



Anticipating Strategic Long-term Challenges

Gap Analysis



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Introduction

This report will provide an overview of the findings of the Gap Analysis of the ASTRAL Project.

The Goal was to identify Gaps in the tasks, skillsets and competencies and to find the needs and demands of Higher Education Institution (HEI) students and teachers, as well as learners and trainers on the business side, concerning HEIs and Vocational Education and training (VET) bodies on the topic of long-term strategic Planning and Management in Small and Medium Enterprises.

A multiple Methods approach was chosen. First a Bibliometric desk research and then Expert interviews, and Targeted online surveys to do a cross-analysis between them identified educational offerings. Furthermore, possible collaboration frameworks between the business community, the educational sector (HEI and VET), and the public sector will be explored.

Insights gathered from from Bibliometric Desk Research

The bibliometric analysis identified challenges, needs, methodologies, and skills in long-term foresight.

The report outlined the following emerging themes: **Frameworks** (organisational and strategic foresight evaluation), **AI and foresight** (integration and concerns of AI in organisations), **Foresight methods** (how to apply, plan, and execute foresight effectively), **Curriculum** (university education and student assessment), **Foresight and industrial practices** (leveraging foresight for innovation and customer value, with data playing a key role), and **Other debates** (strategic management in relation to sustainability and foresight).

A range of challenges, needs, methodologies, and skills were identified, as shown in the table below.

| Challenges | Needs | Methodologies | Skills |
|---|---|---|---|
| <ul style="list-style-type: none"> • Lack of Theoretical Foundation • Difficulties in Empirical Study and Communication • Managing Psychological Biases • Disconnect from Strategic Management • Methodological Issues • Implementation and Acceptance • Measuring Success • Balancing Rigour and Speed • Maintaining Quality • Limited Attention | <ul style="list-style-type: none"> • Theoretical Development • More Empirical Research • Integration with Strategy • Understanding Value Contribution • Addressing the "How" • Contextual Understanding • Managing Key Factors • Testing and Validation • Guidance for Practitioners | <ul style="list-style-type: none"> • Scenario Quality Assessment Method • Hybrid AI-Expert-Based Foresight Approach • Rapid Review Methodology • Scenario Planning • Delphi Method • Horizon Scanning • Backcasting • Systemic Foresight Methodology (SFM) • The Futures Literacy Design Framework (FLDF) • Systematic Literature Reviews | <ul style="list-style-type: none"> • Creative • Innovative Thinking • Interdisciplinary Anticipation • Environmental Scanning • Strategic Selection • Integrated Capabilities • Analytical Skills • Reflective and Social Skills • Communication • Understanding the present • Futures Literacy • Critical Thinking |

Gaps identified from Expert Interview Analysis

A recurring theme is the absence of formal systems for identifying and addressing skill gaps in foresight practices. Many organisations rely on more informal and ad hoc methods. Therefore, the evaluation and execution of such informal methods are often inconsistent, depending on the context, and reactive, based on the needs of the customers. Furthermore, there is a lack of general knowledge and awareness of foresight methods.

Several interviewees emphasise the need for and importance of soft skills, such as adaptability, critical thinking, flexibility, openness to learning and changing, problem-solving abilities, and communication, as essential for future readiness. A gap in systems thinking and the ability to frame complex and ambiguous problems was further identified. A university-based interviewee highlighted that even highly capable engineering students often struggle to define and reframe problems. This suggests a need for reflective thinking in courses.

Another gap identified is the need to show that foresight methods give an organised way of exploring uncertainty and the future, and that foresight is not abstract and/or speculative imagination. One interviewee expresses this as the credibility gap. Furthermore, organisations find it difficult to identify gaps in foresight and translate them into actionable training. Some identify these gaps by inspecting client and market needs/demands, which they create training programs to address.

To alleviate some of the gaps, some of the interviewees' organisations use collaboration with external experts, consultants, universities, and ecosystems. There is an emphasis on knowledge sharing and community fostering.

Gaps identified from Survey Analysis

Foresight content and competencies are missing from current HEI and VET educational offerings. While general skills like communication and creativity are common, specialised foresight skills—such as futures literacy, environmental scanning, and interdisciplinary anticipation—are lacking. For instance, 24% of respondents said futures literacy was completely absent in their context.

Curricula are not aligned with the needs of learners or employers. Educators highlighted the absence of practical foresight tools like scenario planning or trend analysis in current courses. Pedagogical formats also fall short—there is little experiential learning, few real-world foresight projects, and minimal engagement with actual industry data or challenges.

Cross-sector cooperation is another critical gap. While educators and businesses alike value collaboration, structured formats for interaction are rare. Teachers seek closer company engagement through guest lectures, site visits, and foresight project partnerships. Businesses, in turn, express interest in co-defining challenges and accessing tailored training, yet most partnerships remain informal or ad hoc.

