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Thank you for participating,

Gregory Hamilton
President
Aviation Week Network

Acknowledged, agreed, and submitted by

Nominee’s Signature

Jun 5th 2023
Date

Nominee’s Name (please print): Neimar Rogério Berti Vasconcellos.

Title (please print): Program Manager.

Company (please print): Embraer S.A.

NOMINATION FORM

Name of Program: KC-390 Millennium Program Development and Certification.

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- Date: Jun 5th. 2023
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Supplier Approved (if named in this nomination form)

- Date: _____
- Supplier Contact (name/title/organization/phone): _____

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

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?

[LIMIT YOUR NARRATIVE TO THIS PAGE.]

The KC-390 Millennium Program is the result of a long-term partnership between the Brazilian Air Force (FAB) and Embraer that has brought state-of-the-art products to the global defense market.

By means of extremely demanding requirements, the FAB entrusted Embraer with the challenging responsibility of developing a medium-lift military transport aircraft with multi-mission capabilities, designed to perform a variety of missions, including cargo and troop transport, precision cargo airdrop, paratroop operations, air-to-air refueling, aeromedical evacuation, search and rescue, aerial firefighting, and special forces missions, in extreme environmental conditions such as Antarctic region and unpaved runways.

Embraer was ready to use all its knowledge of more than 50 years of experience in the aeronautical industry, in defense, commercial and business aviation markets, to create the largest aircraft ever designed in the southern hemisphere.

A new clean sheet design to surpass the current market segment operational capability, offering higher mission efficiency, easy and affordable maintenance, and the best combination of high performance and low life cycle cost.

In recent years, aiming the Final Operating Capability (FOC), some of the most important operations were successfully certified in a short period of time (KC-390 to KC-390 air-to-air refueling, unpaved runway operation and aerial firefighting, among other certifications), which enabled the KC-390 to conclude the certification tests as well as all technical reports for the FOC certification in less than 4 years after the first delivery and Entry Into Service in 2019.

For all those certifications, Embraer deep dived into the operations scenario with the FAB, capturing more than the customer's detailed needs but also its expectations for the future, in order to reflect them on the KC-390 Millennium design.

The in-flight refueling between a KC-390 tanker and a KC-390 receiver was a major achievement, making the KC-390 Millennium the first aircraft in its class to perform a refueling operation between aircraft of the same size through wing pods.

Moreover, during few months of 2021, Embraer built an unpaved runway in accordance with applicable regulations and carried out the necessary tests for certification on compacted-dirt soil and gravel runway surfaces.

At the same moment of the FOC activities, several operations were performed by the FAB, demonstrating the differential capabilities of this product, such as the accuracy of air drop missions on the Antarctic continent. The KC-390 Millennium was also successfully chosen by Portugal, Hungary, and the Netherlands Air Forces, considering its higher mission efficiency, easy and affordable maintenance, and the best combination of high performance and low life cycle cost.

Currently, after obtaining the FOC in early 2023, the KC-390 advances expanding the platform's interoperability through development and certification of NATO capabilities.



DIRECTIONS

- **Do not exceed 10 pages in responding to the following four descriptions.**
 - Allocate these 10 pages as you deem appropriate, but it is important that you respond to all four sections.
- DO NOT REMOVE THE GUIDANCE PROVIDED FOR EACH SECTION.
- Use 12 pt. Times Roman typeface throughout.
- Include graphics and photos if appropriate; do not change margins.

VALUE CREATION

Value: 15 points

Please respond to the following prompt:

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

Defense Aviation is responsible for a significant part of Embraer's annual revenues and strategic portfolio. To increase the company participation in global defense market, Embraer decided to develop the KC-390 Millennium, based on the highly demanding requirements of the Brazilian Airforce for a new generation of a military multi-mission aircraft.

The biggest and most complex aircraft developed by Embraer and southern hemisphere so far leads to an increase of team's capability and promotes retention of top talents, which is key to accelerate innovation.

Consequently, more than 100 patents were identified in several fields of knowledge such as Landing Gear design, Mechanisms Architecture, Software Algorithms, Flight Control Systems, Airdrop Systems, Air-to-air Refueling System besides organizational processes and development tools.

One significant achievement of KC-390 during the last three years was the certification for cold weather environments conducted by the Brazilian Airforce and Embraer, in Fairbanks (AK, USA) in only 1 week duration. Other platforms use to take much more time to perform those tests.

