

A Work Project, presented as part of the requirements for the Award of a Master's degree in
Management - Advanced Executive from the Nova School of Business and Economics.

Almadesign: Unleashing collaborative networks

MAGDA DANIELA ROCHA DA
COLA

Work project conducted under the supervision of:

Professor Miguel Pina e Cunha

Doctor Roba Elbawab

27/09/2023

Abstract

Almadesign, a design consulting studio, has positioned as a key player in product design, over 25 years. Its visionary concepts and pioneering designs have earned international honours like the Crystal Cabin Awards. Almadesign' success is rooted in promoting collaborative networks, driving breakthroughs in product design. The strategic focus on R&D and Innovation projects propelled the studio into more complex ventures and international expansion. Almadesign become a solid innovation partner, significantly influencing the Portuguese aeronautic sector's landscape, leaving a mark through commitment and relentless pursuit of excellence.

Keywords

Collaboration, collaborative networks, design, innovation, interdisciplinary, leadership, organizational culture, product design, R&D, strategy.

Acknowledgements

I would like to express my gratitude for the invaluable opportunity to immerse myself in the world of Almadesign during my Executive Master's Work Project. This experience has been incredibly enriching. I extend my sincere thanks to Rui Marcelino for the inspiring conversations and the valuable insights shared throughout this journey.

This work used infrastructure and resources funded by Fundação para a Ciência e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209), POR Lisboa (LISBOA-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences DataLab, Project 22209).

Once upon a dream

It all began with young Rui Marcelino's dream, fuelled by a passion for sketching futuristic cars, drawing inspiration from the captivating realms of science fiction. As a teenager, Rui Marcelino boldly reached out to Pininfarina¹, the legendary design house of Ferrari, seeking guidance to pursue a career as designer. Against all odds, he received a heartfelt response from Diego Otina, the designer of the iconic Ferrari Testarossa², with a simple yet sharp advice: to study mechanical engineering and specialize in design³.

Determined to accomplish his dream, Rui Marcelino enrolled in Mechanical Engineering at Instituto Superior Técnico (IST) in Lisbon. His thirst for knowledge led him to pursue a master's degree in Transportation Design at the Politecnico di Milano in Milan. To further hone his skills, he embarked on an internship at the Alfa Romeo design studio⁴, where his exceptional talent as a designer caught the attention of industry experts.

The opportunity knocked when Rui Marcelino was invited to contribute to the design proposal for the Lisbon-Porto pendular train, a pioneering project led by Sorefame and NOVODESIGN. Although the ambitious project did not take-off, he returned to Portugal driven by a burning ambition to start turning his dreams into reality. Securing a scholarship at IST, Marcelino embarked on his dream job, conceptualizing the design of a robotic and unmanned aircraft. A special project for Rui Marcelino, as it took him back to his childhood imaginings of a futuristic aircraft that would whisk him away to visit his grandparents, shortening the arduous six-hour train journeys between Lisbon and Porto.

The birth of Almadesign

Amidst the dynamic landscape of 1990s, Portugal thrived with substantial investments and infrastructural developments. The renowned international fair EXPO 98 held in Lisbon, ignited

¹ PININFARINA Group, Italian design of global automotive industry with brands such as Ferrari, Lancia, Alfa Romeo, Fiat

² Testarossa Ferrari model launched in 1984, popular for its wedge shape (<https://www.ferrari.com/en-EN/auto/testarossa>)

³ Marcelino 2007

⁴ Castro 2018

a surge in business opportunities to provide innovative design and construction solutions. Rui Marcelino collaborated with the Animation Productions Department of EXPO 98 and with Salvador Caetano during that period⁵. It was then, that he was challenged by Salvador Caetano Group⁶, to design an innovative bus to replace the aging “Delta” coach model, a tribute to the company's 50th anniversary in the coach-building industry⁷.

Rui was initially alone, but soon joined by his former colleagues from NOVODESIGN, Paulo Bago d'Uva and Carlos Castel-Branco. A union that gave birth to Almadesign in 1997⁸.

The pioneer project, ENIGMA, marked Almadesign's first venture, laid the foundation for the enduring partnership with the Salvador Caetano Group. It set the ground for Almadesign's integrated approach to the design process, integrating all phases and embracing collaborative practices at its core. The success of ENIGMA was duly recognized when it received the prestigious National Design Award from the Portuguese Center for Design (CPD)⁹ in 1999, revealing the tremendous potential of Almadesign.

Almadesign swiftly started to be acknowledged as a solid player in the national design sector, gradually expanding their expertise beyond transport design, operating in diverse design areas such as machinery, furniture, electronics, commercial spaces, communication, and shows. The studio's demand increased rapidly, but the three designers held divergent visions about the business. In 2001, Rui Marcelino emerged as the sole partner of Almadesign, driving the studio to prioritize a consistent flow of commercial projects, thus achieving financial stability.

The portfolio flourished, encompassing around sixty projects, ranging from pioneering industrial designs for clients like Adira¹⁰, to immersive retail projects for Sony Portugal and Worten, initiating a consolidation phase for Almadesign within the Portuguese market¹¹.

⁵ Castro 2018

⁶ Salvador Caetano Group, the largest bus manufacturer in Portugal (<https://salvadorcaetano.pt>)

⁷ Fundação AEP 2021

⁸ Castro 2018

⁹ Centro Português de Design (CPD) created in 1985, public entity for implementation of design practices, terminated in 2013.

¹⁰ ADIRA is global provider of engineering solutions for the sheet metal processing industries (<https://adira.pt/>)

¹¹ Castro 2018

Rui Marcelino's unwavering commitment to innovation, his dexterity to adjust to changing circumstances and to build collaborative partnerships across industries, led Almadesign to establish as a prominent design studio in Portugal, with the capability to elevate its partners competitiveness through design.

Lifting Portugal's aeronautics sector

The economic transformations conveyed by Portugal's integration into the Euro Zone and the increasing globalization, posed significant challenges to the aeronautic industry. Stagnation, lack of innovation, and intense competition threatened the sector's future. Felt as unreachable by many companies, as large corporations dominated the industry, e.g., EMBRAER¹².

Rui Marcelino believed in design as a keystone of industry, and that Portugal's unique blend of quality, knowledge, and cost, could be a critical asset in the aeronautic industry. With this vision, he began seizing opportunities and like-minded partners to venture into the aeronautic sector.

In 2005, the opportunity arose, nine Portuguese companies from diverse sectors joined in a financed R&D project, collaborating on a new Microjet model, conceptualized, designed, and produced entirely in Portugal. Microjet made its international debut at the Aircraft Interiors Expo (AIX) in Hamburg, Germany, showcasing the national competencies in the sector.

This breakthrough marked a key milestone, Almadesign gained global visibility within the aeronautics' community for their innovative interiors concept, and the Portuguese companies showcased capabilities internationally¹³. The successful collaboration laid the ground for the creation of PEMAS, Portuguese Aerospace Industry Association in 2006. This collaborative endeavour reignited the national aeronautic industry, enabling Portuguese companies to enter the sector, pooling their resources and expertise in a collective approach, cooperating to innovate¹⁴.

