Enhancing Regional Innovation Systems in Cymru (Wales): Lessons from AgorIP and CALIN

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Abstract: This paper presents a practitioner report of two exemplar European Regional Development Fund (ERDF) projects within Cymru (Wales). Namely analysing the AgorIP and Celtic Advanced Life Science Innovation Network (CALIN) business and research support projects within the context of Regional Innovation Systems (RIS) (Cooke et al, 2004; Pino & Ortega, 2018). Cymru has had a long history tied to innovation with Llywodraeth Cymru (Welsh Government) placing the need to encourage Research Development & Innovation (RD&I) and Small and Medium Enterprises (SME) competitiveness at the forefront of their vision for Cymru's future economy. Both lead by Prifysgol Abertawe (Swansea University), the AgorIP and CALIN projects had different delivery models, AgorIP having secondees in external Cymru HEIs and GIG Cymru UHBs (NHS Wales University Health Boards) that supported the delivery at the main hub, and CALIN, a partnership between three Cymru and three Irish HEIs. Jointly supporting over 300 enterprises and organisations across their lifetimes, the projects' outcomes offer the potential to learn from previous publicly funded business support initiatives within the Cymru RIS. This paper will use these outcomes to inform future Cymru RIS support projects that could learn from and improve on the operations of those before it. These new projects should focus on sharing capabilities and avoiding duplication where possible, incorporating and utilising the individual capabilities and knowledge bases of Cymru's HEIs and Science Parks, with the ability to work on projects that combine organisations across Cymru and beyond. Further, the projects should adopt AI-enabled software as a 'shopfront' to engage with users, automate the creation of RIS networks, and provide business support templates and training that can be supplemented by additional support from project partners.

Keywords: Regional Innovation Systems (RIS), Innovation, Technology Transfer, Open Innovation, Publicly Funded Business Support.

1. Introduction

Cymru (Wales) is a small nation within the European landscape. With just over 3 million people, Cymru constitutes just 4.6% of the total population of the United Kingdom and around 8.5% of its landmass (Wales.com, 2025). The majority of the population can be found within the South, in the Capital city of Caerdydd (Cardiff), Abertawe (Swansea), Casnewydd (Newport), and the newly famous Northeastern city, Wrecsam (Wrexham), which hosts everyone's now second favourite football team. The business make-up of Cymru of an estimated, 253,800 enterprises was overwhelmingly occupied by SMEs (Small and Medium-sized Enterprises) (99.3%), of which Micro enterprises (0-9 employees) accounted for 94.6% of total enterprises, mimicking a similar situation in the UK as a whole (Melanie Brown, 2023; Georgina Hutton, 2024). However, Cymru does not mimic the UK's GDP per capita, which has been consistently lower than all UK regions (except for North-East England) at 74% of the UK average (Gov.Wales, 2024). Cymru is also over 3 percentage points below the English WEMWBS Wellbeing average, 48 to 51.15 respectively, corresponding to a medium mental well-being (Gov.Wales, 2023; NHS England, 2022).

These shortfalls in the economy and mental wellbeing of Cymru made it a target of the European Regional Development Fund (ERDF), especially in the less developed areas of West-, North-Cymru, and the Valleys, where over €2 billion were invested from 2014-2020 (Welsh Government, 2022b). Much of this investment into Cymru was to encourage Research, Development, & Innovation (RD&I) and SME Competitiveness. This supported

projects such as the AgorIP (which also had funding from Llywodraeth Cymru (Welsh Government)), Celtic Advanced Life Science Innovation Network (CALIN), and ASTUTE projects which delivered support for these aims, with CALIN also linking this support to the Republic of Ireland (RoI) (Welsh Government, 2022b). These projects, based within Higher Education Institutions (HEIs) in Cymru, used a technology transfer model of expertise and funded support that external organisations could access to support their RD&I projects. The projects aligned specifically to Objective 1.2 of ERDF Priority Axis 1: Promoting Research and Innovation – "to increase the successful translation of research and innovation processes into new and improved commercial products, processes and services, in particular through improved technology transfer from HEIs", that also provided support for commercialisation, protection, and exploitation of research to improve market readiness (Welsh Government, 2019). This successful investment into Cymru's economy influenced Llywodraeth Cymru's renewed focus on these activities in its Wales Innovates delivery plan to increase the country's competitiveness as it transitions further into a post-industrial economy (Welsh Government, 2023).

