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

The Creation of the Value Creation Wheel Ecosystem at Nova School of Business and Economics: How to Industrialize Innovation, Decision-making, and Problem-solving Within an Organization?

Challenge 3: "How can Nova SBE develop an efficient and sustainable system for continuously updating its alumni databases?"

Sophia Maria Kirchner

Work project carried out under the supervision of:

Professor Luis Filipe Lages

17/12/2024

Abstract:

This work project explores the implementation of the Value Creation Wheel Ecosystem at Nova School of Business and Economics to industrialize innovation, decision-making, and problem-solving within the organization. Despite prior efforts to address internal challenges using the Value Creation Wheel framework, implementation barriers persisted. This research project applies the Value Creation Wheel methodology to three key challenges: Enhancing campus accessibility, reducing living expenses for students, and optimizing alumni database management. Through stakeholder engagement, workshops, and iterative refinement the study identifies actionable solutions and a systematic framework for sustainable innovation, contributing to both academic literature and practical institutional improvement.
Keywords: Value Creation Wheel, Innovation Ecosystem, Problem-solving, Decision-making

Abstracts of individual part:

Challenge 3 (Sophia Maria Kirchner): Challenge 3 aims to create an accurate, sustainable alumni database while eliminating manual updates. Using the Value Creation Wheel framework, the analysis identifies inefficiencies in current processes and alumni disengagement, compounded by GDPR challenges. Research, including stakeholder input and benchmarking with leading business schools, led to two solutions: LinkedIn API integration and an Alumni Event App. The app was preferred for its real-time CRM integration, seamless data updates, and enhanced event experiences through gamification and incentives. A Hackathon driven development strategy offers a scalable, cost-effective approach to boost alumni engagement and ensure automated, accurate data management.

Keywords: Alumni Relations, Data Management, Alumni Database

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Abbreviations

AI	Artificial Intelligence
API	Application Programming Interface
CPS	Creative Problem-Solving
DT	Design Thinking
GDPR	General Data Protection Regulation
KDM	Key Decision Maker
KPI	Key Performance Indicator
MCDA	Multi Criteria Decision Analysis
MVP	Minimum Viable Product
Nova SBE	Nova School of Business and Economics
NREC	Nova Real Estate Student's Club
SDGs	Sustainable Development Goals
VCF	Value Creation Funnel
VCW	Value Creation Wheel
VCW team	Value Creation Wheel team
WP team	Work project team

1 Introduction

The following section introduces the context and content of the work project, providing a detailed exploration of the motivation behind the study, the identified research gap, as well as the goals and objectives that guide the project and its intended outcomes.

1.1 Motivation for Writing the Thesis

In today's fast-paced environment, it is becoming increasingly difficult for both individuals and organizations to keep up the pace, make decisions and solve problems (Boyles 2022). One of the keyways to navigate these challenges is through innovation (Boyles 2022). The demand for innovation is accelerating across all industries, including traditional businesses and business schools, which must continuously innovate to stay competitive in the global education market (Boyles 2022). Nova School of Business and Economics (Nova SBE), one of the leading business schools in Europe, has experienced significant growth, and with that growth comes the challenge of maintaining internal agility (Aghina and De Smet 2015). Associated with this growth, many transformational challenges emerge that need to be addressed. To tackle these, it is crucial to establish a systematic approach for innovation, decision-making, and problem-solving.

In his June 19, 2024, welcome speech at the Value Creation Wheel (VCW) conference, Nova SBE's Dean, Pedro Oliveira, emphasized the critical role of innovation. He highlighted the school's dedication to fostering it through various initiatives, including collaborations with the VCW creator Luis Filipe Lages to address key internal challenges using the VCW methodology (Value Creation Wheel 2024a). It supports the internal decision-making and problem-solving process. The work project team (WP team) is dedicated to advancing the workshop initiative as a crucial step in laying the foundation for the development of a VCW Ecosystem at Nova SBE, supporting the school's "way to the top" (Nova SBE 2023a). The WP team's mission focuses

on exploring how to industrialize innovation, decision-making, and problem-solving within an organization. As part of this effort, the WP team addressed three highly significant internal challenges.

1.2 Research Gap

Research on innovation ecosystems highlights their evolution as a widely discussed concept in both academic and business domains, emphasizing their role in fostering collaboration, driving innovation, and sustaining competitive advantages. Studies have focused on defining the components of innovation ecosystems, like actors, activities, and artifacts as well as their interrelations, including collaboration and competition (Granstrand and Holgersson 2020). While innovation ecosystems are well-studied, the VCW Ecosystem remains underexplored. A pilot project at INCM-Portuguese Mint and Official Printing Office marked its initial application but lacked systematic academic analysis (Value Creation Wheel 2017). Comprehensive research on its implementation, scalability, long-term benefits, challenges, and outcomes is still absent. This work project seeks to address this gap by contributing to develop a VCW Ecosystem at Nova SBE, systematically implementing and analyzing its application. The study aims to contribute to both managerial practice and academic literature on innovation ecosystems and provide practical insights into using the VCW methodology to industrialize innovation, decision-making, and problem-solving. The findings will inform the adaptation of the VCW Ecosystem model for broader use in various institutions and industries, paving the way for future research and practice.

1.3 Inspiration from INCM

The INCM-Portuguese Mint and Official Printing Office has reinvented itself over 700 years. To sustain innovation, it partnered with consulting firm Everis and academic expert Luis Filipe Lages to industrialize its innovation process. An innovation ecosystem with three layers was

established. A Governance Model for managing innovation, an Innovation Framework based on Prof. Lages' VCW methodology, and a Network of Partners to enhance its impact. A pilot project tested the VCW framework by tackling the challenge of reducing costs while creating organizational value. (Value Creation Wheel 2017)

1.4 Goals and Objectives

The project goal is to explore how to industrialize innovation, decision-making, and problem-solving within an organization. To achieve this, the WP team is piloting a VCW Ecosystem at Nova SBE, applying the VCW Meta Framework (TIAGO – Tap, Induce, Analyse, Ground, Operate) (Lages et al. 2023) (see Appendix 1 for an illustration). It was used to simultaneously address three internal challenges: (1) "How to improve mass public transportation and campus accessibility?", (2) "How can living expenses be made accessible and affordable for all students?", and (3) "How can Nova SBE develop an efficient and sustainable system for continuously updating Nova SBE alumni databases?". The outcomes will identify synergies and evaluate the VCW Ecosystem's potential. These insights are highly relevant not only to Nova SBE but also to other higher education institutions, as well as public and private organizations which desire to industrialize the innovation, decision-making, and problem- solving process.

2 Context and Company Background of Nova SBE

"A Nova way of being a school, based in Portugal, and open to the world." (Nova SBE 2024h)

Nova SBE, established in 1978 as part of NOVA University Lisbon, is a leading institution recognized for its academic rigor, research focus, and internationalization in business, economics, and finance (Nova SBE 2024j). Consistently ranked among Europe's top 30 business schools, Nova SBE responded to the Bologna reform by enhancing its global competitiveness (CEMS 2024; Nova SBE 2024j). Notably, it became the first Portuguese

business school with two Master's programs, Finance and Management, ranked in the global top 10 by the Financial Times, placing 7th and 8th respectively (Financial Times 2024a; 2024b; Nova SBE 2024f). The school is known for its collaborative and student-centered approach and has positioned itself as a leading educational institution within Europe (CEMS 2024; Nova SBE 2024p). Dean Pedro Oliveira attributes this success to the school's unwavering commitment to academic excellence and innovation (Nova SBE 2024f).

Since 2018 Nova SBE has been situated in Carcavelos, Cascais (located 16 kilometers from Lisbon), offering a unique coastal setting (Nova SBE 2024b; 2024p). Its international community includes approximately 21,000 alumni in over 60 countries and 3,000 students from more than 70 nations (Nova SBE 2024e; CEMS 2024). Its commitment to fostering a diverse, global community is key to maintaining strong ties with the business world (Nova SBE 2024p). International students make up 53% of the student body and 65% of the Master's cohort, highlighting its global appeal (Nova SBE 2024k; 2024p).

Nova SBE stands out with the prestigious "Triple Crown" (Nova SBE 2024p) accreditation from EQUIS, AMBA, and AACSB, a distinction held by less than 1% of business schools globally (Nova SBE 2024p). The school's mission, "to be a community dedicated to the development of talent and knowledge that impacts the world," (Nova SBE 2024j) is manifested in every aspect of the Nova experience. This commitment is demonstrated in initiatives, such as an extensive, international alumni network or the innovation ecosystem that foster continuous development and engagement within the global business community (Nova SBE 2024e; 2024a). The opening quote underscores how Nova SBE, a leading Portuguese university, has evolved into a top European business school, embracing progress through innovation.

3 Analysis of Nova SBE's Internal and External Environment

A comprehensive assessment of Nova SBE's strategic position was conducted through PESTEL, SWOT, and TOWS analyses, complemented by an evaluation of its commitment to the SDGs. These frameworks connect internal strengths with external pressures, predicting challenges and resistance, which ensures evidence-based, adaptable recommendations for VCW projects (Carruthers 2009).

Nova SBE operates in a dynamic environment influenced by political strategies like Portugal 2030, economic goals for R&D investment, and social opportunities from Lisbon's startup ecosystem, which together enhance its funding and partnerships (Ferreira Gomes 2024; Portugal 2030 2024; 'Global Innovation Index' 2024; Foundation for Science and Technology 2024). Additionally, technological advances in Artificial Intelligence (AI) and blockchain, alongside sustainability initiatives and tax incentives, position Nova SBE to leverage emerging trends effectively (KPMG LLP 2023; Treat and Klein 2024). A detailed analysis of the PESTEL framework is provided in Appendix 2.

A SWOT analysis of Nova SBE highlights strengths such as its Triple Crown accreditation, international focus, modern campus, and strong research output, alongside weaknesses such as reliance on international student mobility, a relatively smaller alumni network, high tuition fees for Master's programs compared to average business schools (though significantly lower than top European institutions), and limited global brand visibility (Nova SBE 2024p; 2024e; 2024l; 2023b). Opportunities in sustainability and Lisbon's startup ecosystem contrast with threats such as intense competition and financial dependency, with further details provided in Appendix 3 (Nova SBE 2023b; 2024n; Unicorn Factory Lisboa 2024; Financial Times, n.d.; 2023; Ferreira Gomes 2024).

The TOWS matrix identifies strategic pathways for Nova SBE to “leverage strengths, address weaknesses, seize opportunities, and mitigate threats” (Weihrich 1982, p 55), emphasizing alignment with the UN Sustainable Development Goals and Portugal's 2030 Agenda to attract students, form partnerships, and enhance its global reputation (Portugal 2030 2024; Nova SBE 2024n; Nova SBE 2024c). Strategies include increasing visibility through international events, digital programs and reducing financial vulnerabilities by diversifying revenue streams and expanding scholarships, with further details provided in Appendix 3 (Ferreira Gomes 2024; Nova SBE 2024l; 2024b; 2023b).

Nova SBE's strong commitment to sustainability, aligned with its mission and institutional values, is a key differentiator, highlighted by its integration of the SDGs into academic programs and practices, including 100% SDG-related content in new courses since 2022 (Nova SBE 2022). Initiatives like the Estoril Conference further showcase this dedication, inspiring the Nova community to contribute to global sustainability efforts and amplifying the impact of projects like this work in alignment with the 2030 Agenda (Nova SBE 2024g). Nova SBE’s strategic position integrates sustainability, innovation, and partnerships, enabling it to navigate challenges and reinforce its role as a globally competitive, socially responsible institution.

4 Theories and Schools of Thought Supporting the VCW

To gain a deeper understanding of the VCW concept, which is essential for implementing the VCW Ecosystem, a comprehensive literature review was conducted, focusing on the key theories that underpin its framework.

4.1 Stakeholder Theory

Stakeholder Theory, introduced by Freeman in 1984, represents a shift in strategic management by asserting that businesses are accountable not only to shareholders but to a broader group of stakeholders who influence or are affected by the organization’s objectives (Freeman and

McVea 2001; Freeman 2010). Stakeholders include employees, customers, suppliers, and communities, all of whom play a critical role in the firm's ecosystem (Freeman and McVea 2001; Freeman 2010).

The theory highlights the importance of actively managing these relationships to balance diverse interests, fostering trust, and promoting shared goals (Freeman and McVea 2001). Unlike traditional approaches focused solely on the customers or on maximizing shareholder value, Stakeholder Theory emphasizes that long-term success and sustainable competitive advantage arise from addressing the needs of all stakeholders, especially in times of change (Freeman and McVea 2001; Lages et al. 2020).

4.2 Problem-solving

Everyone encounters problems daily, from minor challenges like finding lost keys to significant questions about life's meaning. Martinez (1998) defines problem-solving as, "the process of moving forward toward a goal when the path to that goal is uncertain" (605). Organizations today face increasingly complex challenges, prompting the development of problem-solving frameworks that combine structure and agility, leveraging collective intelligence, co-creation, and partnerships (Lages 2016). Examples include Design Thinking (DT), Creative Problem-Solving (CPS), and Lean (Lages et al. 2020).

DT, developed by David Kelley of IDEO and Stanford's d.school, focuses on human-centered design through creative methods like storytelling, prototyping, and experimentation (Brown 2010; Carlgren, Elmqvist, and Rauth 2014; Carlgren, Elmquist, and Rauth 2016; Lages et al. 2020). It emphasizes user needs and uses a structured yet flexible process, Inspiration, Ideation, and Implementation, to refine solutions based on feedback (Brown 2010; Liedtka 2015; Lages et al. 2020). Despite its utility, DT's academic use is limited by its vague theoretical foundation (Johansson-Sköldberg, Woodilla, and Çetinkaya 2013; Liedtka 2015). CPS, rooted in Alex

Osborn's 1950s research on brainstorming, enhances creative thinking by embedding solutions into actionable plans with stakeholder involvement (Isaksen and Treffinger 2004; Lages et al. 2020; Puccio 1999). It evolved from a linear model to a flexible, cyclical process and is widely applied to innovation, collaboration, and organizational challenges (Lages et al. 2020). Lean, originating in manufacturing, aims to optimize efficiency and eliminate waste while maximizing stakeholder value (Alvarez 2015; Pullan, Bhasi, and Madhu 2013). Nowadays it extends to organizational processes, emphasizing experimentation, iterative design, and customer feedback to foster agility and faster development cycles (Blank 2013; Lages et al. 2020).

4.3 Value, Value Creation, Value Capture and Co-Creation Theory

Value is generally defined as something that is "worth spending money on" (Cambridge University Press & Assessment 2024) and more specifically the trade-off between benefits and sacrifice or the perceived benefit customers derive from their experiences with a company, its products, or services (Grönroos and Voima 2013, 134).

Value creation is subjective and varies by individual. It depends on the relative value perceived by a target user or buyer, whether an individual, organization, or society (Lepak, Smith, and Taylor 2007). A target's perception of value hinges on their subjective evaluation of an outcome's novelty and appropriateness. Greater perceived novelty and appropriateness increase the potential for value use and exchange (Lepak, Smith, and Taylor 2007). Value again can be created by an individual, an organization or a society (Lepak, Smith, and Taylor 2007). The source of value creation differs from that of value retention. Two approaches are key to long-term value capture. First, firms may share products or services with stakeholders, including competitors, especially when price competition reduces perceived value. Second, applying "isolating mechanisms" (Lepak, Smith, and Taylor 2007) helps firms retain value by protecting it from competitors and minimizing value loss (Lepak, Smith, and Taylor 2007).

Traditionally, companies created value internally, bundling resources and know-how to protect it from competition. However, with market complexities, emerging technologies, and increased competition, value creation has shifted to co-creation (Prahalad and Ramaswamy 2004). Consumers, companies, communities, and professionals now collaborate to define and create value, engaging through communication channels, social media, open innovation, or digital platforms (Prahalad and Ramaswamy 2004). Co-creation, as described by Ramaswamy (2011), expands mutual value through shared processes (195). An example is Nike's co-design initiative, allowing consumers to design their own shoes, unlocking new value sources (Ramaswamy 2008).

4.4 Innovation

Despite extensive research on the topic, there is no universally accepted definition of innovation (Kogabayev and Maziliauskas 2017). According to Kogabayev and Maziliauskas, some author describes innovation as the creation of a new idea and its implementation into a product, process, or service. The implementation leads to economic growth, higher employment rates, and profits for innovative businesses (Kogabayev and Maziliauskas 2017). When an invention is combined with successful commercialization, the result is innovation (Lages 2024). Different types of innovation can include new technologies, business models, processes, or positions in the market (Lages 2024). The three perennial issues of innovation are institutionalizing vs. de-institutionalizing innovation, technology-driven vs. market-driven innovation, and the balance between incremental improvements and radical changes (Tzeng 2009). Innovation opportunities can arise from four key areas within a company or industry. Those are unexpected occurrences, incongruities, process needs, and industry or market changes (Drucker 2002). Additionally, three external sources of opportunity include demographic changes, shifts in perception, and advancements in new knowledge (Drucker 2002). The economist Peter Drucker

highlights the need for leadership to prioritize innovation: “If an innovation does not aim at leadership from the beginning, it is unlikely to be innovative enough“ (Drucker 2002, 8).

4.5 Decision-making

Decision-making is the intentional process of assessing various options and selecting the one that best aligns with achieving specific goals (Morelli, Casagrande, and Forte 2021). This process is shaped by an individual’s abilities, values, preferences, and beliefs, aiming to identify the most effective solution (Morelli, Casagrande, and Forte 2021). John von Neumann’s and Oskar Morgenstern’s game theory (1945) developed foundational work in the field of decision-making. This theory suggests that individuals make decisions to maximize personal benefit, a core principle of classical rationality. The model assumes that decision-makers are fully rational (Von Neumann and Morgenstern 1945). In contrast, Herbert A. Simon introduced the concept of bounded rationality. He states that decision-makers face limitations in terms of computational capabilities (Simon 1997). Due to this instead of seeking the optimal solution, decision-makers aim for a satisfactory one, known as “satisficing” (Simon 1997, 5). On the other hand, behavioural decision-making, significantly influenced by Kahneman and Tversky, offers an alternative perspective to rational theories. Their work offers a more refined understanding of how cognitive biases and heuristics impact the decision process (Tversky and Kahneman 1974). It sheds light on the ways people make choices, especially when faced with risk and uncertainty, highlighting the non-rational factors that often drive decisions (Kahneman and Tversky 1979). In Thinking, Fast and Slow, Daniel Kahneman describes System 1 as fast, automatic, and intuitive thinking, while System 2 is slow, deliberate, and analytical, with both systems shaping how we process information and make decisions (Kahneman 2011). However, decision-making is not just a theoretical concept but a daily practice crucial for individuals and organizations. For organizations, optimizing major decisions is vital for long-term success in a competitive market (Nelson 2023).

4.6 Linking Theoretical Foundations to the VCW

The theories supporting the VCW offer a robust foundation for its role as a framework to address organizational challenges and foster innovation. Stakeholder Theory underscores the importance of engaging diverse stakeholders and balancing their interests, aligning with the VCW's collaborative focus. Problem-solving methodologies, such as DT, CPS, and Lean, demonstrate structured approaches to address challenges, which the VCW enhances by acting as a meta-framework that integrates these tools (Lages et al. 2020). Value creation theories, particularly the concept of co-creation, emphasize the shared generation of value, a principle deeply embedded in the VCW. Decision-making frameworks add another layer, highlighting the VCW's ability to guide rational, informed choices through its structured breakdown of complex issues. Together, these theories illuminate the VCW's versatility and effectiveness.

5 Understanding the VCW

The VCW, developed by Luis Filipe Lages, is the product of 29 years of research and refinement. Since its inception in 1995 and its early active application at the beginning of the Millennium, it has been tailored to address the complexities of 21st-century business environments (Lages 2016; Lages et al. 2023). Unlike rigid frameworks that lead to linear decision-making, the VCW offers a flexible, adaptive approach to innovation and problem-solving, incorporating diverse perspectives and non-linear thinking (Lages 2016). Influenced by Darwinist principles, the VCW combines traditional and dynamic frameworks into a circular, interactive model, balancing flexibility with structure (Lages 2016). As Lages (2016) states, "we must think not only 'within the box' and 'outside the box' but also 'with no boxes'." (1). Lages continues to enhance the tool, leveraging his extensive consultancy expertise and ongoing research highly supported by companies and executive education inputs.

