Manumix Part 2

Action Plan

Welsh Government

December 2018

Revised March 2019

Revised May 2019

Revised June 2019

Revised 27 June 2019

Revised July 2019

PART I – GENERAL INFORMATION

Project: Manumix

Partner organisation: Welsh Government (WG)

Other partner organisations involved (if relevant): Basque region, Lithuania, Finpiemonte

Country: Wales - UK

NUTS2 region: West Wales and the Valleys

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PART II – POLICY CONTEXT

The Action Plan aims to impact:

(X) Investment for Growth and Jobs programme
() European Territorial Cooperation programme
(**X)** Other regional development policy instrument

Name of the policy instrument addressed:

The policy instrument addressed have been broadened from the OP to reflect the uncertainty facing Welsh SMEs in the potential threats caused by the results of the EU referendum (BREXIT)

1: WG overarching **Economic Action Plan** including The Research and Innovation priority of the EU Structural Funds Operational Programmes 2014 20, West Wales and the Valleys.

The action plan reflects these changes and shows Welsh Government reacting in an agile manner, accelerating processes due to circumstances and addressing challenges by adapting and modifying policy mix and instruments that were not present or foreseen at the start of Manumix. The new learning from partners helped shape and develop new policy thinking, how we monitor and future evaluation methods up to this point and hopefully in the future. This plan looks to support key industrial investments to secure future growth and future job skills and competencies. The plan's

overall aim is supporting the capacity of SMEs to engage in growth in regional, national and international markets, and in innovation processes in a highly competitive and uncertain future.

2: Research and Innovation strategies for smart specialisation (RIS3) and smart growth

The focus of the plan is developing an economy based on knowledge and innovation based on exchange of experience and sharing of best practices in acknowledged areas of smart specialisation e.g. Advanced Manufacturing.
This is will be achieved by addressing sustainable growth; through industry 4.0 adoption WG can promote a more resource-efficient, greener and more competitive economy. Through inclusive growth; the plan aims to foster a high-employment economy that delivers social and territorial cohesion by improving the implementation of advanced manufacturing policies and programmes.
The experience and good practices contained in the plan come from various sources, including EU-programmes and projects such as regional Structural Funds.

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Part III – Details of the actions envisaged

Actions:

1: Deliver Industry 4.0 business diagnostic
2: Monitor and evaluate pilot programme
3: Deployment of Manumix learning and development of new Instruments to support the action plans developed from the diagnostic phase.
4: Industry 4.0 policy and instruments benchmarking, to maintain effective policy mix.

Action 1

Industry 4.0 business diagnostic measure.
Incorporate better practices into the existing system by proceeding with the expansion of recent pilot programme devised to provide diagnostic service for up to 700 SMEs adopting Industry 4.0 methodology and to drive associated activities in Research & Development, automation and digitalisation.
Engage with Advanced Manufacturing sector with West Wales and Valleys to uplift R&D activities.

Part I – Background information

Following the learning journeys to Bilbao and Turin, the measures, good practices and the approach and good practices of these two regions highlighted their progress in promoting the opportunities of Industry 4.0 as part of their ongoing RIS3 planning. The policy and instruments available have been developed with the industry and the stakeholders to address emerging and specialist areas of innovation. The steps in supporting advanced manufacturing businesses had potential to be unstructured, inconsistent and not aligned with policy objectives. Therefore, in order to support the targeted I4.0 support, the diagnostic service was proposed to determine an assessment of the current position and what areas of innovation support were a priority. The instruments and approach found in partner regions could then be more targeted and effective. Elements of these measures would be of great interest to Wales to support its smart specialisation, productivity and sustainable jobs. Reporting back to programme managers in Wales after these visits it was decided to proceed with a pilot diagnostic for businesses to benchmark their position and awareness of the opportunities around Industry 4.0. The next step was to agree to pilot the diagnostic with a small number of businesses, implementing the sharing learning from Basque and Finpiemonte and consultation with UK national innovation bodies. Industrial representation and stakeholder groups – Industry Wales, welcomed this approach as, their own market analysis research and feedback highlighted the opportunities and weakness in this area. This would then be a starting point to develop support measures and instruments to advance Industry 4.0 wider adoption and supply chain improvements.

