### TRANSFORMATIVE ENTERPISE RESEARCH GROUP-**TERG**

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Where are the gaps? Constructively Aligning Higher Education in an Entrepreneurial Ecosystem

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TRANSFORMATIVE ENTERPRISE RESEARCH GROUP (TERG)

TERG is a network of researchers dedicated to entrepreneurship and enterprise education. The group's goal is twofold: to promote world-class research and to get relevant scholarly inputs into the hands of key decision-makers.

### **Executive Summary**

This working paper is part of developmental research conducted in 2021 for the EntreUnity (Entrepreneurial University Network) project, an Initiative for Innovation Capacity Building in Higher Education. The project involved a series of scanning and mapping exercises to support the development of entrepreneurial ecosystems within Higher Education Institutions (HEIs). Based on this preliminary work, it became evident that the combined tools used in the study could potentially form a framework. This framework could help HEIs identify gaps in their entrepreneurial ecosystems, including both internal structures and alignment with the local and regional ecosystems they are part of.

This paper outlines the methodology adopted in this project and discusses the insights that emerged. These insights have since been used to strengthen the University of the West of Scotland's (UWS) place within the local entrepreneurial ecosystem. Importantly, we are not suggesting universal applicability. What worked at UWS may not work for other HEIs. Instead, we propose a context-neutral model that allows visualisation and discussion of an ecosystem within its immediate regional and broader contexts, facilitating a constructive comparison with other ecosystems. Based on this, this working paper sets out plans for further research and development to produce a replicable model for broader application in mapping these ecosystems elsewhere.

#### **Background Statement**

For a thriving entrepreneurial ecosystem, identifying and addressing gaps is crucial (Meyers, 2015). While Higher Education Institutions (HEIs) play a vital role, their contributions may not always fully meet the needs of local entrepreneurs. It is a moot point that by understanding some of these gaps, HEIs can tailor their curriculum, programmes, and support models to better align with real-world entrepreneurial requirements (Mason et al., 2020). We note that such a proactive approach has multiple benefits, as a strong reputation as a reliable and engaged partner attracts talent and fosters collaboration with businesses and entrepreneurs (Audretsch and Belitski, 2021; Murray *et al.*, 2018). Additionally, addressing gaps can unlock new funding opportunities, as many grant programmes tend to target weaknesses within regional entrepreneurial ecosystems.

On our part, we believe that further exploration of new lines of research can help understand the role of the university in our local and regional ecosystems, strengthen our enterprise activity, and that the model can be adapted by other HEIs seeking to enhance their own entrepreneurial impact. We believe that our proposed methodology can be replicated by other HEIs, allowing them to identify areas of strength and weakness within their own entrepreneurial ecosystems—critically allowing for context specific to their region rather than taking a 'cookie cutter' approach. The research we are undertaking has several potential beneficiaries. Higher Education Institutions (HEIs) are one such group, as they increasingly recognise the risk of becoming irrelevant if they do not adapt to the entrepreneurial environment (Jalal and Murray, 2019). Policymakers and support organisations responsible for regional and national economic development also stand to gain, particularly in areas where outdated, inconsistent, or underdeveloped entrepreneurial ecosystems hinder innovation, job creation, and overall economic prosperity. Additionally, businesses operating within these ecosystems, which engage with HEIs and other stakeholders through various programmes and initiatives, will benefit from a more cohesive and supportive environment, leading to greater success.

Yet, there is concern that decisions regarding entrepreneurial ecosystems are often made without a full understanding of the system (Brown and Mawson, 2019). A robust, user-friendly visual model could address this issue by providing a common 'language' for ongoing discussions about these ecosystems. This would enable more effective demonstration, discussion, and comparison of ecosystems. Research indicates that the accuracy of decision-makers' 'mental models' significantly impacts their performance (Schaffernicht and Groesser, 2011).Both metaphors and models hold the promise of answering questions about the world through their use (McConnell, 2016).

Our goal in this paper is to create a metaphor-based model that serves as a common 'language' for comparing and discussing entrepreneurial ecosystems. Broadly, we aim for this model to address the 'messy metaphor' problem currently associated with the concept of entrepreneurial ecosystems (Brown and Mawson, 2019). The model will illustrate ecosystem development and structure for non-specialists, providing all stakeholders with a frame of reference and a common language for discussion. It will enable comparisons across ecosystems and demonstrate how each ecosystem influences and is influenced by the broader context in which it operates.

To achieve our agenda and its outcomes, the specific objectives of our research project are to develop a comprehensive framework for assessing HEI alignment with entrepreneurial ecosystems, considering both internal and external factors. The analysis of the findings is focused around three sub-questions:

*RQ1:* What are the key components of a well-aligned entrepreneurial ecosystem in which HEIs play a pivotal role?

