



Manumix Part 2

Action Plan

Welsh Government

November 2018

## 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:**

- Investment for Growth and Jobs programme
- European Territorial Cooperation programme
- Other regional development policy instrument

**Name of the policy instrument addressed:** Innovation –  
Strengthen RDI support for the delivery of innovation in smart specialisation areas of Advanced  
Manufacturing - through adopting aspects of Industry 4.0

## Part III – Details of the actions envisaged

### 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.

### 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. 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. 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

- Servitisation
- Web based customer order tracking
- Mass customisation

### Product innovation

- Innovation best practice/readiness
- New product development
- Continuous product improvement

## Part II – Policy context

These key components, similar to 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.

SMEs in Wales face a greater challenge as they find it difficult to articulate clearly what challenges they face and what are priorities for them to be successful. The ‘norm’ and ‘business as usual’ approach taken by many traditional advanced manufacturing businesses highlights the lack of national and global performance indicators and benchmarking of competitors and ‘best in class’ performers. Confusion, resource concerns, uncertain benefits and the language of Industry 4.0 have been identified as barriers.

Key barriers for SMEs included:

- SMEs don’t really understand all the jargon and terminology
- Don’t how to start on the process
- Want to be able see it
- Want to know what is the government doing

Identified good practices such as the WG Innovation Dashboard, ‘Arloesiadur’, can provide insights and trends within regions and sectors but needs to be checked for currency and consistency of data. Policy mix and delivery of instruments need to break this cycle and challenge businesses to adopt a more disruptive outlook and a reflective mind set. Welsh Government (WG) has recently launched its’ Economic Action Plan (EAP) as a new over arching policy which looks to imbed innovation across a number of key advanced manufacturing areas and identifies the opportunities that Industry 4.0 can bring

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

## Importing learning from Basque and Piemonte to advance EAP objectives.

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–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

Expected to be delivered within existing innovation support programme.

### Part 6. Funding sources

WG Innovation support programmes  
Innovate UK

## 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.

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

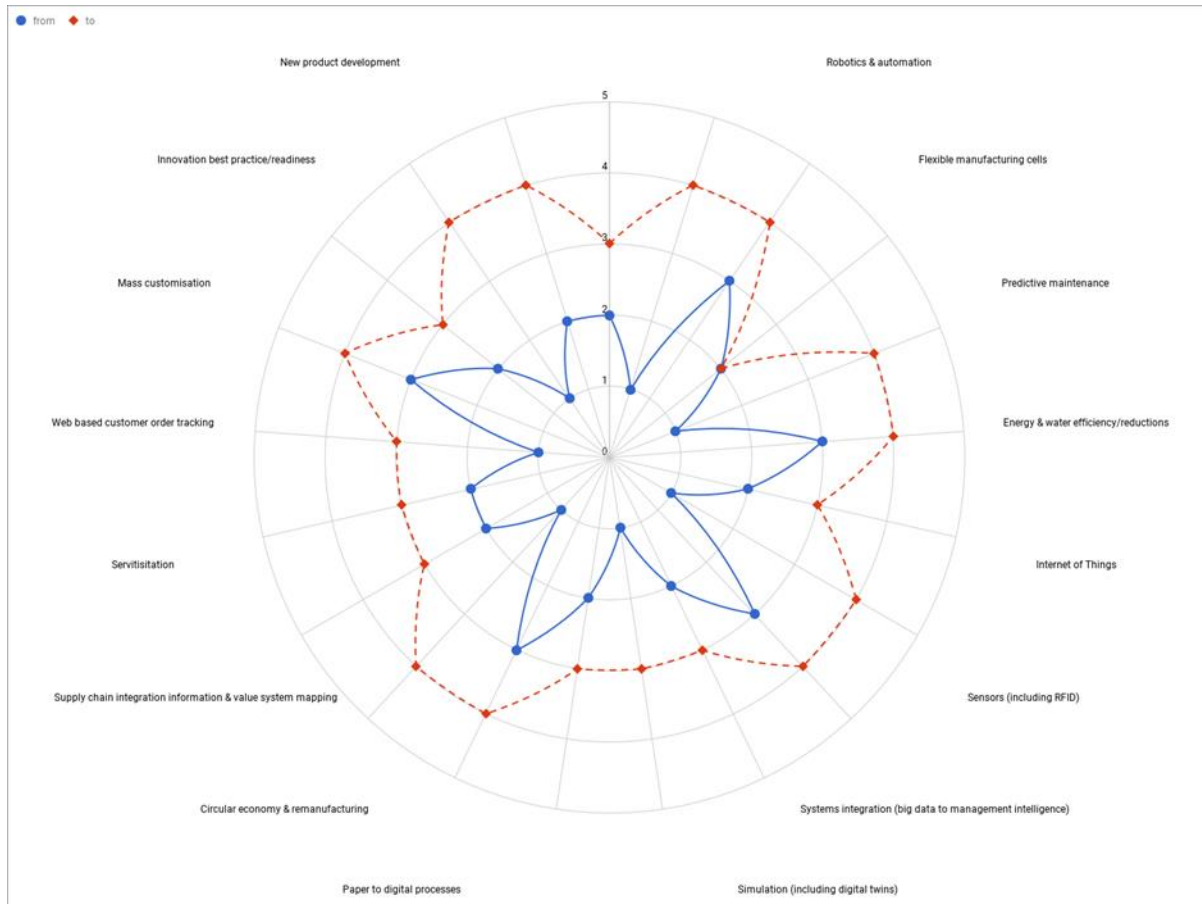
and presenting new and immediate challenges for workers and the skills they need to succeed.. Utilise different approaches and best practices from partner regions such as Innovation contracts from the Piedmont region, and working with RTO and /or universities as in the Basque approach will improve the 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 innovation support programme.

### Part 5. Funding sources

WG Innovation support programmes  
Innovate UK

## 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

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.

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.

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. It’s 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.

Another area is the support for projects with a supply chain or collaborative aspect to the project. 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 measures Piemonte has done 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.

## Part 2: Players involved

Innovation specialists

Innovate UK

Knowledge Transfer Network

Industry Wales

Broadband Wales

## Part 3. Timeframe

New pilot instruments anticipate early 2019

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

## Part 4. Costs

Expected to be delivered within existing innovation support programme.

## Part 5. Funding sources

WEFO

WG Innovation support programmes

Innovate UK

## Action 4

Industry 4.0 benchmarking.

Monitor and Import best practice and learning from others, including Manumix partners, UK regions, Other similar Smart specialisation regions .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.

### Part I – Background information

Maintain and expand organisational and individual learning around Industry 4.0 measures.

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 else where.

Consideration for a Part 2 study visit to the Basque region for detailed understanding of their Industry 4.0 instruments early in 2019, to 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.

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

For the Phase 2 period of Manumix up to 2020  
Work within delivery window of existing innovation support programmes up to 2021-22

### Part 4. Costs

Not relevant

### Part 5. Funding sources

Element of Manumix phase 2 for remainder of the project



European Union  
European Regional  
Development Fund



Date: 23<sup>RD</sup> November 2018

Dr Alastair Davies.

Director of Innovation – Welsh Government

*Alastair Davies*

Signature: \_\_\_\_\_

Stamp of the organisation (if available):

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