The VCW addresses challenges identified by Key Decision Makers (KDMs) who have the 4Ms (Manpower, Minute, Money and Motivation) (Lages et al. 2023). It engages internal and external stakeholders through a five-phase framework: Defining challenges, identifying ideas and filters, assessing these ideas, and refining them into tangible value (Lages et al. 2023; Lages, Fonseca, and Toh 2024). This methodology fosters innovation, decision-making, and problem-solving (Lages et al. 2023; Lages, Fonseca, and Toh 2024). Both the KDMs and their challenges can be highly diverse. KDMs are ranging from CEOs to individuals navigating daily challenges, actively contribute essential resources (4Ms) and play a central role in the problem- solving process (Lages, Fonseca, and Toh 2024; Value Creation Wheel 2024d; 2024d). The VCW is adaptable to diverse fields, including aerospace, finance, healthcare, public administration, technology, and tourism (Lages 2016; Lages, Fonseca, and Toh 2024). It is implemented by individuals, startups, NGOs, SMEs, and Fortune 500 companies (Lages 2016; Lages, Fonseca, and Toh 2024). Challenges often stem from a lack of internal support, complexity, or limited perspectives (Lages, Fonseca, and Toh 2024). By engaging KDMs and emphasizing efficiency, the VCW facilitates effective decision-making with reduced efforts and resources, delivering solutions that create value for stakeholders (Lages, Fonseca, and Toh 2024).

The VCW consists of two main components, resulting in four frameworks tailored to users' needs: The DIANA Framework, which underpins the VCW Sprint, VCW Journey, and VCW Method, and the TIAGO Framework (Lages et al. 2023; Lages, Fonseca, and Toh 2024; Lages, Dias, and Reis-Marques 2025) (see Appendix 4 for an illustrative image). The VCW Funnel serves as an additional component, demonstrating the VCW in practice (Value Creation Wheel 2024b) (see chapter 7 for a comprehensive description of the VCW Funnel). The selection of the most suitable VCW framework depends on factors like resources (4Ms), challenge complexity, team size, and diversity (Lages, Dias, and Reis-Marques 2025). The DIANA

Framework, focusing on “converting practice into theory,” (Lages 2016,2) supports the VCW phases: Define, Increase, Assess, Narrow, and Act (Lages et al. 2023). It is ideal for specific challenges with limited resources (Lages et al. 2023). In contrast, the TIAGO Framework emphasizes practical application, described as “converting theory into practice,” (Lages 2016, 2) with five phases: Tap, Induce, Analyse, Ground, and Operate (Lages 2016). TIAGO is highly adaptable and customizable for diverse challenges (Lages 2016, 2). Due to its high degree of complexity, customization, and co-creation sophistication, it requires more human resources, budget, and time to be implemented (Lages, Fonseca, and Toh 2024; Lages, Dias, and Reis-Marques 2025). See Appendix 6 for an illustrative image of the VCW frameworks.

The VCW Meta Framework, based on TIAGO, is the most complex and resource-intensive approach, suited for comprehensive challenges involving numerous stakeholders (Lages, Dias, and Reis-Marques 2025, 12). It integrates the 15Is of Innovation and adapts flexibly to each unique case, functioning as a “chameleon framework” (Lages 2016, 2-3; Lages, Fonseca, and Toh 2024, 24). Both DIANA and TIAGO frameworks are dynamic and circular, enabling responsive problem-solving and complementing existing tools across various fields (Lages 2016, 2-3).

The core elements of each of the five TIAGO phases are as follows: The first phase, **Tap (**3Is: Ignition, Idea, Intelligence**), focuses on “Discovering Value”** by defining the problem or challenge (Lages 2016; Lages, Dias, and Reis-Marques 2025). This phase involves a thorough diagnostic to uncover root causes, contextual nuances, and relevant trends, culminating in a well-defined vision, clear goals, and a precise research question (Lages 2016; Lages, Dias, and Reis-Marques 2025). The process duration varies based on complexity, from minutes to years (Lages 2016; Lages, Dias, and Reis-Marques 2025). Key outcomes include setting a baseline, establishing KPIs, and aligning progress measures with desired outcomes (Lages et al. 2023). The second phase, **Induce (**3Is: Imagination, Intuition, Intellect), **focuses on “Creating Value”**

by generating two key components: Ideas (potential solutions) and filters (criteria for prioritization) (Lages 2016; Lages, Dias, and Reis-Marques 2025; Lages, Fonseca, and Paulino 2018). Teams collaborate with internal and external stakeholders to produce a wide range of ideas and filters, treating them separately to ensure creativity and avoid premature elimination (Lages 2016). Creative methods such as brainwriting, brainstorming, crowdsourcing, networking, and open innovation might be employed, alongside techniques like market-pull and tech-push exercises (Lages 2016). Filters, often developed by stakeholders not involved in idea generation, serve to refine and evaluate ideas based on acceptance / rejection criteria (Lages 2016). In phase three, **Analyse – focuses on "Validating Value"** (3Is: Interpretation, Insight, Integration). KDMs prioritize and rank the ideas and filters from phase two, evaluating them from most to least important (Lages 2016; Lages, Dias, and Reis-Marques 2025). Factors such as organizational hierarchy, control systems, and the number of stakeholders involved influence this evaluation (Lages 2016). The **POKER method** (Keep, Review, Multiply, or Kill), developed by Lages and Hartmann (2015), streamlines the process, focusing on refining filters and solutions to ensure only the most viable options move forward (Lages 2015; 2016; Luis Filipe Lages, Fonseca, and Paulino 2018; Value Creation Wheel 2024c) (see Appendix 7 for an illustrative image). The fourth phase, **Narrow – focuses on "Capturing Value"** (3Is: Inspiration, Illumination, Incubation). It involves building the Value Creation Funnel using the ideas and ranked filters from the previous phase to identify solutions with the highest potential (Lages 2016; Lages, Dias, and Reis-Marques 2025). Flexibility and openness are key as the team incorporates KDMs' insights (Lages 2016). After narrowing down the list of ideas, the team develops detailed concepts and prototypes for the final solutions, preparing them for implementation (Lages 2016). The final phase, **Operate – focuses on "Consolidating Value"** (3Is: Impression, Introduction, Implementation). A business model is developed and, if viable, implemented, monitored, and controlled (Lages 2016; Lages, Dias, and Reis-Marques 2025).

The board evaluates the solution by reviewing the 4Ms and business model, deciding to “Go,” “No-Go,” or “Check.” (Lages 2016; Lages et al. 2023). A “Check” decision requires revisiting earlier TIAGO phases for refinement (Lages 2016; Lages et al. 2023). KPIs set during the Tap phase are also reviewed, and stakeholders may be engaged to create roadmaps or oversee implementation (Lages 2016; Lages et al. 2023).

6 The VCW Ecosystem

Just as natural ecosystems like prairies, rainforests, and oceans consist of diverse species that interact, adapt, and evolve, human-created systems such as innovation ecosystems mirror this complexity, with various stakeholders interconnecting and evolving, driving growth and interdependence (Zhe et al. 2024). An innovation ecosystem can be described as an evolving set of actors, activities, and artifacts, as well as the institutions and relations, including complementary and substitute relations, that are important for the innovative performance of an actor or a population of actors (Granstrand and Holgersson 2020). An innovation ecosystem can be established on a smaller scale, such as within a company (Singapore Management University 2018) or on a larger, global scale (MIT 2021). An example for an innovation ecosystem within the European Union is the European Institute of Innovation and Technology (EIT). It is a large-scale innovation ecosystem that connects businesses, universities, and research institutions across Europe to address societal challenges through cross-border collaboration and support for startups (EIT 2024). Regardless of the scale, what is always needed is a density of resources, talents, infrastructure, and demand.

Innovation ecosystems have been implemented in various organizations and business schools. A noticeable trend among European business schools is their strong emphasis on innovation and entrepreneurship through various impactful initiatives. For example, HEC Paris Innovation & Entrepreneurship Institute fosters a leading European ecosystem for innovation and corporate

transformation, offering three centres that support entrepreneurial ideas at every stage of development to drive lasting positive impact in business and society (HEC Paris 2024b). However, similarly to the Innovation Ecosystem at Nova SBE, internal and external problem-solving and decision-making is not their primary focus. In contrast, UC Berkeley fosters stakeholder engagement through partnerships, connecting alumni, faculty, and staff, guiding alumni in innovation-focused research, building philanthropic and corporate ties, and strengthening its network creatively ('UC Berkeley Innovators' 2024). The framework of UC Berkeley's innovation ecosystem stands out due to its decentralized structure, which proves to be highly effective by empowering various academic units with autonomy. This approach fosters dynamic collaboration and innovation across different departments, leveraging the unique talents and expertise within the institution (Cohen 2016).

Nova SBE established an innovation ecosystem which is focusing on being a "meeting point to forge partnerships with a shared vision, blending generations, industries, cultures, and perspectives to breed new business models, products, and solutions" (Nova SBE 2024a). They focus on enhancing executive education at Nova SBE and managing partnerships with external partners. Nova SBE is a key innovator for Portugal (Lopes 2024). This is why, alongside external efforts, internal challenges and innovation processes must be systematically and efficiently managed to maintain agility despite recent growth and remain competitive with other business schools. The VCW Ecosystem serves to be this systemized process which continuously generates innovation (Value Creation Wheel 2017). The VCW Ecosystem has already been successfully implemented outside Nova SBE at INCM-the Portuguese Mint, showcasing its potential to foster innovation, make decisions, and solve challenges. At Nova SBE, internal stakeholders have emphasized the need to enhance internal problem-solving and decision-making. This need was highlighted through active participation in VCW workshops and insights from interviews with previous KDMs involved in three VCW student projects (see

Appendix 8). The KDMs observed that, as in many organizations, excellent ideas from the VCW process often fail in implementation. A key issue was poor communication among students, staff, and faculty. This highlights the need for a structured approach like the VCW to ensure ideas are effectively implemented and integrated. Therefore, the VCW Ecosystem project was launched to address challenges at Nova SBE. The goal is to industrialize decision-making and problem-solving at Nova SBE, ensuring that innovation is better structured and more visible. The existing innovation ecosystem like all the other internal and external stakeholders are important assets in the implementation process of the VCW Ecosystem. To make the VCW Ecosystem efficient and applicable it is built on three fundamental layers: The Governance Model, the Innovation Framework and the Network of Partners (see Appendix 9), similar to the project at INCM (Value Creation Wheel 2017).

The Governance Model establishes the main responsibilities for each of the components of the VCW Ecosystem (Value Creation Wheel 2017). The Governance Model consists of three separate but interconnected units. The board challenges, selects filters, prioritizes, decides, and implements. They primarily launch the challenges, although other stakeholders can also initiate them. The VCW team challenges, dynamizes, explores, and supports. Lastly, the departments and organic units suggest ideas and filters. They are also responsible for conceptualizing and prototyping the solutions for their specific challenges (Value Creation Wheel 2017). This structure provides clarity and accountability within the ecosystem. The underlying components of the Governance Model are resource allocation, standardized processes, and technology. Efficient distribution of financial, human, and physical resources is crucial for implementing the ecosystem. Streamlined operations require standardized processes and training to effectively use the VCW Ecosystem. Technology must support innovation, ensuring the tools align with the governance structure. (Lages et al. 2023)

The Innovation Framework is based on Luis Filipe Lages' VCW methodology for innovation, decision-making, and problem-solving (Value Creation Wheel 2017). It is a comprehensive framework designed to tackle innovation, collaboration, and change management challenges. The strength of the VCW lies in its adaptability and ability to capture insights from both internal and external stakeholders, which is particularly valuable in addressing the complexities of collaborative partnerships (Lages, Dias, and Reis-Marques 2025). Given that the framework was developed by a professor at Nova SBE, there is a heightened level of familiarity among staff and students, which facilitates comprehension, encourages engagement, and supports its seamless integration into institutional decision-making and problem-solving processes.

The Network of Partners is essential for enhancing the potential of the VCW methodology for innovation, decision-making, and problem-solving within the VCW Ecosystem (Value Creation Wheel 2017). The diversity of partnerships is crucial, encompassing a variety of internal but also external partners to bring different perspectives and resources to the table. The sustainability of these partnerships is vital, with a focus on long-term collaboration to create enduring, impactful connections .

7 Procedure and Methodology of the VCW Ecosystem Project

The VCW Ecosystem Project began with an exploratory phase focused on identifying Nova SBE's existing challenges. This stage involved the active participation of KDMs and numerous internal and external stakeholders, providing a diverse range of perspectives. During this diagnostic phase, over 80 potential challenges were identified. Subsequently, discussions were held with the Dean and the President of the Scientific Council to prioritize these challenges and identify the appropriate KDMs for each.

Once the priority challenges and KDMs were defined, the next phase, which centered on gathering potential solutions through idea and filter generation workshops, began. Conducted

in June 2024 and September 2024, these workshops brought together various internal and external stakeholders, including staff and students, to solve real challenges while generating ideas and filters across multiple funnels. The workshop utilized the VCW Funnel, a stage-gate and agile methodology designed to energize and unify the co-creation team around a common objective and solution, enhancing engagement and motivation (Value Creation Wheel 2024b; Lages, Fonseca, and Toh 2024; Lages, Dias, and Reis-Marques 2025). The VCW Funnel begins by defining the Diagnostic, Challenge, Leaders / Key Decision Makers, Key Stakeholders, and the Scientific Team supervising the VCW Funnel (e.g., VCW Lab @ Nova SBE team). Ideas and filters are generated through methods such as brainwriting, brainstorming, and AI. Filters are then ranked from "must-have" to "nice to have". Solutions pass through filters, followed by the development of the "4Ms" (Manpower, Minute, Money, Motivation), culminating in a concise pitch (summarizing the challenge, solution, and resource needs (4Ms)). VCW Funnels typically last two hours but can vary based on context from 90 minutes to 4 hours (e.g., number of people, number of challenges, number of VCW facilitators, presence of KDMs) (Value Creation Wheel 2024b).

During the workshops in June 2024 and September 2024 over 300 participants contributed, working together in teams of four to six people resulting in over 50 funnels. In October, additional workshops in the same format were held exclusively with Nova SBE Master's students to gather more ideas and filters specifically for the three challenges addressed by the master thesis work project team. The WP team together with Luis Filipe Lages conducted four sessions in the mandatory "Marketing Management" class and two sessions in the elective "Decision Making". During these sessions 235 students contributed to over 279 ideas and 254 filters (see Appendix 10). Following the workshops, further meetings with the KDMs to review and evaluate the proposed ideas and filters were held. This culminated in an official review meeting attended by the Dean of Nova SBE, the President of the Scientific Council, the three

KDMs, Luis Filipe Lages representing the VCW Lab @ Nova SBE and the VCW Methodology, and the three Master's student's authors of this work project. The purpose of this meeting was to gather feedback on the ideas and filters and confirm their prioritization by the KDMs. With approval and endorsement from the Dean, the final funnel phase, where all ideas were assessed through the established filters was initiated. After developing an implementation plan for the respective solutions, the projects concluded with the implementation phase, where the KDMs were tasked with overseeing the integration and monitoring of the selected solutions. The three challenges addressed during the VCW Ecosystem Project are:

1. How to improve mass public transportation and campus accessibility?
2. How can living expenses be made accessible and affordable for all students?
3. How can Nova SBE develop an efficient and sustainable system for continuously updating its alumni databases?

In the following the process from defining the challenge to the implementation of the solution is described for each challenge in detail. The overarching mission of solving the challenges is to solidify the implementation of the VCW Ecosystem at Nova SBE, to industrialize innovation, decision-making, and problem-solving and offer implications for other organizations. To track the success of the project, the WP team set five overarching objectives with underlying KPIs to monitor the process and measure the results at the end of the project (see Appendix 11).

8 Challenge 3: How can Nova SBE Develop an Efficient and Sustainable System for Continuously Updating its Alumni Databases?

The following section applies the VCW methodology to solve challenge 3.

8.1 VCW Phase 1 – Discover Value (Tap)

In 2013, Nova SBE identified a key challenge: "How can Nova SBE develop an efficient and sustainable system for continuously updating its alumni databases?". This question arose directly after the alumni department was formed in 2013. Recognized as one of the most pressing priorities by the Dean at that time, this challenge is now central to Nova SBE's efforts to improve data accuracy and alumni engagement across the world. During the internal kick-off meeting on September 24, 2024 (see Appendix 48 for meeting overview), the WP team and the alumni department met to explore this challenge in depth. The alumni team, along with the KDM, emphasized the importance and context of maintaining an updated alumni database, while the WP team shared their strategy for addressing the issue using the VCW.

This challenge is a pressing concern because Nova SBE's current alumni database needs to be consistently up to date. Staff members often spend considerable time and resources manually searching for alumni updates, such as through LinkedIn, which is time-consuming and does not yield fully accurate results. As Madalena Borges de Sousa (KDM) noted, this labour-intensive process is insufficient for providing the school with reliable, current alumni data (KDM meeting 1, 24.09.24). Accurate and comprehensive alumni data is essential for Nova SBE. It strengthens the foundation for fostering long-term relationships with alumni, building the school's reputation, and expanding its global professional network. These relationships are critical, as engaged alumni become loyal supporters, promote the school through word-of-mouth, and act as international ambassadors, sharing their expertise and experiences in their home countries and professional networks (Loughborough University & CASE 2019). This is particularly

evident in conversations with students, many of whom cite recommendations from their professional network or bachelor's peers as a key factor in choosing Nova SBE for their Master's studies. Moreover, in 2013, the school recognized that alumni engagement was crucial for successfully raising funds for a new campus, emphasizing the need to foster connections and maintain accurate alumni records.

The **KDM** for this challenge is Madalena Borges de Sousa, Executive Director for Community Engagement & Alumni Relations at Nova SBE (Borges de Sousa 2024). With a diverse background spanning aviation, broadcast TV, retail, energy, consumer goods, and digital communication, she now works with the Dean's team to enhance the Nova way of life, focusing on lifelong learning, professional growth, and alumni engagement (Borges de Sousa 2024). Madalena serves as a KDM by leveraging the **4Ms.** She leads a team of three tasked with fostering alumni relations and addressing the challenge of maintaining accurate alumni data (Nova SBE 2024o). She contributes her expertise and motivation through regular meetings with the WP team and shaping project criteria. With a €150,000 alumni budget, including €4,000 dedicated to this initiative, she ensures financial and strategic alignment (KDM meeting 2, 10.10.24).

Root causes of the challenge include the absence of automated tools, reliance on manual updates, and the prevalence of incomplete or inaccurate records, which hinder tracking alumni locations, job positions, and achievements. The challenge is compounded by a relatively young alumni base, frequent changes in their careers and locations, limited departmental resources, data privacy restrictions, and the absence of effective engagement initiatives or incentives to update personal data. The reluctance to share personal information further hinder efforts to maintain accurate and updated records. These issues are interconnected, forming a cyclical relationship where one problem reinforces or results from another, making it difficult to

determine which is the root cause. Addressing these issues is crucial, as outdated alumni data risks losing engagement, missing valuable feedback, and overlooking achievements that could enhance the university's reputation (KDM meeting 1, 24.09.24).

Developing a sustainable alumni database system requires understanding **stakeholder roles, interests, and influence**. Key internal stakeholders with high power and interest include the alumni department, the Dean, students and the VCW team, whose leadership and resources are essential. Supporting roles like IT, data management, and marketing provide technical and promotional assistance, while finance, legal, and compliance ensure data protection. Externally, alumni and recent graduates are crucial for maintaining an up-to-date database and benefiting from enhanced networking. Data protection authorities hold significant influence by enforcing privacy compliance. Engaging high-impact stakeholders and alumni is critical to the project's success. Figure 50 in the Appendix outlines stakeholder power and interest levels in more depth.

For **benchmarking, market- and competitor analysis**, the University of St. Gallen (HSG), a leading Italian university, and another leading German business school, which both prefer to stay anonymous, were chosen as reference institutions, as they, like Nova SBE, rank among Europe's top business schools. To examine how these schools manage alumni data, the top 20 European business schools were invited to participate in interviews. The HSG, and the two other institutions responded, enabling discussions with their alumni departments. The findings revealed that prominent institutions such as the University of St. Gallen and the Italian University face similar challenges in maintaining accurate and up-to-date alumni databases.

During an interview with a representative from the leading Italian University's alumni relations department, it was emphasized that maintaining up-to-date alumni data is a significant and ongoing challenge. For example, although the Italian University regularly emails its 100,000 alumni requesting data updates, only about 10% respond. The diversity of their alumni base

further complicates the issue, as older alumni prefer traditional communication methods like letters, while younger alumni favour platforms such as LinkedIn. Additionally, following the implementation of GDPR, the school had to obtain explicit consent to process alumni data, resulting in 10% of alumni not providing consent. This reduction has hindered the school's ability to maintain connections, invite alumni to events, and engage them in other initiatives. Consequently, the school is prioritizing the development of more efficient and sustainable alumni data management solutions (Interview Italian University).

Similarly, a German business school, which requested anonymity, reported that alumni primarily update their data via an online portal. However, this self-service approach is inconsistent, as many alumni fail to update their information regularly. As a result, the alumni relations team often resorts to manual methods, such as searching LinkedIn or directly contacting alumni, to fill data gaps (Interview German University).