¹² EMBRAER, Brazilian multinational aerospace manufacturer (<https://embraer.com>)

¹³ Marcelino 2007

¹⁴ AICEP 2018

When a crisis makes you stronger

Portugal faced significant economic challenges during the 2008/9 financial crisis, including falling Gross Domestic Product (GDP), high unemployment, and rising government debt. Almadesign, like other companies, experienced the impact of the crisis with reduced project volumes and constraints on investment¹⁵. In the storm of uncertainty, Rui Marcelino stayed undiscouraged. Instead of succumbing to the storm, he saw an opportunity to reinstate the path for the studio, one that would refine their strategy and drive. Amid a wealth of R&D and Innovation potential projects that had sank in the backlog due to time and resource constraints, Rui Marcelino recognized the untapped potential within this treasure trove of ideas.

Almadesign shifted part of business focus towards long-term R&D ventures, emphasizing the importance of innovation and fostering strategic partnerships that would elevate the studio's position in the industry. Rui Marcelino embarked on seeking out like-minded visionaries to board on ventures that would inspire other companies to rise above the challenges of the times. With external financing secured, Almadesign weathered the storm investing in R&D and Innovation Projects shaped through collaborative networks¹⁶.

In a visionary move to create innovative design solutions for existing and emerging challenges, Almadesign created the ALMANITEC in 2008, an Innovation Lab dedicated to pioneer R&D activities in complementary domains of design, including production technologies and ergonomics. Almadesign achieved a significant milestone in 2010 when ALMANITEC R&D Innovation Management System received the NP4457:2007 standards certification¹⁷.

Amidst this journey, Rui Marcelino made another critical decision in Almadesign management. Making an everlasting partnership at the commands of Almadesign, invited André Castro in 2009 to be Almadesign's partner with a 10% stake in the studio¹⁸.

¹⁵ Castro 2018

¹⁶ Castro 2018

¹⁷ Marcelino 2013

¹⁸ Marcelino 2013

André had joined the designers' team in 2001, as a Design Architect. He quickly discovered a realm of inspiration in Almadesign's visionary outlook and impressive portfolio of projects. A fertile ground to cultivate his creative talents, while steadily honing his technical prowess, organizational finesse, and project management skills. It was more than just a professional growth for André, as he worked closely with Rui Marcelino, the seeds of a shared passion for science fiction and aeronautics took root. André's childhood dream of becoming an astronaut found its course by Rui Marcelino's determination and enterprising spirit to breakthrough the national aeronautic industry, getting him closer to his inspirations within that dynamic landscape. Rui and André shared vision of innovation, and mutual dedication to excellence, propelled the studio's evolution and established a robust strong base.

André's involvement in Academia increased the studio value dimension. Actively engaged since 2007 in teaching design, ergonomics, sustainable design, and sketching rendering techniques at FAUTL¹⁹, reinforced the studio fresh perspectives, innovative knowledge, and access to emerging design practices. Encouraging a dynamic integration between industry and academia, Almadesign could stay at the forefront of design thinking and leverage the latest advancements in their projects. Through the stormy period between 2007 to 2012, the studio delivered over two hundred projects, from concept proposals to development and industrialization of products, using interdisciplinary innovation and nurturing an environment of collaboration and innovation²⁰.

Winning the “Oscar”

The breakthrough project LIFE (Lighter, Integrated, eco-Friendly, and Efficient), an R&D EU funded project, mobilized six different organizations, all PEMAS co-founders, into a cooperation that permitted Portuguese companies to surpass their traditional roles.

¹⁹ Faculty of Architecture, University of Lisbon

²⁰ Castro 2018

Almadesign's expertise used as conceptual integrator, led to interdisciplinary collaboration, in a shared positive mindset of cooperation to develop visionary aircraft cabin designs. The companies in the consortium included Almadesign, Amorim Cork Composites²¹, Couro Azul²², INEGI²³, SERNIS²⁴, and SET²⁵²⁶.

The success of LIFE project garnered international recognition with Almadesign winning the Visionary Concepts category at the prestigious 2012 Cristal Cabin Awards. An accolade which validated Almadesign's collaborative approach and ability to conceive and develop complete integrated solutions,



Figure 1: Mock-up of LIFE, awarded with 2020 Cristal Cabin Award

as stated by Rui Marcelino *“Life has strengthened and promoted a more multidisciplinary and cooperative approach of working for future aerospace projects”*²⁷.

LIFE project also served as a case study for the OECD²⁸ project Green Growth & Eco-Innovation, further cementing the studio as a leader in sustainable design practices²⁹.

A pivotal moment for Almadesign arrived when the captivating visualization of LIFE mock-up took centre stage before the TAP³⁰ President, unlocking an exceptional business opportunity: the invitation to craft the cabin interiors for the future A350s for TAP.

The opportunity expanded to a more ambitious project: the retrofit of TAP's entire cabin interiors fleet wide in 2014. Almadesign's proven approach to involve all relevant stakeholders from the beginning, allowed for the seamless articulation of TAP design directives and the

²¹ Amorim Cork Composites is the cork industry world leader (<https://amorimcorkcomposites.com>)

²² Couro Azul is a leather manufacturer with strong position in the Auto, Railway and Aircraft markets (www.couroazul.com)

²³ INEGI, Institute of Science and Innovation in Mechanical and Industrial Engineering, a Research and Technology Organisation (RTO) founded in 1986, with expertise in composite structures (www.inegi.pt)

²⁴ SERNIS, Portuguese technology solutions company, manufactures and supplies products, services, and solutions for road safety, in areas of Full Colour. Electronic Displays, LED Lighting and Optical Fiber, (www.sernis.com)

²⁵ SET, IBEROMOLDES Group, a computer simulation, prototyping, and toolmaking specialist (<https://set.pt/index.html>)

²⁶ AICEP 2011

²⁷ AircraftInteriorsInternational.com 2011

²⁸ Organisation for Economic Co-operation and Development (OECD) (<https://www.oecd.org/about/>)

²⁹ Marcelino 2013

³⁰ Portuguese Airlines (TAP - Transportadora Aérea Portuguesa)

creation of a unique identity for the cabin interiors. By collaborating closely with suppliers, including original equipment manufacturers (OEM), seat manufacturers, and textile producers, Almadesign elevated TAP brand value and passenger experience, defining lighting, colours, materials, and finishes for the cabin linings³¹.

In Almadesign's DNA

Within the vivid walls of Almadesign, a youthful spirit and a culture of creativity remains over the years, nurtured by the harmonious blend of diverse team members' profiles. With a shared passion for aeronautics, sci-fi, cinema, architecture, and comics, inspires to surpass boundaries, cemented by a common sense of purpose, each one contributes to a grand vision of building a sustainable future for all³².

Catarina Ferreira's path intertwined with the two visionary mentors, André Castro, and Rui Marcelino, during her undergraduate and master's courses at the FAUTL Architecture School, who taught her in the disciplines of Project. Her capabilities did not escape the keen eyes of André and Rui, always in search for talents, saw in her the perfect fit for the team.

In 2009, Catarina's dream of joining Almadesign became a reality, inspired by the vision of design as a force for shaping a brighter future and how her work could contribute to a greater purpose. Her creativity skills found a new home in Almadesign's projects. Catarina first unique and exciting opportunity was brought by LIFE project, ignited her spirit, and broaden her knowledge, providing a platform to forge everlasting connections with the diverse organizations involved. She immersed herself in the dynamic streams of product innovation, becoming a vital key member in the studio and in the major R&D and Innovation endeavours by Almadesign.