The preparation and execution of those tests improved the company skills, especially in extreme conditions.

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

The KC-390 Millennium program led the partnership between Embraer and the Brazilian Airforce to a major level, with a product that brought unrivaled mobility, high productivity and operation flexibility at low operational costs on a single and unique modern platform. The program created opportunities with key government partners worldwide, including NATO countries.

KC-390 MILLENNIUM



100+ patents in several fields of knowledge



The performance of KC-390 created a new reference for the customers, enhancing Fleet Readiness, ensuring the aircraft is able to complete their mission as well as preventing Aircraft on Ground (AOG) for the fleet despite its recent Enter Into Service (2019).

A major enabler for this is applying the design best practices from the enterprise Commercial and Executive business units. Another example of good practice is the strategic decision of implementing mature components and systems in partnership with renowned American companies such as International Aero Engines (engines) and Rockwell Collins (avionics). This approach was important to best fit a proven technology to a new military environment.

In 3.5 years of operation and 5 aircraft in service, the fleet reached more than 8,250 Flight Hours and over than 6,000 Flight Cycles since Entry Into Service. The platform efficiency is evidenced by the best-in-class Mission Completion Rate of 99.5% and by the Technical Availability of 80%.

In addition, its Reduced Operational Cost constitutes other key characteristic of KC-390 Millennium, with half of cost (USD/NM/m.ton) of a similar category aircraft in average.

In terms of operation, KC-390 was employed in some international activities such as the Culminating Exercise in Fort Polk (Louisiana, USA), a combined exercise held by the Air Force and Army of Brazil and United States. The activity has shown the capability of KC-390 in paratroopers' night jump, a combat training simulation with modern techniques, experiencing the partnership between the two countries.



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

A complex and multi-mission aircraft provides all team members with close cross-functional interaction since the preliminary design throughout all the development and test phases up to Enter Into Service.

The partnership with the Brazilian Airforce is also a unique opportunity to enhance the team exposure in field operations, with close contact with the end user in many missions.

Evolving to external market customers, team members knowledge expands in a broader scenario of operation, a wide variety of complex systems and requirements as well as specific needs.

Working in such a program harvest patriotic feelings and pride in participating of an innovative product, with state-of-art technology.

Those experiences promote professional development and high engagement, also reflecting high levels of satisfaction in independent media surveys.

The post pandemic reality showed new ways to work and accelerated home office with virtual work methods, recognized as an important benefit for the employees' community.



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

The world is facing transformations in geopolitics and nature disasters and other special needs as occurred during COVID 19 pandemic.

More than a military transport aircraft, KC-390 Millennium is a multi-mission platform with reliability and fast response to attend those demands.

In recent years, several missions were accomplished in different scenarios, assuring benefits to society.

The Brazilian Airforce contributed to many assistance fronts in Brazil, supplying medical goods, oxygen cylinders during pandemic, infrastructure equipment and humanitarian essential items, all around Brazilian territory, supporting hospitals and indigenous tribes in remote Amazon region, for instance.

Supporting worldwide urgent cases was also a priority usage for KC-390 Millennium fleet, which performed missions to transport donations to the victims of the explosion in Beirut in 2020, to provide support to Haiti after the earthquake occurred in 2021 and, more recently, to rescue civilians who left Ukraine in consequences of Russian invasion in 2022.

In terms of environmental protection, KC-390 was certified in 2022 for Fire Fighting missions, contributing to avoid emissions and protect human communities as well as wildlife.



ORGANIZATIONAL BEST PRACTICES AND TEAM LEADERSHIP

Value: 35 points

Use 12 pt. Times Roman typeface

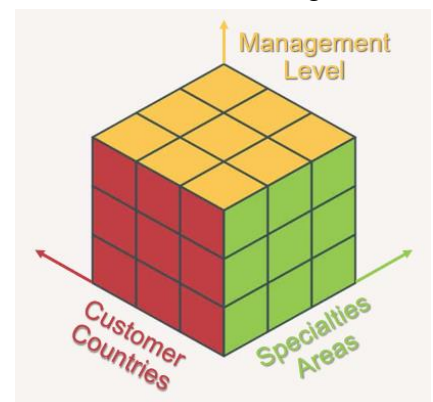
Please respond to the following prompts:

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

EMBRAER leverages from all business units to share best practices and lessons learned throughout the organization. Supported by the P3E - Embraer Enterprise Excellence Program, different tools are used for continuous improvement and excellence. Since the very beginning KC-390 Program considered processes and tools from previous programs and evolved them to ensure an optimized performance.

