

# MANUFACTURING THE FUTURE WORKFORCE

VISIT REPORT: IRELAND 



In partnership with

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## INTRODUCTION

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### STRUCTURE OF REPORT

Each meeting report summarises general discussions, additional observations and further background information provided by the hosts about their organisation and its involvement with wider vocational and professional education and training systems and Centres of Innovation.

Individual meeting reports also ‘highlight’ good practice and useful counsel captured during discussions then subsequently explored in delegate group de-briefs. These highlights are brought together using headings common with other visits in the closing section of this report to support further analysis and leading to recommended actions.

This document and its references are an appendix to the overall *Manufacturing the Future Workforce* report.

The full report is available to download at: [hvm.catapult.org.uk/mtfw](http://hvm.catapult.org.uk/mtfw)

### VISIT ITINERARY 4<sup>TH</sup> TO 5<sup>TH</sup> JUNE 2018

1. National Institute for Bioprocessing Research and Training Dublin

#### Delegates

Daniel Sandford Smith, Gatsby Foundation  
Chris Beck, TWI  
Ian Collier, HVM Catapult  
Paul Shakspeare, HVM Catapult

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## MEETING REPORT

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### NIBRT VISIT

31<sup>st</sup> May 2018

National Institute for Bioprocessing Research and Training  
Foster Avenue, Mount Merrion, Blackrock, Co. Dublin, Ireland

<http://www.nibrt.ie>

#### Hosts

Killian O'Driscoll, Director of Projects  
John Milne, Training Director

### Background

NIBRT was recommended as an early visit and introductions made by IfM following previous research interactions. Opened in 2011, it has developed a dual focus on both training and research in an emerging technology field and appeared to cover many of the Study areas. NIBRT were happy to share what had gone well, what was learnt and are keen to develop partnerships and to learn from visits such as this.

*From website:*

*'The National Institute for Bioprocessing Research and Training (NIBRT) is a global centre of excellence for training and research in bioprocessing. NIBRT is located in a new, world class facility in Dublin, Ireland. This facility is purpose built to closely replicate a modern bioprocessing plant with state-of-the-art equipment.'*

*NIBRT is based on an innovative collaboration between University College Dublin, Trinity College Dublin, Dublin City University and the Institute of Technology, Sligo. NIBRT was primarily funded by the Government of Ireland through Ireland's inward investment promotion agency, IDA Ireland (Industrial Development Agency), which is responsible for the attraction and development of foreign investment in Ireland.*

*NIBRT is a world-class institute that provides training and research solutions for biopharmaceutical manufacturing industry. Our mission is to support the biopharmaceutical industry by providing a unique learning experience for trainees in an environment that replicates the most advanced industrial bioprocessing facility. In parallel, we also undertake leading edge research in key areas of biopharmaceutical manufacturing in collaboration with industry and academia."*



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## *Organisation*

NIBRT is a private company limited by guarantee training operators to doctorates and carrying out research. Initial Government investment was through IDA (responsible for inward investment) - €60m investment (€30m for buildings and equip, remainder 'revenue'). The NIBRT Board reports to a Minister and maintains the involvement of the four founding academic partners.

Delivery focus is on the needs of biopharmaceutical industries where new drug products are based on molecular biology (big molecules, increasingly personalised). Original investment was a response to demand from Wyatt (now Pfizer) in 2003 for the means of training a workforce of some 2,000 to justify their significant inward investment. €10bn in 10yrs has now been invested in Irish biopharma with recognition that NIBRT has been a key enabler. (Irish inward investment themes are: Tax, Technology, Track Record and TALENT)

NIBRT have a mandate to be the National Institute at the centre of a research Hub and Spoke model but without control of the spokes, hence there is some limited competitive investment by universities wanting to grow in the biopharma space. Government wants coordination and to avoid duplication of training resources.

The intent is that the NIBRT business becomes self-financing and that surplus from training activities will be invested in research. Relatively low levels of cross over use of equipment or expertise between training and research activities directly results from lack of common need, however, co-location is seen as a clear benefit. Some Masters students may carry out research activities.

A NIBRT Training Advisory Board is under review to structure industry input. There is regular churn of trainers back to and from industry with typical stay of 3 – 4 years of a relatively young group.

Recent annual training numbers have been some 2,800 learners with 1,400 on academic programmes. Industrial courses at NIBRT are prioritised over academic needs. The training team is about 16 people, some PhDs, the Centre has a capacity of three parallel courses at any one time. 25% of industrial clients are from overseas, however direct competitors for inward investment would be given very low priority (e.g. Singapore).

There is a total of 70 people at NIBRT, 10 in admin, 16 training staff and the remainder in 4 research groups. The business was 81% self-financing in 2017.

Typical fees are €700 per day for industrial courses. Significantly less (perhaps €200) for academic students and others such as 'Springboard' students who are funded by DofE or ESF.

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## *Training Courses*

A lot of Biopharma innovation is driven by vendor equipment developments, consequently there are high levels of equipment donation to NIBRT (€6m recently) to support new courses. The centre is not licensed to make usable product, however all training takes place in a full-facsimile clean environment to establish desired workplace behaviours. In-course assessment takes place for internal recording purposes however industrial trainees receive a certificate of attendance, not competence. Industrial customers are mainly new-hires entering industry or starting to work on new processes, some training is directed at supervisors / trainers.

Breakdown of courses:

- 10% to 15% - open prospectus (existing offers, upskilling)
- 30% - custom industrial courses
- 30% - academic modules as part of HE qualifications
- 25% - CPD - Masters

Academic modules typically take a few days in each semester per student and are a requirement of the Higher Education curriculum with learning outcomes certified by the HE Institution. SMEs, often product manufacturers do take up courses. Industrial courses don't lead to significant repeat business because of the nature of the groups to be trained, however continuing relationships lead to follow-on training as required.