At the heart of Almadesign beats an ethos of collaboration, fuelled by the essence of Rui Marcelino's visionary leadership. Under his guidance, Almadesign has flourished, accumulating

³¹ Marcelino 2017

³² Castro 2018

invaluable expertise and knowledge gained in collaborating with multidisciplinary and interorganizational teams. Employing a structure methodology within an open culture of cross-sharing knowledge, relationship building, the studio stands as an example of creativity, where diverse minds unite to conceptualize innovative solutions that inspire and reshape industries.



Figure 2: Almadesign team, in 2022

The stability of the Almadesign team becomes vital in absorbing the complexities of their projects, with a steadily growth over the years (3-6 from 1997 to 2001; 3-8 from 2001 to 2007; 8-10 from 2007 to 2012; 10-14 from 2012-2017; and 14-15 from 2017 to 2023)³³, contributed to sustain the studio culture, reinforcing processes and methodologies, and its leadership induce. The very essence of collaboration flows through Almadesign' people. Beyond technical prowess, social and interpersonal competences, workload capacity, and creative skills, new designers to join the team must be prone to effectively communicate and seamless collaborate with engineers and engineering departments, as pivotal attributes that define their team.

Nurturing collaborative networks for industry revival

Rui Marcelino's profound sense of mission and heartfelt purpose, centred on the importance of design as a strategic asset for business, and industry revitalization in Portugal, has been a driving force behind the resounding success of his collaborative endeavours.

³³ Castro 2018; Rui Marcelino, personal interviews, March 22, May 9, and July 7, 2023

In 2006, when Rui Marcelino and a group of like-minded individuals came together to create PEMAS, a year of intense discussions preceded its foundation, defining working methodologies that would guide their partnership, while setting aside potential conflicts of interest. Leonel Jesus, Director at SET, one of PEMAS' co-founders, emphasized that the methodology that was established, not only removed formalities but paved the way for PEMAS success, *“It established targets, structured communication and facilitated effective collaboration. The true value of this network became evident through knowledge sharing and open discussions, a strong team spirit, which over the years led to quicker project turnarounds”*³⁴.

The methodologies and rules, established at PEMAS' foundation remain the cornerstone of their success. As new members join the association, they are required to embrace these methodologies, ensuring consistent adherence to the rules.

PEMAS experienced a remarkable growth over the years, expanding its membership from 9 to 40 companies by 2016. Building on its success, recognized by the Government, captivated the interests of the Defence and Space industries, evolving into the Portuguese Cluster for the Aeronautic Space and Defence Industries (AED) in 2014. A winning union between PEMAS, the National Association of Defence (DANOTEC), and the National Association of Space (PROESPAÇO). Headed by Rui Marcelino, this collaboration flourished with a dynamic ecosystem of approximately 120 associated companies by 2023³⁵.

With mobility as Almadesign's core focus, Rui Marcelino set his sights on replicating the collaborative network approach to the railway industry. In 2015, he played a pivotal role in co-founding the PFP, Portuguese Railways Platform Cluster, aimed at reactivating Portugal's railway sector, uniting eight entities from: public sector (CP, REFER); private sector (Evoleo, Nomad Tech, Almadesign); and academia (FEUP³⁶ and IST).

³⁴ Leonel Jesus, personal interview, September 18, 2023

³⁵ AED 2023

³⁶ Faculty of Engineering of University of Porto - FEUP

Rui Marcelino served as a board member of the PFP, witnessing a remarkable growth, reaching 112 associate companies by 2023³⁷.

Almadesign played a key role as a concept integrator within these collaborative networks, bringing the human experience perspective to the product/project, allowing the diverse partners to converge in a shared vision, visualizing the materialization of concepts and ideas.

In 2023, Rui remained at the boards of PEMAS/AED and PFP, as well as in boards of cross-sectorial business networks, namely “Forum Oceano” (sea economy association) and at COTEC Portugal (business association for Innovation). Rui Marcelino's active engagement in nurturing all these collaborative networks, takes up a significant 35% of his time³⁸. The high demand on Rui presents a considerable time management challenge, hindering his ability to fully immerse himself in the creative process that he once deeply cherished and enjoyed in the studio.

A second "Oscar", no longer a coincidence

The 2019 edition of the Paris Air Show³⁹ became a remarkable occasion for Almadesign and Eviation⁴⁰ as they unveiled ALICE, a groundbreaking all-electric zero emissions aircraft prototype, capable of accommodating nine passengers and two crew members. This remarkable achievement was the culmination of an intensive eighteen-month collaborative effort, bringing together an impressive group of international partners from various segments of the global supply chain. Companies from countries such as France, Italy, Singapore, Germany, South Korea, Australia, the USA, and Israel, contributed to the realization of this innovative project⁴¹. Entrusted with the aircraft interior cabin prototype, Almadesign undertook the challenge designing, developing, and prototyping it with various components. Catarina Ferreira

³⁷ PFP 2023

³⁸ Rui Marcelino, personal interviews, March 22, May 9, and July 7, 2023

³⁹ Paris Air Show, trade fair and air show held in Paris–Le Bourget Airport in France, showcases developments in the global aerospace and defence industry (www.siae.fr/en/)

⁴⁰ EVIATION is a manufacturer of electric aircraft, aviation industry (www.eviation.com)

⁴¹ InnovationsoftheWorld.com 2021

passionately describes this project as one of the most thrilling and captivating experiences she has been a part of: *“The briefing itself was fantastic! It granted us complete creative freedom and encouraged forward-thinking. We were inspired to envision a sustainable aircraft, exploring endless possibilities with various materials, and embracing innovative trends, including the incorporation of recycled and reused materials. We all wholeheartedly embraced the challenge of creating a real and tangible impact in sustainability, an endeavour that excited us in building a greener and more environmentally conscious future”*⁴².

The studio ensured that diverse needs and expectations were artfully integrated into design, by engaging customers and partners in an open dialogue, also leveraged on Virtual Reality technology to create an immersive cabin walkthrough experience. This allowed Almadesign and Eviation to validate the design solutions before proceeding to the prototyping phase, encouraging seamless alignment between the design team and the aircraft manufacturer.

ALICE won the 2020 Crystal Cabin Awards edition, over intense competition. 105 entries were submitted by airlines, aerospace suppliers, universities, design houses, aircraft manufacturers, representing 21 countries. The final list had 24 finalists, selected by an expert international judging panel of 27



Figure 3: The interior of ALICE aircraft, winner of 2020/21 Crystal Cabin Award

members. ALICE outstanding innovative design was also distinguishing in 2020 by iF Design Award⁴³, one of the most valued design competitions worldwide.

⁴² Catarina Ferreira, personal interview, July 19, 2023

⁴³ iF DESIGN AWARD, one of the most prestigious design awards in the world, <https://ifdesign.com/en/>

Evolving into an international powerhouse

Almadesign remarkable journey into the international market within the aeronautics industry, has been marked by persistence, collaboration and significant projects that boosted the studio visibility on the global stage. The first breakthrough came with the LIFE, which earned international attention and opened doors to new opportunities. Recognizing the potential of the international market, Rui Marcelino and André Castro, actively engage in international fairs and industry events each year to connect with key players, network, explore new opportunities, and stay alongside of industry dynamics and latest trends.