KC-390 Program evolved from a single customer program (Brazilian Airforce) to a multi customer program including Portuguese Airforce and Hungarian Defense Forces.

A powerful tool for Program Management in Embraer is known as the Core Team framework. For each program a Core Team is defined that integrates the operational areas on different specialties (Engineering,



Supply Chain, Quality, Manufacturing, Customer Support) and different roles to coordinate activities, reinforce ownership and manage execution.

Even when remote work is needed, this manner of teamwork generates intensive collaboration, providing support for problem solving and the necessary readiness for decision-making.

Equilibrating demands for different customers through the Specialties Areas is also a management challenge to make the most efficient use of resources. A cross role approach associated with virtual collaborative tools is essential in the Program organization.

Besides the operational level organization, specific Core Teams at each management level (Tactical and Strategic) were integrated aiming a fast communication and decision making.

It is worthy mention that a key tool that constitutes one of the basis for the Core Team weekly routines is the Critical Chain Project Management (CCPM) with Project Buffers management through Fever Charts, both for Program Development and for the portfolio of aircraft modification.

This combination of tools resulted in reduced development cycle times and cost savings, from operational needs to certification. For example, an unpaved runway was defined and constructed, certification tests were performed, and the certification was achieved in a few months. The support of International Aero Engines with the engines evaluation in extreme environments was crucial.



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

The basis for Embraer’s leadership and management is our organizational values. They shape the behavior of the company and the environment by which our teams perform activities in partnership with customers. Every employee lives for the challenge and knows the importance of serving customers globally, pursuing innovation and enterprise excellence, with teammates respect, compliance commitment, envisioning a sustainable future.

From the very beginning, the leadership on the program keeps team members accountable for their scope of work, including the interfaces, in a collaborative approach. The leadership enables this behavior providing guidance, mentorship, support and progressive exposure to critical work packages, with on-the-job training atmosphere.

In case of someone’s absence, we take the opportunity to cross train and transfer knowledge, supporting less experienced team members to grow, empowering each individual to make decisions and to be a backup on similar roles and projects. This is crucial for customers consistent coverage in a lean structure.

Leadership also evaluates the results and evolution of each member continuously, providing feedback, rewarding performance, and identifying potential leaders.

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

To leverage our partnership approach to supply chain companies, Embraer created the Fit for Growth program, with strategic pillars of Supply chain Management, Operational Excellence and Product Redesign.

Based on shared goals and objectives, with clear indicators, the suppliers engagement is boosted in mutual collaboration to make the program successful. Looking ahead, Embraer challenges suppliers to work collectively as partners to support definition of product roadmaps and sales campaigns.



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.)**
- **15 points: Explain how your team responded to these challenges. What changes did you make, what were the results?**

The need for social distance forced whole teams to suddenly work at home, unveiling the volatility of work culture. Embraer reacted fast, allowing employees to take furniture and equipment from the workplace to home.

KC-390 program took advantage of digital tools to maintain coordination and cross-functional activities, enabling simultaneous work and providing remote access to data servers.

Similar tools, processes and routines were adopted to engage our supply chain partners worldwide, assuring even best performance than in face-to-face activities. In-presence work is now reduced to a few essential meetings such as multi-functional workshops, project reviews and program management meetings. Team members recognize this hybrid work mode as a benefit since the time at home was increased while the waste of time in traffic is reduced.

Like many complex programs, KC-390 experienced uncertainties arising from novelty and innovation in product development. To address this uncertainty, the Millennium team took advantage of highly sophisticated modeling and simulation tools including high fidelity CFD modeling, Engineering Flight Simulator and specific Wind Tunnel Tests. Cargo and parachute airdrop as well as Air-to-Air Refueling missions, are good examples of requirements surrounded by many uncertainties. In early 2021, Embraer was pleased to perform certification tests that confirmed the Air-to-Air Refueling capability between a KC-390 tanker and a KC-390 receiver. This achievement is a result of a best-in-class engineering team, that followed all necessary steps to develop a new capability: analyzing similar designs, participating in real operation with customer, designing specific features, simulating every condition and finally testing. As a result, KC-390 Millennium became the first and unique aircraft in its category to perform a refueling operation between aircraft of the same size from the wing pods.



