



**International comparator study of
Abertay University's Cybersecurity offering
for
Scottish Enterprise**

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Executive summary

Introduction

ekosgen was commissioned by Scottish Enterprise in September 2017 to undertake a comparator study of Abertay University's Cybersecurity offering. Abertay University is keen to understand how its current Cybersecurity offer, and its proposed offer through the *cyberQuarter* project, compares with other Cybersecurity centres in the UK and internationally, and to assess its position with regard to comparator centres.

The study aimed to inform the development of Abertay University's Strategic Outline Case (SOC) by examining UK and international comparator Cybersecurity centres, to: Establish a baseline of existing Cybersecurity offerings in Abertay and the Tay Cities Region; compare the *cyberQuarter* offer with domestic and international Cybersecurity centres, and where possible establish Abertay's current ranking on an international level; and provide an assessment of Cybersecurity projects within other UK City and Growth Deals.

This executive summary presents the headline findings from research and fieldwork that was completed between September and November 2017.

Cybersecurity activity at Abertay and in the Tay Cities Region

Cybersecurity is a key strength of Abertay University. It has a distinct research and teaching offer built around Ethical Hacking and 'offensive' Cybersecurity. This specialism distinguishes it from other expertise and capability in Cybersecurity in Scotland. For example, activity at the University of Edinburgh, accredited as an ACE-CSR, covers a wider spectrum of Cybersecurity activity, and is much more defensive in nature. Though the Cybersecurity economy is growing globally, it is still at a relatively early stage of development – particularly in Scotland.

Nevertheless, Abertay University is undertaking some relatively high-profile industry collaboration. For example, its work with the Scottish Business Resilience Centre (SBRC) is a good example of best practice. The *cyberQuarter* project aims to build on this research, teaching and industry collaboration activity. By creating a physical centre of excellence, it is anticipated that the project will anchor Abertay University's activity and help to create a critical mass in terms of Cybersecurity business, helping to develop Scotland's expertise in this field.

UK and international Cybersecurity offerings

There are many recognised Cybersecurity centres worldwide. These can often be conceptual in nature, with no significant physical centres. However, there are some notable exemplars of Cybersecurity centres and clusters. Ben Gurion University and the wider cluster in Be'er Sheva, Israel, and The Centre for Secure Information Technologies (CSIT) at Queen's University Belfast are particularly strong instances of physical Cybersecurity centres. These have benefitted from focused strategies to establish strong Cybersecurity hubs, and long-term public and private investment to support development.

When compared with other Cybersecurity centres, Abertay compares well in terms of its research and teaching expertise. Though its expertise may not cover the breadth of Cybersecurity, its focus on 'offensive' security and Ethical Hacking can be considered a niche specialism, whereas this forms part of a wider body of research and teaching elsewhere. Abertay's teaching is arguably more inclusive, given its more diverse student cohort and strong links with partner FE colleges and Perth College UHI.

Its expertise is highly regarded by many businesses and law enforcement agencies. Similarly, its teaching is strong, and Abertay's students are judged to be of a very high calibre. Its *HackLab*, and exposure of students to real-world penetration testing is a particular asset. However, there is a lack of

broader awareness of Abertay's work and expertise, particularly amongst some other more established comparator Cybersecurity centres. This is something that can be addressed through the *cyberQuarter* project, and the wider Tay Cities Deal.

Abertay's current activity on collaboration and commercialisation in Cybersecurity is limited compared to some other centres, but it presents a sound basis on which to develop its offer through the *cyberQuarter* project. Targeting the SME and other public sector markets, in contrast to many other Cybersecurity hubs, perhaps offers the greatest opportunity for the success of the project. The current relationship with SBRC offers a sound business platform for this.

Abertay's linkages with other universities, with other organisations and its position geographically in Scotland all help to put it in a strong position to maximise the potential of the *cyberQuarter* project. The existing digital ecosystem in Dundee offers a supportive environment to help develop and grow the cluster. Given its linkages and specialisation, Abertay is well-positioned to form a key component of a wider pan-Scotland approach to Cybersecurity, alongside aligned concepts being developed elsewhere.

These factors all contribute to Abertay's particular USP. However, as has been demonstrated in other clusters worldwide, a cluster such as that proposed to be created through the *cyberQuarter* project needs curating. As such, the efforts of all partners would be needed to ensure the success of the project.

Cybersecurity projects in UK City and Growth Deals

The focus of City and Growth Deals, particularly the early deals in England, has been on hard infrastructure investment projects aimed at unlocking economic growth. It is only in later deals and funding rounds that Cybersecurity projects were proposed and developed.