Wales faces a productivity issue, with output per hour worked in Wales the lowest of all UK nations and regions. This lower productivity is the main driver of the Gross Value Added (GVA) gap between Wales and the UK and other leading EU countries. With no simple or single solution. Investments in human capital, infrastructure and physical capital; innovation and science; enterprise and competition all have a part to play. As industry 4.0 is an emerging area of innovation policy it would cover the following key components

Production efficiency upgrades

Additive manufacturing
Digitally assisted assembly
Robotics & automation
Flexible manufacturing cells
Predictive maintenance
Energy & water efficiency/reductions

Manufacturing system upgrades

Internet of Things
Sensors (including RFID)
Systems integration (big data)
Simulation
Cyber Security
Augmented & Virtual Reality
Paper to digital processes

Supply chain integration

Circular economy & remanufacturing
Supply chain integration information & value system mapping

Customer integration

Servitisitation
Web based customer order tracking
Mass customisation

Product innovation

Innovation best practice/readiness
New product development
Continuous product improvement

Part II – Policy context

- 1: WG overarching Economic Action Plan including The Research and Innovation priority of the EU Structural Funds Operational Programmes 2014 20, West Wales and the Valleys.

Since commencing on the Manumix project, there have been considerable and unexpected policy developments emanating from the UK Government. The most obvious of these being the result of referendum on EU membership (BREXIT), potentially withdrawing the UK, including Wales, from future European RD&I funding programmes. The scope of the policy context has been broadened from the OP to tackle also RIS3 and WG overarching Economic Action Plan (EAP) to reflect the uncertainty facing Welsh SMEs in the potential threats caused by the results of the EU referendum. EAP looks to embed innovation across a number of key advanced manufacturing areas and identifies the opportunities that Industry 4.0 can bring and includes looking at the effectiveness of the triple helix of innovation cooperation.

Key focus of the EAP reflects EU funding objectives;
• Innovation, entrepreneurship and headquarters and competitiveness of SMEs
• Exports and Trade
• High quality employment, skills development and fair work
• R&D, automation and digitalisation
• More innovative, sustainable and inclusive consideration to environment (measures to support a low-carbon economy) and resource efficiency.

2: Research and Innovation strategies for smart specialisation (RIS3) and smart growth

The focus of the plan is developing an economy based on knowledge and innovation based on exchange of experience and sharing of best practices.
Sharing policy and instruments measures which address Key barriers for SMEs adopting Industry 4.0. This is will be achieved by addressing sustainable growth; through industry 4.0 adoption WG can promote a more resource-efficient, greener and more competitive economy. Through inclusive growth; the plan aims to foster a high-employment economy that delivers social and territorial cohesion by improving the implementation of advanced manufacturing policies and programmes.
The experience and good practices contained in the plan come from various sources, including EU-programmes and projects such as regional Structural Funds.

Importing learning from Basque and Piemonte to advance EAP objectives.

The key components in Action 1 are similar to those identified in Basque and Finpiemonte regions, are all aspects which can impact on the wider adoption and utilisation of new innovations and also in part of a wider supply chain review.

The policy mix and instruments developed in partner regions (Basque and Finpiemonte regions) are interesting examples which encourage the adoption of Industry 4.0 techniques and something WG would be keen to understand and further evaluate and potentially import and adapt their policies for local conditions.
These Policy instruments when adapted can be shaped as a public intervention and applied within the region in order to improve a specific regional Industry 4.0 impact and outcome.

Manumix learning from the Basque Region

Basque Industry 4.0 –Statement of capabilities and international branding. To promote the region's policy on ambitions and innovation activities. Technology transference of electronics & ICTs for advanced manufacturing

Supporting manufacturing companies adopting industry 4.0 technologies in the short-term taking the most from existing knowledge in the region

- Support of industrial research and experimental development to transfer industry 4.0 technologies from research organisations to manufacturing companies
- The introduction of electronics and information and communications technologies (ICTs) throughout its value chain. will determine future competitiveness in the short term
- Match available technologies from regional research centres and transfer to businesses

Projects must have a Technology Readiness Level (TRL) from 5 to 9. Their minimum budget is €75,000 and the maximum duration is 16 months. They can get a subsidy up to the 25% of the eligible costs.
Resources needed by the Basque Government - Department of Economic Development and Infrastructures
The annual call has a financial allocation of €2.5M. The Basque Regional Operational Programme (ROP) of the European Regional Development Fund (ERDF) 2014-2020 co-funds the 50% of the call.

