensure our partners grow with us, creating a mutually beneficial environment.

This growth is not merely financial but also regarding skills, knowledge, and capacities. We help our suppliers enhance their technological expertise, management practices, and operational efficiency. Through these efforts, we have created a network of suppliers who are not just vendors but true partners, integral to our mutual success.

As our suppliers grow, they can provide more value and contribute more effectively to our operations, ultimately leading to an enhanced product offering for our customers. In this way, the F4G program contributes significantly to maintaining our competitive and technological edge in the marketplace.

## DEALING WITH PROGRAM COMPLEXITY (VOLATILITY, UNCERTAINTY, COMPLEXITY, AMBIGUITY, or VUCA)

Value: 25 points

Use 12 pt. Times Roman typeface

Please respond to the following prompts:

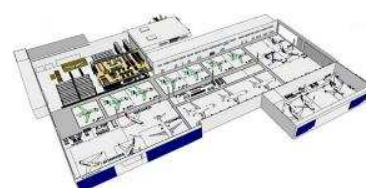
- **10 points: Describe UNIQUE areas of VUCA faced by your program and why. (Please avoid the issues surrounding Covid-19 pandemic, which was faced by all programs.)**

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**High Level of Product Customization:** The Phenom 300 stands out for its remarkable customization options to customers, allowing a unique level of personalization in the executive aviation industry. However, this highly tailored approach introduces a considerable degree of complexity to the program's daily operations. It requires a diligent understanding of the customer's specific demands, translating those demands into actionable requirements, developing unique solutions, and their subsequent production. In addition, the lack of product standardization can imply a slower production learning curve and pose potential disruptions to the supply chain due to the required variation in components and configurations.

**Response to the challenge:** Confronting these complexities, Embraer's robust operational management ensures a pace-controlled execution, thereby creating an aircraft that perfectly embodies the customer's vision. All of that relies on two key tools. First, our in-house development tool, the "Solid Path," guide every step from receipt of a customer configuration to the final assembly of the aircraft. The Solid Patch determines the pace of each task, encompassing engineering development activities, parts purchasing, and assembly. And second, another relevant tool developed to overcome the challenge is the Product Configuration Manager (PCM), that correlates all available engineering solutions with the customer's desired configuration. This efficient system minimizes the need for repetitive engineering analysis and instantaneously configures an aircraft using existing solutions, expediting production, and maintaining the program's responsiveness.

**Hybrid Production Line:** Manufacturing highly customizable and complex aircraft like the Phenom 300E alongside other Embraer Executive Jets models in a shared assembly line presents considerable challenges. These encompass efficient resource allocation, intricate scheduling, managing a diverse supply chain, cross-training personnel, and line balancing. Successfully navigating these everyday challenges is crucial to maintain the assembly line's efficiency..



**Response to the challenge:** The key to efficiently managing this challenge is a meticulously planned and executed production schedule that meets each model's assembly requirements without compromising the quality or delivery timeline.

Embraer leverages its experience in aircraft manufacturing and innovative management practices to optimize the shared production line. The company minimizes potential bottlenecks and efficiently allocates resources across different models by employing advanced planning tools and Lean manufacturing principles such as Pull System, Continuous Flow, and Value Stream Mapping. This flexible and adaptable approach ensures seamless production flow, allowing Embraer to continue delivering high-level aircraft quality on schedule and budget.

**Fierce Competition and Time to Market:** The executive aviation industry is known for its rapid advancements and fierce competition. Competitors constantly enhance their offerings and make technological leaps to gain a competitive edge. This fast-paced environment requires Embraer to actively monitor the market to build competitive intelligence and to respond rapidly, innovating and upgrading its products to meet and exceed customer expectations.

**Response to the challenge:** Embraer has capitalized on its strengths in agile development, effective requirement revisions, and accommodating scope changes quickly. Recognizing the industry's dynamic nature, the program has instituted a robust approach of continuous improvements, which involves a deep understanding of the product development steps and production stages to optimize opportunities

to shorten the development cycle and consequently anticipate the time to market. In addition, the PMX tool is constantly used to support these project revisions and changes, consolidating the communications, and formalizing the approvals quickly. As a result, agility has become one of our mottos, enabling Embraer to respond to changes rapidly and efficiently, thereby maintaining our leading position.



**New technologies:** Updating an already well-established platform like the Phenom 300 series is a task that involves complexities, particularly when introducing new technologies. Significant upgrades have been made to the Phenom 300E, including increased speed, expanded range, and state-of-the-art avionics, including ROAAS. Each of these enhancements improves the aircraft's performance and successfully manages the inherent complexities associated with integrating advanced technologies.