There are a small number of Cybersecurity projects currently being delivered through City and Growth Deals in the UK. Many of these are still at the pre-contract stage. The cluster of projects located in 'Cyber Valley' in the South West of England are perhaps the closest in nature to the *cyberQuarter* project. Abertay's proposal can be considered more ambitious in scope, and in scale of proposed activity and budget.

Whilst projects elsewhere are being developed around existing hubs and clusters, the *cyberQuarter* project seeks to establish a new hub. No such hub or centre exists in Scotland at present, and this is a prime opportunity for the project.

Conclusions

Ethical Hacking and 'offensive' Cybersecurity is an established, key strength of Abertay University, which distinguishes it from other Cybersecurity centres. With the Cybersecurity sector still at an early stage of development in Scotland, the *cyberQuarter* project can help Abertay University capitalise on the opportunity to create a cluster of Cybersecurity businesses the Tay Cities Region.

Its quality and reputation for research and teaching within its specialist field means that it compares well with other Cybersecurity centres. Within Ethical Hacking and more 'offensive' Cybersecurity, it ranks highly, given the specialist nature of the field. However, in comparison to other, more mature and established centres, its range of collaboration and commercialisation activity is limited. For this reason, it does not rank as highly in terms of the broader field of Cybersecurity at present. That said, it is these aspects that it seeks to improve via the *cyberQuarter* project.

Abertay's expertise in a relatively tightly defined sub-sector of Cybersecurity means that it does not duplicate the activity of clusters elsewhere. The proficiency in a niche area is very much a strength of Abertay's offer – what Abertay does appears to not be replicated elsewhere.

In this sense, there is little competition for the research and resultant knowledge and expertise that Abertay University provides. However, in terms of its broader ambition of creating a cluster of Cybersecurity companies, it is arguably in direct competition with many other centres and clusters in the UK and worldwide. Many of the UK clusters and City and Growth Deal projects examined seek to attract Cybersecurity companies. Of these, the most explicitly economic growth-focused is CSIT in Belfast.

Abertay's current activity presents a sound basis on which to develop the *cyberQuarter* project offer. The proposal seeks to grow a Cybersecurity cluster of sufficient density in Scotland. Abertay is also well-placed in terms of relationships, geography and the existing digital ecosystem in Dundee to support the development of a Cybersecurity hub. It can also position itself as a key component of a collaborative pan-Scotland approach to Cybersecurity, linking with Police Scotland and Scottish Government work.

Recommendations

There are some recommendations to consider for the ongoing development of the SOC and subsequent stages of the business case for the *cyberQuarter* project. These can be split into two broad groupings.

Firstly, efforts should be made to better position the proposal to maximise its offer.

Recommendation 1: Abertay University and partners should review the SOC and shape subsequent business case iterations using the study's evidence. Consideration should be given to how the aims and objectives of the project align with what currently exists, what additionally needs to be put in place, and what can be achieved in the short, medium and long term future.

Recommendation 2: Consideration should be given to how the *cyberQuarter* proposal compares with existing centres and clusters. Thought should be given to how to match or compete with what is on offer elsewhere, and the best way to differentiate the *cyberQuarter* from other centres, emphasising Abertay's USP.

Recommendation 3: Abertay and partners should examine the scope for linking its *cyberQuarter* proposal more formally with other offers in Scotland, and if so, at what stage of development. There is potential for wider collaboration, and the adoption of an integrated, Scotland-wide approach to Cybersecurity development. Abertay can form a critical component in such an approach.

Secondly, the economic development aspect of the SOC can be enhanced. This is relatively strong, but there is room for improvement in further iterations of the SOC and in subsequent stages of the business case process.

Recommendation 4: There should be clear articulation of roles for all partners involved in the project. This will help to secure buy-in, and will also provide clarity on where delivery responsibility lies. This could be extended to include consideration of what the ask of public sector agencies would be through the project.

Recommendation 5: There should be greater recognition of the role of the *cyberQuarter* project in creating high-value jobs, including an assessment of how this might help to address the regional productivity gap or increase BERD per capita in the Tay Cities Region.

Recommendation 6: More detail on specific activities should be provided to help demonstrate the economic development focus of the project. As a minimum, this could be done through full description of options as part of an options appraisal. Articulation of the critical success factors for the project would help to illustrate the activities envisaged through the project.

Recommendation 7: A logic chain or theory of change model should be developed, setting out aims, inputs, outputs, outcomes and impacts, and detailing targets and indicators. This will help to illustrate how the *cyberQuarter* project delivers against the rationale.