As part of the research on alumni data management, the WP team interviewed the CEO of the Alumni Club at the University of St. Gallen (HSG). The HSG faces similar challenges, relying on manual methods like LinkedIn messages and phone calls for data collection, which are resource-intensive and often yield incomplete information. To address this, they use external services, such as national postal data updates, though reliability remains an issue. The HSG engages international alumni through a self-sustaining Alumni Club funded by membership fees, which organize events and foster connections. They also build early relationships through student-alumni initiatives like mentorship programs, promoting long-term engagement. These strategies highlight the importance of proactive relationship-building and structured networks (Interview University St. Gallen (HSG)). See field notes of the interviews in Appendix 51.

These interviews highlight the shared challenges of alumni management among European business schools and offer insights and best practices into potential strategies, including

combining manual and automated approaches, fostering local leadership, leveraging new technologies, and prioritizing early student engagement.

The **project objectives and KPIs** were formulated in collaboration with the KDM and alumni team to ensure alignment on a common goal and to track progress toward desired outcomes. They focus on alumni data accuracy, updates, alumni engagement, satisfaction, and team collaboration. Appendix 49 outlines the objectives and KPIs.

8.2 VCW Phase 2 – Create Value (Induce)

To find ideas and filters to solve the challenge the WP team generated primary and secondary ideas and filters (see Appendix 53 and 54 for full list of ideas and filters). For generating primary ideas and filters the WP team held internal brainstorming sessions in which they used various methods such as brainwriting as well as mind mapping to generate ideas into the most diverse directions. First data and ideas were already available to the team from the workshop in September to further build on those ideas. Moreover, extensive literature review and KDM interviews have been conducted to generate even more ideas and filters. For generating secondary ideas, AI tools such as ChatGPT, Perplexity, Microsoft Copilot and Google AI were used to get an even bigger pool of ideas. To gather external insights and ideas, the WP team interviewed several competing business schools, as outlined above. These interviews offered valuable perspectives on different approaches to solve this challenge across the field. As part of the secondary research seven workshops took place between October and November 2024 involving 232 participants including students, staff and external experts. This Case Action Research (Roberts and Helena 2010, 225) format, which combines case study and action research methodologies, yielded additional ideas and filters. The workshop series also highlighted recurring ideas, offering insight into the most popular and promising solutions. These research practices where carried out until the WP team reached a point of saturation,

where newly generated ideas and filters began to repeat, and no further unique ideas emerged (Saunders et al. 2018, 1). This point of saturation was reached after the second workshop of the Decision-Making elective on October 30, 2024.

8.3 VCW Phase 3 – Validate Value (Analyse)

Considering all research sources and methods used in phase 2, a total of 224 ideas and 184 filters were initially generated. The WP team then prepared and refined the data, organizing a meeting with the KDM and the alumni team on October 10, 2024. This meeting aimed to gather initial feedback from the KDM, applying the POKER Method and collaboratively clustering and ranking the filters by importance. The KDM and her team were surprised by the volume of input generated and added additional filters critical to their work (KDM meeting 2, 10.10.24). After removing duplicates, prioritizing with the KDM, and applying the POKER Method, the ideas were refined to 110 unique entries. These were grouped into 20 clusters, such as “Alumni Portal,” “Events,” and “LinkedIn Feature,” to streamline analysis and support further discussion (see Appendix 53 and 54 for full list of ideas and filters). Similarly, the 184 filters were reviewed, adjusted, and clustered, resulting in 23 “must-have” filters and 10 “nice-to-have” filters following feedback from the Dean during the November 4 meeting. The iterative process ultimately narrowed the ideas to 60, which were submitted to the VCW funnel for further refinement. During the November 5, 2024 meeting with the KDM, additional ideas were deprioritized based on reasons such as “the solution was previously implemented and unsuccessful” or “the idea is already in place”. This input could be used as filters to be included in future projects. The KDM emphasized that any new solution should build on existing systems rather than introduce entirely new initiatives, as past implementations had not yet provided the alumni team with sufficient, accurate, or up-to-date data. Proposals such as establishing an alumni portal or app, building a buddy program, or implementing standalone alumni management software were excluded for these reasons. (KDM meeting 3, 05.11.24).

8.4 VCW Phase 4 – Capture Value (Ground)

In the phase 4, the set of ideas described in the previous phase, and the final must-have-filters were applied to the **Value Creation Funnel (VCF)** (see Appendix 55) to find final solutions to solve the challenge. After these steps 13 ideas passed the must-have filters and the VCF and passed further to the **Multi-Criteria Decision Analysis (MCDA)** (see Appendix 57). These **most promising final ideas** that went into the next discussion round with the KDM and its team before a final decision, are shown in Table 3 below.

Exclusive Alumni Network	Data Crowdsourcing Hackathon
WhatsApp for Business	Hackathon to Build Interface / App
Alumni World Map	Buying LinkedIn API Integration
Alumni Scholarship	Purchase LinkedIn Database
CRM Interface with LinkedIn	Leverage Gamification and Incentives
Event App for Data Collection	Customize Eventbrite or similar

Table 3, Most promising ideas for final discussion with KDM and alumni department

The WP team conducted in-depth research and brainstorming on implementation options on the most promising ideas, collaborating with the KDM and alumni team. Findings of this research are detailed in Appendix 56. Some ideas, like the Alumni Scholarship and Exclusive Alumni Network, were de-prioritized as they were already in use or required additional solutions (KDM meeting 3, 05.11.24). Digital options like the LinkedIn Database and WhatsApp Business were also deprioritized due to data security concerns or lack of priority from the KDM and team.

After further elaboration, discussion and prioritization, the **MCDA** with the nice-to-have-filters was applied to find the final solutions for solving the challenge. The two ideas that passed through the funnel, through the MCDA, the KDM discussion and research are the ideas Alumni Event App combined with the Hackathon and Buying the LinkedIn API. Following a discussion with the KDM and her team on November 21, the KDM expressed a strong preference for Buying the LinkedIn API (Idea 1), citing its potential for quick wins and tangible

results. This idea was also a focal point in the initial workshops. Consequently, the WP team conducted further in-depth research and developed an implementation plan, outlined below.

The proposed final **Idea 1** involves "**Buying the LinkedIn API"** to access alumni data, such as job titles, email address and locations, for internal use by the alumni department. The API enables automated data extraction, provided users explicitly agree to share their information. This ensures accurate, up-to-date data is directly transferred to the CRM system, eliminating manual searches. To access the API, the university must register and apply via the LinkedIn Developer Platform, specifying the purpose of data use to ensure compliance with LinkedIn's terms (LinkedIn Corporation 2024). The alumni department intends to use the data for fostering alumni connections, supporting career development, organizing events, and enhancing engagement (KDM Meeting 4, 21.11.24). Since LinkedIn prohibits data use for advertising, this must be clearly stated in the application. Upon approval, the university will receive API keys for authentication. (LinkedIn Corporation 2024; LinkedIn Developers 2024; Microsoft Learn 2024). The standard subscription costs €55/month, supporting 500 data requests per day, while the professional plan costs €570/month with 15,000 daily requests (Maiz 2022). Given the 20,000-member alumni network, the WP team recommends the standard plan, allowing complete data updates within 40 days. Consent from alumni is required, either via LinkedIn message or email, as the API operates on a permission-based system. Once consent is obtained, the alumni department can access and integrate the data into the CRM system (LinkedIn Corporation 2024; LinkedIn Developers 2024; Microsoft Learn 2024). Finally, thorough testing of the system's functionality and data security is essential before full implementation to ensure compliance and reliability.

Integrating the LinkedIn API offers a clear **value proposition** by automating the collection of accurate, up-to-date alumni data, such as job positions and locations into the CRM system. This

enhances alumni engagement, career development, and event planning while reducing the need for manual data entry. By addressing the **pain points** of time-consuming and inefficient data gathering, the solution ensures data accuracy and frees resources for strategic community-building efforts. A successful implementation requires **key resources** such as an IT specialist to manage integration, a project manager to oversee planning and application, and a data protection expert to ensure GDPR compliance. Alternatively, a Hackathon could engage students in solving the integration challenge, fostering innovation and reducing costs. The basic LinkedIn subscription costs €660 annually, along with staffing expenses. According to LinkedIn's guidelines, the integration process should be completed within a few weeks of application approval, ensuring a timely rollout.

However, after detailed research and an interview with the Italian University, the WP team discovered that purchasing the LinkedIn API may not be the most suitable solution for addressing this challenge. Although it offers an efficient, quick and cost-effective method for automating alumni data collection with minimal effort, it comes with significant limitations, such as being restricted to 500 users while the alumni network includes approximately 20,000 members. Additionally, LinkedIn's strict terms of use and GDPR compliance prohibits using the data for internal purposes like event invitations, fundraising, or advertising (LinkedIn Corporation 2024). Insights from an interview with the University's alumni department further support these findings. Their experience with integrating the Italian University LinkedIn API into their Salesforce system ended with the introduction of GDPR, which rendered the data unusable for their operations. This example underscores the challenges of utilizing third-party APIs while adhering to strict legal frameworks (Interview Italian University).

Consequently, the **WP team went back to the funnel and the MCDA analysis** and picked the idea of the Alumni Event App and Hackathon which came second in the prioritization after the LinkedIn API. The Event App and Hackathon were selected as they were deemed the most

feasible options for implementation and aligned closely with the KDMs expectations. Specifically, it built upon existing alumni initiatives and offered the potential for "quick wins" for the alumni team.

A **survey** was conducted to assess the solution's appeal among alumni and recent graduates, complementing prior input from the KDM, alumni department, and WP team. Results show 84% value the proposed Event App, and 84% are willing to share personal data to access it. Data privacy emerged as a key concern, with respondents emphasizing control over visibility, such as one noting: "It is important to choose specifically who can see my data after submitting." These findings confirm the solution's viability, addressing internal challenges while indicating strong demand and likely user acceptance. See Appendix 58 for details.

Insights from the interview with the Italian University highlights the effectiveness of using an alumni webpage for GDPR-compliant data updates. Alumni update their personal information when registering for events or making donations, with data automatically transferred to the CRM system. Through this mechanism, the alumni department independently collects consent for data processing and subsequently can use the data for internal purposes, such as sending event invitations (Interview Italian University).

Following the decision on this final approach, further in-depth research and conceptualization were conducted to detail the value proposition, product features, and potential implementation strategies of the ideas "Alumni Event App" and "Hackathon".

The proposed solution final **Idea 2**, termed the **"Alumni Event App & Hackathon"**, involves developing an app accessible via a QR code displayed at event entry points. Users are directed to a landing page where they input personal details, such as contact information, job title, and location, to access the app. To ensure ease of use, no login is required, and data entry must be

quick and simple to minimize user drop-off. Alumni can also opt out of data sharing without losing access to app features. Upon entering the app, users access a central hub offering event schedules, speaker bios, and interactive content. Returning alumni benefit from pre-filled fields based on CRM data, allowing quick review and updates to enhance the user experience. Real-time CRM integration ensures alumni contact details are updated immediately, providing the alumni department with current information. Optional incentives and gamification features can boost participation. Incentives such as free drinks, early content access, or small gifts should be clearly communicated during data entry. Gamification could include awarding points for data submission, redeemable for rewards like vouchers or discounts, or showcasing attendees who have completed their data entry to encourage networking. The **prototype** in Appendix 59 provides a detailed, step-by-step explanation of the app's functionality, illustrating how these features are implemented.

Considering the outlined features, the **value proposition** for this idea can be formulated as follows: "*A user-friendly Event App, accessible via a QR code, designed to seamlessly integrate up-to-date alumni data directly into the CRM system. Enhance existing alumni initiatives by making them more efficient, enabling the collection of comprehensive data from all alumni attending events, while simultaneously providing alumni with a valuable and enjoyable experience.*" The core **problem point** this solution aims to address is that, while many alumni events and initiatives are already in place, there remains a significant challenge in leveraging these events to efficiently and sustainably gather and update information on participating alumni.

As the solution involves personal data, it must ensure **GDPR compliance**, particularly Article 5. Alumni should be informed via the app about data use and provide explicit consent by accepting terms, with additional consent required for CRM processing and an opt-out option

available. Access should be restricted to authorized staff, secured with encryption, and backed up regularly. Consulting a data security expert pre-launch is advised to mitigate risks.

The WP team proposed **two implementation options** with differences in cost, development method, and stakeholder involvement. **Option one** engages a freelancer to build the app, requiring a project manager to oversee the process, an estimated budget of €2,000 based on Fiverr project benchmarks, and a two-month timeline for planning, development, and testing (Fiverr International Ltd 2024). Detailed implementation steps are outlined in Appendix 60. **Option two** involves organizing a Hackathon at Nova SBE with a challenge for students to build the Event App with an API integration to the CRM software. The implementation steps for this option can be found in Appendix 60 in detail. This solution requires similar resources to option one, including a project manager, but adds a coordinator for the Hackathon. It is more cost-effective, avoiding a costly freelance developer, though money is needed for staff, software, infrastructure, and the Hackathon prize. The trade-off is a longer timeline, with students developing the solution over a semester before testing and piloting.

As implementation option two, which includes the Hackathon, is more cost-efficient, its **implementation and go-to-market plan** will be elaborated in greater detail below.

The product features described and the mock-up prototype provided in the Appendix 59 serve as foundational tools to define the product and its functions, laying the groundwork for the **implementation plan**. Following this, the Hackathon challenge must be formulated, such as: *"Develop an alumni Event App with integration into the alumni department's CRM software",* and an appropriate course and professor identified to support its execution. The Kickoff Day plays a critical role in introducing students to the challenge, specific product features, and design requirements. Materials such as the flyer in appendix 61 and the mock-up prototype can be used effectively during this stage. The presentation should also outline grading criteria and

highlight the reward for the best solution. Afterwards, the course can be divided into smaller groups for collaboration throughout the semester, with regular check-ins scheduled to address challenges and answer questions. At the semester's conclusion, a Pitch Day will be held for students to present their solutions, with a winner selected. The event can conclude with a reception, such as a cocktail gathering, where the prize is awarded to the winning team.

A pilot project is central to the **go-to-market strategy**, refining the app through real-world feedback. A targeted campaign on WhatsApp, LinkedIn, email, and the Nova SBE website will promote its benefits, such as event schedules, networking, and rewards. Clear instructions will support event organizers. Integrated into the alumni department, the app will enhance events, CRM, and initiatives like mentoring and webinars. Ongoing evaluation will ensure its effectiveness. See Appendix 62 for the detailed go-to-market plan.

8.5 VCW Phase 5 – Consolidate Value (Operate)

At a project's end, a business model canvas, resource assessment, and KPI evaluation confirm the solution's viability and alignment with business goals. The Event App's **business model canvas** highlights its dual value: Enhancing alumni event experiences and streamlining alumni data collection for integration with the university's CRM. Key activities include app development, GDPR compliance, and feedback-driven improvements, supported by resources like skilled staff, financial backing, and partnerships with internal teams and external developers. Effective communication channels and personalized engagement foster strong alumni relationships. While revenue is indirect, driven by improved alumni engagement and university reputation, costs include development, marketing, and ongoing maintenance. The detailed business model canvas for the Event App can be reviewed in Appendix 63.

Evaluating resources using the **4 Ms** for the Event App via Hackathon shows it is cost-efficient, staying within the €4,000 budget for a database solution. An alternative freelance developer

option, costing €2,000, also fits the budget (KDM meeting 2, 10.10.24; Fiverr International Ltd 2024). The alumni department's four specialists provide sufficient manpower, with 0.7 FTE currently used for manual alumni data collection reallocated to manage the app (KDM meeting 2, 10.10.24). Despite limited KDM availability, the phased, student-driven Hackathon approach ensures the six-month timeline is feasible. Stakeholder motivation, including the WP team and KDM, remains high.

The **KPIs** established at the project's outset serve as benchmarks for evaluating the solution's effectiveness, though they can only be assessed after implementation. As the WP team's role is limited to providing recommendations within the thesis timeline, the alumni department will evaluate these KPIs post-implementation, measuring outcomes and identifying areas for improvement. However, objectives related to internal collaboration and KDM satisfaction were evaluated during the project, scoring five out of five for both. While the proposed solution effectively addresses the challenge, further refinement may be required to fully achieve its objectives.

In conclusion, the project significantly enhances Nova SBE's capacity to maintain an updated alumni database, strengthening alumni engagement and providing a clear implementation roadmap. The WP team generated innovative ideas by involving students and stakeholders, conducted expert interviews, and analysed best practices from European universities. The solution includes a research-backed prototype, business case, and go-to-market strategy, which is handed over to the alumni department. The **next steps**, discussed during the final KDM meeting on December 11, 2024, involved finalizing the solution, integrating a professor and business analytics course, launching the initiative, and presenting it at alumni events.

9 Outcomes

The following section presents a detailed analysis of the outcomes of this work project, highlights identified synergies, and explores how the findings can inform future research and be applied effectively in other institutional contexts.

9.1 Consolidation of Outcomes and Synergies Across the Three Challenges

The mobility, living expenses, and alumni challenge are distinct in nature, yet the WP team observed several overarching **trends across all three challenges**. First, sustainability emerged as a key priority for both the school and the KDMs, not only in the environmental sense but also in the form of finding long-lasting solutions. Second, communication with students was highlighted as an essential yet underutilized resource. Many stakeholders mentioned that they rarely interact with students, despite greatly valuing their input, perspectives, and insights. As outlined in the value creation concept, this leads to better outcomes and valuable learning opportunities. Third, KDMs consistently encouraged the WP team to propose digitalization ideas, emphasizing solutions that integrate seamlessly into existing systems rather than relying on entirely new technologies, which aligns with Nova SBE's mission of making a sustainable impact. Finally, all measures are ultimately aimed at enhancing Nova SBE's reputation and increasing its appeal to prospective students, driving the school closer to its ambition of becoming a top-tier institution under the motto: "On Our Way to the Top." (Nova SBE 2023a).

Throughout the research, the WP team observed **significant similarities between challenges**, **ideas, and solutions** within the organization, uncovering interconnected opportunities to address issues strategically. For instance, while addressing the living expenses challenge, the WP team recognized its multifaceted nature and broke it down into various aspects, including a transport and mobility part. Ideas such as promoting carpooling, improving public transportation efficiency, and implementing campus shuttles emerged as top solutions. Interestingly, these ideas also feature among the final solutions for the mobility challenge. By

leveraging this overlap, resources can be optimized, leading to more efficient and sustainable processes. Similarly, the alumni challenge, though seemingly unrelated to the others at first glance, revealed shared methodologies and connections. The alumni challenge serves as an overarching baseline for the other two challenges, as alumni play a crucial role as stakeholders in both the living expenses and mobility challenges. For example, alumni insights are critical for initiatives such as the alumni tuition support program or the campus shuttle, where their experiences and opinions help shape viable solutions. Alumni also directly contribute to the success of these challenges. A notable example is the prioritization of alumni during Nova SBE's fundraising efforts for the new campus, highlighting their essential role in the school's growth and development (Meeting with Madalena 21.11.2024). Besides that, the WP team utilized the Hackathon concept, originally proposed within the alumni challenge, to develop at least parts of the programming components for all three final solutions. This demonstrates the potential for leveraging creative ideas from one area to create impactful solutions in others. These findings highlight the deep interconnectedness of the three challenges, offering complementary insights and emphasizing the importance of strategic thinking in addressing organizational challenges holistically.

Certain **commonly applicable filters**, with generalized importance and usability, were used across all three challenges. During our meeting with Dean Pedro Oliveira, the WP team discussed the most crucial filters for evaluating solutions, and he highlighted cost, cost-benefit analysis, resources, and sustainability as key priorities. These filters are likely reflective of the challenges faced by many organizations, which must operate within constraints, not only financially but also in terms of available FTEs and other resources. This underscores the importance of the resource-based view of the organization and developing practical, resource-efficient solutions. On the topic of cost, Dean Pedro Oliveira emphasized: "Keeping in mind that cost is a challenge will help us in the end with the implementation, if the cost is too high,

we might not be able to accommodate it in the end." (Meeting 04.11.24). This statement illustrates that cost considerations are vital filters by many KDMs and lead to the feasibility of implementing most projects. The SWOT analysis highlights Nova SBE's reliance on tuition fees and government funding, suggesting less financial flexibility than other organizations. The cost-benefit analysis further underscores the importance of aligning budgets with the scope of solutions. For example for the living expenses challenge, building social student dorms demands a significantly higher budget compared to implementing a food waste agreement with Pingo Doce and campus restaurants. Tailored budgeting is essential to ensure projects are viable and proportionate to their scale. Regarding resources, Dean Pedro Oliveira stressed the need to align proposed solutions with the limited resources available to ensure they remain practical and feasible. This includes not just financial resources but also human and operational capacity. Sustainability is a critical priority, as Nova SBE is deeply committed to the Paris Agreement and the 17 United Nations Sustainable Development Goals (SDGs) (Nova SBE 2021). To recognize the SDGs critical role in fostering a sustainable future, proposed solutions must align with these expectations, focusing on long-term impact and fostering sustainable success. The emphasis is on creating solutions that are not only effective but also enduring. Beyond these primary filters, the WP team, through its research and analysis of the project funnels, identified additional filters that are broadly applicable across challenges and organizations. These include reach of the solution (number of people impacted), implementation time (feasibility within a reasonable timeframe), alignment with Nova SBE's vision (reflecting strategic goals), maintenance (long-term sustainability and support), (technological) feasibility (realistic execution with available resources), and scalability (ability to grow and adapt to future needs). These filters provide a comprehensive framework for evaluating and prioritizing solutions, ensuring they are impactful, feasible, and aligned with Nova SBE's vision for sustainable and strategic development.