*RQ2:* What are the primary barriers and opportunities for UWS to increase alignment and impact within its entrepreneurial ecosystem?

*RQ3:* Are there any patterns in data that suggest other entrepreneurial ecosystems fit the model described?

The analysis of context plays a crucial role in developing a toolkit for mapping ecosystem elements, including the Miro canvas and surveys designed for EntreUnity, in a readily distributable format. This process will involve conducting futher case studies with the University of the West of Scotland (UWS) to identify gaps and misalignments within its ecosystem. Based on our findings, this working research contributes by providing recommendations to strengthen the integration of HEIs into regional and national entrepreneurial ecosystems.

#### HEI Initiative's EntreUnity project and innovation capacity

Research highlights a growing disconnect between Higher Education Institutions (HEIs) and their role in fostering dynamic entrepreneurial ecosystems (Burke, 2002; Kirby, 2006; Crammond *et al.*, 2018). This raises concerns about the relevance and impact of HEIs within their networks, even as their potential to address broader societal and economic challenges is increasingly recognised (Fayolle *et al.*, 2006; Bridge *et al.*, 2010; Muff, 2012). Universities undoubtedly play a vital role as drivers of knowledge-based economies and agents of social change (Etzkowitz and Zhou, 2006). However, contrary to some academic perceptions, universities are not necessarily the central figures in entrepreneurial ecosystems; they are one of many critical stakeholders (Murray and Palladino, 2020).

Internally, academics employ diverse curricular (classroom-based) and co-curricular (beyond the classroom) methods to engage students (Murray and Crammond, 2020). These methods include enterprise modules, business competitions, knowledge transfer partnerships, mentoring, and incubation for student ventures. The concept of a development pipeline is prevalent, with universities aiming to equip students with workplace skills or to successfully spin out from incubators (Fayolle *et al.*, 2006; Westhead and Matlay, 2006; Anderson and Jack, 2008). These fledgling businesses then interact with various external actors, such as accelerators, support organisations, investors, and government agencies, all of which shape a business's lifecycle (Schaper *et al.*, 2013). Crucially, the success of HEIs depends on ensuring their enterprise activities constructively align with the wider support available within their entrepreneurial ecosystem.

As part of the EIT HEI Initiative's EntreUnity project, our goal was to build innovation capacity in Higher Education Institutions (HEIs). We developed a multi-stage methodology to map and assess HEI alignment within entrepreneurial ecosystems. This methodology began with a broad scan of the external ecosystem using the Miro Dabris Canvas (Figure 1). Concurrently, the university's internal ecosystem was scanned and mapped using the Entrepreneurial Support Internal Ecosystem Canvas (Appendix 2) to analyse existing support structures.

The investigative research started with an entrepreneurship ecosystem mapping exercise, initially considering Scotland as a whole and then focusing on the Greater Glasgow andClyde Valley region. This region includes the two largest UWS campuses, Paisley and Lanarkshire. The mapping captured the breadth and depth of existing support structures, revealing several gaps, overlaps, and duplications, as well as areas lacking clarity that required further investigation.



Figure 1: Miro map of UWS Ecosystem

Curricular Enterprise	Networking Initiatives	Entrepreneurial Support Units
•Creativity, Enterprise and Entrepreneurship (L7) •Entrepreneurial Opportunity (L7) •Business Accelerator (L8) •Enterprise Creation (L9) •Enterprise with New Media (L10) •New Venture Creation (L11)	Help to Grow     Small Business Charter     Chambers of Commerce     Local Economic Fora     Dean's Enterprise Group (DEG)     EntreUnity     CARPE     CARPE	•SBCI Enterprise Team •UWS Business and Innovation Team •UWS Innovation Hubs (incubators) •SBCI Professional Practice Unit
Co Curricular Enterprise Initiatives		
•Elevator Accelerator Programme •UWS Kick Start •Demola		
Internships     UWS Mentoring Scheme		Finance and Investment support
		University Innovation Fund (UIF)     Innovate UK     Help to Grow
Enterprise Competitions		•Business Gateway •Scottish Enterprise •L. ccal Authorities
•UWS Kick Start Awards •Converge •Scottish Edge •IBM Universities Business Challenge		•Loca Puttonies
Enterprise Research Activities	Specialist Support	
•EntreUnity •CARPE SIG •CAREED •Knowledge Transfer Partnerships •Peer reviewed publications •Impact case studies •SBCI Research Groups	UWS KTP Centre     UWS CPD Centre     UWS Research/Professional Services     Innovation Centres	