Regarding the funding situation for future projects, the CALIN and AgorIP projects benefited from participating in the aforementioned ERDF programme. With parts of Cymru, such as the West-Cymru and the Valleys (WCV) region's ERDF designation as a lesser developed region (75% less GDP per person than the EU average), the funding for ERDF (See Figure 1) showed a significant focus on Cymru through the funding per person statistic (Goddard, 2021). However, it is important to note that this data does not reflect the funding per person for individual counties.

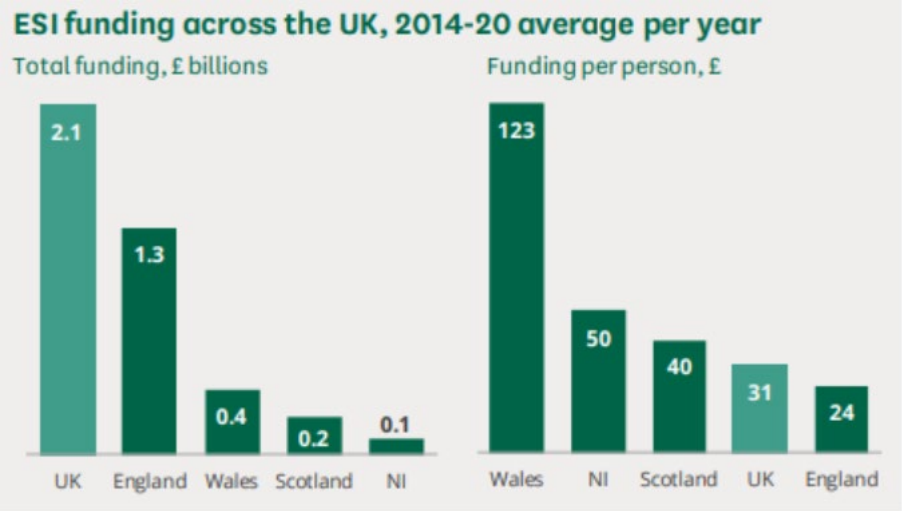

Figure 1: ESI Funding Across the UK, 2014-20 Average Per Year

(Source: Goddard, J. (2021). Brexit: Replacing EU funding in Wales, House of Lords, 2025. Retrieved May 30, 2025, from https://lordslibrary.parliament.uk/brexit-replacing-eu-funding-in-wales/)

In terms of replacement funding, post-Brexit, the UK government promised to match the previous ERDF and European Social Fund (ESF) contributions to Cymru through the United Kingdom Shared Prosperity Fund (UKSPF) on a ramping up basis, eventually matching the EU funding in 2024-25 (Department for Levelling up, Housing & Communities, 2022). However, there are members of Llywodraeth Cymru that believe this resulted in a shortfall of funding for Cymru due to the non-immediate replacement of the £291m per annum received by Cymru through these funding mechanisms (Welsh Parliament Finance Committee, 2022). Problems with the possible duplication of business support and skills projects were also raised in inquiries into the UKSPF in Cymru. Where regional applications that differed in capability, resource, and objectives could have benefited from a less fragmented, local intervention, and instead been integrated and coordinated with other existing provisions or on a larger scale (Economy, Trade and Rural Affairs Committee, 2023).

For the impact on Cymru's HEI sector, in 2015/16 Cymru's universities received £29.3m ERDF and £16.5m ESF funding with £48.6m for further collaborative research from the EU, accounting for £94.4m, just over 6% of total income (Universities Wales, 2018). Since 2014, universities in Cymru were the second largest recipient of EU structural funds, amounting to over £350m as lead partners, showing a significant loss if this level of funding were to be made unavailable (Universities Wales, 2023). This success of Cymru's HEIs in EU programmes appears to not have been replicated within its UK replacements post-Brexit. With Cymru, along with Northern Ireland, consistently receiving the least UKRI (UK Research and Innovation) investment in proportion to local GVA from

2021-2024, receiving £168m in 2023-24 (UKRI, 2025). This overview suggests that Cymru and its HEIs suffered from a lack of funding post-Brexit, and changes may need to be made to ensure that the same level of funding can be accessed in the future.