Throughout the VCW process, the **WP team learned many lessons**. For instance, the importance of effective communication and structured collaboration. In-person meetings proved significantly more efficient than email exchanges, helping to prevent misunderstandings and streamline decision-making. Fixed meeting schedules with clear agendas were crucial, as was being specific about next steps, expectations, and deadlines for KDMs. Persistent follow-ups ensured progress and accountability. This is particularly important, as developing collaborative capabilities is a fundamental requirement for an ecosystem to function effectively. The role of the KDM emerged as critical. A successful project requires a KDM who possesses both the authority to make decisions and the availability to engage actively at all stages, particularly during critical phases and final implementation steps. Supporting KDMs with detailed explanations of processes, especially for complex tasks like ranking the filters and helping to guide the ideas through the VCF and MCDA, was essential to their effective participation. The WP team also recognized the importance of carefully formulating and adhering to the defined challenge. For example, when addressing the mobility challenge, some compelling ideas emerged but required refocusing to align with the core objective. Flexibility was vital as well. While the framework provided structure, projects often took unpredictable turns. Stakeholder unavailability, infeasible ideas, or the need to revisit earlier stages, such as in the alumni challenge, required adaptability. Collaboration with multiple internal and external stakeholders enriched the process by providing diverse insights, while creative methods like brainwriting generated innovative ideas. Listening to the three decades of VCW expertise and feedback of Luis Filipe Lages and KDMs further strengthened the project. Finally, the most important lesson was that the success of any project relies heavily on strong communication and a well-coordinated, functioning team. A unified and collaborative approach, fully aligned with the VCW methodology, proved to be the foundation for achieving impactful outcomes.

9.2 Analysis of the VCW Ecosystem Project and Implications for the Future

To demonstrate the need, value and feasibility of the VCW Ecosystem the WP team analysed previous student-led VCW projects through interviews with the project KDMs (see Appendix 8). Susana Lopes, Chief Librarian at Nova SBE, emphasized the importance of long-lasting support for effective implementation, highlighting her preference for engagement and feedback-driven collaboration with students. Vanda Verissimo highlighted a gap in project implementation due to a transition lapse. This issue, identified during VCW monitoring, has been resolved with Rogério Marchante assuming responsibility. Susana Santos praised the phased approach for its clarity and ease of use, demonstrating the value of the VCW methodology. All KDMs from this work project were highly engaged, appreciated stakeholders and Master students' input, and valued the outcomes of the three challenges, reflecting a shared enthusiasm for ongoing collaboration with the VCW team. Similarly, students in workshops showed significant interest in solving the challenges, showcasing the feasibility of the VCW Ecosystem and the value of including "customers" in the ecosystem to co-create and achieve better outcomes.

The VCW Ecosystem is essential for capitalizing on the abundance of numerous challenges and creative ideas at Nova SBE, by providing the structure necessary for industrializing the innovation, decision making, and problem-solving process. The VCW and the VCW Ecosystem foster open innovation, address resource constraints (human, financial and temporal), and resolve inconsistencies in stakeholder alignment and communication. By improving collaboration and establishing clear processes and responsibilities, the VCW Ecosystem ensures that implementation is actionable. Adopting the VCW Ecosystem aligns with Nova SBE's strategy and long-term goals, such as sustainability and digital transformation, positioning the institution as an European leader in innovation (Nova SBE 2024i). It helps Nova SBE to create a competitive edge among universities, improves stakeholder satisfaction, and reinforces its

reputation for excellence. To summarize, the VCW Ecosystem fulfils two primary needs: improving communication and collaboration between departments, students, professors, partners and other internal and external stakeholders, and establishing structured processes to ensure effective industrialization and implementation of innovative solutions.

The VCW Ecosystem is structured as a centralized model, with individual departments granted autonomy to address their specific challenges in a decentralized manner, similar to Berkeley's approach. By embedding the VCW Ecosystem within the Dean's purview, the initiative ensures strategic oversight, institutional buy-in, and long-term success. Statements from KDMs, such as Sofia Cilia, underscore the importance of centralized authority to drive the process (Dean meeting 04.11.2024). This proofs the point made by Peter Drucker emphasising the need for leadership to prioritize innovation (Drucker 2002).

The 4 Ms, money, Manpower, Minute and Motivation are hurdles to overcome. Therefore, the WP team suggests implementing a **Governance Model** that is aligned with the available resources. The VCW Ecosystem is anchored by strong leadership, starting with **the Board** that consists of the Dean and the President of the Scientific Council, who are already aware of the 80+ challenges faced by Nova SBE. They play a pivotal role in launching these challenges without requiring additional resources. Beyond this, other stakeholders can also propose and initiate challenges, broadening the scope and impact of the ecosystem. This is especially the case for the **Departments and Organic Units** that support the process with their expertise. They act as the KDMs for respective challenges and need to have the 4 Ms. At the core of the VCW Ecosystem is a dedicated **VCW team** led by Luis Filipe Lages, supported by a growing number of employees and students that support the KDMs. Master's students act as consultants on courses, theses, or projects, gaining experience while enhancing job opportunities at the school. As Luis Filipe Lages explained in the alignment meeting on November 04, 2024 "The power of building the VCW Ecosystem lies precisely in engaging students to identify problems

and develop solutions because these challenges are directly relevant to them". This approach ensures creating value by maximizing existing resources and minimizing costs.

The VCW framework proofed itself as a powerful and versatile tool, designed to foster co-creation, innovation, decision making, and problem solving. By integrating stakeholder insights, it engages KDMs to deliver practical, actionable solutions (Luis Filipe Lages 2016). All KDMs involved in the project were familiar with the tool and found it easy to work with, demonstrating its accessibility and effectiveness. Especially Phase 2, the generation of ideas and filters, was highly appreciated. To scale the VCW Ecosystem, the VCW Lab at Nova SBE will launch a Certification in January 2025, training over 150 participants from diverse industries to use the VCW methodology.

As an improvement area for the VCW, the WP team identified the difficulty KDMs face in ranking numerous filters during Phase 4 (VCF and MCDA). To address this, the team conducted a structured analysis of the filters, using criteria such as how frequently each was mentioned in workshops to create a shortlist, which KDMs found helpful for simplifying decisions. To further tackle this aspect in future projects, the WP team proposes several solutions. The VCW team can preselect filters and use AI to cluster and reduce their number, streamlining the process. Additionally, during brainstorming sessions, filters can be classified as "must-have" or "nice-to-have" from the outset, making revisions easier for the KDMs. A library of frequently used filters, supported by both software solutions already developed by the VCW team, might become critical to provide quick and consistent references, showcasing the VCW framework's adaptability and commitment to improvement.

The dynamic **Network of Partners** is built on internal stakeholders such as students, staff, and faculty, whose motivation to address internal challenges was activated through workshops and this work project. External partners, including UberTransit, public transport providers, other

universities and CampusGround were engaged during the project. The network has potential for further expansion since market complexities, emerging technologies and increased competition, shifted value creation to co-creation. Consumers, companies, communities, and professionals now collaborate to define and create value, engaging through communication channels, social media, open innovation, or digital platforms (Prahalad and Ramaswamy 2004).

Industrializing innovation, decision-making, and problem-solving within Nova SBE requires a **structured approach for implementation**. The WP team identified solutions for successful implementation which differ in their degree of complexity and resources needed. A key strategy is to engage teams interested in solving internal challenges, whether by forming diverse new groups or involving existing student clubs, through targeted advertising and LinkedIn outreach. Offering incentives for voluntary student participation and hosting regular VCW Funnels, VCW Sprints and VCW Open Innovation Workshops with diverse stakeholders will foster active involvement. Additionally, promoting the VCW course and allowing students to tackle internal challenges will further boost engagement and hands-on learning. On a medium complexity level, creating a webpage where challenges, ideas, and filters can be posted and shared would encourage transparency and collaboration. For long-term scalability, more advanced initiatives like the engagement of the board are necessary. Enhancing the VCW software solution to support project work could streamline operations but would require additional funding. Successful implementation will depend on the integration of technology, targeted training, and fostering motivation through increased awareness and organizational alignment. Ultimately, the most important step is turning ideas into action, therefore a kick-off event for the VCW Ecosystem, to be held during the VCW Journey Certification Workshop in January 2025 serves as a valuable catalyst and marketing tool to raise awareness.

The success of the VCW Ecosystem relies on strong support from the Dean, President of Scientific Council, KDMs, organizational visibility, and clear accountability with dedicated

project leaders. An obstacle commonly discussed in the literature is the resistance to change within organizations, which can significantly hinder the adoption of new processes or systems. “This resistance is the outcome of change recipients’ cognitive and reactions towards change” (Wah Khaw et al. 2022, 19137). To address this challenge, it is essential to have strong leadership support (Wunker 2024). A **change of mindset** is crucial not only for implementing the VCW Ecosystem but also for addressing each individual challenge, as emphasized by Luís Veiga Martins. To support this, the WP team has consolidated the outcomes and insights from the VCW Ecosystem Project into Kotter’s 8 Steps for Leading Change, with specific measures assigned to each step (Kotter 2024).

Create a Sense of Urgency: By implementing the VCW at the Dean’s level and addressing unfulfilled challenges alongside ambitious goals, the VCW Ecosystem highlights the immediate need for action. **Build a Guiding Coalition:** The Governance Model ensures leadership alignment and collaborative oversight. **Form a Strategic Vision:** The VCW Ecosystem fosters exchange among internal and external stakeholders, solving challenges together as a united community striving for innovativeness and excellence. **Enlist a Volunteer Army:** The VCW team mobilizes stakeholders like students, staff and professors to lead and support. Certified and trained people will become multipliers of the VCW methodology. **Enable Action by Removing Barriers:** Breaking silos and creating a structured process through the VCW methodology ensures no idea is lost. **Generate Short-Term Wins:** Workshops and student projects act as tangible starting points to showcase early success. **Sustain Acceleration:** Building on initial wins, the scale of the projects increases. They integrate technological solutions and enhance professionalism. **Institute Change:** The VCW Ecosystem initiates new behaviours into the organization’s culture, linking them to lasting success until they become second nature (Kotter 2024).

9.3 Analysed Project Objectives and KPIs

The assessment of Nova SBE's VCW Ecosystem project highlights strengths and areas for improvement. KPIs established at the outset measure progress in teamwork, decision-making, and reputation (see Appendix 11 for objectives, KPIs, and their status). Short-term goals, crucial for laying a strong foundation, have been largely achieved. Teamwork and stakeholder satisfaction scored five out of five, reflecting improved communication, collaboration, and alignment with expectations. Timely stakeholder meetings and biweekly feedback sessions ensured consistent progress. Medium- and long-term KPIs, such as interdepartmental ties, leadership communication, and reputation, remain unmeasured pending full implementation of the VCW Ecosystem (see Appendix 11). While early results are strong, sustained focus on stakeholder engagement and collaboration and co-creation is essential to fully realize the ecosystem's potential for innovation and institutional growth. The VCW Certification will help to achieve this medium- and long-term goals.

9.4 Future Directions on Scaling the VCW Ecosystem

The work project explores how Nova SBE can industrialize innovation, decision-making, and problem-solving within its organization by implementing the VCW Ecosystem. By addressing three internal challenges using the VCW methodology, the project demonstrates how the structured ecosystem approach integrates governance, a robust network of partners, and a dynamic VCW team as well as organizational units to drive actionable solutions.

The project underscores the critical role of motivation and an innovative mindset in implementing the structure organization-wide. Motivation and innovation are deeply embedded in Nova SBE's culture, however like in any organization, challenges are inevitable. This became evident early in the project, as the initial brainstorming session produced a comprehensive list of issues to address. However, as Sofia Cilia emphasized during the final

alignment meeting on December 9th, “the solutions are within the community”. The VCW Ecosystem provides a structured approach to uncovering the solutions to address these challenges. Until now, student insights and involvement in the process have been underutilized, presenting an opportunity for greater engagement moving forward. The WP team enriched the problem solving by applying a meta-framework, incorporating various tools and methodologies across the VCW phases. This approach ensured engagement of internal and external stakeholders. These partnerships leverage existing infrastructures, create collaborative capabilities, and creating mutual value. The findings affirm that a well-structured and standardized ecosystem like the VCW Ecosystem not only resolves immediate challenges but also fosters long-term organizational innovation, collaboration, decision-making, and problem solving.

The WP team explored the potential to industrialize the VCW Ecosystem at Nova SBE, laying the foundation for further research, implementation, and scaling of this system for innovation, decision-making, and problem-solving. Nevertheless, the team identified specific limitations that need to be addressed for broader applicability. While the methodology proved effective at Nova SBE, their adaptability and scalability in other contexts needs to be tackled in a structured way. The VCW Ecosystem’s implementation demands significant resources, financial, temporal, and expertise, that may not be universally available. Currently, the project primarily focuses on internal challenges involving only Nova SBE Master students in the project and the workshops, leaving its integration into a broader ecosystem unexplored. This aspect requires further development as the VCW Ecosystem is rolled out. Tailoring solutions to Nova SBEs specific internal context restricts their adaptability to different environments or institutional changes. Moreover, an initial adoption in other industries and institutions requires VCW consultants, workshops and VCW Certifications introducing the methodology and the tool, adding another layer of dependency during the introductory phase.

To scale the VCW Ecosystem beyond Nova SBE requires transitioning from a tool-centric to a holistic ecosystem approach, supported by dedicated resources and well-defined strategies for successful scalability. Training materials such as workshop videos, detailed guides, the VCW Certification, and digital platforms can facilitate adoption without direct involvement from the VCW team or its founder, Luis Fillipe Lages. Understanding and addressing the unique challenges of other institutions and industries is crucial. For instance, universities often face resource limitations, while corporates may have financial capacity but lack human resources for implementation. Further research must explore these differences to adapt the VCW Ecosystem effectively for diverse contexts. Therefore, a key research question emerges from this expansion: How does the application of the VCW Ecosystem differ across universities and corporates, and what specific resources or strategies are needed to ensure its success in these varied environments? While the framework works effectively within Nova SBE, scaling it to broader contexts requires industrialization across countries and industries, emphasizing standardization across the globe. Standardizing and automating the VCW Ecosystem can address its current limitations and serve as first suggestions to make it adaptable on a global scale. As discussed before, digital platforms, customizable templates, Certification, and comprehensive standardized implementation guides are essential for scalability. Furthermore, participation in summits, conferences, and collaborative projects can also elevate the VCW Ecosystem's global recognition and foster its adoption across industries. The continuation of connections with all the schools at Nova University of Lisbon, various Portuguese Universities and leading institutions across different countries (e.g., MIT, Babson College, City University of Hong Kong, Vienna University) keeps enhancing its credibility in global academic and business circles. The continuation of partnerships with Fortune 500 and integrating into larger innovation hubs and networks provides additional opportunities to leverage resources and expertise. Lisbon, as a leading European innovation hub, offers fertile ground for collaboration

through entities like Unicorn Factory Lisboa (2024) and Web Summit (2024), where the VCW was on the grand stage. These platforms connect the VCW Lab @ Nova SBE with startups, entrepreneurs, and transformative ideas, aligning the VCW Ecosystem with cutting-edge trends and challenges. Such partnerships expand the Ecosystem's network and relevance while positioning it as a benchmark for innovation excellence. By actively participating in these networks, the VCW Ecosystem can bridge academia and industry, addressing complex global challenges and enhancing its scalability and reputation.

Emerging technological trends indicated in the Gartner Hype Cycle 2024, such as spatial computing and digital twins, further enhance the framework's potential (Gartner Inc. 2024). For instance, immersive AR and VR technologies can transform VCW workshops, enabling interactive problem-solving and multidimensional data exploration (Gartner Inc. and Resnick 2024). By integrating these technologies, the VCW Ecosystem can align with the demands of modern, creativity-driven organizations.

While these advancements present exciting opportunities, they also require careful implementation and analysis. Longitudinal studies will be critical to assess the long-term efficacy, while comparative research will help evaluate the Ecosystems adaptability in different contexts. As the VCW Ecosystem evolves, it must remain attuned to technological and organizational trends to sustain its relevance and impact.

10 Conclusion

Reflecting on the project, Nova SBE's Dean emphasizes the value of involving students into the project and problem solving, a practice that underscores the importance of following the customer journey and listening deeply to customers. This approach ensures the creation of mutual value and yields solutions tailored to real needs. The VCW Ecosystem's success at Nova SBE serves as a model for innovation, decision-making, and problem-solving that integrates

diverse perspectives and adapts to complex challenges. Its future lies in scaling its impact, standardizing its application, and embracing emerging technologies to become a globally recognized system for fostering innovation, decision-making, and problem solving.

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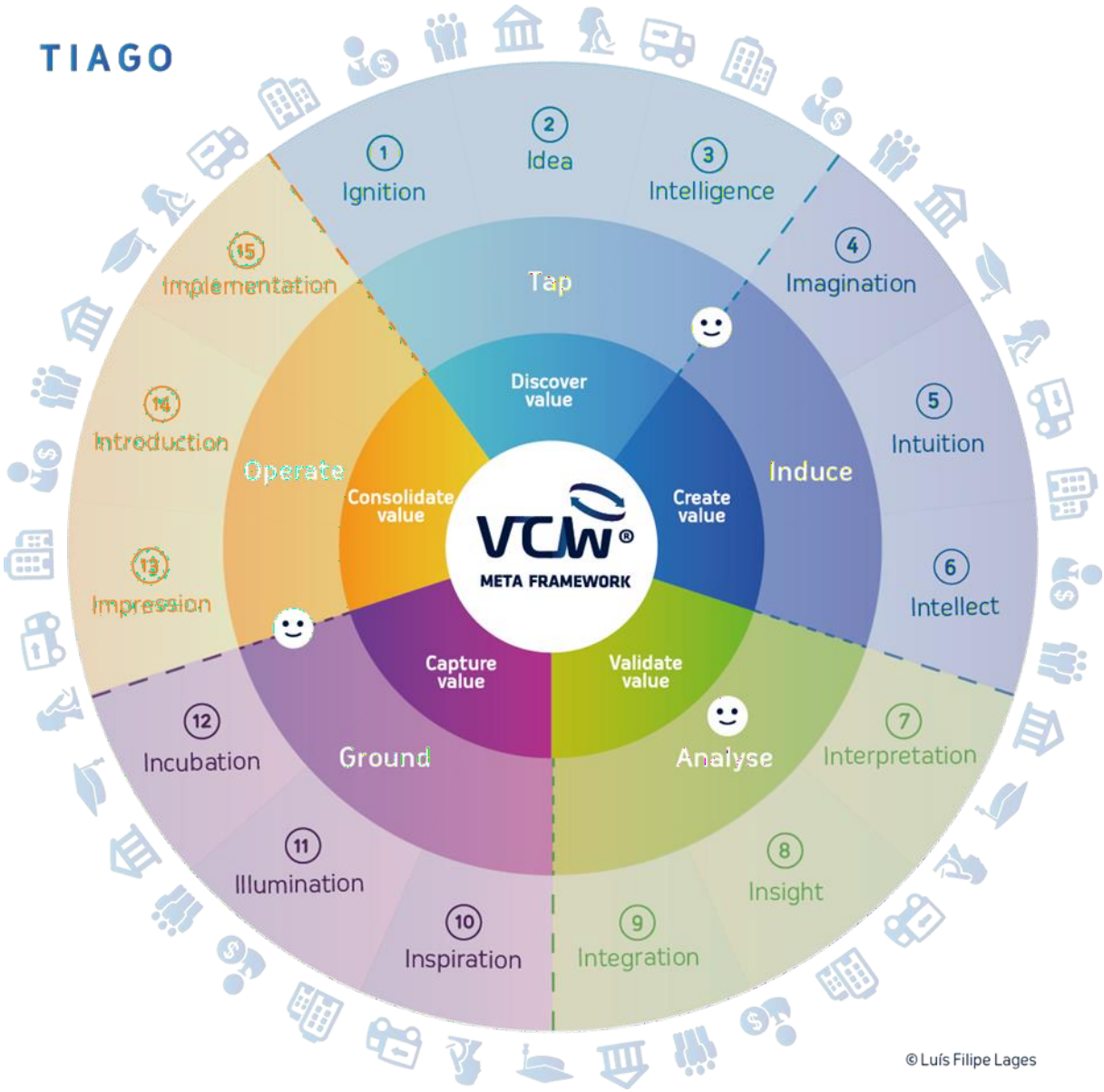
Appendix