In 2015, a first Almadesign's major international R&D collaborative endeavour was brought by PASSME⁴⁴, a European H2020 initiative, with duration over three years, aimed at improving air travel experiences⁴⁵. Almadesign collaborated with 12 partners from seven countries to design interior changes that enhanced user experience and streamlined boarding times. Again, the project success demonstrated Almadesign's expertise in user interface designs and innovative solutions for airport spaces. The innovative aircraft seat developed by Almadesign, was short listed in the 2018 Crystal Cabin Awards⁴⁶.

Moreover, Almadesign participation over the years in R&D projects like FLEXCRAFT⁴⁷, PASSARO⁴⁸, HERA⁴⁹ and FLY.PT⁵⁰ has demonstrated the studio ability to drive innovation, foster cross-industry collaboration, create products that transcend boundaries and the commitment to sustainable aviation solutions, all done in close collaboration with renowned entities and industry leaders.

⁴⁴ Personalised Airport Systems for Seamless Mobility and Experience <https://cordis.europa.eu/project/id/636308>

⁴⁵ International Airport Review 2018

⁴⁶ Marcelino 2022

⁴⁷ FLEXCRAFT modular aircraft that allows cabin reconfiguration for different flight missions (e.g., passenger and cargo transport, surveillance, agriculture) (<https://www.almadesign.pt/projectos/flexcraft>)

⁴⁸ PASSARO (caPAilities for innovative Structural and functional teSting of AeROstructures) approved for funding under a call for Clean Sky 2 Core Partner's (<http://passaro-project.eu/index.asp>)

⁴⁹ HERA project, EU funded, will develop environmentally friendly regional aircraft (Hybrid-Electric Regional Architecture), (<https://cordis.europa.eu/project/id/101102007>)

⁵⁰ FLY.PT project combines an autonomous vehicle with an aerial drone with a passenger cabin, allowing simultaneously horizontal and vertical mobility (<https://www.almadesign.pt/flypt>)



Figure 4: PLYPT.PT concept presented at Paris Air Show Le Bourget 2023

As creative product designer, Catarina Ferreira sees the international journey ahead of Almadesign as exciting as daunting. Fuelled by the passion to push the boundaries of innovation and revolutionize the use of sustainable materials in technologically advanced products, the increase participation in international R&D projects, unleashes the prospect of the studio to evolve in more complex and ambition projects within the aeronautic industry.

EVE project mirrored that, an Embraer project for a future within 10 years, were Almadesign's captivating collaboration with EVE Team, resulted in an inspiring electric vertical take-off and landing (eVTOL) aircraft cabin mock-up. Not only was prioritized passenger intuitive design, as the use of sustainable and eco-friendly materials. Almadesign's cabin concept was listed in 2023 Crystal Cabin Awards finalists.



Figure 5: the Cabin interior of eVOTL mock-up, presented at Farnborough Airshow in June 2023

As of 2023, 80% of their projects are focused on R&D, with 35% of those being R&D and Innovation projects. Furthermore, 60% of their sales originate from international markets⁵¹.

⁵¹ Rui Marcelino, personal interviews, March 22, May 9, and July 7, 2023

“The best way to predict the future is to design it”⁵²

As we delve into the pages of Almadesign's 25th-yearbook, it lights a remarkable journey filled with challenges and breakthrough achievements, where collaborative networks have been critical in Almadesign's success, breathing new life into the Portuguese industry. It is adorned with various prestigious awards for pioneering R&D and Innovation projects, where underlines a talented team of creative and versatile individuals, committed to shaping a better world through design. Almadesign's ethos echoes loudly *“We believe that innovation happens through the creation of bridges between different sectors and active participation in cooperative networks, such as those we are proud to have helped to create and grow”⁵³*.

As an SME in Portugal aspiring to further its presence in the aeronautics industry, a demanding and ever-evolving sector with fertile ground for future innovations - what lies ahead? How can the studio sustain a position at the forefront of these exciting developments and help Portugal's industry shine on the international stage? Yet, within an ever-changing environment, pressing questions emerge. How should Almadesign strategize in the event of a downturn in R&D funding? How can they sustain innovation in such a scenario?

At the hearth of Almadesign's is Rui, a polymath in the realm of design blending the acumen of an engineer with invaluable social finesse. With 35% of his time dedicated to collaborative networks, more than a commitment, it is a passion and an inspiration to everyone around him.

As Rui Marcelino reflects on Almadesign team success, stability in their growth has been critical. Within this creative environment, the interplay between culture and the team dynamics is delicate. The quest for the perfect talent fit remains paramount. As Almadesign continues its pioneering work in sustainable aeronautics design, these challenges of retaining this delicate stability, particularly amidst the ever-shifting global landscape, become a focal point.

⁵² Quote by R. Buckminster Fuller; Fosslund and Sigurjónsson 2016

⁵³ Marcelino 2022

Almadesign: Unleashing collaborative networks

Teaching Note

Case summary

This case explores the remarkable 25-year journey of Almadesign, a prominent Portuguese design consulting studio that established itself as a driving force in product design innovation. Founded by Rui Marcelino, Almadesign's success is intrinsically rooted in the commitment to leverage collaborative networks to foster groundbreaking innovations in product design.

At the heart of Almadesign's success beats an ethos of collaboration, fuelled by Rui Marcelino's visionary leadership. His profound sense of mission centres on the important role of design as a strategic asset for business growth and revival of Portugal's industries. With mobility as Almadesign's core focus, Rui strategically seized opportunities and partnered with like-minded individuals to venture into the aeronautics. The Microjet Model was a pioneering project born through collaboration, reigniting the national aeronautic industry and enabling SMEs to enter the sector. This collaboration success led to the creation of PEMAS. Years later, the winning formula was replicated to the railway industry, resulting in the creation of PFP.

Almadesign's journey is marked by breakthrough projects within the aeronautics sector, earning the studio two of the most prestigious accolades, the Crystal Cabin Awards, which boosted the studio's visibility and presence in the international market.

The case presents three challenges for the students to explore regarding collaborative networks as drivers for value creation and innovation, drawing on the work of Camarinha-Matos and Afsarmanesh (2006), as well as Romero and Molina (2011), and emphasizing the importance of collaborative networks for product innovation novelty, reflecting the research by Nieto and Santamaría (2007).

- **Strategic decisions.** Almadesign strategically increased its focus on long-term R&D projects, invested in R&D capability, and nurtured collaborative networks. These decisions come with inherent risks and increased project complexity. Within an ever-changing landscape, how can they make a strategic decision to ensure sustained success?
- **Collaborative networks.** Almadesign's focus on collaborative networks has positioned it as a preferred design partner for successful R&D and Innovation projects. Aspiring to expand its presence in the aeronautic sector, specific challenges and rewards are presented within this ever-evolving environment, providing fertile ground for future innovations. How can the studio sustain its position at the forefront of these exciting advancements?
- **Team stability.** Over the years, stability has been vital in absorbing the complexities of their projects, preserving the equilibrium between its creative environment, culture, and methodologies. The quest for the perfect talent fit remains paramount. Given Rui's involvement in business networks, how critical is his role in maintaining this balance?

