

The Questions:

1. What are the current policy (or other) opportunities & challenges that Ireland faces in the digital sector?
2. Which emerging trends are potentially dominant in the digital sector?
3. In which niches can Ireland become a world leader?
4. What is the most important strategic investment of relevance to the digital sector that Ireland could make at this point to enhance its competitiveness in the next 10 years?
5. What are the next three steps that Government should take?

Ireland's Digital Future  
A Brief Note on Ireland and the Digital Sector  
Charles J. Larkin on Behalf of the Swan Group<sup>1</sup>

A more appropriate title for the series could be “Ireland: Where to next?” The current challenges to the digital sector are the same challenges that face the entire economy of Ireland. The most important challenge is for Ireland to recognise that there are clear and present changes that need to be made in order to support and facilitate growth. The ever-present temptation is for Ireland to decide to work on matters related exclusively to one area of economic activity to the detriment of all others. Ireland, being a small open economy, has to be aware of two potential dangers; one is hubris and the other is ignorance.

At present the Irish economy is a service economy, with 68.6% of those employed working within the services sector. The challenge for Ireland is to be found in the fact that Ireland still only has 34 Internet users per 1000 inhabitants, this compares with 53 in the UK, 76 in Sweden, 74 in the Netherlands and 67 in the US. When comparisons are made on the issue of Broadband users, Ireland ranks 36<sup>th</sup> in the world, on a par with Latvia and Hungary. Ireland's gross research expenditure is 0.7% of the gross expenditure of the United States in 2004. These stylised facts present a few important subtopics which will reoccur as part of the approach that Ireland can take to growth over the next decade.

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1. Ireland is a service economy. There are clear distribution effects that are the result of a service economy where compensation for those who provide low value-added services is very low and those who provide elite, high value-added services is considerable. This concern was outlined repeatedly by Prof. Robert Reich, who was Secretary of Labor during the Clinton Administration, when discussing the new “symbolic analysts” who will make up the majority of the modern workforce.
2. Ireland still suffers from an infrastructure deficit. With ICT penetration still at low levels, Ireland will be unable to compete with other countries. As the recent increase in the price of oil has demonstrated, transport costs have the potential to increase substantially and quickly, making the presence of a reliable ICT backbone to facilitate commercial activity essential. This basic aspect of the economy is hurting Ireland's competitiveness.
3. Ireland is a small open economy with a spending problem. The continuing infrastructure deficit in Ireland seems at odds with recent public sector expenditure exuberance: Ireland's public expenditure increased 12.4% between 2006 and 2007 and by 9.6% between 2007 and 2008. Where does that money go?
4. Ireland must also be aware of the limitations of its own research and development sector. As outlined in Table 1 below, Ireland's expenditure on research and development is limited and given the gross amount of money spent, the probability of a fundamental, large pay-off result is small. The Irish context is conducive to the application of funds to small, high probability, low pay-off developmental innovation that works with existing technologies and systems. To make large investments in fundamental innovation with the resources available to Ireland would be the same as a member of the Department of Finance taking a significant part of the Department of Education & Science and Department of Enterprise expenditure allocation and playing blackjack.

Table 1.

**Gross Domestic Expenditure on R&D**

County	Millions of Current € (2004)
EU27	143439.93
RUS	5473.04
USA	251254.12
CHN	19099.42
IRL	1840.40

Source: Eurostat.

5. Governance is a significant and largely ignored factor in the development of the Irish economy. At the present time the innovation and education sectors in Ireland are controlled by the Departments of Education and Enterprise and several others on a minor scale. The number of government agencies are considerable: HEA, HETAC, FETAC, FAS, IDA, Enterprise Ireland, SFI, IRCSET, IRCHSS, NCCA and many others. (Also note that the CAO is not a government organisation but a body paid for and jointly run by the seven universities.) Due to a lack of a US-style administrative law system, complete with the ability to appeal to the High Court (the differences in the operations of Comreg and the US FCC comes to mind, both for the consumer and the firm), these organisations are effectively operating without any legal oversight and no single organisation or individual is capable of taking legal action against them. Even the Daíl has very limited powers over such organisations, unless they decide to wind-them-up. The Irish quango appears to be the last bastion of absolutism in Europe.
  