This paper intends to explore the possible use of Information Communication Technology (ICT) systems that can improve skills, encourage better decision-making, and act as a "shop window" for an innovation support project within a larger RIS in Cymru. This system would learn upon the needs of previous projects and provide hands-off skills training and templates for participating organisations and individuals to exploit their intellectual property and innovations with supplementary RD&I, research, and commercialisation support being provided by the partner organisations within it. Samara et al's (2024) exploration of the relationship between R&D and ICT in RIS found a two-way dynamic between the two, with both being strongly associated with innovation, there's every indication that they are complementary. Whilst this is not in direct relation to the use of any one ICT system, it suggests a likelihood in the acceptance of the system and its usage by innovators within RISs. There is also a quantifiable correlation between R&D personnel and increased computer and internet usage, especially relating to online learning (Samara et al, 2024).

This paper will explore the AgorIP and CALIN projects, analyse their final outputs and show the appetite and potential in Cymru for RD&I and SME competitiveness support in the business, HEI, and health sectors. Furthermore, this paper aims to highlight the need for a similar pan-Cymru, multi-sector RD&I project that can support commercialisation and innovation in the public, private, and third sectors without a specific focus on any industry (CALIN was focused solely on life sciences), the ability to work with partners outside of Cymru, and comprised of the specific expertise and capabilities of multiple HEIs, science parks, and other supplementary organisation.

2. Methodology

This paper will be a practitioner report and analysis of the AgorIP and CALIN projects, detailing their strengths and weaknesses and making recommendations based on their outcomes. The analysis will consist mainly of secondary data from the final project reports, including in-person interviews and surveys with key project stakeholders and team members. These final reports will be compared with Llywodraeth Cymru's intentions for the current RD&I landscape, including support provision and funding landscape, post-Brexit.

3. Regional Innovation Systems (RIS) and the Innovation Ecosystem in Cymru

Cymru has a closely tied history with innovation. The first industrial revolution saw Cymru spearhead the UK copper and coal industries from the late Eighteenth Century (with the later introduction of steel) until their decline through to the end of the Twentieth. This was arguably due to the close geographical system of mineral extraction, refining, and transport, with Abertawe at one point being labelled *Copperopolis,* producing over 50% of global copper in the Nineteenth Century (Evans & Saunders, 2015). Swiftly onto the late 1990s, with the arrival of Asian 'Tiger' firms, such as Sony and Matsushita (later Panasonic), Cymru briefly became an innovation darling for the Regional Policy Directorate of the EU due to its focus on lean production, global sourcing and supplying, and technology marketing (Cooke et al, 2004). This led to Cymru running the first Regional Technology Plan pilot in 1994, the precursor to Regional Innovation Strategies (RIS) (Cooke et al, 2004).

RISs are defined by Cooke et al (2004) as "interacting knowledge generation and exploitation subsystems linked to global, national, and other regional systems". Whilst not necessarily linked to any specific sector, RISs contain interlinked actors, such as industry, research, and public sector organisations that operate RD&I and commercialisation activities (Pino & Ortega, 2018). Whittington et al (2009) suggest that organisations and institutions (HEIs in the case of AgorIP and CALIN) are essential to RISs to create networks and connect organisations within and beyond RIS boundaries. Whilst separate from RIS due to its deemphasis on geography, the triple helix model of university-industry-government relations similarly emphasises the importance of HEI's knowledge bases in enhancing the exploration and exploitation of innovations (Leydesdorff & Zawdie, 2010). Llywodraeth Cymru echoed this in its 2022 Innovation Strategy, highlighting the need for RD&I and IP exploitation through collaborations between HEIs, businesses, and the public sector, i.e. GIG Cymru (Welsh Government, 2022a). The University Health Board (UHB) structure was created by Llywodraeth Cymru to encourage this collaboration between the public sector and HEIs in training and RD&I (Cardiff and Vale University Health Board, 2025). However, collaboration may be more effective when there is dedicated RD&I support within HEIs with the remit to support the public sector, create networks, and connect it to other organisations.