Another key challenge was navigating with the certification authorities toward new technologies. Certification compliance is a significant aspect of aviation innovation. Therefore, introducing sophisticated features and systems into the Phenom 300E had to be carefully managed, ensuring full compliance with all certification aspects and achieving an optimal balance between innovation and operational simplicity.

**Response to the challenge:** the Phenom Program applied the core Embraer value of facing complexity with simplicity. The program management team focused on systemizing and simplifying the integration of new technologies. The teams developed strategies and processes that met performance goals without overwhelming the system or compromising program development efficiency. This approach allowed for the seamless integration of new technologies into the Phenom 300

The Phenom Program also acknowledged the importance of early and continuous engagement with certification authorities. This proactive approach helped to mitigate potential ambiguities and obstacles in the certification process. Early involvement ensured that the regulatory agencies comprehensively understood the new technologies and their operation. As a result, certification issues were anticipated and addressed promptly, minimizing delays and uncertainties.

## METRICS

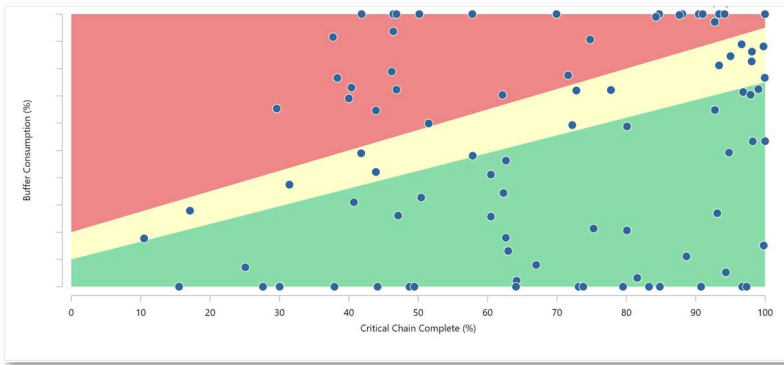
Value: 15 points

Use 12 pt. Times Roman typeface

Please respond to the following prompts, where predictive metrics indicate items that provide a view of how yesterday's actions and today's actions will affect the future timeline, cost or other requirement.

Provide charts/graphs that illustrate performance to these metrics:

- **What are your predictive metrics?**
- **How did you perform against these metrics?**
- **How do your predictive metrics drive action toward program excellence? Please provide examples.**

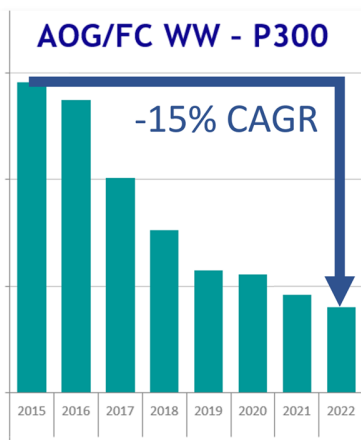


### **Optimizing Program Delivery: Leveraging Critical Chain and Buffer Management.**

The Project Management team at Embraer extensively employs Critical Chain Project Management (CCPM), a methodology that has been widely adopted by the company over the past decade. It supports tracking the progress of key program milestones using various predictive tools, including fever charts that monitor the status across all projects.

**Metric:** Project progress is monitored through a tool known as a fever chart, which measures buffer consumption for each project over its lifespan. This provides active, real-time tracking and management of buffer usage, enabling the project team to identify potential schedule slippages or resource constraints and take preventive or corrective actions as needed.

**Actions towards excellence:** To improve data accuracy and enable more precise predictions for decision-making, a real-time digital connection was established with Jira, a popular web-based tool. This system allows the executor to update each task (or project line) online. This change facilitated continuous tracking of project health and progress, removing the need for manual updates. Digital integration has significantly increased the reliability of buffer consumption, enabling more accurate forecasting and timely decision-making, ultimately improving project performance and outcomes.



### **Up and flying, keeping the Phenom 300 airborne, not grounded.**

The Phenom Program relies on a primary metric, the AOG/FC, to ensure optimal aircraft operation. Both metrics rely on real-time data from operating aircraft; as reports roll in, corrective measures are rapidly implemented to prevent recurrence in other aircraft or across the fleet.