A – Group part

Appendix 1: VCW Meta Framework (TIAGO)



Source: *Value Creation Wheel, 2024d*

Appendix 2: PESTEL analysis

Political	Economical	Social
1. Portuguese government funding and policies significantly influence Nova SBE's budget, shaping its	1. Portugal's ranking in the Global Innovation Index 2024 ranks only 20th among the 39 economies in Europe	1. Nova SBE has a strong network of partners (e.g., alumni, industry) that are key assets in creating an

ability to implement internal innovations and process improvements (Ferreira Gomes 2024).	indicates room for improvement, motivating Nova SBE to be a leader in innovation (‘Global Innovation Index’ 2024).	VCW Ecosystem (Nova SBE 2024p).
2. The Portugal 2030 strategy emphasizes innovation, competitiveness, and energy transition, encouraging organizational changes that align with government priorities for sustainable development (Portugal 2030 2024).	2. R&D investment program foresees reaching 3% of GDP by 2030: The national R&D investment goal of reaching 3% of GDP by 2030 provides significant funding opportunities for research and development. Nova SBE can tap into this increased funding to drive innovation initiatives, attract talent, and collaborate with industries, thereby strengthening its role as a hub for innovation within the broader national strategy (Foundation for Science and Technology 2024).	2. Portugal is home to a thriving entrepreneurial ecosystem, supported by progressive policies that attract significant international investment. The country’s startup landscape is highly dynamic, with innovative ventures emerging across diverse sectors, including Fintech, Tourism, Renewable Energy, and Agri-tech. This robust growth positions Portugal as a leading hub for innovation and entrepreneurship in Europe (Financial Times, n.d.).
3. As member of the EU, Portugal can make use of the EU’s research and innovation programs, also Nova SBE as a public university benefit (European Union 2024).	3. Lisbon, close to Nova SBE, is an emerging as a European hub for startups, attracting tech companies and investors. The proximity to this growing entrepreneurial scene could enhance the VCW Ecosystem at Nova SBE (Financial Times, n.d.).	3. Portugal is facing an aging population and talent shortage, therefore Nova SBE has to attract national and international students (The Portugal News 2022).
	4. Portugal has a growing pool of highly educated young professionals. Nova SBE’s ecosystem could benefit from the availability of a skilled workforce and the problem of brain drain (talented individuals leaving the country) it tackled by	

	the Prime Minister in 2024 (Financial Times 2024c).	
Technological	**Ecological**	**Legal**
1. The Lisbon region, where Nova SBE is located, is growing into a tech hub with numerous startups and technology companies. Collaborating with this ecosystem can foster innovation (Euronews 2023).	1. Portugal incorporates the 2030 Agenda into its national strategies, plans and policies around the '5ps' (people, planet, prosperity, peace, partnership). It identifies its priorities for SDG action with an environmental dimension as climate change (SDG 13) and life below water (SDG 14). Green innovative solutions are welcome (European Environment Agency 2020).	1. Data Protection Laws (GDPR): As part of the EU, Portugal enforces strict data protection regulations under the General Data Protection Regulation (GDPR). This could affect how Nova SBE and its innovation ecosystem handle data in research and development (Intersoft Consulting 2024).
2. Technologies like AI, blockchain, and data science are gaining traction in Portugal. Nova SBE's innovation ecosystem could leverage these trends to create cutting-edge solutions (World Economic Forum 2024).	2. The university's commitment to environmental responsibility and its impact on internal decisions (Nova SBE 2024n).	2. In 2023 Portugal introduced a new tax and legal regimes for startups and scaleups which encourages innovation (KPMG LLP 2023).
3. NOVA FCT strengthened its links with industry by signing a cooperation protocol with NOS, one of Portugal's most prestigious telecommunications companies. Nova SBE has the possibility to be part of partnerships with the other Nova schools and industry partners (Nova FCT 2024).	3. As environmental concerns grow globally, there's increasing pressure on institutions to integrate sustainability into their strategies. Nova SBE's VCW Ecosystem could emphasize green tech, sustainable business practices, and environmental responsibility to align with these trends (Anitha 2024).	3. Nova SBE's VCW Ecosystem has to adhere to the university's guidelines.

Source: Created by WP team

Appendix 3: SWOT and TOWS analysis

Strengths	**Weaknesses**
Nova SBE has an ambition to grow and improve as a university with a focus on "the development and co-creation of innovative projects and top talent" (Nova SBE 2024j).	A significant portion (53%) of the students is international which makes Nova dependent on international students and vulnerable to global events that can disrupt student mobility such as visa regulations, and health crises like COVID-19 (Nova SBE 2024p).
The school achieved rankings and accreditations like the Triple Crown (AACSB, EQUIS, and AMBA) and is ranked among the top 10 business schools worldwide (Nova SBE 2024m).	Due to being a young school and only be founded in 1978, Nova SBE has still a small alumni network size with 20.000 members in the Alumni Club. Therefore, Nova's scale and influence globally may be less extensive than older, established institutions in the U.S. and U.K (Nova SBE 2024e).
Another strength is the international focus of teaching as all courses are taught in English, the school offers exchange programs and 50% of master students find jobs abroad (Nova SBE 2024p).	Due to high tuition fees for students, the access is limited to many. This may hinder diversity in socioeconomic representation (Nova SBE 2024l).
The modern campus, Nova's facilities and services enhances students learning and the overall experience – "The Nova Way of Life" (Nova SBE 2024h).	Nova is competing with Europe's best business schools and globally with other renowned institutions. Attracting and retaining top-tier faculty members is challenging, as well as getting the attention of talented students (Financial Times 2023).
Strong cooperate partnerships in Portugal and international with huge companies and institutions represent another strength of Nova and provides companies with "collaboration opportunities, from on and off-campus events to online activities or work projects" (Nova SBE 2024c).	The limited global brand recognition outside Europe especially compared to elite business schools in US and UK is another weakness. Despite the business school ranking Nova does not appear in university rankings for business studies outside Europe. Besides, students are mainly coming from Portugal, Germany and Italy and almost no students are coming from USA to study at Nova (Nova SBE 2023b).
Nova's strong focus on research and innovation lead to 591 publications in the last 5 years (Nova SBE 2024p).	
Opportunities	**Threats**
With an increase of around 25% in the number of applications compared to the previous year 2022 and an increasing number	Increasing competition with other established business schools often leads to competing for

of incoming students, more revenue can be generated, and Nova's reputation improves (Nova SBE 2023b).	the same pool of students and faculty (Financial Times 2023).
The rising interest and importance in sustainability and social responsibility among students, applicants and staff could be further enhanced by positioning Nova SBE as a leader in sustainable business research and practices (follow ESG's and established the impact model, community engagement projects) (Nova SBE 2024n).	Economic instabilities and political uncertainties could decrease the number of incoming international students which affects revenue and reputation of Nova.
Another opportunity could be using the increasing publicity and brand recognition to expand in new markets outside Europe and emerging markets. Nova SBE could thereby broaden its influence, increase student intake, increase revenues, and create new research collaborations in these rapidly developing economies (Financial Times 2023).	A dependency on tuition fees and funding as revenue stream could threaten the financial stability of the school (Ferreira Gomes 2024).
Lisbon has been awarded as the European Capital of Innovation by the European Union with the launch of the Unicorn Factory and has been ranked top 10 of European's leading startup hubs by the Financial Times. This represents an opportunity for Nova SBE to attract students and faculty interested in entrepreneurship and innovation, and could collaborate with local tech firms and startups (Unicorn Factory Lisboa 2024; Financial Times, n.d.).	

Source: Created by WP team

Strengths / Opportunities How can the strength be used to take advantage of the opportunities? What actions do we need to take to make use of the strengths?	Strengths / Threats How can these strengths reduce or remove these threats? What do we need to do to remove or reduce these threats?
Foster leadership in sustainability, research, and innovation by staying at the forefront of sustainability trends, which brings significant value to both students and faculty. Additionally, Nova has a strong	Strengthen and further grow the international alumni connections to improve networking and job placement, especially outside Europe (Nova SBE 2024e).

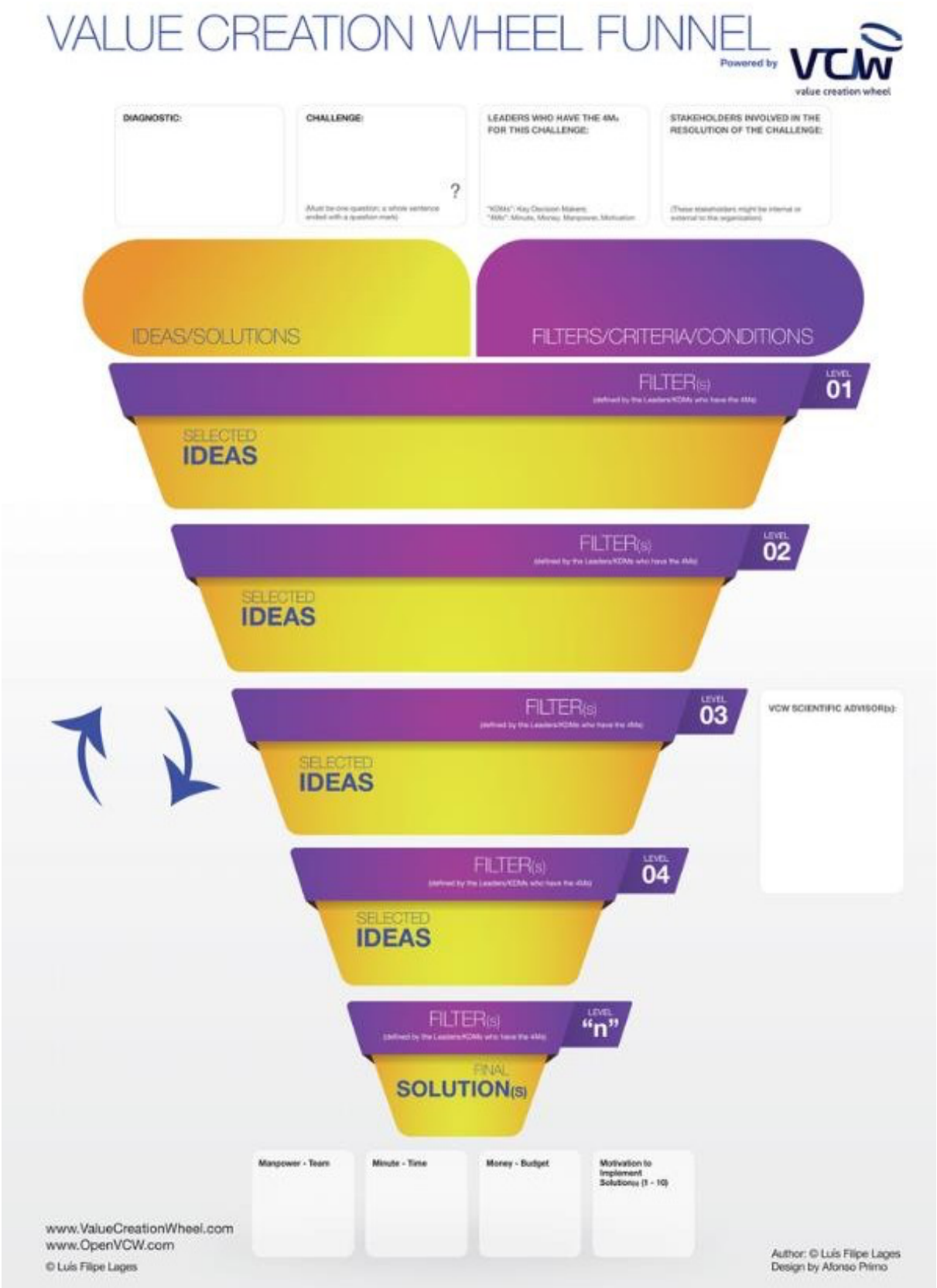
foundation in this field, demonstrated by its commitment to the UN Sustainable Development Goals (SDGs) and its established impact model. This foundation also attracts students and partnerships that share these values (Portugal 2030 2024; Nova SBE 2024n).	
Strengthen connections with companies in emerging economies outside Europe to tap into new markets and further expand Nova's global reputation (Nova SBE 2024m).	Diversify the revenue streams to reduce the dependency on tuition fees and government fundings. This can be done through further corporate partnerships, grants, and sponsored research to improve Nova's financial resilience (Ferreira Gomes 2024).
Use Nova's modern campus, attractive offerings and unique learning experience as well as the increasing awareness and brand reputation to further attract international students also beyond Europe (Nova SBE 2024h). Additionally, use this strength to further tab into the opportunity of establishing corporate collaborations (Nova SBE 2024c).	Nova can offer more scholarships to attract diverse students from different socioeconomic backgrounds and mitigate the impact of high tuition fees (Nova SBE 2024l).
Moreover, this strength can be used to leverage the opportunity of Lisbon being among the top 10 startup hubs in Europe by collaborating with tech firms, startups and talented people to Nova's innovation practices, research activities and learning experience (Financial Times, n.d.).	
Weaknesses / Opportunities Do these weaknesses prevent or risk these opportunities? Should we address the weaknesses? What actions do we need to take to remove the weakness?	**Weaknesses / Threats** Which relate to each other? Are there weaknesses that result in threats? Which elements should be addressed?
Enhance the global presence by partnering with international firms, offer the campus facilities as a place for events and conferences and establish digital programs accessible worldwide. Use Lisbon's image as a global startup hub to raise awareness for Nova as a school (Nova SBE 2023b).	Nova's limited brand recognition outside Europe can be severe when competing with other well established business schools. Nova needs to invest in competitive salaries and professional development to attract and retain top faculty members and resist competition (Financial Times 2023).

Source: Created by WP team

Appendix 4: The VCW framework

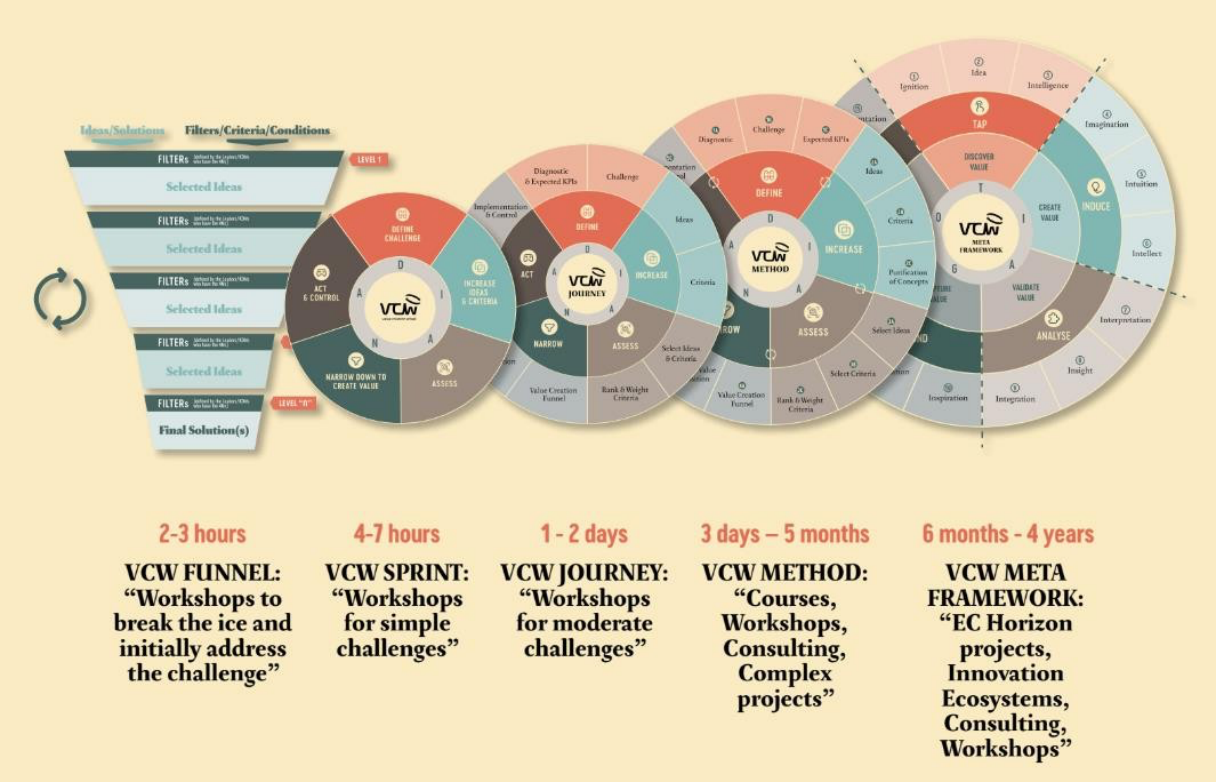
Source: Lages, 2024

Appendix 5: The VCW funnel



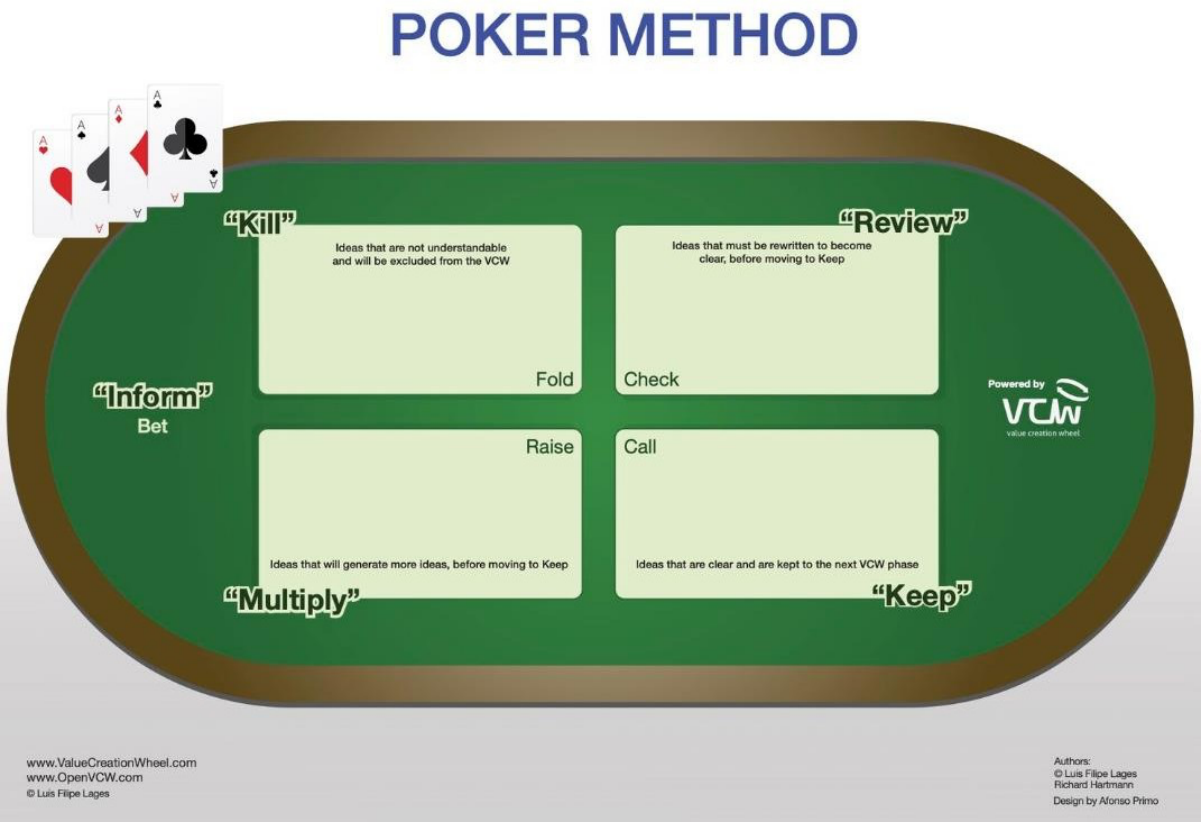
Source: Value Creation Wheel, 2024b

Appendix 6: The VCW funnel and the four VCW frameworks



Source: Lages, 2024

Appendix 7: POKER method



Source: Value Creation Wheel, 2024c

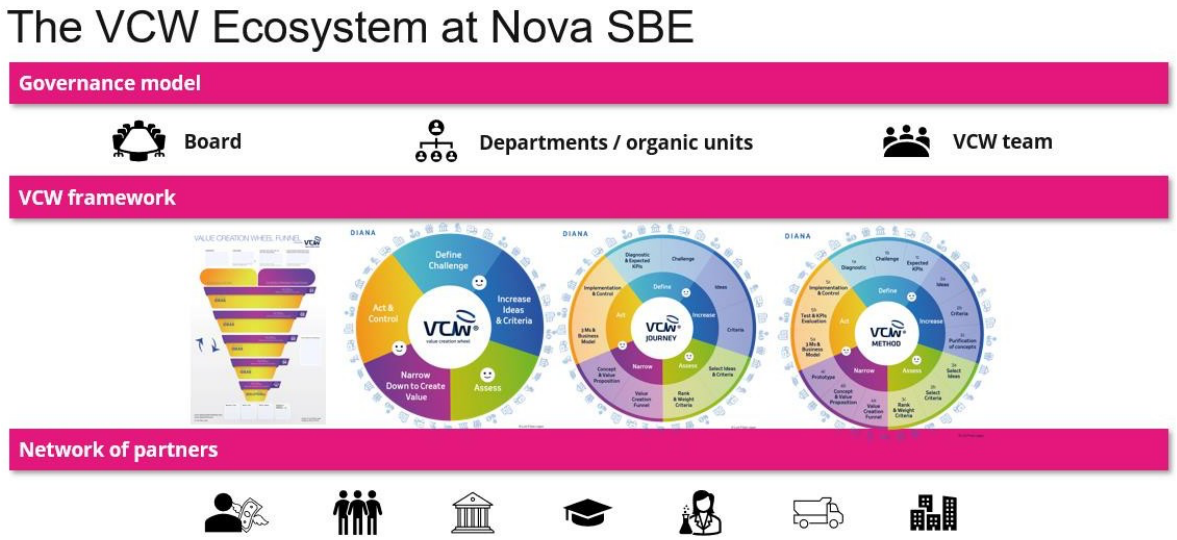
Appendix 8: Meetings with KDMs from previous projects