4. AgorIP

AgorIP (OpenIP, translated from Welsh) was one such project set up to provide the much-needed RD&I, Intellectual Property (IP), and commercialisation support identified by Llywodraeth Cymru and ERDF (Swansea University, 2020). Based at Prifysgol Abertawe, AgorIP was originally an ERDF project created to support SMEs and HEIs in the previously identified ERDF target areas that lacked sufficient innovation resources, later funding from Llywodraeth Cymru made the project pan-Cymru, included support for GIG Cymru (NHS Wales), and created secondees that could facilitate joint HEI, SME, and public sector innovation projects (AgorIP, 2022a). The project was based around an open innovation model of support, including IP protection & exploitation, including patent, trademark, and design rights; RD&I, including technical, prototype, and design; and commercialisation, including marketing, product deployment, and supplier acquisition (AgorIP, 2022c). The expansion to support GIG Cymru included the secondment of in-house secondees into five University Health Boards to assist GIG staff and innovation teams with the aforementioned support (AgorIP, 2022b).

Due to its split between the original focus of WCV and then including East-Cymru, the final indicators for the success of the project were equally split. AgorIP exceeded expectations in WCV, surpassing 7 out of 8 indicator targets by the end of its operation in June 2023 (See Table 1.). It achieved particularly strong results in private investment matching public RD&I funding (185%), supporting enterprises to introduce new products (122%), and fostering collaborations between businesses and research institutions (159%). The only shortfall was in employment increase in supported enterprises (91%), though its long-term impacts were expected to extend beyond the project's official timeline, which was echoed by its partners in post-project investigations.

AgorIP delivered strong results against its East Cymru indicator targets, meeting or exceeding six out of eight (See Table 2.). Notable achievements included providing non-financial support to enterprises (138%), securing private investment to match public RD&I funding (129%), supporting new enterprises (100%), helping businesses introduce new-to-market products (210%), introducing new-to-firm products (140%), and fostering collaboration between enterprises and research institutions (133%). However, it fell short in patents registered for products (73%) and employment increase in supported enterprises (38%), largely due to the challenges that had arisen in developing operations in East Cymru post-COVID-19. It is also important to note that patent processes can take several years, as such, there were likely to be processes initiated during AgorIP that progressed post-project (Gov.uk, 2025).

It is also worth noting the non-indicator impacts of AgorIP, such as GIG Cymru UHB's utilising the project as the "go-to" option for commercialisation and IP expertise and advice, especially so after the introduction of the secondees into those organisations. Notable suggestions for the project included higher levels of support quickly and flexibly, operations utilising the expertise of multiple HEIs rather than being based around one, and training for early-stage founders.

Table 1: AgorIP Indicators – West-Cymru and the Valleys

Indicator	Project Target	Project Achievement (June 2023)	% of Total Target Achieved
Number of patents registered for products	68	70	103
Enterprises receiving non-financial support	80	90	113
Employment increase in supported enterprises	50	45.38	91
Private investment matching public support for RD&I projects	£1,136,664	£2.104,336	185
Number of new enterprises supported	20	21	105
Number of enterprises supported to introduce new to market products	55	67	122
Number of enterprises supported to introduce new to firm products	55	61	111
Number of enterprises cooperating with supported research institutions	58	89	153

Table 2: AgorIP Indicators – East Cymru

Indicator	Project Target	Project Achievement (June 2023)	% of Total Target Achieved
Number of patents registered for products	11	8	73
Enterprises receiving non-financial support	13	18	138
Employment increase in supported enterprises	8	3	38
Private investment matching public support for RD&I projects	£100,000	£129,000	129
Number of new enterprises supported	4	4	100
Number of enterprises supported to introduce new to market products	10	21	210
Number of enterprises supported to introduce new to firm products	10	14	140
Number of enterprises cooperating with supported research institutions	15	20	133