With the first international contracts, KC-390 Millennium entered the NATO universe and faced another dimension of complexity, a rare case of a non-NATO OEM with resulting restrictions in terms of classified information and equipment, with multiple interfaces and moving parts as suppliers, customers and authorities, from several different countries. In order to enable the product development, tests, and qualification, a strategy was put in place leveraging from OGMA, an Embraer controlled company in Portugal, with necessary experience and clearances to support all activities to certify and qualify NATO systems.

Another complex scenario is the partnership with companies for specific systems such as MAFFS II (Modular Airborne Fire Fighting System) supplied by United Aeronautical Corporation (UAC). Integrating the system in KC-390 showed beneficial situations (when a fast design adaption was necessary, for example) but also some unfavorable cases (when supporting the supplier in certification issues is necessary).

After achieving the FOC certification, the retrofit of all 5 KC-390 for final configuration could start, allowing FAB to use and show to the world KC-390's full capacity. However, at the same timeframe, the production was ramping-up. To overcome the ambiguity between both paths and choices in terms of supply chain, labor and infrastructure, the management team has dedicated a high level of efforts, integration and alignment to produce the best panning solution to meet customer needs.

METRICS

Value: 15 points

Use 12 pt. Times Roman typeface

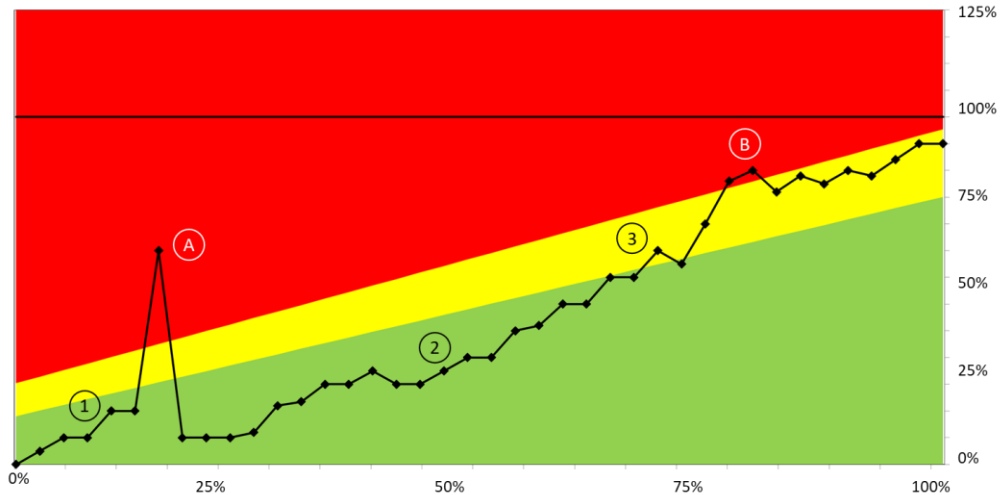
Please respond to the following prompts, where predictive metrics indicate items that provide a view of how yestrday's actions and today's actions will affect the future timeline, cost or other requirement.

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.**

Embraer is widely using CCPM – Critical Chain Project Management technics to control project execution and deliveries. The fever chat is the basic CCPM tool used to evaluate the buffer consumption and determine if the project is likely to be concluded on time or if any hurdle is preventing the project progress. KC-390 is a platform with highly integrated systems that required software development, tests and certification.

In order to mitigate development risks, a software project was split into intermediate deliveries indicated as 1, 2 and 3 in the fever chart presented below:



Each intermediate delivery represents a software load for the process of system certification tests. By performing tests with intermediary releases of software, a faster way to identify issues and solve them in advance was created, protecting the final delivery.

Moreover, at the end of each intermediate delivery, the knowledge of the whole software project increases and planning updates are conducted for the next intermediate delivery.

In this example, after release 1, detailing activities was conducted for the scope of intermediate releases 2 and 3, and a project delay trend showed up in the conformity process procedures (point A).

Identifying this delay trend early in the project is crucial in order to establish a suitable recovery plan. In this case, an increase of 30% in the critical resource was negotiated internally with other areas in the company and was enough to bring the project buffer to a safe level.

However, software conformity activities were more complex than expected and showed a new delay trend after the completion of delivery 3 (point B). This time, at the end of the project, a 40% increase in critical resources engagement was necessary and a more sophisticated approach was used, segregating the team into work groups for parallel execution.

The previous situation (point A) contributed not only to save buffer early in the project but also to conduct to a better solution in terms of workforce distribution and optimization based on lessons learned.