Figure 2: Entrepreneurial Support Internal Ecosystem Canvas: UWS, Oct 2021

We therefore conducted an external mapping exercise using the Entrepreneurial Support External Ecosystem Canvas to categorise and cluster ecosystem activities (Figure 3). To capture stakeholder perceptions, we distributed surveys using the Entrepreneurial Competencies Questionnaire (Appendix 1) and the Entrepreneurial Support Questionnaire (Appendix 2) to both internal (faculty/staff) and external (business community) stakeholders. These questionnaires were designed to gauge perceptions of UWS's role and impact and were aligned with the 31 dimensions of the Small Business Charter, focusing on three key areas: *Support for the Growth of Small Businesses, Stakeholder Engagement to Support Growth, and Encouraging Student Enterprise and Entrepreneurship.* These questions were posed to both academic and professional service employees representing the community of the School of Business and Creative Industries (SBCI) to gauge the current level of interaction and focus between the School's departments and the local business community it aims to serve.

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Figure 3: Entrepreneurial Support External Ecosystem Canvas: Scotland Oct 2021

The collected data underwent thorough analysis to identify areas of strong alignment and opportunities for improvement. An Innovation Map (Figure 4) was developed using the Miro Mind Map Board to visualize the findings. Finally, the Network Intelligence Methodology was applied to inform future development initiatives.



Figure 4: University of the West of Scotland Innovation Hub

#### **Preliminary Findings**

Our initial findings highlighted several misalignments within the entrepreneurial ecosystem. Businesses perceive the contributions of the University of the West of Scotland (UWS) to business support as less significant than indicated by UWS's internal self-assessment. Existing curricula lack a strong connection to the real-world skill sets needed by entrepreneurs. While robust internal resources exist, limited connectivity to external networks hinders their potential impact. Many businesses were unaware of relevant faculty expertise and university programmes that could support their development. Despite these misalignments, the importance (or potential importance) of the university in the ecosystem was widely recognised.

During discussions with internal and external stakeholders, it became evident that there was a lack of a common frame of reference to compare and contrast the ecosystem as a whole and its elements. To address this, we explored the possibilities offered by a visual representation of entrepreneurial ecosystems and created a simple Ecosystem Hex Model (Figure 5). This model illustrates the interconnected elements of the UWS internal enterprise ecosystem with a basic color code representing the developmental stage of each element. Here the model adopts a traffic light system where green denotes an intervention which is well developed, amber signifies an element which has been operationalised but is still early stage whilst red identifies initiatives which are on the radar but have not been operationalised with red question marks

signifying unknown unknowns allowing for new ideas to be added following discussion around development of the current mapped ecosystem.



Figure 5: Visual Representation of UWS internal ecosystem

To make things clearer, it worth mentioning that entrepreneurial ecosystems are often considered as 'fuzzy concepts', lacking precise borders and definitions (Morgan, 1998). This lack of clarity becomes challenging when attempting to translate theoretical concepts into practical action, a crucial task for entrepreneurial ecosystem development, given the emphasis on productive entrepreneurship inherent in the concept (Nicotra *et al.*, 2018). Particularly, advocating for change within an ecosystem, often necessitating investment, becomes more challenging when the system itself is poorly defined or understood. We are highly intrigued by the potential of visual representations of entrepreneurial ecosystems to address this ambiguity. Our initial model significantly enhanced the quality and clarity of conversations surrounding enterprise support provision within the university.

#### Further model development and methodological consideration

Using models to explain complex systems is a well-established technique, as described by Max Black as 'a systematic representation of ideas by means of which a given thinker describes, by analogical extension, some domain to which these ideas do not immediately and literally apply' (Black, 1962, p. 241). While our initial model serves this purpose and proves to be a useful tool in describing the university's internal ecosystem, it has both conceptual limitations as a model and practical challenges in its deployment with stakeholders. Our proposed metaphor visualises the ecosystem as an 'island' comprised of interconnected 'hex' blocks. These blocks can be color-coded (to indicate stage of development) and given varying heights (to represent strength). Beneath this 'island' lies a 'sea', symbolising the broader ecosystem—population size, wealth, education, demographics, and other contextual factors—that is subject to external influences (*such as winds, currents, tides, waves, and extreme weather in the metaphor*), representing real-world factors beyond the ecosystem's control, such as policy, taxation, inflation, recession, pandemics, and so forth. This metaphor could further extend to include 'bedrock', representing the 'anchor institutions' in the system.