Target group

The case was designed for use in undergraduate and master's level courses, including those related to strategy, management, innovation, and design.

Learning objectives

The case was created to facilitate an in-class discussion about strategy and innovation methods, exploring the power of collaborative networks to drive creation of value and innovation, illustrated by Almadesign's journey:

- Discuss the concept of strategic collaboration, its significance in today's business landscape, and use Almadesign's journey to discuss how collaborative networks can be leveraged to achieve strategic objectives.
- Explore the role of collaboration in developing innovation and creativity. Assess how Almadesign's approach to collaboration contributed to innovative outcomes.

Assignment questions

1. During the 2008/9 crisis, Rui Marcelino made strategic decisions to increase the focus on R&D projects, commit to fostering collaborative networks, as well as invite André Castro to become a partner at Almadesign (10%). How relevant were these decisions to Almadesign's success? Which one was the most impactful, and why? If you were invited to become an Almadesign partner, what would be your decision? Why?
2. Almadesign's commitment to collaborative networks has boosted the studio's position in the market, particularly in the aeronautic sector, where it has driven the revitalization of the Portuguese industry. In the context of product design, what challenges and rewards are posed by collaborative networks? Do these differ in an industry such as aeronautics?
3. Explore how Almadesign's strategy relies on Rui Marcelino's leadership. Given his involvement in various business networks (35% of his time), how critical is his role in maintaining a balance between team dynamics, culture, and business growth?
4. Discuss the challenges and the advantages of Almadesign' team stability over the years. How does it relate to product design novelty and knowledge in collaborative networks? Since new talents have mostly been handpicked by Rui and André, should they consider other strategies to sustain their talent pool? If so, which ones?

Discussion plan

A 90-minutes class can be structured as follows:

1. Brief introduction to Almadesign and the case study (15 mins)
 - a) Present the assignment questions (four sets of questions).
 - b) Divide students into groups (preferably 1-4 people).
 - c) Distribute the assignment questions per group (one set per group).
 - d) Set a timer for the groups discussions and to prepare the answers.
2. Timer for groups discussion and prepare of responses (20 mins)
3. Invite groups to present their answers or solutions to the questions (50 mins = 5 x 10)

Facilitate contributions or discussion with all students.

4. Conclusion remarks by the instructor (5 mins)

Proposal of insights to lead the discussion

0. The brief introduction of Almadesign can be supported by the presentation of the short video (1m:41s) titled "Almadesign 25-years of Design-Driven Innovation".

1. During the 2008/9 crisis, Rui Marcelino made strategic decisions to increase the focus on R&D projects, commit to fostering collaborative networks, as well as invite André Castro to become a partner at Almadesign (10%). How relevant were these decisions to Almadesign's success? Which one was the most impactful, and why? If you were invited to become an Almadesign partner, what would be your decision? Why?

The instructor could begin by exploring with the students the circumstances (e.g., a decreased volume of customer projects, a backlog of dormant R&D project/ideas, and economic crisis in Portugal) that led Almadesign, under the leadership of Rui Marcelino, to make these decisions, which have played a pivotal role in Almadesign's success and in steering the studio through challenging times. It also worth examining the fact that Almadesign is an SME and how this impacts the company's ability to thrive during difficult periods. The reflections on how each decision uniquely contributed to the company's overall resilience and growth can be as follows:

- Increasing the focus on R&D projects is especially important during economic downturns.

It can drive competitiveness and market differentiation, allowing companies to offer unique solutions, adapt to evolving market demands and gain a competitive edge (Basile 2012). This is especially relevant for an SME, as it helps revive their innovative performance and maintain competitiveness, we can refer to the work from Basile (2012) to reflect how Almadesign overcome this challenging period.

- Rui's commitment to finding like-minded individuals and fostering collaborative networks highlights the value of collaborative strategies for innovation and competitive advantage.

During a crisis, external collaborations can help to access to resources, knowledge, and complementary capabilities (Camarinha-Matos and Afsarmanesh 2006). Almadesign's strategic choice to embrace collaborative networks allowed it to pool expertise, share risks, and access a broader ecosystem, reinforcing its innovative capacity and resilience (Nieto and Santamaria 2007). Collaborative networks are important instruments for organizations to endure during periods of socio-economic instability (Camarinha-Matos and Afsarmanesh 2006).

- Inviting André Castro had the potential to be impactful. Since he had joined Almadesign in 2001, could an emotional attachment to the studio outgrow in him? If André has complementary skills, resources, and brings valuable management skills that can aid in studio strategy and management, aligning with Rui Marcelino's quest in collaborative networks, reinforcing the management with dynamic capabilities (O'Reilly and Tushman 2011)

Reflecting with the students on the question of whether they were invited to become a partner, several factors should be considered: the specific terms of the partnership, an assessment of Almadesign's potential to succeed, the alignment of values and objectives, and their own capacity to contribute to the company's growth. Additionally, it requires a careful evaluation of the potential benefits and risks associated with the strategic direction envisioned by Rui Marcelino, as well as alignment with personal and professional goals.

2. Almadesign's commitment to collaborative networks has boosted the studio's position in the market, particularly in the aeronautic sector, where it has driven the revitalization of the Portuguese industry. In the context of product design, what challenges and rewards are posed by collaborative networks? Do these differ in an industry such as aeronautics?

The discussion could begin by offering definitions to clarify the various concepts, below are the definitions provided by the work of Camarinha-Matos and Afsarmanesh (2006):

Networking	It involves the exchange of information and communication for mutual benefit but lacks a joint goal or structured contributions, resulting in no common value being generated.
-------------------	--

Coordination	It involves information exchanging and aligning activities to achieve results. Entities work together harmoniously but might have different goals. Value is mostly generated at individual level.
Cooperation	It involves information exchange, adjusting activities, and sharing resources to achieve similar goals. Work is divided among participants, and in most cases, although there is a common plan, it is not jointly defined but rather by a single entity. It generates aggregated value by combining individual contributions.
Collaboration	Entities collaborate by sharing information, resources and responsibilities to collectively plan, execute, and assess a program of activities aimed at achieving a common goal. In this process, entities enhance each other's capabilities and share risks, resources, responsibilities and rewards

An effective collaboration involves a joint engagement to solve problems together, mutual trust and time, effort and dedication, along with operational overhead and risks (Camarinha-Matos and Afsarmanesh 2006). Almadesign's journey serves as a valuable example to explore the types of networks, and how benefited from collaboration and access to information from partners, positioning itself to achieve more novel product innovations (Nieto and Santamaria 2007). It can also be discussed, during Almadesign's journey, whether the studio endeavoured with different types of networks, and to what extent that determined its maturity in the relationships and with new partners. Students can explore the extent to which different types of collaboration have a significant impact on innovations and the level of novelty achieved within product design. For further insights refer to Nieto and Santamaría (2007).