Date	**Participants**	**Topic**	**Project Details**	**Meeting Topics**
17.10.2024	Susana Lopes, WP team	Insights on previous project for the library	The final solution proposed to the library team was the following: Adoption of a mobile application, incorporating the Skedda software (Value Creation Wheel 2023) (see video under the reference for more details of the project). According to Susana Lopes, the solution was not implemented because it was not deemed the right fit for their needs. Additionally, she lacked the authority to	What went good / what went bad? Did implementation take place? Is there a need for the VCW Ecosystem Insights on the project and KDM experience

			proceed independently, as she reports to higher-level KDMs who were not actively engaged in the process. Susana Lopes also explained that there is a lack in communication with students (to understand their needs) and across the departments (to understand and support each other).	
28.10.24	Vanda Verissimo, WP team	Insights on previous project for the procurement department	Custom-designed dashboard solution which combines different supplier management components to ensure comprehensive supplier evaluation and two-way communication.	What went good / what went bad? Did implementation take place? Is there a need for the VCW Ecosystem Insights on the project and KDM experience
13.11.24	Susanna Santos, WP Team	Insights on previous project for the sustainability department	The final solution was about providing incoming students reusable products such as reusable coffee cups and lunchboxes in their welcome bag to make a commitment to sustainability. Susanna as the KDM reported that she was satisfied with the project and using the VCW methodology, and many student projects are implemented in the department. For more details on this project see the video (Value Creation Wheel 2024d).	What went good / what went bad? Did implementation take place? Is there a need for the VCW Ecosystem Insights on the project and KDM experience

Source: Created by WP team

Appendix 9: VCW Ecosystem



Source: Created by WP team

Appendix 10: Photo from workshop held in October

Appendix 11: Evaluated KPI's

Objective / KPI	Measure	Timeframe	Evaluation
1. Successful Project work on VCW Ecosystem			
Teamwork and internal collaboration on thesis will be evaluated as a 5 out of 5.	Scale from 1-5	short-term	Reached 5 on a scale from 1 to 5.
Implementation of VCW innovation ecosystem: At the end of master thesis work project a decision whether to proceed with the ecosystem or not can be made.	Decision made?	Medium-term	Successful pilot projects show that Nova should proceed with ecosystem – decision made.
The proposed VCW Ecosystem is actually implemented one year after the thesis submission.	Implemented?	Long-term	Not fulfilled yet, needs to be measured again after ecosystem implementation.
The following questions can be answered at the end of the master thesis work project: How to industrialize innovation, decision making, and problem-solving inside an organization?	Question answered?	Short-term	Question answered.
Ensure solutions of challenges are implemented 1 year after WP team submitted thesis.	Implementation after project end successful?	Medium-term	Can first be measured in 1 year from now.
Initial research, theoretical background and literature review is completed within six weeks.	Yes or no	short-term	Done in 6 weeks.
Initial meetings are held with KDMs and challenge is defined within the first six weeks.	Yes or no	short-term	Done in 6 weeks.
2. Enhance Communication and Collaboration at Nova SBE			
Improve exchange between internal stakeholders by at least two new social connections per department.	Number of social connec-tions to other stakeholders	medium-term	Not fulfilled yet, needs to be measured again after ecosystem implementation.
Make the KDMs familiar with the successful application of the VCW framework.	KDM and WP team perception	short-term	KDM's were actively involved and are now familiar with VCW.
Increase communication between departments and with leadership team.	KDM perception	medium-term	Not fulfilled yet, needs to be measured again after ecosystem implementation.

3. Data Collection and Analysis for Decision-Making			
Collecting sufficient quantitative and qualitative data for analyses until point of saturation is reached.	Saturation of ideas and filters achieved	short-term	Saturation was achieved.
Having a biweekly exchange with supervising professor and KDM's to implement feedback.	Did meetings take place biweekly? Yes or no	short-term	Biweekly meetings were held with both KDM's and supervisor.
4. KDM Satisfaction			
Satisfaction of all stakeholders involved in the work project will be evaluated as 5 out of 5.	Scale from 1-5 by KDMs	short-term	Stakeholders were satisfied with the work project and gave a 5 out of 5.
KDM personal perceived satisfaction with project work and team will be evaluated 5 out of 5.	Scale from 1-5 by KDMs	short-term	KDM's were satisfied with collaboration with work project team and gave a 5 out of 5.
5. Enhance Nova SBE's Reputation, Quality of Life and Operational Efficiency			
Efforts made support Nova SBE on the way to the top.	KDM, Dean and Defense Jury impression	short-term	Can be measured only upon receiving feedback in thesis defense.
Solution is suitable for the whole organization.	Perception of Jury & feedback KDM	short-term	Can be measured only upon receiving feedback in thesis defense.
Increase Nova SBEs reputation.	Dean, KDM perception	medium-term / long-term	Not fulfilled yet, needs to be measured again after solution- and ecosystem implementation.
Increase time and cost efficiency of the innovation and problem-solving process.	Dean, KDM perception	medium-term / long-term	Not fulfilled yet, needs to be measured again after ecosystem implementation.
Increasing quality of life for students and staff at Nova SBE.	Survey	medium-term / long-term	Not fulfilled yet, needs to be measured again after ecosystem implementation.

Source: Created by WP team

D – Alumni Challenge

Appendix for Challenge 3

Appendix 48: List of KDM meetings, points of discussion and dates

Meeting Number and Date	**Participants**	**Topic of the Meeting**
KDM Meeting 1: 24.09.2024	KDM Madalena Borges de Sousa and Alumni Team (Rita Roquette, Mafalda Rodrigues)	Kick-Off Meeting, get to know each other, defining the challenge and getting background information on the department and challenge.
KDM Meeting 2: 10.10.2024	KDM Madalena Borges de Sousa and Rita Roquette	Clustering and ranking of the filters, applying the POKER method and receive first feedback on first generated ideas. Additional feedback was sent to the thesis team in form of an excel file.
KDM Meeting 3: 21.11.2024	KDM Madalena Borges de Sousa and Alumni Team (Rita Roquette, Mafalda Rodrigues)	Discussion of most promising ideas. Prioritizing and deprioritizing ideas after in-depth research.
KDM Discussion 4: 21.11.2024	KDM Madalena Borges de Sousa	Discussion on final idea(s). Additional feedback was sent to the thesis team in form of an excel file.
KDM Meeting 5: 11.12.2024	KDM Madalena Borges de Sousa and Alumni Team (Rita Roquette, Mafalda Rodrigues)	Final presentation of the results and the final solution. Gathering feedback from the KDM's and the team on the whole project and outcome.

Source: Created by WP team

Appendix Phase 1:

Appendix 49: Objectives and respective KPIs

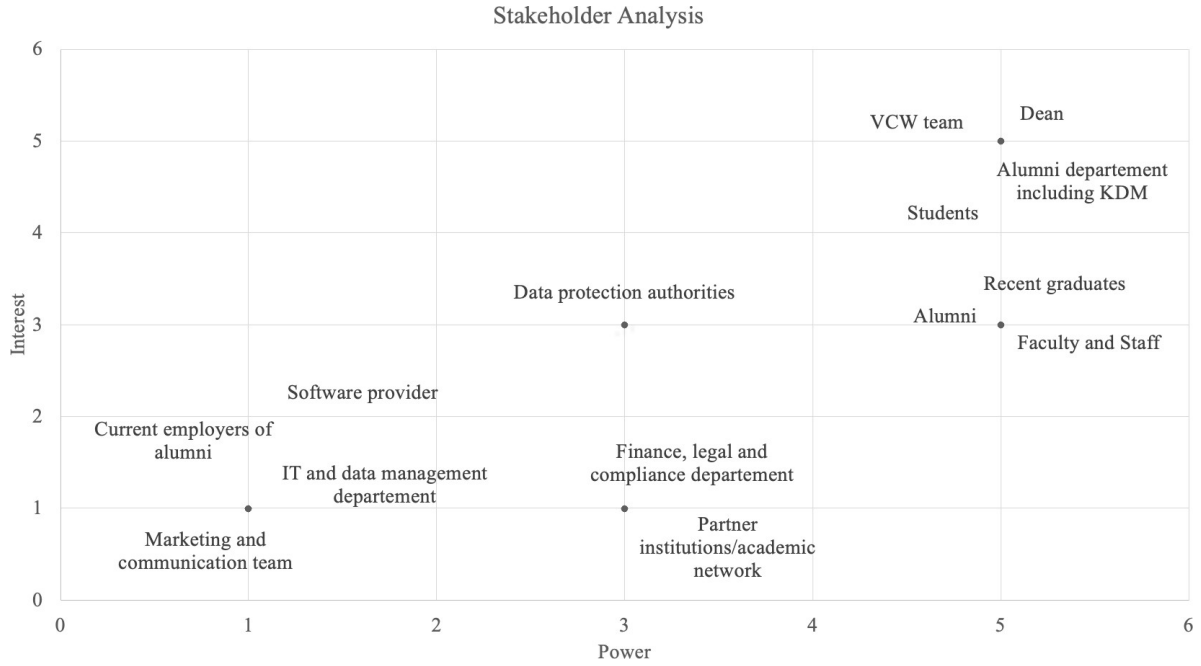
Objective	**Measure**	**Timeframe**	**Assessment Phase 5**
1. Objective: Finding a solution that updates the alumni data automatically and regularly.			
KPI: Each alumni profile is updated within 6 months and	Frequency of data updates without	medium-term	Can only be measured upon

is thereby never older than 6 months.	manual intervention.		implementation of the solution.
KPI: 65% (rate of success) of alumni data is automatically updated through the new solution.	Percentage of alumni records automatically updated through integrated software.	medium-term	Can only be measured upon implementation of the solution.
2. Objective: Alumni engage with- and respond to the new solution.			
KPI: 65% engagement rate for the new solution (update requests, event, software usage, portal usage or similar).	Percentage of alumni engaging with- and responding to update requests via surveys or outreach efforts.	long-term	Can only be measured upon implementation of the solution.
3. Objective: Increase in alumni completing the profile updates after receiving an automated or prompted reminder.			
KPI: 20-30% conversion rate from prompts to completed updates (compared to current 8% survey fill-out-rate).	Percentage of alumni responding to update requests via surveys or outreach efforts and percentage that completes a form.	long-term	Can only be measured upon implementation of the solution.
4. Objective: No significant increase in costs but more accurate / up-to-date alumni data.			
KPI: Efficiency increase by 10% measured by comparing costs with available alumni data within 1 year.	Data accuracy increase in percent compared to costs within a given period.	long-term	Can only be measured upon implementation of the solution.
5. Objective: No significant increase in human resources and allocated time of the alumni department and more accurate / up-to-date alumni data.			
KPI: Efficiency increase by 10% measured by comparing staff deployment with available alumni data within 1 year (current FTE of 0,7 is not increasing but available alumni data is increasing).	Data accuracy increase in percent compared to personnel deployment within a given period.	long-term	Can only be measured upon implementation of the solution.

6. Objective: Building a solution on current solutions and improve those to make the most out of existing resources.			
KPI: Improvement of current events, initiatives, software solutions in terms of keeping the offerings the same whilst increasing the accuracy of alumni data by 75%.	Percentage increase in rate of success compared to alumni offerings / initiatives.	short-term	Can only be measured upon implementation of the solution.
7. Objective: Internal collaboration and teamwork within the WP team worked well.			
KPI: Internal collaboration and teamwork is rated with a 5 on a scale from 1 to 5.	WP team perception on a scale from 1 to 5.	short-term	Internal collaboration and teamwork are evaluated with 5/5.
8. Objective: Collaboration with KDM worked well and KDM's satisfaction with project outcome is on a high level.			
KPI: Collaboration with KDM and satisfaction of KDM is rated with a 5 on a scale from 1 to 5.	WP team and KDM perception on a scale from 1 to 5.	short-term	KDM satisfaction is evaluated with 5/5.

Source: Created by WP team

Appendix 50: Stakeholder analysis - Internal and external stakeholders and their interest and power



Source: Created by WP team

Reasoning and Description to Stakeholder Analysis:

Internal Stakeholder:

Alumni Department, VCW team and Dean	**IT and Data Management Department & Marketing and Communication Team**	**Finance, Legal, and Compliance Department**
The alumni department consisting of Rita Roquette, Mafalda Rodrigue, Catarina Sernadas, including the KDM (Madalena Borges de Sousa), the Dean, and the VCW team hold the highest levels of power and interest. They are deeply invested in the project's success because it directly impacts their daily work on alumni relations, institutional reputation, and operational efficiency. Their leadership, insights, and resources are essential for solving the challenge and ensuring it aligns with the school's and department's goals.	Have low power and interest. Their roles are largely supportive, providing potential technical infrastructure and helping promote the final solution but not driving key project decisions.	Play a moderate role. Their interest is limited, but they hold a crucial authority in ensuring the solutions compliance with data protection laws, which is vital for the project's success.
Students at Nova SBE		
Students are internal stakeholders in the project because they actively participate in the VCW workshops, contributing to idea and filter generation. Their involvement reflects a direct interest, as they will soon transition into alumni and be directly impacted by the outcomes of the project. Furthermore, they hold significant influence as future alumni, helping to shape criteria and ensuring their interests are prioritized to develop attractive and relevant solutions.		

External Stakeholder:

Alumni and Recent Graduates	**Data Protection Authorities**
Are key end-users with a strong interest in maintaining a connection with Nova SBE. Their active participation in updating information is essential for the solution to work, and they benefit from enhanced networking and career opportunities.	Similar to the internal compliance department, they hold a significant role as they ensure the project is confirm to privacy laws.

Appendix 51: Field notes university interviews for benchmark and market analysis

Interview Alumni Relations Department Italian University (prefers to remain anonymous):

Work title of the two interviewees: Head of Donor DB & Intelligence and Data Analyst of Donor DB & Intelligence

1. Question: In general – how do you engage with alumni? What initiatives do you have?

We 75 different chapter in different cities.
12 topics groups (topic fashion or sport for example as they are focus / cores of the university)
Have many events like for example a Christmas party.
During the events we ask the attending alumni to update their information by themselves in the internal alumni webportal.
In the alumni webportal we have a site with a calender for all the events and when they sign-in for event they have to give their personal information to access the site and register for the event. In this way we get the data.
We need the data for example to check in which city the live to assign them to the right alumni chapter.
We also have a reunion of every study program for the MBA for example. They then visit the campus together on that day.
And for example, for old alumni we celebrate the 40 year graduation and organize this together with the assigned class leader from every graduation year.

Follow-up Question: Are these initiatives / events / programs etc. well accepted? Are they demanded by alumni?

Yes, alumni attend the events even if graduation was long time ago.

2. Question: What is you biggest challenge when managing alumni data?

Definitely to keep it updated.
The alumni receive many emails and for instance for the survey or request by email message to update data only 10% answer and update their data.
We have a large alumni base (more than 100 000 alumni and different age ranges, so different tools and initiatives are needed for each target group.
Not everyone wants to receive an email, especially the older alumni prefer receiving a letter.
During the events the response rate is higher because they want to network and want to find each other on the event and talk to other alumni from the same graduation year.
And to see a person also attending the event we need to ask for their information.
Therefore, it is mandatory at events to fill out the data form if they want to register for an event.
We have very active alumni that want to participate in the initiatives events and donations.

3. Question: What initiatives do you currently have to tackle this issue? (Software, Strategy, Tool, Events, Process etc.)?

The solution is to try to find a tool to keep the data updated.
We currently have an updating campaign which is kind of an automated journey, an automated email every alumni receives after one year.
Also, over our website we have a personal alumni profile and we regularly ask the alumni to keep their data up to date there.
Tools such as LinkedIn and WhatsApp we are not using cause of the GDPR regulations which forbids to contact them via such tools.
We used to have Salesforce and it was connected to LinkedIn but now due to GDPR it is not allowed anymore so we stopped this.
There are many useful tools but most of them are not compliant, and we take data security very seriously as we are a good school and also a school of law.
The only solution we have now is the alumni page on our own website because it is compliant.

4. What are your experiences in getting consent from the alumni that you are allowed to get and process their data? Are the alumni relatively open or do most not answer / do not want this?

We lost many alumni's consents when we needed to ask for consent for everything according to GDPR. Before we could contact all of them.
There is a huge number of alumni that did not allow the marketing consent.
It is about 10% that do not allow for marketing purposes so we lost these alumni and can never contact them anymore for event invitations etc.
We can only contact them for purely institutional events now and not if they have a sponsor or something – and ask them there at these events or via email again that if they don't give consent we cannot work with it and cannot let them know about initiatives.

5. What do you mainly use / need alumni data for?

To drive the engagement strategy, bring them to campus, ask them to donate, get to know them.
If you are organizing events, you need to know where they live if they are alive etc.
Many of our alumni for example are from London or live there,
Especially the way of a young student is not predictable nowadays. Where they go and live can change very fast. They do not stay in their home country anymore as many years ago.
We also need to know what they are interested in – fashion or sport, to get the right targeting.
We also need the data for fundraising purposes.
For younger alumni we also have a career services, mentorship etc. and we use data to offer the right services to them.

6. We are currently doing research on the solution of integrating the LinkedIn API which is available as a subscription to automatically get up-to-date alumni data or an Event App. What do you think about this? (Briefly explain the ideas to the interviewee)
   (Here the WP team only asked for the idea of the Event App as the idea of the LinkedIn API was discussed in a previous question as the interviewees came up with this topic)

As an event app we used graduway already – but our own website was better for the purpose of event registration and data collection. Again, due to personalization issues and GDPR. Our own website is good for collecting data via event registration as it is compliant and our own.
But over our website the reach is a problem. Not all alumni register for events.
A lot of our events are in Italy but people do not fly to events if they are from China, so the reach is problem to get data from events.
Using social networks are always good but many of our older alumni do not have LinkedIn for example but for Nova it could work as they have younger alumni.

Interview CEO of Alumni Club from University St. Gallen (HSG):

Work title of the interviewee: CEO of Alumni Club St. Gallen

1. Question: In general – how do you engage with alumni? What initiatives do you have?

We do data synchronization with the Swiss post to get postal addresses, get information who has moved and who has died.
But this is only possible within the country.
To get this data from the Swiss Post we pay a certain amount.
Apart from that we currently gather most of the data also manually through calls, LinkedIn messages or we note done postal returns etc.
But all this has not much success right now.
We also do media monitoring, especially if a CEO position changes and its one of our alumni.
Currently we have 42 000 alumni.

2. Question: What is you biggest challenge when managing alumni data?

The biggest challenge is getting young graduates engaged early, so that they become part of the alumni community directly after graduation not many years later.
Our alumni association / club finances itself independently through membership fees as every member pays for the club.
All of the alumni are taken on into the club directly after graduation without needing their consent.
But then you have to contact them to see if they also pay for the network.
50-60% them continue to pay after graduation (Payment rate).

3. Question: How do you deal with this challenge?

We already show presence during the alumni's studies and keep in touch with them regularly.

For example, we offer opportunities during their studies to create points of contact through mentorship opportunities or similar.
Internationally, we have over 50 local alumni clubs which are all run locally by volunteers. For example, Asia has many active clubs and we now have an Asia weekend for example where many alumni meet in Asia. Many people travel there.

4. Question: What initiatives are you currently using to solve this problem? (Software, strategy, tool, events, process etc.)?

A CRM is in place, but the data is still entered manually.
We have 190 different alumni clubs with many activities, but nothing is updated.
We do not need to ask for consent, it is not necessary because we are not in the EU.
We the Alumni Club are a company and we finance ourselves through membership payments.

5. What do you mainly use / need alumni data for in your work?

For segmentation to target the alumni more specifically.
But this is a lot of effort.
Also, for evaluations and statistics to for example cluster by industries.
And targeted invitations.