5. Celtic Advances Life Science Innovation Network (CALIN)

The Celtic Advances Life Science Innovation Network (CALIN) was a cross-border project between HEIs and Research Institutes in Cymru and the RoI that strengthened collaborative opportunities between the two countries' Life Sciences sectors. CALIN, alike AgorIP in its technology transfer and innovation objectives, differed in its focus on the Life Sciences and joint academic-private research operations. CALIN's research element provided Life Sciences innovation skills and knowledge to SMEs to conduct research projects that covered themes such as Regenerative Medicine, Therapeutics, Biocompatibility & Safety Evaluation, Biosensors & Devices, and Health & Wellbeing (CALIN, 2025). CALIN was an exemplar of open innovation-based RIS support projects, reaching past geographical boundaries to create cross-border RIS collaboration, sharing risks, expertise, and developing innovations and research that could benefit both systems and encourage future collaborations.

CALIN and AgorIP's total impacts were likely to have extended far beyond their initial project lifespans and expected scope, thus they cannot be attributed solely to their original KPI outputs. This notwithstanding, CALIN delivered strong outputs compared to its objectives (See Table 3.): enterprises receiving non-financial support (87%), enterprises cooperating with research institutions (117%), enterprises introducing new-to-market products (143%), enterprises introducing new-to-firm products or processes (84%), and enterprises participating in cross-border, transnational, or interregional research operations (88%). To reiterate the research element of CALIN, it is important to note the 15 publications and 56 additional new-to-firm products created through the project.

Table 3: CALIN Indicators

Indicator	Original Target	Reprofile Target	Achievement as of August 2023	% of Reprofile Target Achieved
Number of enterprises receiving non-financial support	241	241	209	87%
Employment increase in supported enterprises	21	35	36	103%
Number of enterprises cooperating with research institutions	36	60	67	112%
Private investment (Euros) matching public support in innovation or R&D operations	588,000	1,038,000	5,049,055	486%
Number of enterprises supported to introduce new to the market products	9	14	18	129%
Number of enterprises supported to introduce new to the firm products/processes	72	96	71	74%
Number of enterprises participating in cross-border transnational or interregional research operations	36	60	51	85%

Indicator	Original Target	Reprofile Target	Achievement as of August 2023	% of Reprofile Target Achieved
Number of research institutions participating in cross-border, transnational or interregional research operations	12	12	6	50%
Number of new or enhanced cross-border innovation networks	1	1	1	100%

6. Analysis

This analysis situates AgorIP and CALIN within Cooke's (2001) Regional Innovation Systems (RIS), specifically exploring Region, Innovation, Network, Learning, and Interaction concepts.

6.1 Region

AgorIP initially targeted regional economic disparities aligned with ERDF objectives in West Cymru and the Valleys (James, Smith, & O'Shea, 2023). Its subsequent pan-Cymru expansion incorporated secondees strategically placed within Cymru's HEIs and GIG Cymru University Health Boards, significantly enhancing its regional responsiveness. Conversely, CALIN fostered cross-border collaboration between Cymru and the RoI, demonstrating the value of transnational RIS frameworks in avoiding regional isolation or lock-in, as cautioned by Tödtling and Trippl (2011).

Both projects highlighted the strategic advantage of pooling institutional expertise and capabilities to avoid external resource dependencies, evident in CALIN's internal capability utilisation compared to occasional external commissioning observed within AgorIP (James & Smith, 2023).

6.2 Innovation

AgorIP effectively utilised an open innovation model, converting academic and healthcare-generated intellectual property into market-ready innovations, thereby significantly enhancing regional private investment (James, Smith, & O'Shea, 2023). CALIN similarly drove innovation through structured academic-industry collaborations within life sciences, particularly excelling in generating innovative products and attracting substantial private sector engagement (James & Smith, 2023).