Evidence of success

Since 2015, 53 companies have been supported to incorporate electronics and ICTs for advanced manufacturing within their organisations. The total expenditure made by the companies was of 8,261,205 Euros.

Difficulties encountered which are similar to those experienced in Wales.

Increasing awareness among companies (mainly SMEs) that their competitiveness will be determined in the short term by these technologies.
Demonstrating their usefulness in their current activity is key.
Supporting the right technologies for the Basque companies
Potential for learning or transfer

This initiative is focused on fostering the technology transference from research and technology centres to the manufacturing sector. Its aim is to reduce the gap existent between the research and development (R&D) activities in electronics and ICTs related to industry 4.0 and the introduction of their results into the market. It also pursues the demonstration of the utility of such technologies in order to boost their adoption by manufacturing companies.
Basque Industry 4.0 reflects the need to define programmes adapted especially to advanced manufacturing, a RIS3 priority in the Basque Country, in order to introduce disruptive technologies that could make a great contribution to manufacturing companies' competitiveness.
This programme has a structure and objectives that have a great potential of transferability into Wales and to other regions that need to face the challenge of fostering the adoption of cutting-edge technologies resulted from previous R&D activities of research centres among manufacturing companies

Manumix learning from the Finpiemonte Region

The "Impresa 4.0" National Plan represents a major opportunity for all companies that are ready to take advantage of the unprecedented incentives offered by the Fourth Industrial Revolution. The Plan provides for a wide array of consistent and complementary measures promoting investment in innovation and competitiveness – all measures that have proved their effectiveness in the past have been strengthened under a "4.0" logic, and new measures have been introduced to meet new needs. The Government new innovation policymaking: have planned measures that every company can put in place automatically – thus avoiding any evaluation procedures and the associated red tape - and, above all, without any restrictions in terms of its size, sector or location. Financial resources that have been committed to the Plan in the coming years offering enterprises that want to grow and innovate a new deal.

Which will affect every step of the life cycle of companies that want to improve their competitiveness by supporting investments, the digitalisation of industrial processes, improvement in workers' productivity, as well as the development of new skills, new products and new processes.
The success of the "Impresa 4.0" National Plan depends on the extent to which entrepreneurs take advantage of the measures that have been put in place; including:

Hyper and Super Depreciation*
Nuova Sabatini*
Tax Credit for R&D*
Patent Box*
Guarantee Fund for SMEs
Development Contracts
Innovation Agreements
Tax Credit for Training 4.0*
Innovative Start up And SMEs Fund for Intangible Capital, Competitiveness and Productivity

(Measures marked with a * would be determined and set at a UK level, as Wales does not have devolved powers in these areas.)

Also, recently the National Assembly for Wales, Economy, Infrastructure and Skills Committee Produced a paper titled 'Industry 4.0 – the future of Wales' in August 2018 which made a number of recommendations which align with these objectives.

http://www.assembly.wales/laid%20documents/cr-ld11717/cr-ld11717-e.pdf

Part 3: Players involved

WG Sectors and Business – Department responsible for Economic Action Plan

Innovation specialists – 1:1 business advisory service

Innovation Advisory Council Wales – Gov officials advisory board for Innovation policy in Wales

Wales European Funding Office – One of the Project funders

Industry Wales – Industrial representative body for Advanced Manufacturing

Anchor Companies – National significant employers

Regional Important Companies – Regionally significant employers
Innovate UK - UK Innovation agency

Knowledge Transfer Network (Innovate UK outreach team)

Catapult Network – National RTO.

Basque region – Shared learning on their policy mix and instruments
Nesta – Developers of the Innovation Dashboard – Arloesiadur (management innovation portal)

Cardiff City region/ Swansea Bay City Region/North Wales economic region – Regional Industrial strategy boards

Part 4. Timeframe

Work within delivery window of existing innovation support programmes up to 2020 for the duration of Manumix

Part 5. Costs

No additional finance required. Expected to be delivered within existing UK/WG innovation support programmes and budgets.
For the diagnostics for the phase Jan 19-Dec 20 budget of c €980k including VAT
The financial profile for SMART Innovation funding continues up until June 2023 and includes a further budget of c €800k in addition to the above figure.