A significant aspect of the metaphor is to demonstrate the resilience of the island to external shocks: while the ecosystem island may function smoothly during calm waves (indicative of a positive economy and benign external influences), how does it fare during a tidal wave (akin to challenges such as Covid or Brexit)? Facilitating these discussions through creative metaphors is a pivotal aspect of this model's function, as is emphasising the interconnectedness of elements within the ecosystem interacts with other ecosystems (do 'islands' collide, erode, or integrate and strengthen one another?).

We recognise that 'strength' is subjective and would need to be justified- this can be a positive element of the model in encouraging rich discussionWe would use a mixed-methods approach to gain a comprehensive understanding of HEI alignment within entrepreneurial ecosystems, and an abductive approach to generate a metaphorical model using this understanding. Quantitative data, including surveys of students, entrepreneurs, and faculty, as well as analysis of curricula and program metrics, will provide statistically driven insights. Interviews and focus groups with key stakeholders like entrepreneurs, incubator managers, administrators, and policymakers will offer rich qualitative perspectives.

We will also leverage the frameworks and methods developed in the EntreUnity project, adapting them to a broader context and a closer alignment with the CABS entrepreneurial competencies. Both quantitative and qualitative data will be rigorously analysed (statistical analysis for quantitative, thematic analysis for qualitative), ensuring findings align with research objectives. Incorporating external stakeholder input will be crucial in evaluating how effectively HEIs fit into their ecosystem, and whether the proposed model fully describes the complex relationships that exist in most areas.

We are proposing both a physical and a virtual representation of this model. The physical version of this model will allow a tactile, structured discussion to create visualisations of an ecosystem, and has huge potential for stimulating structured conversations around ecosystem development. It is, however, likely to be reliant on the research team demonstrating and discussing the model in person for maximum effectiveness. A virtual (AR or VR) version of the model would allow us to engage faster and more widely to establish what best practice in EE looks like in different contexts. Large-scale adoption of this methodology could generate a dataset to analyse patterns in HEI ecosystem integration, with the potential to produce theoretical insights for the field, guide best practices and shape future HEI policy.

This methodology will lay the groundwork for comparative cross-institutional studies essential for developing a theoretical framework of effective HEI integration within entrepreneurial ecosystems. We think that the development of these models could be an important step in pushing forward the research agenda for EE proposed by Wurth et al. (2021).

#### Limitations

To address the research limitations, we propose further research that expands and elaborates the model to be more universally applicable. This involves developing the model to visualize additional elements and increasing the use of metaphor to contextualise ecosystems by examining their interactions with the broader economy. The aim of developing this model is not only to illustrate the constituent parts of the ecosystem but also to depict the strength and foundations of each part, the relationships and connections between parts (particularly how adjacent elements of an ecosystem reinforce one another), the cultural and practical contexts in which ecosystems operate (and how these contexts either strengthen or limit them), the changes to an ecosystem over time, and perhaps most importantly, the relationship of the ecosystem to the external environment. In doing so, we can better understand and discuss how, for example, an ecosystem in Paisley might necessarily differ from an ecosystem in London or Silicon Valley. This approach helps address the risk that policymakers may be inclined to inappropriately adopt policies from other successful regions.

We have outlined our future development plans below and are excited to continue this important research endeavor. For future research, we intend to further expand and refine the model to enhance its universality. This will involve developing the model to visualise additional elements and employing new techniques to provide deeper insights into ecosystem dynamics.. Additionally, we will explore the cultural and practical contexts shaping these ecosystems, tracking changes over time and examining their interactions with the broader economic environment.

Phases	Details	
Phase One	e Literature review, research design (2 months)	
Phase Two	Data collection (3 months)	
Phase Three	Data analysis and findings (2 months)	
Phase Four	Writing, dissemination (3 months)	
Total Estimated Time	10 months	

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#### Appendix 1: Entrepreneurial Competencies Questionnaire

1) How do you rate your Business School's quality in terms of current programmes being focused on the growth and development of small businesses and/or their managers?

2) How do you rate the provision within your institution of dedicated innovation/accelerator/start-up space?

3) How do you rate your Business School's experience of publicly funded business development initiatives such as voucher schemes and evidence of their performance?

4) How do you rate your Business School in terms of providing a dedicated facility with the capability and capacity to respond to the needs of small businesses?

5) How do you rate your Business School's experience of managing Knowledge Transfer Partnerships and other similar Knowledge Exchange projects with small businesses?

6) How would you describe your Business School's active engagement of small businesses in alumni and mentoring, peer support, awareness raising and role modelling for university staff and students?

7) How do you rate your Business School in terms of the opportunities it provides for projects explicitly with a small business/enterprise focus?