6.3 Network

Both projects established extensive collaborative networks. AgorIP connected multiple stakeholders including SMEs, HEIs, and GIG Cymru, effectively using secondments to reinforce stakeholder relations and regional embedding (James, Smith, & O'Shea, 2023). CALIN's cross-border networks effectively facilitated resource-sharing, significantly strengthening collaboration between Cymru and Irish institutions, thus enhancing collective innovation capacity (James & Smith, 2023).

6.4 Learning

AgorIP emphasised practical knowledge transfer, especially in commercialisation and IP management, through direct mentorship and tailored resources, responding effectively to the needs of SMEs and health sector participants (James, Smith, & O'Shea, 2023). CALIN's structured approach to joint research significantly boosted SME capabilities through direct participation in advanced life sciences projects, complemented by wide dissemination through academic publications (James & Smith, 2023). Both projects suggest potential enhancements via digital platforms, which could sustain learning beyond project lifecycles.

6.5 Interaction

Interaction was integral to both projects. AgorIP's structured "Health Hacks" and secondment-based approach fostered meaningful stakeholder engagements, although certain administrative complexities and repetitive initial communications remained a challenge (James, Smith, & O'Shea, 2023). Similarly, CALIN successfully encouraged robust cross-sector interactions through clear communication strategies, though it too faced administrative and communication inefficiencies (James & Smith, 2023). Implementing streamlined ICT systems could address these recurrent issues effectively in future RIS initiatives.

7. Discussion

7.1 Cymru's ERDF Experience: AgorIP and CALIN as Exemplars

AgorIP and CALIN exemplified effective utilisation of ERDF funding, significantly advancing Cymru's Regional Innovation System. AgorIP's shift from regional to pan-Cymru operations exemplified strategic adaptability, enabling broad and effective innovation support across sectors, particularly health and SMEs (James, Smith, & O'Shea, 2023). CALIN further extended these benefits internationally, underscoring the advantages of cross-border collaboration (James & Smith, 2023).

7.2 Project Outcomes: Successes and Areas for Improvement

Both AgorIP and CALIN achieved substantial successes in innovation metrics including private sector investment, new-to-market products, and academia-industry partnerships. AgorIP notably exceeded collaboration and private investment targets, validating its innovation support model (James, Smith, & O'Shea, 2023). Similarly, CALIN demonstrated exceptional outcomes in generating international collaborations and significantly surpassed private investment goals (James & Smith, 2023).

However, notable shortfalls in employment outcomes, especially within AgorIP's East Cymru operations, indicate the need for strategic refinements. Additionally, recurrent administrative and communication issues were significant in both projects, exacerbated by complex procedures and unclear stakeholder expectations. AgorIP's single-institution structure further limited collaborative potential, suggesting the necessity for improved institutional collaboration in future strategies.

8. Recommendations for Future Innovation Support Strategies

Future RIS projects should integrate successful elements, cross-institutional collaboration and robust private sector engagement, whilst addressing identified administrative inefficiencies. A consortium-based approach involving multiple Cymru universities, structured with a "first among equals" leadership model, such as that with CALIN, could significantly enhance regional coherence, reduce duplication of efforts, and lower costs through utilising each individual HEI's capabilities more effectively. This collaborative structure could also strengthen the competitive position of Cymru's HEIs for securing post-Brexit UK innovation funding (Universities Wales, 2023).

Additionally, the adoption of an advanced ICT platform as a digital 'shopfront' could be integral to future RIS initiatives. This platform could significantly streamline stakeholder interactions, simplify administrative processes, and enhance project transparency, particularly benefiting SMEs and microbusinesses central to Cymru's business landscape.

9. Conclusion

The insights from AgorIP and CALIN demonstrate that future RIS initiatives in Cymru must prioritise institutional collaboration, simplified administrative structures, and integrated digital communication systems. Addressing these strategic areas effectively could substantially enhance regional innovation capacity, resilience, and competitiveness, aligning closely with Llywodraeth Cymru's vision for a more dynamic and inclusive innovation ecosystem (Welsh Government, 2023).

Ethics Declaration

Ethical clearance was not required for this research paper.

AI Declaration

AI was used to grammar and spell check this research paper.

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