Part 6. Funding sources

WG Innovation support programmes
Innovate UK

Part 7: Outputs

Provide diagnostic service for up to 700 SMEs across Wales, West Wales and the Valleys.
Make available enhanced Innovation vouchers which support adoption of I4.0 activities.

Action 2

Monitor and evaluate the pilot programme devised to provide diagnostic for SMEs adopting Industry 4.0

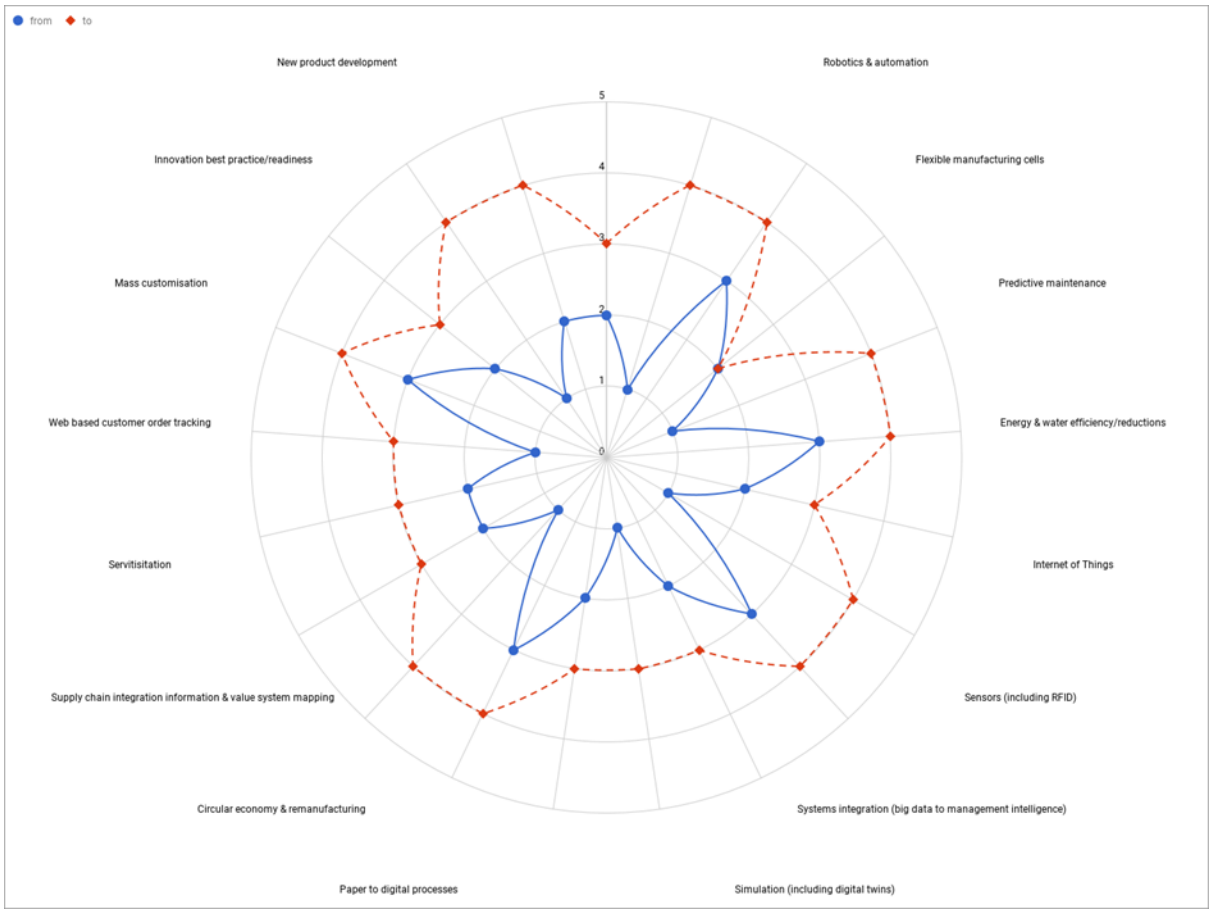
Part I – Background information

Across the EU, the support for innovation across regions helps de risk and encourages the activity. Innovation can mean different things to different people. As a definition, Innovation is related to a process connecting knowledge and technology with the exploitation of market opportunities for – compared to what is available on the internal market – new or significantly improved products (goods or services), or processes, new marketing methods, or new organisational methods (such as areas adopted under Industry 4.0) in business practices, workplace organisation or external relations. Innovation encompasses a certain degree of risk that is higher than for ordinary business activities.
This Innovation action is to take structured and planned approach to Industry 4.0 that will benefit Wales and UK economic growth and productivity goals.