To support the discussion about the several challenges and rewards, applicable to product design, in the context of the aeronautics industry, the table below provides some suggestions:

Rewards	– Access to varied expertise, specialized resources, technology – Enhanced creativity and innovation – Cross pollination of ideas – Opportunity for market expansion or new markets – Reduced time-to-market – Cost efficiencies
----------------	---

	– Risk sharing
Challenges	– Communication and coordination issues: multiple stakeholders involved with varying goals and expertise, language and cultural barriers, clear and effective communication channels – Intellectual property concerns: protecting intellectual property information; ownership and licensing agreements; idea leakage and theft. – Trust and commitment: building trust among network partners; ensuring commitment to the common goal; addressing free-rider problems. – Resolution of conflicts: handling conflicts and disagreements; mediation and dispute resolution; maintaining collaboration amidst tensions.

When examining the creation and “life” of the collaborative networks co-founded by Almadesign, it becomes evident that there was an initial investment to establish clear common goals, communication processes, and directives to define its governance and prevent conflict of interests. For further insights into network life cycle refer to the paper by Tellioglu (2008).

The instructor can use the following suggestions to drive reflection with the students about the challenges and rewards associated with collaborative networks, in the aeronautics industry:

- Regulatory approvals in the aeronautic industry are stricter , particularly in areas such as safety and quality, making compliance a top priority. Collaborative networks must navigate these regulations and can leverage on multidisciplinary capability within the network.
- The complexity of aeronautical systems and components can magnify coordination challenges, making a clear methodology pivotal to ensuring safety and reliability of products.
- The aeronautics industry often relies on global supply chains, which may involve more extensive international collaborations. This can introduce complexities related to logistics, communication, and cultural differences.
- In product design, aesthetics and functionality are paramount. Almadesign's journey highlights the importance of design-centric collaboration within the network, where creative input is as crucial as technical expertise.

3. Explore how Almadesign's strategy relies on Rui's leadership. Given his involvement in various business networks (35% of his time), how critical is his role in maintaining a balance between team dynamics, culture, and business growth?

Students can reflect on the critical role of Rui's leadership in Almadesign's success. He serves as the driving force behind the company's focus on collaborative networks. Through his participation in various business networks, brings to the studio connections and reputation, proven to open doors to new opportunities, partnerships, and clients.

Students may reflect on Rui's leadership style, which emphasizes inspiring and motivating teams, whether they are internal or external, toward a shared vision. His engagement enables him to articulate a compelling vision for the Almadesign's growth and innovation, for the industry and for Portugal, inspiring both the team and partners to excel (Rego and Cunha 2020). Rui's commitment allows him to effectively coordinate the efforts of internal teams and external partners, ensuring harmonious collaboration and alignment. This ability to navigate both internal team dynamics and external network relationships has facilitated knowledge sharing, innovation, while preserving Almadesign's culture (Rego and Cunha 2020).

To harness Rui Marcelino's leadership effectively it is essential to strike a balance between external engagements and internal leadership responsibilities. Establishing clear priorities and time management strategies can help ensure that Rui's participation in business networks enhances Almadesign's reputation and business prospects without compromising internal operations and strategic decision-making processes (O'Reilly and Tushman 2011). Building a strong leadership team and a culture of shared responsibility can distribute the workload and allow for smoother operations even when Rui Marcelino is engaged in external activities (Rego and Cunha 2020).

Sustaining their creative culture and collaborative ethos while balancing exploration and exploitation will be essential to maintain their innovative edge (Nieto and Santamaria 2007;

O'Reilly and Tushman 2011). Almadesign's dedication to leveraging strengths and experiences within collaborative networks will secure their position as a leading player in the ever-evolving aviation design landscape.

4. Discuss the challenges and the advantages of Almadesign' team stability over the years.

How does it relate to product design novelty and knowledge in collaborative networks?

Since new talents have mostly been handpicked by Rui and André, should they consider other strategies to sustain their talent pool? If so, which ones?

Some reflections on the team's stability over the years can be discussed with the students. The following suggestions are drawn from Claudio Dell'Era and Roberto Verganti (2010) work on collaborative strategies in design intensive industries:

Advantages	– In-depth knowledge and expertise: team members who have been with the studio for an extended period have accumulated substantial knowledge and expertise in product design over the years. This knowledge enables them to have a refined insight of design principles, materials, and industry trends, which contributes to the high quality of their work. – Strong team cohesion: the stability of the team nurtures robust interpersonal relationships and cohesive team dynamics. Trust and mutual understanding among members enhance collaboration, resulting in more efficient and effective design processes. – Maintaining a consistent design language: has facilitated the development of a consistent design language and brand identity, which proves advantageous in building brand recognition and customer loyalty.
Challenges	– Risk of innovation stagnation, as long-term team members may become entrenched in established design practices, making it challenging to explore radically new and innovative design concepts. – Limited diversity of perspectives, there is a risk of lack of fresh ideas from different viewpoints which may delay the generation of novel and groundbreaking designs. – Sustaining a stable team can be resource-intensive, as it involves continued investments in salaries, training, and benefits. Allocating a significant portion of resources to an existing talent pool may limit the ability to invest in other areas.

Team stability can positively impact product design by building on accumulated knowledge and experience in their domain. To infuse novel ideas, Almadesign can actively engage with external collaborators and diverse partners, particularly through involvement in collaborative networks. These complement team stability by introducing fresh insights, diverse expertise, and cross-industry knowledge into the design process (Dell'Era and Verganti 2010).

The students can explore the strong interpersonal bonds within Almadesign team member. They share an emotional connection with the studio, driven by common values, tastes, and a shared vision to contribute to a better world through their expertise. This creates a unique positive team strengthened by Rui Marcelino's leadership (Rego, Souto and Cunha 2007).

To discuss about what additional strategies should Rui and André consider sustaining Almadesign talent pool, a few suggestions on the discussion:

- Diversity initiatives to seek designers with diverse backgrounds and experiences to introduce new perspectives into the team (Dell'Era and Verganti 2010).
- Internship programs to allow young designers to work alongside the stable tea, not only brings fresh talent but also serves as a talent pipeline for future recruitment.
- Partnerships with design agencies, universities, and research institutions to access a broader talent pool when needed for specific projects (Dell'Era and Verganti 2010).
- Continuous learning to upskill existing team members and keep them updated on the latest design trends and technologies.