6. Education in Ireland suffers from a disjointed curriculum. The primary curriculum was recently reformed and this reform was largely a success. One of the major failures was the use of ICT. ICT, from the last NCCA review is largely used for basic actions, such as typing and retrieval of reading materials and not in interactive, developmental education. The objective of Primary Education is to provide the students with a basis in developmental and child-centred learning. In other words, that the student learns to acquire and use knowledge but not to constantly memorize facts. The Junior and Senior Cycles of Secondary Education provides a break with child-centred education.

This system, in conjunction with incentive effects of the Leaving Certificate points system (facilitated by the CAO, which turns the desire for courses into a demand driven exercise where qualifications, quality, demand and supply are all confused in one 600 point metric), has turned many students into rent-seekers as they abandon developmental learning and the “deep knowledge” it brings for the maximisation of points. The high points race is further complicated by the fact that the courses with the highest points are in the protected sectors of the economy, further compounding the desire for rent-seeking students to become rent-seeking adults and to foster a rent-seeking economy which is in their future interest. Entrepreneurial activity is stifled in this environment. This rent-seeking and risk-averse behaviour continues into the university sector. It is crucial to remember that most of the cognitive and non-cognitive development of children takes place below the age of 12 and has an economic impact throughout their working lives. (See Nobel Laureate James Heckman for more on this topic [NBER Working Papers 11,331 & 14,064].)

Given the nature of Ireland's initial foray into the world of research and development, it is clear that the State was well intentioned and made significant inroads in the development of certain aspects of research infrastructure. This infrastructure was to be supported by the influx of firms from the multinational sector to provide further operational funds and build upon the pre-existing capital. The impact of this was to create a hardwired “Matthew Effect” in the development of the predetermined areas of funding by SFI, IRCSET, IRCHSS, IDA, Enterprise Ireland and PRTL.

Question 2:

The major areas of advancement will be quantum computing, cryptography and self-adapting programmes. Ultra mobile computing will become more important. ICT production will continue further down the road of commoditisation.

There will be additional refinement of applications in the areas of financial services and engineering technology.

Question 3:

Ireland has the potential to enter into many different aspects of the product refinement and delivery stage of R&D (high probability of success, low cost, low but consistent payoff) and in financial services where innovations are largely reliant on human capital and not extensive physical resources. The limited financial support and limited personnel in the area of Mathematics (which does not receive the same financial and institutional preferential treatment as applied physics and engineering) has undermined the ability for Ireland to provide significant support to areas like cryptography, advanced computing, etc.

Question 4:

Investment decisions:

1. Overhaul of the ICT infrastructure of Ireland. Ireland had a greenfield advantage when the P&T invested in a new phone system in the late 1980s and early 1990s. Ireland must move to a fully fibre-optic system within the next decade.
2. A reform of the Leaving Certificate and the abolishment of the CAO point system in its present form to be replaced by a system with a greater focus on prerequisites.
3. Increase on the quality of teaching at all levels of education with comprehensive supports for in-service development at all levels. In addition a fund must be developed to solve the pensions crisis developing in primary and secondary levels (which are paid from current vote expenditure) and the crisis that already exists at the university level.
4. The development of an institute of advanced study (which can develop from an existing non-university body) which has all subjects but with the express purpose of only engaging in research and mentoring a small cadre of postdoctoral apprentices.

Question 5:

1. Public expenditure must be curbed, immediately and a permanent department created within the NTMA to engage in forensic accounting and cost-benefit analysis exercises of all government departments, quangos and projects.
2. Consolidation and elimination of the various education & innovation quangos and new comprehensive legislation for the universities, IOTs and education and research organisations in Ireland, with special attention to governance. In addition the government must make a determination on what the purpose of the education system is and the purpose of the universities – are they there to teach students comprehensively, certification factories, economic training centres or research centres with a limited responsibility to educate.
3. The development of a US system of administrative law which will have all elements subject to appeal to the High Court. This will have the ability to address many of the problems that exist in the areas of education, innovation, communications and the health sector. Good and effective governance is necessary before any expenditure takes place, otherwise it will be wasted.