Basque and Italian region partners have branded themselves heavily around their 'Industry 4.0' capabilities. By positioning themselves as a leading region with a strong political support, a range of measures and instruments available, they can attract and secure targeted investments in high value manufacturing and enhance their smart specialisation strategies.

Through the programme so far, Manumix partners will be better equipped to propose new policies and improved instruments and programmes.
R&D - New digital technologies are having a huge impact on the traditional divisions of industry and present new and immediate challenges for workers and the skills they need to succeed.
Importing and utilising different approaches and best practices from partner regions such as Innovation contracts from the Piedmont region, and working with RTOs and /or universities as in the Basque approach will improve the adoption of these policy learnings.
Importing these best practices and modify existing innovation instruments and delivery mechanisms to incorporate them into the policy mix will assist in the delivery of this action.
This action plan will be endorsed by stakeholders such as Innovation Advisory Council Wales and Industry Wales.
Agree with stakeholders' best utilisation of existing budgets and programmes to prioritise and focus on these areas. Support industrial research and experimental development projects for the transfer of industry 4.0 technologies from RTOs and Catapults to manufacturing companies in Wales.
This will help address the common issues encountered by businesses, such as;

- Select the best and appropriate solution
- Ensure solution deliverers all that is required
- Integration with current systems
- data flow - in both directions
- Comparisons between different solutions
- Assess value for money & return on investment
- Integrating legacy



Through bench marking, the objectives of the measures is, through monitoring is to push businesses from the blue line to the red line across all components of Industry 4.0.

Monitor and evaluate suitability of calls and competitions and existing instruments including:

Industry 4 diagnostic service and review for business pilot
Raise awareness of '4Manufacturing' service from KTN
Industry 4.0 thematic calls.
WG support for Business engagement with national calls in this area.
Automation
AI and data.
Digitisation – Improving the quality and quality data accessible to businesses to improve performance up and down stream. Determine how this data can be automated to improve decisions and productivity

How the data communicates businesses would need also need to understand opportunities around the Internet of Things (IOT)

Part 2: Players involved

WG Sectors and Business – Department responsible for Economic Action Plan

Innovation specialists – 1:1 advisory service

Innovation Advisory Council Wales – advisory board for Innovation policy in Wales

The 3 contractors undertaking the diagnostic
Knowledge Transfer Network (Innovate UK)

Wales European Funding Office - WEFO

Part 3. Timeframe

Work within delivery window of existing innovation support programmes up to 2020 for the duration of Manumix

Part 4. Costs

Expected to be delivered within existing UK/WG innovation support programmes and budgets

Part 5. Funding sources

WG Innovation support programmes
Innovate UK – grand challenge theme 'Made Smarter'
(Awaiting UK budget figures for this support)

Action 3

Deployment of imported learning and development of new Instruments to support the action plans developed from the diagnostic phase. Improve effectiveness' of policy mix

Part I – Background information

Following on from the learning from Basque and Finpiemonte regions, the approach to have a suite of support to drive business to adopt best practices of I4.0, even if they are existing instruments aligned with the i4.0 objectives; was a key consideration in developing a new instrument. A single, restricted or narrow support instrument would not have the desired impact. By having a number of aligned policy instruments like the National plan in Finpiemonte or the umbrella brand of Basque I4.0, provides the business community with a on going thread of support which they can access as they move along the TRLs or as supply chain relationships develop. With this in mind, the development of a new instrument – The Innovation Voucher +, Allowed for a wider focus of innovation support, taking in the scope of I4.0 to allow additional support for related capital equipment, specialist RTO support and upskilling of staff.
Undertaking the Industry 4.0 diagnostic in Action 1 will produce an action plan. This on its own will be a useful guide and reference document for the SME but without further specialist advice and guidance the take up of Industry 4.0 type activities the SME will not fully realise the benefits.
Utilising existing Innovation support measures can progress the SME towards Industry 4.0 if a clear project can be defined.
Areas of learning from the Basque and Finpiemonte partners include

- Access to expertise
- Treatment of Capital equipment
- Financial support
- Infrastructure
- Supply chain

All of which, would enhance the policies in Wales in a number of key areas.