REFERENCES

- AED Cluster Portugal. “AED Days 2021 – CAREERS, Looking at the future of Aeronautics”. YouTube video, 1:03:48 (0:45 – 16:00). October 29, 2021. <https://youtu.be/8-VrPKOzxkM>.
- AED Cluster Portugal. “Sobre nós”. Accessed April 11, 2023. <https://www.aedportugal.pt/sobre-nos/#infoBeginning>.
- AEFA- Associação Estudantes Faculdade Arquitectura. “MADweek'21 - MADcall com Alma Design”. YouTube video, 38:20. April 15, 2021. <https://youtu.be/SAklo37--54>.
- AICEP Portugal Global. “Almadesign - Uma referência crescente no sector aeronáutico”. *Portugal Global*. September 2018. 112. 22-23. <http://www.revista.portugalglobal.pt/AICEP/PortugalGlobal/Revista112/>.
- AICEP Portugal Global. “NEWFACE Os Aviões do Futuro”. *Portugal Global*. Maio 2015. N. 76. 34-35. <http://www.revista.portugalglobal.pt/AICEP/PortugalGlobal/Revista76/>.
- AICEP Portugal Global. “Projecto LIFE”. *Portugal Global*. Junho 2011. N. 34. 11. <http://www.revista.portugalglobal.pt/AICEP/PortugalGlobal/Revista34/>.
- AircraftInteriorsInternational.com. “Designbrief: Lifesigns”. *Aircraft Interiors International*. September 2011. 31. <https://www.aircraftinteriorsinternational.com/wp-content/uploads/archive-issues/september-2011.pdf>
- Almadesign. “Almadesign Aeronautic Projects”. Accessed March 20, 2023. <https://www.almadesign.pt/aeronautic>.
- Almadesign. “Almadesign News”. Accessed July 9, 2023. <https://www.almadesign.pt/news>.
- Almadesign. “Almadesign Press”. Accessed March 20, 2023. <https://www.almadesign.pt/press>.
- Almadesign. “Almadesign Studio – Awards”. Accessed March 20, 2023. <https://www.almadesign.pt/studio>.
- Almadesign. ”Almadesign 25-years of Design Driven Innovation”. YouTube, video 1:41. February 2, 2022. https://youtu.be/MyC4q_rffRg.
- Basile, Alessandro. 2012. “Evaluating R&D Networking to Revitalize SMEs Innovative Performances: A Management Perspective”. *Business: Theory and Practice* 13 (3):217-27. <https://doi.org/10.3846/btp.2012.23>
- Camarinha-Matos, L.M., and Afasarmanesh H. 2005. “Collaborative networks: a new scientific discipline”. in *Journal of Intelligent Manufacturing*, 16. 439-452. Springer Science+Business Media Inc. <http://dx.doi.org/10.1007/s10845-005-1656-3>
- Camarinha-Matos L. M., and Afasarmanesh H. 2006. “Collaborative Networks: Value creation in a knowledge society”. in *Knowledge Enterprise: Intelligent Strategies in Product Design, Manufacturing, and Management: Proceedings of PROLAMAT 2006 IFIP TC5 International Conference*. 207. 26-40. https://doi.org/10.1007/0-387-34403-9_4

Castro, André. 2018. “The Form Language of Almadesign - A study on Context, Syntax and Semantics”. Design Doctoral dissertation. Architecture School in University of Lisbon. 18-43. https://www.repository.utl.pt/bitstream/10400.5/16899/1/Tese%20de%20Doutoramento_%20Andr%C3%A9%20de%20Castro.pdf.

Compete 2020. “Projecto FLY.PT desenvolve transporte aéreo urbano do futuro”. *Portugal 2020*. October 4, 2022. Accessed July 7, 2023. <https://portugal2020.pt/projeto-fly-pt-desenvolve-transporte-aereo-urbano-do-futuro/>

COTEC Portugal. “Sobre Nós - Órgãos Associativos”. Accessed April 11, 2023. <https://cotecportugal.pt/pt/quem-somos/orgaos-associativos/>.

Dell’Era, Claudio, and Verganti Roberto. 2010. “Collaborative Strategies in Design-intensive Industries: Knowledge Diversity and Innovation”. in Long Range Planning (43). 123-141. Elsevier. <http://dx.doi.org/10.1016/j.lrp.2009.10.006>

Durand, Ricardo. “HERA. O novo avião híbrido-eléctrico europeu vai ter “dedinhos” portugueses: ISQ, INEGI e Almadesign”. *PCGUIA*. January 25, 2023. Accessed July 7, 2023. <https://www.pcgua.pt/2023/01/hera-o-novo-aviao-hibrido-electrico-europeu-vai-dedinhos-portugueses-isq-inegi-e-almadesign/>.

ETV. “Projecto Empresa Almadesign”. YouTube vídeo, 26:57. January 23, 2014. <https://youtu.be/3zmQUqF3yas>.

FORUM OCEANO Cluster da Economia do Mar. “Quem Somos – Órgãos Sociais”. Accessed April 11, 2023. <https://forumocean.pt/orgaos-sociais/>.

Fossland, Alexander Jayko, and Sigurjónsson Jóhannes B.. 2016. “*The best way to predict the future is to design it*”. in DS 85-1: Proceedings of NordDesign 2016. Vol 1: 073-082. Trondheim, Norway. 10th-12th August 2016. ISBN: 978-1-904670-80-3.

Fundação AEP. *Desafio 2030: Casos de Sucesso Colaboração entre Instituições de I&D e PME - LIFE*. Lisbon: Fundação AEP. 2021. Accessed March 20, 2023. <https://www.desafio-2030.pt/casos-de-sucesso/life>.

Henriques, Cátia Andreia Gourgel. 2014. “Tendências e Desafios no Processo de Internacionalização de Empresas Inovadoras”. Management Master’s thesis. Social Sciences School in University of Évora. <http://hdl.handle.net/10174/13055>.

IAPMEI. “Cluster da Plataforma Ferroviária Portuguesa”. Accessed April 11, 2023. <https://www.iapmei.pt/Paginas/Cluster-da-Plataforma-Ferroviana-Portuguesa.aspx>.

iF Design. “iF Design Award 2020 - Eviation’s Alice Electric aircraft”. Accessed July 9, 2023. <https://ifdesign.com/en/winner-ranking/project/eviations-alice/282193>.

INEGI. “LIFE Aircraft Project”. YouTube vídeo, 4:32. December 15, 2011. <https://youtu.be/lxD-kc8Hhyo>.

INEGI. “NewFACE Project”. YouTube vídeo, 8:00. May 18, 2015. <https://youtu.be/QOdo6FaSKE4>.

Innovationsoftheworld.com. *INNOVATE™ Oeiras: ALMADESIGN, Design Driven Innovation*. Oeiras: Global Village World Publishing Inc. 250-251. 2022. Accessed April 13, 2023. <https://innovationsoftheworld.com/almadesign-lda-design-driven-innovation/>.

Innovationsoftheworld.com. *INNOVATE™ Oeiras: Thought Leader*. Oeiras: Global Village World Publishing Inc. 23. 2022. Accessed April 13, 2023. <https://innovationsoftheworld.com/jose-rui-marcelino-ceo-almadesign/>.

Internationalairportreview.com. “In-Depth Focus | Passenger Experience: Creating a stress-free journey”. August 2018. Issue 4. 3-4. <https://www.internationalairportreview.com/article/73490/international-airport-review-issue-4-2018/>.

Marcelino, José Rui. “Trabalho Colaborativo e Networking Empresarial Potencial Sucesso”. *Portugal Global*. Junho 2011. Nr. 34. 12. <http://www.revista.portugalglobal.pt/AICEP/PortugalGlobal/Revista34/>.

Marcelino, Rui. 2022. “25 Almadesign”. 1st Edition. Paço de Arcos, Oeiras: Almadesign Lda.

Marcelino, Rui. 2017. “20 Almadesign”. 1st Edition. Paço de Arcos, Oeiras: Almadesign Lda.

Marcelino, Rui. 2013. “15 Almadesign”. 1st Edition. Paço de Arcos, Oeiras: Almadesign Lda.

Marcelino, Rui. 2007. “10 Almadesign”. 1st Edition. Paço de Arcos, Oeiras: Almadesign Lda.