Interview Alumni Relations Department German University (prefers to remain anonymous):

General call with alumni department representative without specific questions like in the other interviews.
Insights the WP team gathered:

Have a paid alumni network.
Most alumni update the personal information by themselves in the alumni portal.
If they do not update then the alumni department updates manually but this is very resource intensive.
They get information via email contact – for example if email signature changes they adapt their data base with the new name, address etc.
They also search on LinkedIn for data updates.
Sometimes they also write directly to alumni by email for example if they did not yet paid the membership fee then use this contact point to get data.
Members of the alumni network get an economics magazine for free and if the alumni then write to the magazine if for instance postal addresses changes, then the magazine forwards the info to the alumni network for them to update their data base.
In general, they do not do surveys as they have many passive members and don't want to annoy them.
They say they cannot reach all, because also financial resources are limited.
Some alumni still feel belonging to the university and are members for donation purposes but do not want to be contacted.

Appendix Phase 2:

Appendix 52: VCW workshop in the marketing class

Appendix 53: Full list of ideas generated after deleting duplicates (110 ideas)

Alumni App / Portal (14 Ideas)	Hackathon (3 Ideas)
Exclusive alumni network	Alumni data crowdsourcing Hackathons (maybe with innovation ecosystem)
Alumni network	Create a challenge for students to develop a platform or a LinkedIn connection
Alumni webpage	Challenge for business analytics course to build interface, software, or portal
Instagram or TikTok channel	Incentivize / Gamification (10 Ideas)
Alumni mobile app	Use gamification
Peer network validation	Referral programs
Alumni engagement through active groups on social media	Sustainability-driven alumni credits
Create a chat	Exclusive benefits portal
Alumni resume portal	Incentivizing alumni to update their profiles, reward for updating, attending & refreshing data – reward like access to Events etc.
Create an alumni-platform for alumni to update information themselves	Nova alumni benefits: to get benefits annual information update required by alumni

Link the alumni-platform to LinkedIn	Allow access to database only after updating their data
User-friendly, digital portal with networking experiences (make it joyful to use)	Continuous career advisory services in exchange for regular alumni data updates
Ensure a strong tracking of alumni community through an app	To renew Masters' credentials biannual record update is needed
WhatsApp groups	Alumni can only join LinkedIn network when providing personal information
Alumni Map (1 Idea)	LinkedIn Feature / Automation (8 Ideas)
Alumni world map	Create an alumni LinkedIn page
Alumni Scholarship (1 Idea)	Create automated data updates from LinkedIn with power BI
Alumni scholarship	Create partnership with LinkedIn to share personal information from Nova SBE students/alumni to have a database
Collaboration with Employers (3 Ideas)	Connect the alumni database with LinkedIn profile
Collaboration with academic and administrative units	Integration of social media
Collaboration with employers	API integration: Use the LinkedIn API to integrate with professional networks
Send emails to companies' of alumni to know if information is updated	Buy the LinkedIn database
Committee / Ambassadors (2 Ideas)	Use blockchain technology
Establish an alumni committee	Mentoring (3 Ideas)
Assign alumni ambassadors	Buddy program
CRM Software (2 Ideas)	Volunteering program
CRM Interface with LinkedIn	Mentoring program
Implementing CRM software like salesforce to automate updates and manage alumni data	Newsletter (2 Ideas)
Data Team (5 Ideas)	Own alumni newsletters
Periodic audits	Magazine abonnement like Financial Times for alumni (thereby get alumni data from magazine like change of email address)
Database management team	Merch (1 Idea)
Create a team of responsible data keepers by location / year of graduation that adapt the database	Merch
One full time worker dealing with databases	Outsourcing (4 Ideas)
Invest in a team consisting of programmers, marketing experts and managers	Outsourcing to experts

Events (12 Ideas)	Third-party alumni networks
Alumni-get-together	Use external tech provider to build a designated page for alumni
Open days	Hire coders to update data to the systems
Family experience	Own Data Software / AI (20 Ideas)
Social events	Dynamic QR codes
Industry events	Machine learning for data accuracy
Alumni conference to collect data	Smart contracts for alumni updates
Alumni annual meeting	AI-Powered data crawling
Use Job teaser, can give info's about events, jobs, news	Segment campaigns
Regional events all over Europe	Sentiment analysis with AI
Throw annual alumni parties and dinners at Nova	Web scraping
Use Eventbrite to get data from events - further customize	Solution for automation and data integration
Event App to gather data at events more effectively	Own software that is connected to LinkedIn and keeps the information updated
Guest Lecture / Seminars (4 Ideas)	Use AI to find alumni's new contact details like company e-mail addresses
Alumni speech	Segmenting the process within the different bachelors / masters
Alumni guest lecture program	Scan of outdated CV with AI to reduce time to update (every 6 months)
Alumni panel discussions	Create a program that use multiple online data (not just the database) and the alumni has just to confirm own data and make adjustments
Invite alumni to give seminars and get their data	Automated data collection with AI prompts, perhaps connected with an alumni portal, where former students update information themselves
Survey (11 Ideas)	When a student finishes their bachelors / masters the system automatically puts their data on an alumni database and sends an email to remind for updates
Interactive e-mails	Using AI to identify outdated information and analyse external data sources
Keep nova e-mail address after graduation	Develop a multi-channel outreach pilar to connect with graduate students
Data usage transparency	Implement intelligent data - acquisition and management

Targeted communication	Get an alumni email address after Nova student email address is deleted
Ask alumni 1 x a year to update their contact details	Run a test to identify which data is changed mostly and only ask for those
Alumni survey send to each alumni - direct link to a database send by email	Showcase (2 Ideas)
Send an email every year with a QR code linked to a website where alumni can update their information	Memory moments
Phone calls	Hall of fame
After graduation send an email for each student to ask position	Start with Current Students (2 Ideas)
Implement automated survey and integrate with LinkedIn to regularly update alumni information	Encourage all of the students to have LinkedIn before the end of their studies
Approach more personally than a common / automatic mail - regular communication	Provide all current students the option to choose how they want to be contacted after completing their studies whether it is by email, mail. LinkedIn or phone

Source: Created by WP team

Appendix 54: Full list of filters generated (82 filters)

Real time updates possible	Reduce manual input of data
Personalization	Solution should use data analytics to identify trends and engagement levels
Modular development & ability to develop the solution continuously	System should leverage predictive analytics
Potential for expansion (future success)	Low opportunity cost
Relevant technology	Digital-first approaches to minimize paper use
Reluctance	Market potential of the solution is high
Ease of implementation	Can we easily measure the success of this campaign with KPI's
System should support multiple languages and cultural nuances	Technical feasibility
Possible feedback loop integration	Customer (alumni) satisfaction
Decay algorithm that downgrades the reliability of data based on the alumni's engagement level	Realistic solution
ROI	Engaging

Data is reflective of current alumni information	Allow value-added features, like career services or networking opportunities
Data is complete	Implement secure data storage
Budget	Response time
Diversity	Continuity of method
Low costs	Frequency of interaction
Complies with regulations	Scalability
Quality and data accuracy	Flexibility
Automated process	Data protection
Implementation speed (when can we start using it?)	Resources required
Time effectiveness (provide data doesn't take too long)	Integration into existing IT
Alignment with Nova SBE values, vision, goals & mission	Cost, benefits / efficiency
Update frequency	Innovative
Data base update	Competitive
Degree of automation	Modern
Sustainability	User-friendliness
Reach	Time to implement
Maintenance	Effectiveness
Flexibility	Attractiveness to alumni
It should include processes that are easy to reproduce year after year	Security & risk management
Low latency	User engagement
Platform coverage	Will achieve the final goal
Potential for profit generation	Based on current facilities
Relevance	Level of change
Acceptable by many	Solution can utilize social media and networking platforms
Difficulty - chose the easiest plan	Cost cutting benefits
Difficulty to reach partnerships or agreements with external sources	Quality over quantity
Expertise available	It should have any element that makes alumni wanting to be part of the network
Benefit (short-term and long-term)	Low operating cost
Cost of R&D	Alumni participation and interaction rates
Can it solve the real problem?	Not much technical support needed

Must-have filters (23 filters)

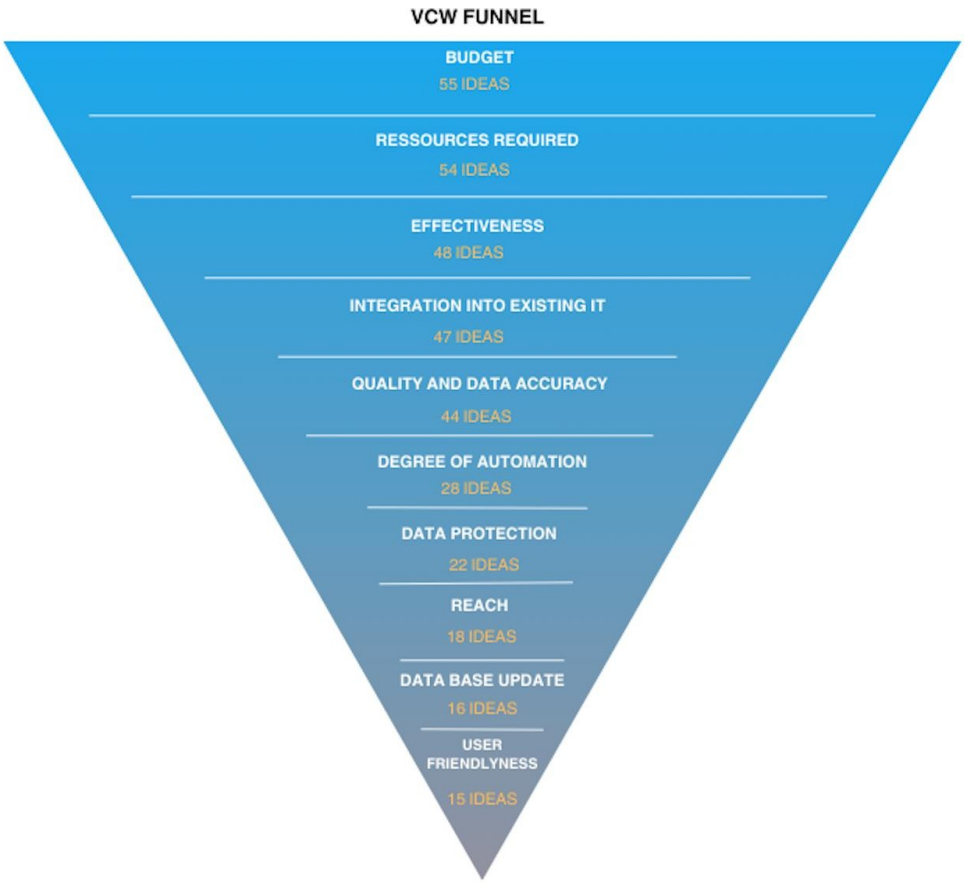
Budget
Resources required
Effectiveness
Integration into existing IT
Cost, benefits / efficiency
Quality and data accuracy
Degree of automation
Data protection
Reach
Sustainability
Data base update
Flexibility
User-friendliness
Vision & goal
Frequency of interaction
Time to implement
Attractiveness to alumni
Maintenance
Diversity
Cost of R&D
Can we easily measure the success of this campaign with KPI's
Engaging
Alignment with strategic goals

Nice-to-have filters (10 filters)

Technological feasibility
Scalability
Modern
Innovative
Competitive
Potential for profit generation
Modular development & ability to develop continuously
Level of change
Openness for partnerships and external resources
Response time

Appendix Phase 4:

Appendix 55: Value Creation Wheel Funnel for the alumni challenge



Source: Created by WP team with canvas.com

Appendix 56: Extraction of in-depth research of most promising ideas

Leverage WhatsApp groups with WhatsApp Business	The WhatsApp Business API can integrate customer data from the WhatsApp Business chats in a CRM system. Unlike the standard WhatsApp Business app, the API version is not available as a simple download. It requires an application process, approval from WhatsApp, and often a setup process through an official WhatsApp Business Solution Provider (BSP). Popular BSPs include companies like Twilio, MessageBird, and Vonage (Meta 2024a; 2024b; Twilio Inc., n.d.; MessageBird 2024; Vonage, n.d.). Get more data out of alumni WhatsApp groups than just name and phone number, the alumni department can regularly post surveys within the WhatsApp groups in which alumni get certain benefits as a reward / incentive to fill out the survey. Incentives could be discounts on certain magazine subscriptions similar to student discounts or discounts for fairs in the respective city etc.

Purchase LinkedIn Database	LinkedIn does not allow direct integration with its platform to access user data for external use. However, they offer options for researchers or organizations to access professional data under strict guidelines. For academic or research purposes, LinkedIn may provide access to their data through specific agreements, which usually involve submitting a detailed research proposal outlining the intended use of the data. This process ensures compliance with LinkedIn's terms and privacy policies, focusing on ethical usage. Costs for such databases vary significantly, with single purchases starting at approximately €15,000 or subscription models available. However, using these databases for purposes other than direct research may still face restrictions (Datarade, n.d.).
Purchase LinkedIn API	Using the LinkedIn API upon agreement of the alumni to use their data such as information on job position, location etc. for internal purposes. A possible compliant method for using LinkedIn data is through the LinkedIn API, which allows data extraction provided that users have given their consent. For example, the LinkedIn API can be used to obtain current professional information from alumni who have explicitly consented to the university's use of their data. This would help getting automated up-to-date alumni data directly into the CRM system. To get the LinkedIn API one needs to register and apply for the API via the LinkedIn Developer Platform. The Standard LinkedIn API plan costs around 55€ per month and allows access to the LinkedIn profile data of up to 500 people (LinkedIn Corporation 2024; LinkedIn Developers 2024; Microsoft Learn 2024).
Event App	Show a QR code check-in at every event entrance which alumni can scan with their phones to register for the event and updating their contact information directly. For these purposes an Event App could be developed that lets attendees quickly log in, update details, and register their attendance. This app / QR code setup should be directly integrated with the CRM system of the alumni department to manage the data. One app feature could be offering immediate rewards for data updates, like exclusive event perks (e.g., a drink voucher, priority seating, or early access to event materials). People are more likely to respond if they see an immediate benefit. Efforts can be reduced by pre-filling known data so attendees only need to confirm or adjust their data. The Event App can be build by a freelancer for instance via Fiverr.com or via a Hackathon challenge (Fiverr International Ltd 2024).

Source: Created by WP team

Appendix 57: MCDA

Nice-to-have filters from rank 1-10	Techno-logical feasibility	Scala-bility	Modern	Innovat-ive	Competi-tive	Potential for profit gener-ation	Modular developm ent & ability to develop contin-uously	Level of change	Openness for partner-ships and external resources	Response time	Outco me
Exclusive alumni network	0	0	0	0	1	1	1	0	0	0	3
Whats-App groups (Whats-App Business)	1	0	0	0	0	0	0	0	0	1	2
Alumni world map	1	0	0	1	0	0	1	0	0	0	3
Alumni scholar-ship	1	1	1	1	1	0	0	0	1	0	6
CRM Interface with LinkedIn	1	1	1	1	1	0	1	0	0	1	7

Use Eventbrite to get data from events – further customize	1	0	1	1	1	0	0	0	0	0	4
Alumni event app to gather data at events more effect-ively	1	1	1	1	1	0	1	1	1	1	9
Alumni data crowdsourcing Hackathons (challenge for business analytics course)	1	1	1	1	1	0	1	1	11	1	9
Use gamification	1	0	1	1	1	0	0	0	0	0	4

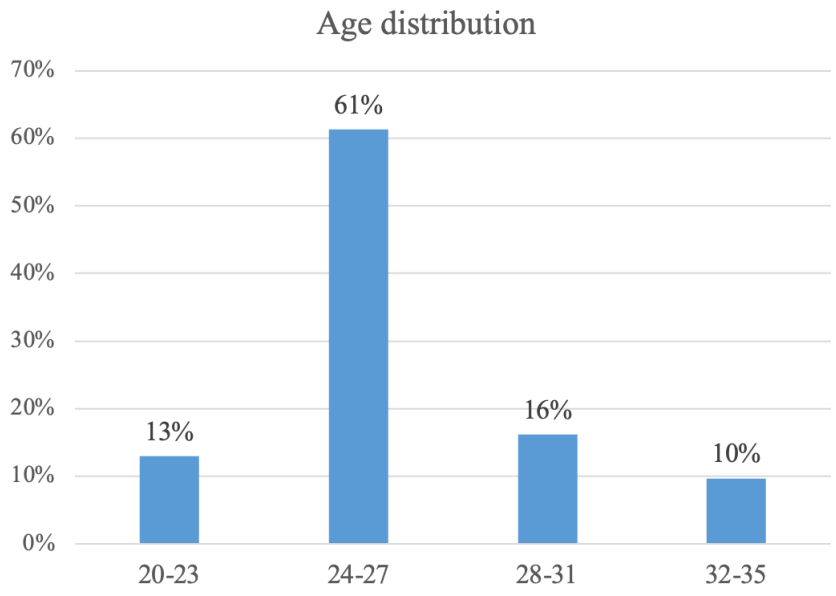
Exclusive benefits portal	1	0	1	1	1	0	0	0	1	0	5
Incent-ivizing alumni to update their profile, reward for updating and refreshing data	1	0	1	1	1	0	0	0	1	0	5
LinkedIn API inte-gration to integrate profess-sional networks to automate data process-sing	1	1	1	1	1	0	1	1	1	1	9

Buy the LinkedIn database	1	1	1	1	1	0	1	1	0	0	7

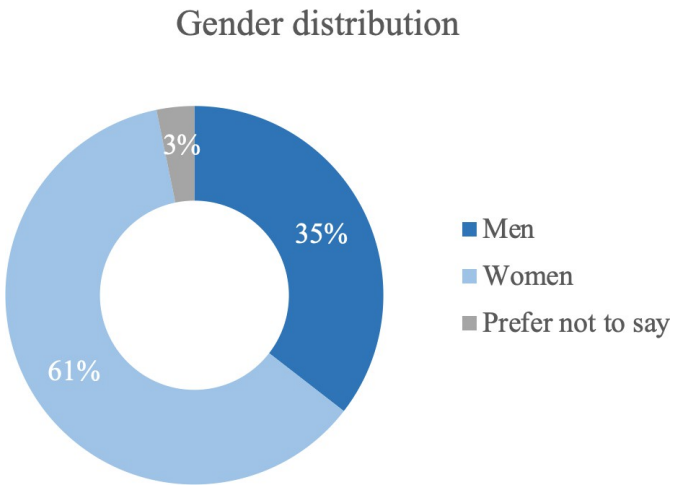
Source: Created by WP team

Appendix 58: Survey results

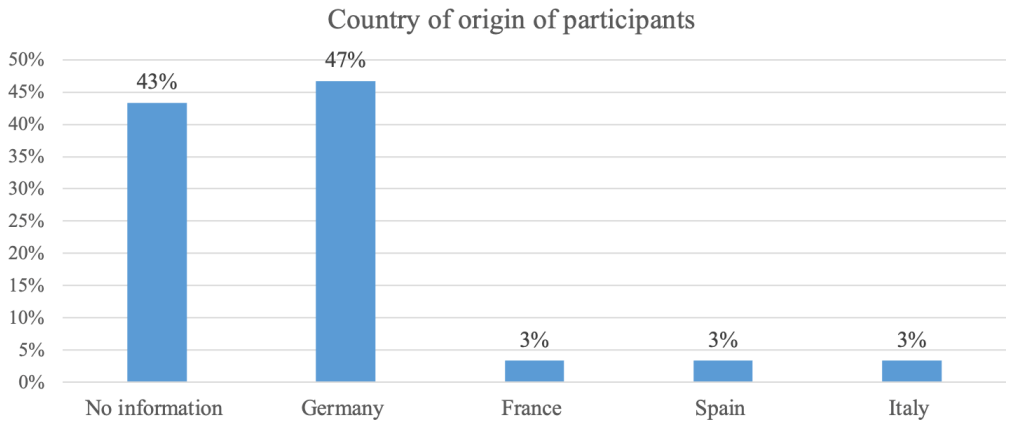
1. Question: How old are you?