Access to expertise

Learning from the Basques and Italian regions highlighted the role of industry Research Technology Organisations (RTOs), delivering the policy objectives by close working with industry and academia. They match available technologies from regional research centres and transfer to businesses. Wales has a small but increasing number of RTOs and the way they operate with industry, suppliers and skills can enhanced by importing some of the best practices. The learning from the Basque region and the role of their RTOs and universities provides a useful benchmark on how they are funded, how they operate with industry and their relationship with stakeholders eg suppliers, training providers. Wales is currently expanding its RTO network and the models operating within Bilbao provide an opportunity to propose similar structures and even regional cooperation as both are engaged with similar stakeholders and industrial sectors, e.g. Advanced Manufacturing Research Institute (AMRI) are advising centres in both regions.

Treatment of Capital Equipment.

One area which is in scope is the development of a new pilot instrument which supports not only the capital cost of equipment but can also bring in scope associated costs to fully take advantage of the equipment and its digital readiness.

As Industry 4.0 is a high level 'umbrella' innovation theme, the breadth and depth of resulting actions is wide and complex. For example, the requirement to apply for innovation 4.0 support for new capital equipment may not realise its full benefits unless complementary equipment is also eligible – similar to the learning from Piemonte. These developments of new instruments will help the recipient with Industry

4.0 adoption, maximises impact and is a goal within Welsh Government Economic Action Plan.

Financial support

Similar to the objectives of the Basque and Finpiemonte support, the proposed Innovation Voucher Plus – ''IV Plus' is intended to pilot support to project costs up to £100,000 grant for the implementation of a new or improved method of production, process or service delivery, in particular with regard to automation and digitalisation. Its focus will look to support changes to new organisational methods of business practices or the implementation of new or significantly improved production or delivery methods.

Infrastructure

The measures Finpiemonte has undertaken in infrastructure and access to fast broadband roll out recognises the link with Industry 4.0 and it is an area WG has committed to as part of its wider national Digital agenda.

Supply chain

Learning from the Basque and Italians also highlighted another area is the support for projects with a supply chain or collaborative aspect to the project. Working towards common goals and to support independent parties pursuing a common objective. As one of the benefits of using Industry 4.0 approach is increased exchange of real time data from up and down the supply chain, a proposal for a pilot which brings into scope real collaborations between businesses with real benefits to all those participating. The advanced manufacturing profile in West Wales and the Valleys has a strong supplier Tier2, Tier 3 composition, the opportunities from I4.0 adoption could have a significant positive impact and help introduce new to market products and services.

Part 2: Players involved

Innovation specialists

Innovate UK

Knowledge Transfer Network

Industry Wales

Broadband Wales

Part 3. Timeframe

New pilot instruments anticipate early 2019
Will run until 2020.

Work within delivery window of existing innovation support programmes up to for the duration of Manumix 2020

Part 4. Costs

No additional cost. Expected to be delivered within existing UK/WG innovation support programme.

Part 5. Funding sources

WEFO

WG Innovation support programmes

Innovate UK

Action 4

Through the Innovation Advisory Council Wales - with WG ministerial and senior Innovate UK attendance, to provide quarterly reporting to the steering group on Industry 4.0 implementation, policy and instruments and benchmarking, to maintain effective policy mix and align with Government priorities.
IACW, will act as the innovation policy prism to ensure its effectiveness as the policy and instruments are implemented.
As Industry 4.0 becomes more widely adopted across regions, those regions who enter the policy area may have new approaches and instruments which assist in achieving policy objectives. Wales' policy needs to be agile to respond and therefore the requirement to monitor and Import best practice and learning from others will be required. This includes Manumix partners, UK regions and other similar Smart specialisation regions. Within West Wales and the Valleys region, the objective to increase GVA can be enhanced by the opportunities from Industry 4.0 methodologies and adoption.
To strengthen and improve the monitoring and evaluation of regional policy mixes with enhanced RDI results of private companies whilst undertaking best use of resources.
Due to the uncertainty of UK's and Wales future role in EU collaborations, the requirement to monitor, share and learn from others may become increasingly valuable.