Nieto, Maira Jesús, and Santamaría, Lluís. 2007. “The importance of diverse collaborative networks for the novelty of product innovation”, in *Technovation* 27. 367-377. accessed on 09/07/2023 <https://doi.org/10.1016/j.technovation.2006.10.001>

O'Reilly, C. A., and Tushman, M. L. 2011. “Organizational Ambidexterity in Action: How Managers Explore and Exploit”. In *California Management Review*. 53(4). 5–22. <https://doi.org/10.1525/cmr.2011.53.4.5>

PFP Portuguese Railway Platform. “Home”. Accessed on September 18, 2023. <https://www.ferrovia.pt/>.

Rego, Arménio, and Cunha Miguel Pina. 2018. *Que líder sou eu? Manual de apoio ao desenvolvimento de competências de liderança*. 3ª Edição. Lisboa: Edições Sílabo

Rego, Arménio, Solange Souto, and Miguel Pina e Cunha. 2007. *Espiritualidade nas Organizações e Comprometimento Organizacional*. RAE-eletrônica, 1-27. <https://doi.org/10.1590/S1676-56482007000200003>

Romero, David, and Molina Arturo. 2011. “Collaborative Networked Organisations and Customer Communities: Value Co-Creation and Co-Innovation in the Networking Era”. In *Production Planning & Control*. 22. 447-472. <https://doi.org/10.1080/09537287.2010.537900>

RTP, Agência para o Desenvolvimento e Coesão. “P2020 FUTURO NUM MINUTO: ALMADESIGN”. YouTube video, 1:10. February 5, 2016. <https://youtu.be/moZaHbWL7Uo>.

Smartdefence. “Eve Air Mobility e Almadesign na lista de finalistas do Crystal Cabin Award de 2023”. *Smartdefence: Noticias*. March 31, 2023. Accessed July 7, 2023.

<https://smartdefence.pt/pt/noticias/eve-air-mobility-e-almadesign-na-lista-de-finalistas-do-crystal-cabin-award-de-2023/>.

TEDxAveiro. “José Rui Marcelino at TEDxAveiro”. YouTube vídeo, 18:14. July 31, 2013. <https://youtu.be/vF1wRBz4RPw>.

Tellioglu, Hilda. 2008. “*Collaboration life cycle*”. in 2008 International Symposium on Collaborative Technologies and Systems. 19-23 May 2008. 357-366. IEEE. <https://doi.org/10.1109/CTS.2008.4543951>

Williams, Trevor. 2005. “Cooperation by design: structure and cooperation in interorganizational networks” In Journal of Business Research. 58. 223–231. [https://doi.org/10.1016/S0148-2963\(02\)00497-6](https://doi.org/10.1016/S0148-2963(02)00497-6)

ANNEXES

Annex I – Almadesign Recognitions and Awards (national and international)

Information from Almadesign website and Almadesign 25-years book.

1999:

- National Design Awards CPD, Product Design Category - ENIGMA Bus for Salvador Caetano.

2000:

- IEE Web Design Award PRO-HTML - Almadesign website.

2005:

- AIMMP Wood Furniture Design Competition - Vénus collection for Animovel.

2008:

- Bienal Iberoamericana Design Award, Product Category - WINNER and COBUS Buses for CaetanoBus.

2009:

- Good Design Award, Transport Design Category - OPTIMO Minibus for Salvador Caetano.
- National Design Awards CPD, Company Category.
- National Design Awards CPD, Product Design Category - COBUS for CaetanoBus.
- DME Design Awards - Honourable mention.

2010:

- Bienal Iberoamericana Design Award, Product Category - CyberCar Critical Move.
- Green Good Design Award, Transportation Design Category - CyberCar Critical Move.
- Hotspot contest for Galp Energia - Honourable mention ‘Spring’ Terrace heater.

2012:

- Crystal Cabin Award, Visionary Concepts category - LIFE Project.

2013:

- Good Design Award, Product Design Category - ISEAT Project.

2015:

- Good Design Award - inTRAIN Project.
- National Design Awards CPD – DesAIR.

2016:

- Green Good Design Award, DesAIR Project.

2017:

- Good Design Award, Product Category - Aralab Testa Project, ARALAB

2018:

- Crystal Cabin Award - finalist with PASSME - Aircraft Seat Project.

2019:

- Green Good Design Award - CAT 12.0 Catamaran Sunconcept.

2020:

- Crystal Cabin Awards, Cabin Concepts category – ALICE Eviation.
- IF Design Award - ALICE Eviation.
- International Yacht and Aviation Award – finalist ALICE Eviation.

2021:

- IDA “GOLD Design Award”, Transportation Design category – Flexcraft Project.
- IDA Design Award - CAT 12.0 Catamaran – Sunconcept.
- COTEC INOVADORA'21.
- RedDot Design Award – Transformer Core 40 MVA EFACEC.
- RedDot Design Award –XBarrier 100 EFACEC
- Green Good Design Award, Transport Design category - H2 City Gold with Caetano Bus

2022:

- COTEC INOVADORA'22.

2023:

- RedDot Design Award - Cobus Vega with COBUS Industries GmbH and CaetanoBus.
- COTEC INOVADORA'23.

Annex II – Interview guide

1) List of questions – personal interviews with for Almadesign Founder and CEO, José Rui Marcelino (March 22, May 9 and July 7, 2023)

- Where did it all start – what triggered the creation of Almadesign? Why creating a design studio and not joining a renowned company?
- What differentiates Almadesign from others?
- What are the foundations of the long-lasting relation with Salvador Caetano Group?
- Why did a new partners joined during the 2007/2008 crisis?
- When the opportunity comes to join the first R&D project for aeronautics (Microjet model) what were the challenges?
- What is the strategy behind the diverse collaborative networks that Almadesign has co-founded? How have they evolved over the years?
- How will Almadesign manage the challenge of the growing international demand? How do you manage keeping the team in a sustainable size?
- Within the collaborative networks, how do you tackle the challenges such as opportunistic behaviour? Dealing with large collaboration networks, and large projects?
- What are the major challenges ahead of Almadesign?

2) List of questions for Almadesign Partner, André Castro (July 12, 2023)

- When did you joined the studio? In which position? How did you know Rui?
- What made you accept joining Almadesign? What made you stay over these years? What keeps you there?
- What does collaborative networks mean to you? How has impacted your way of working? What do you see as the main challenges?

- How was the first aeronautic project that you participated? What were the main challenges?
- How do you interact and relate with the associations co-founded by Almadesign?
- How do you perceive cross-politization?
- What do you see as the main challenges ahead of Almadesign?

3) List of questions for Almadesign Product Designer, Catarina Ferreira (July 19, 2023)

- When did you join Almadesign? In which position did you start? How did you know Almadesign, Rui and/or André? Why did you choose to join their team?
- What kept you over the years / keep you now in Almadesign?
- How do you interact in the collaborative networks? What does it mean for you? How did it shape your way of working? Where do you see the biggest challenges?
- What was your first aeronautic project? What was your participation? What were the bigger challenges?
- How do you describe Almadesign culture? What does it mean for you personally?

4) List of questions for Almadesign Business Partners, PEMAS Co-founders: Nuno Correia (INEGI) and Leonel Jesus (SETindustrial, Grupo Iberomoldes) (September 18, 2023)

- When and how did your collaboration start?
- What differentiates your relationship with Almadesign from other partners? What are the main characteristics? What is it that Almadesign does differently?
- What are the main challenges that you see ahead?