

**Balancing the Basic, Applied and Commercial R&D in  
Higher Education research in Ireland:  
Building a Flexible and Sustainable National  
Innovation System in an Open Economy**

**Executive Summary and Recommendations**

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## Executive Summary

In response to the call for submissions by the Innovation Task Force, the TSSG has revised an earlier position paper, and made this public on its website<sup>1</sup>. The TSSG is submitting the Executive Summary and the Recommendations from this paper formally to the Innovation Task Force, and would invite the members to read the full position paper.

The track record of the TSSG since 1996 has established a model for the creation of an innovation environment funded from diverse Irish and European research funding sources. The co-location of this full-spectrum of ICT research and innovation with supportive business and entrepreneurial systems expands this core model towards one that may have general applicability to other research domains.

There is a profound tension between the pragmatic model evolved at the TSSG and the established R&D funding models in Ireland. In particular bridging the gap from highly academically focussed research directly to industrial exploitation (e.g. the PRTL/CSET/SRC model) is a major challenge that arguably has yet to be effectively understood. It would appear that in some limited circumstances this transition is possible for larger multinationals. However, SMEs continue to find the established models unsuitable. The TSSG model has evolved successfully to meet some of these challenges. In particular our model builds many intermediary linkages that can act stepping stones for the overall academic/industrial collaboration to mature. This yields a richer eco-system, part funded by the national agencies, part entrepreneur funded, producing a dynamic innovation culture and experience.

Thus the TSSG has established a viable alternative model through the creative use of its funding portfolio, achieving a balanced critical mass of basic research, applied research and commercialisation, and by pushing the boundaries of expectations (driven by a narrow academic view of what research should be like). This has allowed the ArcLabs/TSSG model to flourish. Thus the model has changed the way we think, and we believe that others interested in integrating research and innovation should be trying to do the same.

The paper argues that central Irish funding policy should recognise the efficacy of this model and promote a more integrated approach to basic, applied and commercialisation activities. In our experience the more enterprise-focused agencies have been most supportive of the developing model itself, in particular Enterprise Ireland (EI) and the Industrial Development Agency (IDA), although the latter has no direct funding vehicles for Irish academia or Irish SMEs. The TSSG also appreciates that the academic funding it has won from SFI and the HEA has been critical to its growth, in particular the capital funding from HEA that has allowed for the development of two buildings in WIT's West Campus in Carriganore. Similarly the capital funding from EI was essential to build WIT's Innovation Centre in ArcLabs, and to fund the NGN Test Centre's equipment.

## Recommendations

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<sup>1</sup> <http://www.tssg.org/innovation>

1. Innovation has to be core to the research activity and designed into the research process. Thus more research funding programmes should emphasise innovation as well as research. Thus **Ireland should clearly define the research and innovation model that its policies support**, and this model should recognise the complex non-linear nature of research and innovation, where there is never one simple linear path from an academic idea to a commercial exploitation. The model of a **National System of Innovation** is the strongest candidate in the past policy literature produced in Ireland, and is non-linear. This model should be defined in the Irish context, so it is clear what is meant by it.
2. Ireland should fund research into understanding how Ireland's own National System of Innovation actually operates. Some of this funding should be used to bring in external experts, particularly from Scandinavia where there is a strong history of such research, so that we gather appropriate supporting evidence for works and what does not work in Ireland for stimulating innovation. Many current decisions seem to be based on potentially naïve assumptions and simplistic models.
3. SMEs are the backbone of any economy and therefore Ireland's strategy should be to develop a strong indigenous industry sector in parallel to attracting multinational investment (the current SFI strategy is almost exclusively based on the existing multinationals). This means a radical change in how the big budget projects are designed and evaluated.
4. Ideas for innovation can originate anywhere and we do not have to create all of the knowledge originally in Ireland. We can leverage knowledge that already in the public domain (such as what is already published). Thus it may be a better strategy for a country like Ireland to promote applied research very heavily, as Israel does, rather than to have a very basic-research centric policy, as we currently do. This does not however mean that there should be no basic research funding, a proper balance is what is required, for a healthy National System of Innovation.
5. There is a need for a balanced approach to the allocation of long term research funding (over 3-5 year programmes) to allow research groups such as the TSSG in WIT build strong strategic relationships, engage in knowledge transfer and product development with industry. We feel that EI should therefore fund a Competence Centre (or equivalent) high status programme that is led by HEIs with funding from €5M-€10M over 5 years with strict annual evaluation criteria in terms of industrial impact. The current EI Competence Centre model led by industry is flawed as industry clusters often cannot agree on priorities, or cannot prioritise the Competence Centre to make sure it is delivered - thus a successful HEI has no control of the process that should be designed to support it. This is equally true of the EU Technology Platforms and other so-called industry-led programmes - all are driven by key academics. The trick is to make the proposals industry-focused, with strict evaluation criteria, but allow suitably industrially oriented academic groups to drive the agenda setting. This should include the possibility for capital investment in buildings. This is the only way to get

applied research funding in Ireland to have equal status with basic research funded by SFI and HEA.

6. In terms of national metrics for PhDs it should be formally recognised that there is still a place for masters graduates where there can be greater focus on providing them with the training required by industry and particularly SMEs. The funding programmes for HEIs should be flexible and allow Master or PhD researchers as required by the needs of the programme. Thus our high-level national student targets should not all be about PhDs, and HEIs should receive financial support for MSc (taught) programmes that address clear skills needs for the economy.
7. Any research centre that is exclusively composed of postdoctoral staff will tend to focus on academic criteria and will generally recruit staff members that do not have the required skill sets to innovate, or to directly link up with relevant industrial partners. We think it is very important that Ireland change the assumed staff profile of research centres in HEIs, as the TSSG has done, so that the default is not just to have faculty, postdoctoral researchers, junior research assistants and students. The current assumptions are adequately illustrated by the IUA scales<sup>2</sup>, where the maximum salary that a non-PhD holder can attain is around €40k. When recruiting people with good software design and development experience from industry to create a balanced team able to perform professionally on funded projects these assumptions are a serious limitation to flexibility.
8. In ICT, and in software development in particular, the patent model of exploitation does not really work. If you file a patent and try to license it to industry it will have little value. You need to build commercial grade software, get reference customers, and then the real IPR rests in the code base itself (the software that has been developed). Thus the value is linked to the market value of the spin-out company you have established, not to the patent. Therefore Ireland should prioritise the creation of successful (in terms of revenue generation or in terms of raising VC funding) spin-in and spin-out companies as a metric for exploiting ICT IPR rather than patents.

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<sup>2</sup> <http://www.iua.ie/iua-activities/documents/07scalesdefinitions.pdf>