Part I – Background information

'Innovation Wales'. The RIS3 strategy identified that, despite manufacturing forming a larger part of the economy than the UK average, Wales has low levels of industrial R&D and existing innovation is mostly incremental and at the level of 'new to company'

Therefore, the requirement to maintain and expand organisational and individual learning around Industry 4.0 measures will help assist in improving R&D.

The opportunity to evaluate and modify current structural fund programmes to address emerging innovation opportunities around Industry 4.0 is a key objective of the action plan.
As Industry 4.0 is evolving and businesses adopt and utilise elements of Industry 4.0, the need to maintain a high level of knowledge will be essential to keep Wales policy and measures appropriate and meeting their objectives.
This action is to encourage ongoing learning to the staff members of the partner organisations who have increased their capacity by being directly involved in all the activities of the project so far. The increased capacity of more than a few members of staff within Welsh Government and its partner organisation will be required to ensure that results (i.e. policy change and related impact) will be achieved.
The benefit to this expanded and wider learning is that the new knowledge does not stay with individuals, but is also shared within Welsh Government and its partners. This increases the chance that the learning gained from the cooperation will have a greater impact in Wales. This can be achieved through internal reporting meetings where the staff directly involved in the cooperation report back to the relevant colleagues, managers and key stakeholders.
External learning through Manumix, conferences, overseas missions is valuable as it provides evidence and key information for partners and others which can be exploited elsewhere.

Part 2 study visit in early in 2019 to the Basque region provided a detailed understanding of their Industry 4.0 instruments, to appraise and import their expertise and approach and for WG to export expertise and share further details on its approach and Good Practices of interest to them.

- Historically, Welsh SMART Innovation model has attracted attention from a number of EU countries. The Basque region expressed interest in detailed learning about it (structure, funding, delivery, management, etc.) to develop a proposal

for establishing a similar programme and instrument.

- Wales and the Basque region had identified Industry 4.0 as a crucial area for policy development and evaluation. The Basques have branded their support for Advanced Manufacturing under an Industry 4.0 banner.

- Wales' acknowledged success in holding and winning public sector procurement challenges is of great interest to the Basques, who have expressed an interest in developing similar measures.

Potential Areas to transfer good practice

- Indentify instruments and measures to import /export and implement a business innovation support system and understand the interrealtionships and complimentary aspects of the different instruments

- As both regions have a focus on Industry 4.0, Wales to import and undertake an audit of I4.0 assets in order to define the Welsh Industry 4.0 offering.

- Identify joint regional innovation initiatives via respective London offices.

- Incorporate lessons learnt from the Basque Aero innovation hub – such as strong industry support, including access to state of the art equipment, skills and expertise and finance through a membership model, linked with strong academic expertise into the new Wales aero hub (Advanced Manufacturing research institute AMRI) business plan. Review and compare the objectives of the Auto sector centres strengths and operating model in each region and the focus on technology roadmaps eg Electric Vehicles. Their Automotive RTO is state of the art and as such, the Welsh Auto Forum has visited the centre previously. There is an opportunity to look at this model and potentially replicate as WG as done with AMRI, but establishing working with Aston Martin, Ford and Toyota along with the Welsh Auto Forum. Initials discussions have taken place with the AMRC, and the Innovation team hosted a visit to AMRC Sheffield with Aston Martin in late 2018 which has resulted in a number of R&D projects. Consideration to the possibility of an Auto RTO in South Wales similar to the AMRI in North Wales and Basque region.

- Explore Policy and instruments which provides The Basque Country with greater success in getting women into Science, Engineering and Innovation.

Sharing real time experiences across the different regions will help identify potential barriers, what works well and what adjustments will need to be considered. Short – mid-term evaluation of results mainly by integrating the lessons learnt from cooperation into the relevant local, regional or national policies, it is expected these results should result in durable outcomes.

Part 2: Players involved

Innovation specialists
Innovate UK
Knowledge Transfer Network
Manumix Partners
Other related Interreg projects (Good practices)

Part 3. Timeframe

Additional focused visit to share best practice with the Basque region as part of Phase 1.
For the Phase 2 period of Manumix up to 2020,
Typically, quarterly reporting to IACW steering group.
Taking forward any actions to follow up.
Work within delivery window of existing innovation support programmes up to 2021-22

Part 4. Costs

Additional Study visit with key innovation stakeholders in innovation and I4.0 development, visit costs for travel and accommodation to Basque Region approximately €2500.
IACW attendance
WG official time for human resources over phase 2 forecast €20k

Part 5. Funding sources

WG Innovation overheads for officials' time in development of closer interregional working

Part 6: - Outputs

Following the learning exchange with The Basque region:
Basque SPRI – Have an office in London and wish to work with the Welsh Governments office on Innovation
AAMC has created their Aero hub through working with AMRC Sheffield who we worked with WG to create the AMRI. They are however using a large previously unoccupied unit but have new equipment purchased or gifted by partners. Their ability to replicate the AMRC model within such a small region with centres generating >50% of revenue through industrial R&D projects is something WG would wish to replicate.