8) How would you describe the existence of wider provision within your Business School to support the needs of small businesses/enterprises for growth and evidence of its impact?

9) How would you describe the ability to evidence the role enterprise and SME development plays within the mission of your institution/Business School?

10) How would you describe the ability of your institution/Business School to evidence that research conducted underpins and involves the enterprise/small business activity?

11) How would you describe your Business School's ability to evidence collaboration(s) that improve quality, achieve reach or scale activity?

12) How would you describe the level of small business involvement in aspects of the governance of your Business School shaping its mission and strategy?

13) How would you describe the ability of your institution/Business School to evidence collaboration(s) that improve quality, achieve reach or scale activity and participation in broader university-led engagement?

14) How do you rate your Business School's involvement in regional and national networks of entrepreneurs and small businesses e.g. Entrepreneurial Exchange; E2E?

15) How would you describe the quality of engagement with small businesses as suppliers to your university or institution?

16) How do you rate relationships with private sector providers and other private sector professionals who offer specialist advice to small businesses through programmes and workshops organised by your Business School/University?

17) How do you rate your Business School's profile as a source of advice/support for small businesses and enterprise advice?

18) How do you rate the level of engagement by your Business School with representative bodies for small businesses and entrepreneurs e.g. Chambers of Commerce, CBI, FSB etc.?

19) How would you describe the ability to evidence your Business School working with other government business support agencies, e.g. DIT, Innovate UK, Business Wales, Invest NI, Scottish Enterprise?

20) How would you rate your Business School's engagement with local, regional or national government agencies with respect to business support strategy and national agendas for growth?

21) How would you describe the ability to evidence how your Business School or wider university impacts on small businesses?

22) How do you rate the provision of having a dedicated start-up space for students within your institution?

23) How would you describe the opportunities for students to participate in a dedicated business start-up programme within your Business School/university?

24) How do you rate your institution's provision of post-graduation support for employment opportunities in small businesses?

25) How do you rate the provision of placements in small businesses within a student's course or programme (core requirement or elective)?

26) How do you rate the provision of internships in small businesses outside of a student's course or programme (paid or unpaid)?

27) How do you rate your Business School's activity in terms of engaging small business owners and entrepreneurs in mentoring students?

28) How would you describe the nature and scale of the Entrepreneurship Society in terms of membership within your institution?

29) How would you rate the quality of your Business/enterprise/entrepreneurship faculty that delivers programmes with appropriate expertise, research, knowledge and underpinning?

30) How would you rate the Enterprise modules for students in your Business School and the wider institution?

31) How would you rate the Enterprise modules offered in terms of involving contributions from current small business owners and entrepreneurs?

Appendix 2: Entrepreneurial Support Questionnaire

- 1) How would you describe the size of your organisation?
- 2) What sector does your business operate in?
- 3) How long has your business been running?

4) How would you describe your business?

5) How would you rate your awareness of the Small Business Charter? https://smallbusinesscharter.org/

6) Which of the following business support services are you aware of?

7) Please select any of the following business support services your business has received support from.

8) If you have received this type of support, how would you rate it?

9) How would you rate your awareness of Entrepreneurial Support Organisations business services e.g. Scottish Enterprise, Skills Development Scotland Prince's Trust?

10) Has your business received support from any of the following Entrepreneurial Support Organisations which provide business services?

11) If you have received this type of support, how would you rate it?

12) Has your business received support from any of the following Networking Associations providing business services e.g. Chambers of Commerce, Federation of Small Businesses?

13) If you have received this type of support, how would you rate it?

14) How would you rate your awareness of Specialist Support Organisations business services e.g. Scottish Funding Council, Scotland Food and Drink, Technology Scotland?

15) Has your business received support from any of the following Specialist Support Organisations?

16) If you have received this type of support how would you rate it?

17) How would you rate your awareness of Finance and Investment support for businesses available from syndicates, investors and angel groups?

18) Has your business received support from any of the following Finance and Investment Support Organisations?

19) If you have received this type of support how would you rate it?

20) In your experience, how easy is it to find business support and advice in the Greater Glasgow and Clyde Valley region?

21) If you have received this type of support, how would you rate it?

22) How do you prefer to receive business support?

23) Which type of business support would you prefer to receive?

24) How would you rate your awareness of the business services a University can offer?

25) Which of the following University services to business are you aware of?

26) How often has your organisation used a business service provided by a University?

27) Please select any of the following topics that would be of interest to your organisation if a University offered it as a business service i.e. a short course?

28) How would you describe the importance of University support to local businesses?

## TERG Working Paper Series