Competency Gaps

Across all three data sources, there exists a recognition of a deficit in foresight-related skills. The desk research identifies more advanced foresight and advisory competencies needed for LTFF as being underrepresented in current educational frameworks. This is further supported in the expert interviews, where participants lament the scarcity of professionals equipped to facilitate structured foresight processes. The survey reinforces this concern, as 51% of respondents cited a lack of skill as a significant barrier, and many reported that neither they nor their colleagues have had formal training in LTFF. Furthermore, educators noted in the survey that current curricula are more focused on the near-term rather than the long-term when teaching entrepreneurship and innovation.

Another competency gap identified is that of soft skills. The desk research identified many skills needed by the foresight professional, and the interviews indicated that there was a need for these skills. Adaptability, critical thinking, and communication are consistently highlighted. In the survey analysis, it was found that general skills like communication and creativity are common, but as both the interviews and the desk research found them important and potentially lacking, it suggests that these soft skills should be a part of the ASTRAL curriculum, but potentially to a smaller extent.

The survey identified uncertainty in data as a key challenge for foresight, with over one-third citing unreliable or vague data as a major concern. This is supported by the findings in the desk research that skills in specialised domains, such as decision-making under conditions of deep uncertainty, are lacking.

Methodology Gaps

The three analyses further reveal a shared concern regarding the limited methodological diversity and reliance on informal ad hoc methods. The desk research catalogues a range of foresight methodologies, but notes the little empirical evidence on how to conduct such methods successfully and how to measure the success of such efforts (success factors). The expert interviews add that many organisations rely on ad hoc or intuitive methods, often lacking formal structures for implementation and evaluation. The survey corroborates this, indicating that structured use of foresight tools remains rare in both educational and business contexts.

Furthermore, the survey found that there was little experiential learning, few real-world foresight projects, and minimal engagement with actual industry data or challenges in current curricula. This is additionally supported by the interview findings, where many expressed a need for real-world problem-solving skills using, for example, case work. This was expected to help facilitate the integration of learnings into their organisations afterwards by the interviewees.

This points to a dual gap: the need for both methodological knowledge and experiential learning. Therefore, the ASTRAL curriculum must move beyond just focusing on theoretical instruction and include hands-on, real-world problem-solving. This could be achieved through case-based learning and collaborative foresight projects.

Structural and Institutional Barriers

The three data sources also found several structural and institutional barriers. Implementation and acceptance were important factors when discussing foresight. The challenges from this can stem

from the little empirical evidence on how to perform and evaluate the foresight programmes, thereby making it hard to convince leadership to apply foresight techniques and conveying the value added by doing foresight. These findings are further supported by the expert interviews, stating that there is a need for structures both in creating foresight but also in implementing it, and highlighted by the survey results, showing that 62% of respondents plan within a 3–5-year window.

The desk research found that balancing rigour and speed is an important challenge, as there exists pressure to quickly achieve outputs and create value, which can hinder methodological rigour. The interviews support this, as it was found that organisational inertia poses a challenge for implementing foresight. From the interviews, it can be seen that this inertia can be caused by budget cycles, procurement policies, and stakeholder management. The interview found that educators face overloaded curricula and that industry professionals are pressured by short-term financial and operational goals, further supporting the findings of the desk research and interviews.

Additionally, the expert interviews highlighted the challenges posed by legal frameworks and policies changing quickly. Especially the field of AI was mentioned. Furthermore, the desk research found legal to be a keyword in the AI theme, indicating this as an important topic in the discussion of AI and foresight. Another key issue identified through the interviews related to AI is the uncertainty of its development, together with the development of all other technologies. The fast pace of technological development and societal change makes it hard for organisations to plan for the long-term future.

Conclusion

The combination of desk research, expert interviews, and survey data offers a strong basis for the development of the ASTRAL program. There is a clear need for new educational offerings by Higher Education Institutions (HEIs) and Vocational Education and Training (VET) bodies to adequately equip foresight professionals with the competences to perform long-term strategic thinking and foresight. Moreover, it was found that current foresight professionals are in need of long-term future foresight skills. The course should teach both the key methodologies and the skills identified through the analysis of the three data sources. Key methodologies include Scenario planning, the Delphi method, Backcasting, trend analysis, Horizon scanning, and Roadmapping. Furthermore, important skills to teach include futures literacy and an open and adaptable mindset that is balanced with critical thinking abilities.

In summary, the following is recommended to be part of the curriculum:

| Area | Recommendation |
|-------------------------|--|
| Core Content | Teach foresight tools with real-world cases and tools. Include specialised domains (ethical foresight, policy advisory, and systemic decision-making under conditions of deep uncertainty). |
| Learning Methods | Use experiential formats: simulations, case work, design sprints. Use online modules. Tailor modules to time-constraints of professionals. |

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|----------------------|--|
| Soft Skills | Integrate training in adaptability, communication, and systems thinking. Future literacy is crucial. Open, adaptive, creative, and innovative thinking as well as analytical and creative thinking. |
| Assessment | Develop formal tools to assess foresight skills and learning outcomes. |
| Support | Provide post-training mentorship, toolkits, and communities of practice. Provide a context to apply new knowledge in your own organisations post-training. |
| Credibility | Emphasize the methodologically structured, knowledge-based nature of foresight. |
| Collaboration | Foster partnerships with external experts and institutions in cooperation labs. |