**Metric:** The AOG/FC (Aircraft on Ground per Flight Cycle) metric measures the ratio of AOG occurrences (instances when the aircraft cannot fly) to the number of flight cycles (each cycle is counted as one take-off). This metric provides insight into the fleet's performance during a specific period. Given the high priority placed on aircraft availability in executive aviation, this metric is critical.

**Performance:** The performance chart illustrates the Phenom 300 series' KPIs from 2015 to 2022, highlighting a significant decrease of 15% CAGR (Compound Annual Growth Rate) in AOG/FC. This reduction demonstrates a remarkable improvement in aircraft availability and for the end customer.

**Actions towards excellence:** The remarkable improvements towards excellence evident in these results are propelled by the diligent efforts of a dedicated working group called the Tiger Team. This committed committee is entrusted with identifying and addressing the top detractors of the KPI.

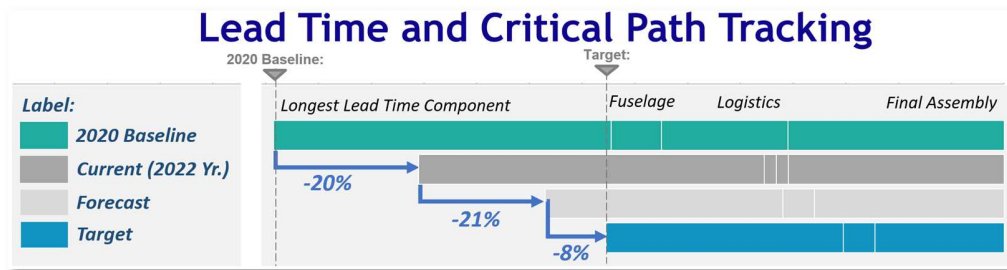
The Tiger Team approaches these challenges with a multi-faceted strategy. Their efforts range from refining and redesigning the product to implementing innovative operational techniques in the manuals. They also work to enhance the operational instructions to prevent recurring issues. The Tiger Team approach not only addresses immediate concerns but also focuses on preventing potential issues from arising in the future,

thereby ensuring an uninterrupted flying experience for the customers. In addition, this team's approach emphasizes the importance of continuous improvement in maintaining high performance and customer satisfaction standards.

### **Production Lead Time and Work in Progress in the Phenom 300 Assembly Line.**

The assembly of the Phenom 300 heavily relies on two integral metrics: Production Lead Time (or Value Stream Mapping - VSM) and Work in Progress (WIP). VSM is the total time taken from receiving a new order to the final delivery of the aircraft to the customer, acting as a significant tool to identify potential bottlenecks and inefficiencies within the production process.

Simultaneously, WIP represents the components and partially completed aircraft currently in production. Effective WIP management ensures smooth assembly operations, optimizes resource flow, and controls capital expenditure. It employs strategies like Lean Manufacturing and Just-in-Time production, helping Embraer swiftly respond to order changes, minimize the risk of overstocking, and maintain the Phenom 300 production line's efficiency and financial health.



**Metric:** The VSM indicator measures the efficiency of a process from start to finish. For example, in manufacturing, such as in the Phenom 300E production, it measures aspects like total production Lead Time, Cycle Time, and Work-In-Progress (number of items being processed simultaneously) and identifies Bottlenecks (points slowing down production).

**Performance:** Implementing the Value Stream Mapping (VSM) indicator in 2020 has contributed to significant improvements, notably a substantial 20% reduction in total production lead time. This streamlined approach ensures more efficient infrastructure utilization and optimizes inventory management, thereby preserving the program's working capital. These enhancements have subsequently increased production throughput within the existing Phenom 300 assembly line.

**Actions towards excellence:** Embraer implemented the VSM and developed a new e-Cycle tool to maintain real-time control of all manufactured, purchased parts and assembly processes. This tool connects all relevant corporate databases, including SAP (Embraer's central software for purchase and inventory), MRP (Material Resource Planning), and EPRO (Engineering Product Structure). This integration using the e-Cycle offers a comprehensive view of the process, from manufacturing a component by an overseas supplier to the final delivery of the aircraft.

The insights derived from e-Cycle supported the decision to revise some industrial assumptions of the Phenom Program. These revisions included insourcing components (from purchased to manufacture), altering the sequence of component installation, and changing installation facilities. As e-Cycle is constantly synced with the program database, regular analysis ensures all process parameters are controlled to prevent an increase in total Production Lead Time. This comprehensive management has proven crucial in optimizing industrial efficiency and maintaining the program's standards.

PHENOM<sup>®</sup> 300E  
BY EMBRAER