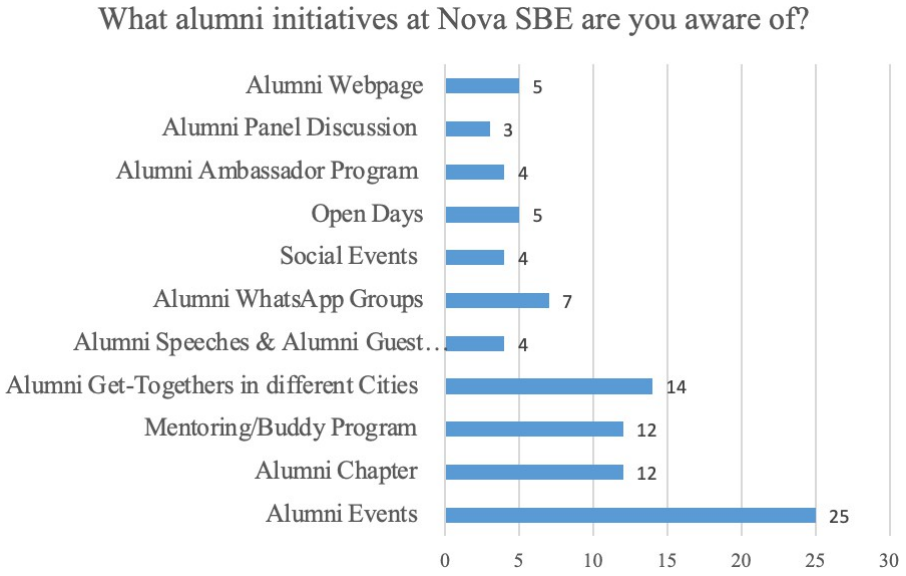
2. Question: What gender are you?



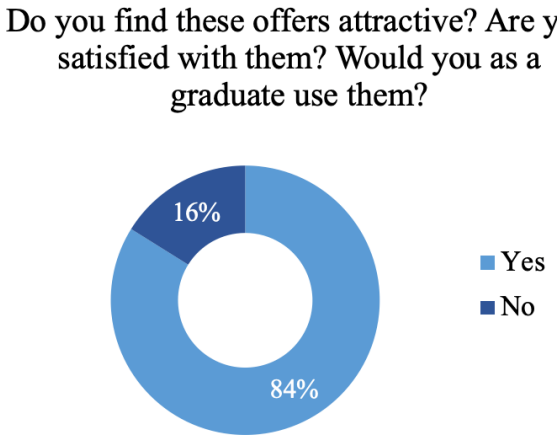
3. Question: Which country are you from?



4. Question:



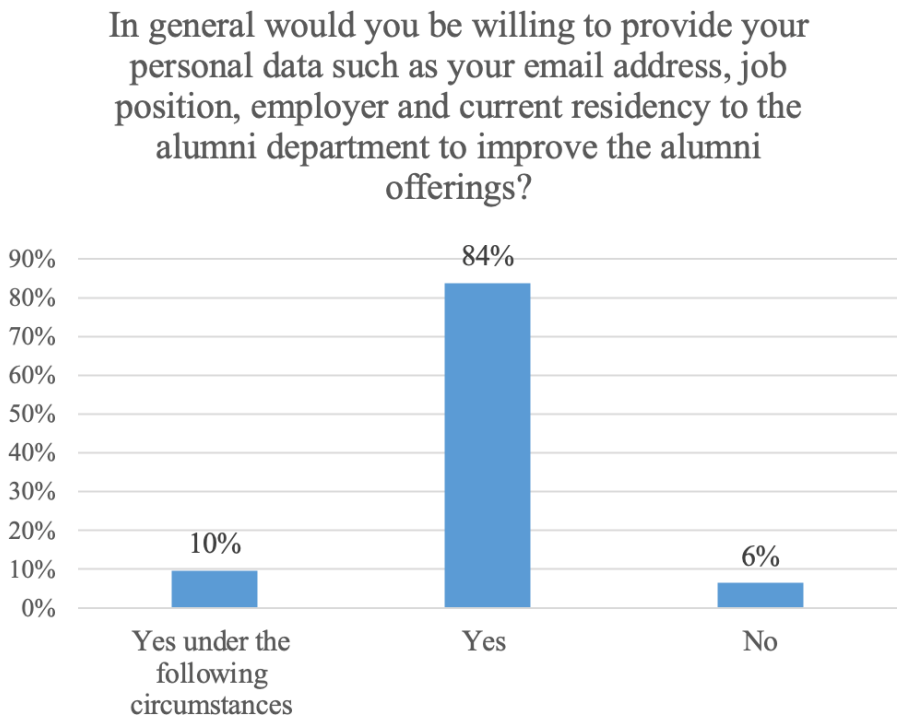
5. Question:



6. Question:

What would you improve concerning the existing alumni initiatives?
More communication about these initiatives
More information
Bigger network
Team Communication
Nothing
More communication about them for students who are just about to graduate
I didn't attend any yet so I wouldn't know
Not very familiar with that topic
More information
Too many options, but good networking
Nothing

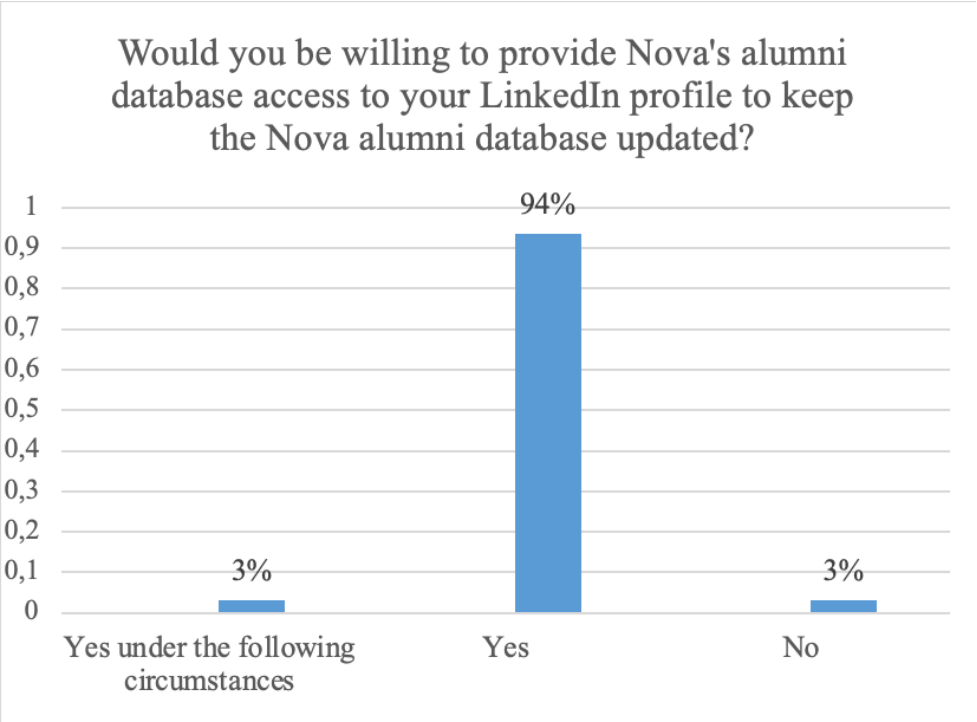
7. Question:



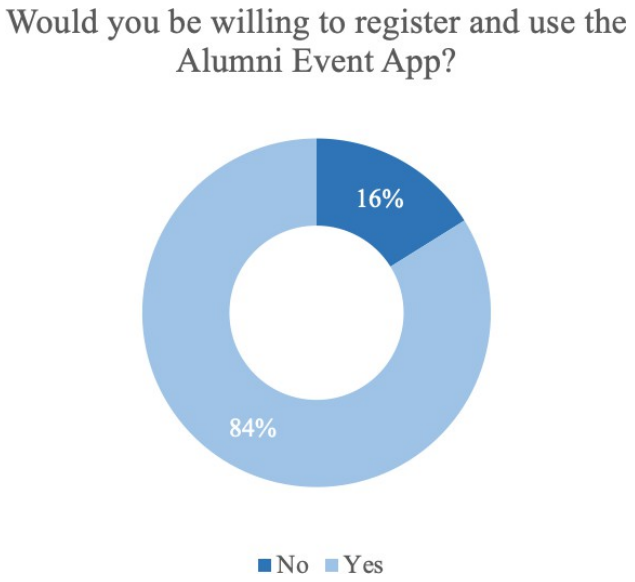
8. Question:

What are those circumstances / requirements for giving your personal data to the alumni department?
Making sure that the data are protected and for example that my professional email address is not shared to everyone
n/a
Data security and that I can choose who specifically can see that data
Know the exact usage

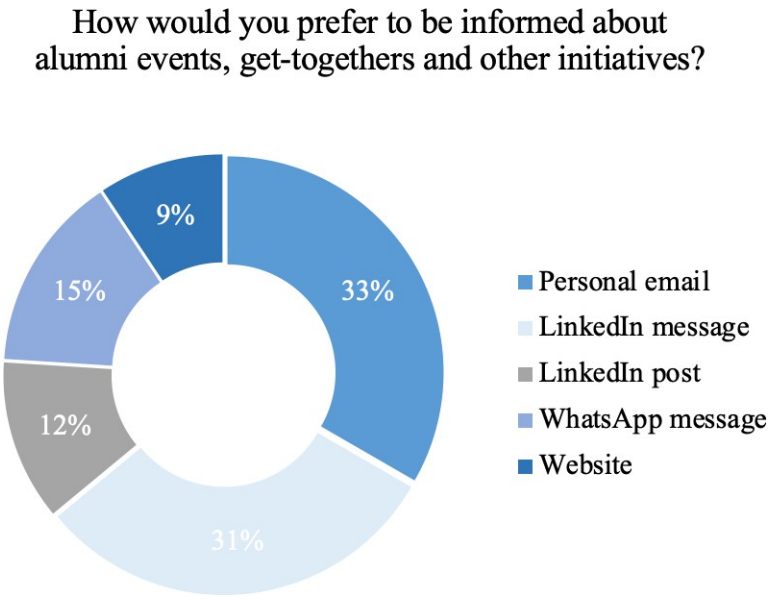
9. Question:



10. Question:

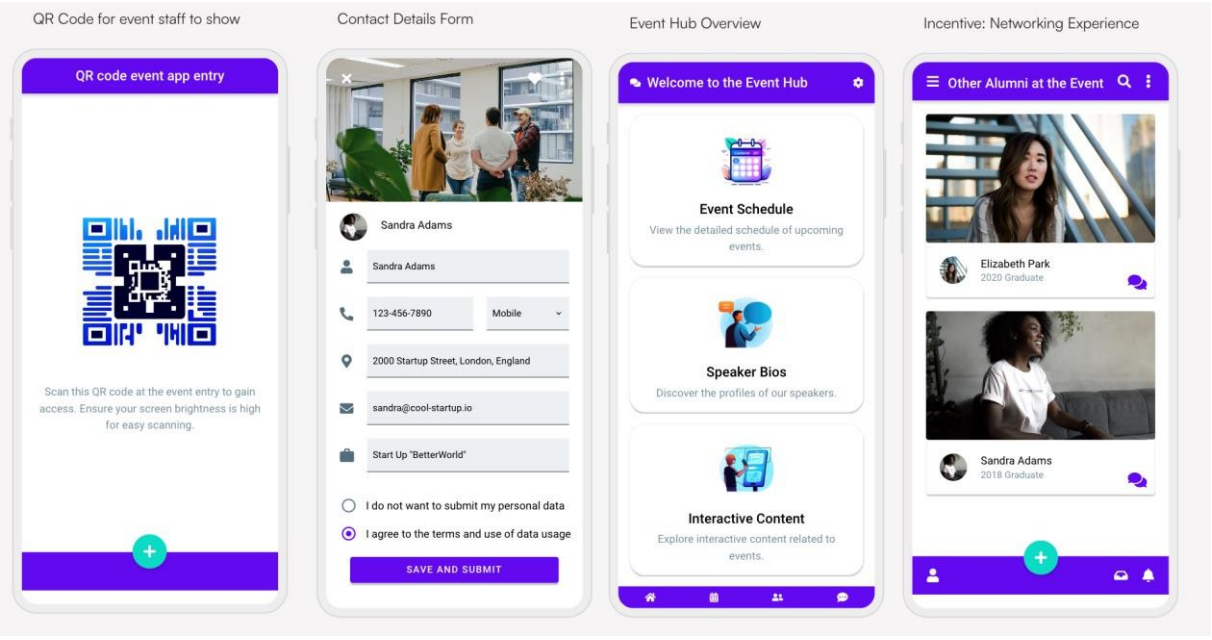


11. Question:



Source: Created by WP team with Microsoft Forms

Appendix 59: Prototype of the Alumni Event App



Source: Created by WP team with uizard.io

Description of the prototype above and user journey:

Screen 1:

1. Visible QR code at screens, boards, welcome desks ready for being scanned by attendants

Scanning of the QR code leads to the Event App landing page - no login (simple and fast process)

Screen 2:

2. Landing page directly shows a form to fill-out the following data: name, email address, employer, current place of residence

3. On top of the "fill-out page" is an information regarding incentives receivable upon filling-out data such as getting access to the Event App with event schedule but also for instance receiving a voucher or discount (ex. to get drinks for free at event, discount for other events, discount code for magazine subscriptions such as financial times or from a similar partner cooperation of Nova)

4. On bottom of page, before confirming is information on data security and information that submitting data is giving consent to Nova processing data further and for what the data will be used (have an opt-out option here)

Screen 3:

5. Upon filling-out data user reaches a site which shows an overview of the event including event schedule, hosts and speaker bios, other alumni present on event for networking opportunity etc.

Screen 4:

6. Incentive networking opportunity by seeing which alumni are at the event as well

Appendix 60: Implementation options in-depth

Implementation option one in more detail - Involving a freelancer in building the Event App:

The implementation steps for this option include:

1. Define a responsible team and a product owner, and a desired timeline, then define the purpose and functions of the product.

2. Define the final features of the app described above in more detail.

3. Develop a prototype / mock-up or use the one created by the WP team above for the developer to understand the app purpose and the desired design.

4. Compare different offerings on freelancer pages such as Fiverr (Fiverr International Ltd 2024) to find a suitable freelancer that is within the budget and timeline and possesses the necessary skills.

5. Clarify data protection constraints. Check with and expert at Nova or an external consultancy to assure full compliance before placing the order.

6. Set up a first call with the freelancer to explain the needs and the required product.

Together with the freelancer, compose the final offer.

7. Set up regular calls with the freelancer to reassure that the product development is on the right track.

8. As soon as the product is delivered, a pilot testing phase needs to take place with a pilot event, user feedback needs to be incorporated and potential bugs need to be corrected.

9. If the solution includes the incentive features, cooperations with companies to provide vouchers need to be established.

Implementation option two in more detail - Organizing a Hackathon to build the Event App:

The implementation steps for this option include:

1. Define a responsible team and a product owner, and a desired timeline, then define the purpose and functions of the product.

2. Define the final features of the app described above in more detail.

3. Develop a prototype / mock-up or use the one created by the master thesis team above for the developer to understand the app purpose and the desired design.

4. Set up the Hackathon challenge. Define what exactly is needed in the development, set up a timeframe for the students and describe the desired deliverable.

5. Create a flyer like the one created by the master thesis team presented below and communicate the opportunity of participating in the Hackathon via social media.

6. Get a Business Analytics course and professor motivated to take the challenge as course content.

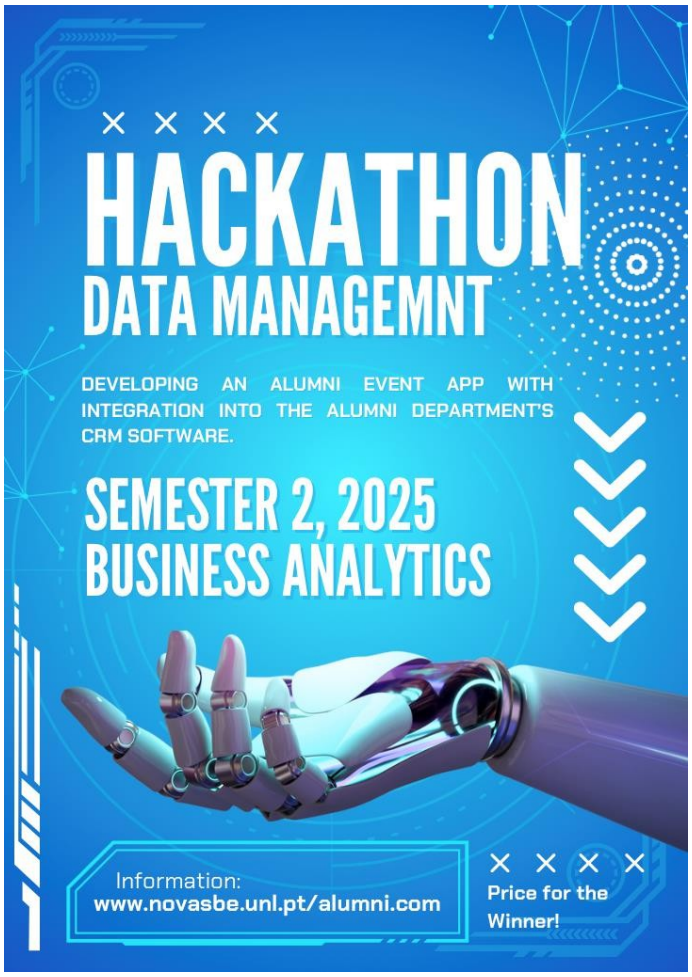
7. Plan and execute the Kick-off session for Hackathon with the assigned course and attendees. Form teams in which the students work on the challenge over the semester.

8. Continuously having check-ins with the course.

9. Pitch Day: The teams present their solution, and a winner is assigned during a closing cocktail.

10. As soon as the product is delivered, a pilot testing phase needs to take place with a pilot event, user feedback needs to be incorporated and potential bugs need to be corrected.

Appendix 61: Flyer for the Hackathon



Source: Created by WP team with canvas.com

Appendix 62: Detailed go-to-market plan for the Event App

	Pilot Project	**Identification of Bugs**	**Marketing and Communication Strategy**	**External Communication Channels**	**Commun-ication Materials**
EXTERNAL	Evaluate the app in a real-world setting – an alumni event.	Assessment of missing features, implementation of necessary improvements, and the collection of user feedback.	To effectively introduce and roll-out the app to its target audience—in this case, the alumni network.	Use existing communication channels, like alumni WhatsApp groups, LinkedIn, email campaigns and the alumni webpage on the	Materials should highlight the app's key benefits, including providing event schedules, facilitating

				Nova SBE website.	networking opportunities, and offering rewards.
	Internal Communication	**Train Event Organizers**	**Internal Communication Channels**	**Integration of App**	**Scale the Solution**
INTERNAL	Internally, the new app must be effectively communicated throughout the departments, faculty and staff to ensure successful adoption.	This includes creating a guide for event organizers on how to use the QR code and navigate the app.	Internal communication efforts could involve distributing information through established channels or organizing dedicated information sessions or videos to showcase the app and its functionalities.	The app should be fully integrated into the alumni department's overall strategy and day-to-day operations. This includes designating the Event App as a standard tool for alumni events and as a primary method for gathering up-to-date data within the CRM system.	Its usage can also be extended beyond events to support other alumni initiatives, such as mentoring programs, online events like webinars, guest lectures, fairs, and reunions. By embedding the app into these broader initiatives, it can serve as a cornerstone of the alumni engagement strategy, data management, and data

					collection processes. Do not forget to continuously monitor and evaluate the app's performance.

Source: Created by WP team

Appendix Phase 5:

Appendix 63: Business model canvas for Alumni Event App

Key Partners	**Value Proposition**	**Customer Segments**
Internal stakeholders such as students, staff and professors. Internal stakeholders such as IT- and CRM team. External partnerships, such as freelance developers, corporate sponsors for rewards, and data security consultants.	"A user-friendly Event App, accessible via a QR code, designed to seamlessly integrate up-to-date alumni data directly into the CRM system. Enhance existing alumni initiatives by making them more efficient, enabling the collection of comprehensive data from all alumni attending events, while simultaneously providing alumni with a valuable and enjoyable experience."	The Alumni Event App serves two distinct customer segments. First, it enhances the experience of alumni attending events by offering seamless access to schedules, networking opportunities, and interactive features. Second, it benefits the alumni department by streamlining the collection of up-to-date alumni data, which is directly integrated into the university's CRM system.
Key Activities	**Revenue Streams**	**Channels**

Developing and maintaining the app, ensuring compliance with GDPR regulations to protect personal data, and gathering feedback from event organizers, alumni department staff, and alumni themselves.	Revenue streams from the app are primarily indirect. The app's ability to maintain accurate, comprehensive, and up-to-date alumni data enhances the university's reputation, which can lead to increased donations and a higher number of applicants paying tuition fees. In the future, advertising opportunities may emerge, depending on the utilization of the gathered data.	Effective communication channels, such as alumni WhatsApp groups, LinkedIn groups, email campaigns, and the alumni webpage, ensure that users are consistently informed and engaged.
Key Resources Time: For planning, development, testing Human resources: Data privacy experts, team for campaigns, support for the Hackathon. Money: For app implementation, Hackathon organization, and marketing efforts.	**Cost Structure** The cost structure comprises initial expenditures for app design and development, Hackathon organization, staffing for implementation, and data security consultation if necessary. Once developed, ongoing costs include app maintenance, updates, and marketing campaigns to promote app usage and adoption.	**Customer Relationships** To foster strong customer relationships with alumni, by offering an enjoyable and intuitive user experience, incentivized engagement through rewards and benefits, and personalized communication.

Source: Created by WP team