The NIBRT training model is: Competency-based, Customised, Certified, Continuous (Professional Development), Cost Effective. The future role will extend to cover pre-hire, hiring process and post-hire with the centre likely to sponsor the development of apprentice standards and deliver apprentice training. Open Courses are a good market test for future needs and lead content into academic courses.

Most training delivery is built on a common library of content then assembled into appropriate course structure. On-line 'webinar' courses attract mixed groups of students, e.g. Springboard and Academic. Initial pump priming investment allowed early course generation, ongoing development is funded from cash flow.

NIBRT currently does very little work with school leavers although this may change once Apprentice programmes start.

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## *Growth*

Many visitors in last 6 months: USA, Scotland, Belgium, Korea, Denmark, Sweden, Holland.

### Jefferson University USA

Recently announced new venture to establish a franchise model based on \$10m biologics facility at Jefferson where NIBRT content will be adopted for local use during a 5-year agreement. Both sides see this as an opportunity for growth enabled by speed to market by accessing NIBRT know-how and proven materials and should lead to research opportunities and further collaborative working. (Also wider US interest.)

### Online

Pilot programmes are under evaluation which will lead to the 'NOA' academy to increase geographical reach and timely access for students. Not expected to fully replace the need for centre attendance.

## *Policy and Funding*

Science Foundation Ireland and H2020 funds Doctorate and Post Doctorate research, Enterprise Ireland (similar to Innovate UK) does not fund training which is funded by Dept for Education through various education and training programmes and initiatives.

Education is free to students in Ireland, tertiary is either HEI or Institute of Technology. Overseas industrial students are welcomed because they will find training elsewhere anyhow and increased income and reputation is useful.

The Apprenticeship system in Ireland has recently started to change and is moving towards the German model. Siloing of HE/Apprenticeships/Innovation is apparent in Ireland.

The 'Springboard' programme (Dept Education) was set up post 2008 to provide training to unemployed, funded by Government and ESF. This has now morphed to support the upskilling of current workforce and covers a range of needs for job roles up to level 9 (Masters) to enable transitioning between industries. Programmes last up to 9 weeks with prior learning taken in to account, some delivery is on-line with learners from different backgrounds on the same shared courses.

Further capacity constraints on the growth of the Irish Biologics are forecast. Skills need is addressed by the Expert Group on Future Skills Needs for the sector which is run from the Department of Business. NIBRT supports and convenes this activity but is not directly responsible for outcomes to avoid conflict of interest.

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## NIBRT Highlights

- NIBRT development was driven by Inward Investment pressure for skilled workforce creation. Over €10bn of international major pharma company investment can be linked to the skills pipeline NIBRT has enabled.
- NIBRT is influencing academic education by bringing new industrial practice into the delivery of courses, therefore better preparing students for employment with knowledge and understanding of state-of-the-art application of new technologies with a high level of collaboration with HEIs and industry.
- Mixed industrial and academic training delivery has resulted in significant organic growth and now opportunities for franchise growth. Centre development was led by training and is now approaching financial sustainability across teaching and research projects.
- Low level of crossover between research and training, however co-location said to be important.



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## GOOD PRACTICE – CORRELATED HIGHLIGHTS AND COMMENTARY

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### POLICY AND STRATEGY

#### Inward Investment

- Skills pipeline as an incentive and enabler for high levels of inward investment leading to increased high value employment.
- Continuing revenue support may be required to continue to attract industry.

### EDUCATION AND TRAINING PROVISION

#### Student Experience and Employability

- Industry standard equipment operates to industrial cleanliness standards enabling NIBRT to train industrial behaviours as well as develop knowledge and skills.
- Academic education courses are enhanced by bringing new industrial practice into the curriculum on a regular basis, therefore better preparing students for employment with knowledge and understanding of the application of new technologies.
- Training courses are built on a common modular content library, adapted to meet client group needs.

#### Partnership and Franchising

- International opportunities have the scope to increase return on training investment.

#### Upskilling

- The 'Springboard' programme (Dept Education) now supports the upskilling of current workforce and covers a range of needs for job roles up to level 9 (Masters) to enable transitioning between industries.

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## CENTRES AND SOURCES OF INNOVATION

### Building Research Capability from a Training Base

- Centre development was led by training and is now approaching financial sustainability across teaching and research projects.
- NIBRT is the convener across the Irish Bio-pharma academic network whilst not having authority over strategy. This is seen by government as a mechanism to increase collaboration and reduce duplication.
- Low level of ongoing crossover of resources between research and training, however co-location said to be important.

## ABOUT THE HIGH VALUE MANUFACTURING CATAPULT

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The High Value Manufacturing Catapult creates the conditions for economic growth by enabling UK manufacturers to achieve significant improvements in their performance and productivity. We do this by providing open access to world-class innovation capability and technical expertise, enabling companies to embrace different ways of working, adopt new technologies and achieve step-change in their performance.

To find out more about the High Value Manufacturing Catapult, please visit:  
[hvm.catapult.org.uk](http://hvm.catapult.org.uk)

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## ABOUT THE GATSBY FOUNDATION

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Gatsby is a foundation set up by David Sainsbury to realise his charitable objectives. We focus our support on a limited number of areas: plant science research; neuroscience research; science and engineering education; economic development in Africa; public policy research and advice; the Arts.

To read more about its work in Education, please visit: [www.gatsby.org.uk/education](http://www.gatsby.org.uk/education)

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The full report is available to download at:  
[hvm.catapult.org.uk/mtfw](http://hvm.catapult.org.uk/mtfw)

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