Orona a large lift company manufactures all its own equipment apart from a part (controller) from Welsh supplier - Control Techniques. This is the heart of their system and is manufactured in Newtown Mid Wales. They have obvious concerns regarding Brexit and the source of this component. Officials to work with respective clients to look at future opportunities)

The Basque region have focussed on and created a brand and products to deliver Industry 4 an area they have been working on for some time. They also undertook an audit of I4 to produce their I4 offer. WG to consider doing similar.

Their Automotive RTO is state of the art and as such the Welsh Auto Forum has visited previously. There is an opportunity to look at this model and potentially replicate as we have with AMRI but working with Aston Martin, Ford and Toyota along with the Welsh Auto Forum. Initials discussions have taken place with the AMRC, and the Innovation team hosted a visit to Sheffield with Aston Martin before Christmas which has resulted in a number of R&D projects.(consider the possibility of an Auto RTO in South Wales along the lines of AMRI in North Wales)

Each province has its own tax raising powers of which a portion goes to central government, there is then a commitment to increase R&D spend by 5% per annum.
IACW to review and possibly make the case for a realigned budget and increase in R&D spend throughout Wales.

Open Innovation has operated in the Basque region for many years and it has become a common culture. When compared, the WG Open Innovation pilot was a great success and we have far better incentives in our SMART Cymru operation to support this activity.

The Basque Business support programmes are relatively small in comparative terms compared to SMARTCymru suite of support. The Basque were keen to learn more about the way we are supporting Industry 4 activities with our new Productivity offering (up to £100k per project

We were particularly impressed by the structure of the CVCTI headed by the President of the Basque Government demonstrating the importance of Science, Technology and Innovation as a strategic priority for the region which is on par with health and education.

WG need to continue working on demonstrating the return on Science, Innovation and Technology to the economy.

The region showcased an impressive level of expertise in machine tool and metrology within indigenous businesses with support to develop new technologies and grow. A number are working with Welsh businesses already. This is a strength in Wales in this area and should be explored further

The Basque economy has appeared not to have suffered from the decision to pull out of nuclear energy and have invested in other technologies which has strengthened their supply chain and created further opportunities in other areas. Wg officials to look to identify opportunities for Welsh centres and businesses to collaborate with them in the future.

It was interesting to understand the structure of employee owned businesses such as the Mondragon corporation understanding the pros and cons and how it helps to embed businesses and technologies in the region and allows them to retain and grow major manufacturing businesses. The model also allows organisations such as Orona to commit 2% of sales to R&D. This is something WG should examine this type of model and see if Wales could benefit.

The region has good level of women working in Science, Engineering and Innovation. WG are currently making a concerted effort with Women in STEM (WinSTEM) to improve our current allocation of women in Engineering.

Within West Wales and the Valleys area Monitor attempts to improve Advanced Manufacturing productivity and increase GVA by such measures as encouraging and supporting greater investment in the development of new products and processes (Manumix reporting output)

Participate in OECD innovation review and benchmarking of Welsh innovation

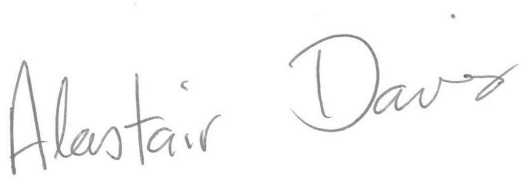
New monitoring approaches will be developed by the delivery teams in the early stages of implementation to identify growing clusters and sub sectors that show the highest levels of innovation and growth.

Use learning and experiences (peer reviews) of similar EU regions and developing an improved evaluation approach.

Date: 6th December 2018

Dr Alastair Davies.

Director of Innovation – Welsh Government



Signature: _____

Stamp of the organisation (if available):

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