

## The 10 Hot Software Innovations to Impact Business & Organisations Today



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This paper draws attention to the benefits that innovation has on businesses and organisations. It reviews the importance of innovation to Ireland in the context of the international competitive environment and how Ireland compares. The main focus of the paper is on the Top 10 Software Innovations of today, how the software industry has innovated and how these innovations enable innovation in end user organisations.

### A Smart economy enabled by innovation

[Ireland's framework for rebuilding our economy](#) in a sustainable way has 5 key action areas of which one is "Building the Ideas economy – Creating the Innovation Island". As a key area one might argue that if we look at our economic situational context; innovation will be required to underpin each of the 5 key areas identified in the Framework.



1. Meeting the Short-term Challenge – Securing the Enterprise Economy and Restoring Competitiveness;
2. Building the Ideas Economy – Creating 'The Innovation Island';
3. Enhancing the Environment and Securing Energy Supplies;
4. Investing in Critical Infrastructure;
5. Providing Efficient and Effective Public Services and Smart Regulation.

One of the most recent and comprehensive Global Innovation Studies "[The global innovation index 2009-2010](#)" produced by INSEAD and the confederation of Indian Industries, rates Ireland in 19<sup>th</sup> place overall on a global basis out of 132 countries and rating 60 variables.

These variables are divided into two categories: (*Ireland's ranking*)

1. Innovation Input Index (19)
  - i. Institutions (Political & Regulatory Environment, Conditions for business) (15)
  - ii. Human Capacity (Education system, output, innovation) (16)
  - iii. ICT & Infrastructure (Availability, Uptake & Usage) (30)
  - iv. Market Sophistication (Investment and Credit) (11)
  - v. Business Sophistication (Firm Innovation, Ecosystem and Competition) (17)
2. Innovation Output Index. (18)

- i. Scientific Outputs (Knowledge creation, application, exports and employment) (21)
- ii. Creative Outputs and well being (Creative products, services, social welfare) (16)

Iceland was rated number 1 in this most recent survey with innovation at the forefront of their plan to rebuild the economy from a difficult position. Also on this list are the usual suspects such as Sweden, USA, and Hong Kong, all placed in the Top 15 with established track records where innovation is the primary driver in their economic success. Through these examples we must understand the importance of innovative growth and the competitive landscape for our economic revival here in Ireland.

*"Our study underscores the fact that successful countries today are not necessarily large geographically speaking or richly endowed with natural resources, nor ones able to project military power internationally. Increasingly, they are ones that have managed to expand opportunities for their populations through the full exploitation of the opportunities afforded by the world economy through international trade, foreign investment, and the adoption of new technologies. A common strand that runs through all of these developments is of innovation at its holistic best. At the outset of the 21st century technical change and innovation have become the dominant characteristic of our time. Therefore, innovation is the game-changer, as Brazil has proved with its nationwide ethanol improvisation. Innovation is green as Iceland has proved with its geothermal revolution. Innovation is global as Google or Taiwan's chip industry has undeniably proved. Innovation is inclusive as Bangladesh's garment workshops have proved. But most importantly, the concept has changed to become the centre point of a survival strategy for the smallest enterprise to the largest nation." © INSEAD – Report excerpt*

### **What is innovation?**

There are many different definitions and descriptions of innovation, the one we prefer is "An **entity** (Person, Group, and Organisation etc) **creates something** new (incl improved/different) which has a perceived value from another entity that is converted into real **value** for the stakeholders of the originating entity."

### **The key words:**

**Entity:** *Implies a person or groups of people fundamental to innovation*

**Creates:** *Implies Creativity and Production*

**Something:** *Implies the output can be anything, product, service, process, structure, view etc.*

**Value:** *Implies satisfaction, a return, a benefit to an entity/society*

Interesting to note several of our hot 10 software innovations are actually facilitators of human innovation and creativity in particular social media and how it releases talent.

### ***Conclusions for Ireland's smart economy***

In looking at all the available studies, it's clear that innovation is acknowledged in society and has potential to create sustainable economic performance. The many economies that have a holistic view of innovation in their society and culture are likely to gain an advantage in a very competitive world. Holistic innovation means two things 1.) It's endemic in the people and culture and 2.) It's systematic in that the environment enables supports and encourages innovation.

Finally it is people who innovate, so how we stimulate and accelerate innovation will centre around how we develop our people, and the entities they engage with or operate in on a day to day basis whether Public or Private sector, NGO or Education.

[IDC Top 10](#) predictions reinforce our view that the current hot software innovations will see focus and growth over the coming 12 to 18 months. [The Capgemini 2009 global CIO report](#) "Digital Winners" are those organisations who have weathered the economic turmoil and are coming out stronger than average are those who have innovated and view technology as an asset for leadership.

That said one persons innovation can enable the next persons "innovation opportunity" and for this reason we want to look at 10 Hot Software related innovations which are impacting business and organisations today.

### **The 10 Hot Software Innovations impacting us today**

If I said Mobile Social Media in the cloud I hit the top 10 Hot innovations, as we look at each it's important to understand briefly the software industry innovation and the impact for the end user where value is derived. In no order of priority or importance

- *Software as a Service (SaaS)*
- *Platform as a Service (PaaS)*
- *Infrastructure as a Service (IaaS)*
- *Web 2.0 & Social Media*
- *Mobile Computing Applications*
- *Open Source*
- *Agile*

- *Service Orientated Architecture (SOA)*
- *Connecting with high bandwidth*
- *Disaggregation of the value chain*

**1. Software as a Service (SaaS):** Software developers in effect host and rent the application for the user, eliminating large up front procurement costs, allowing rapid switch on and off of features and functions, and scaling as the business demands. It is basically a “pay as you use” model. The end user only pays for what they need when they need it and, they can manage their software needs via an on line relationship end to end if desired. There can be some draw backs for the end user, in that the level of customisation they have previously been used to may not be available, however they gain the benefit of new features and functions with future proofing from the vendor as he services the greater user community (market). If an organisation has used/developed software to gain differentiation and/or competitive advantage then there is a less likelihood that they will find this advantage in a SaaS solution. The bottom line is that organisations accept sharing a platform potentially with their competitors if its not core to their competing. The benefits for the s/w industry are that they create enduring relations and annuity revenue streams from clients and, have one set of infrastructure and platforms to manage and support versus many distributed install bases. (e.g. [www.Salesforce.com](http://www.Salesforce.com) , [www.microsoft.com](http://www.microsoft.com) (MS Online))

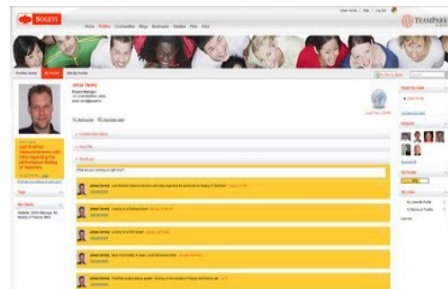


**2. Platform as a Service (PaaS):** Again the model is similar to SaaS but is now available to software developers, whether their core business is software or they are developing business applications for their own organisation. In effect the Platform Provider rents the design, development and test tools and environment to the developers. There are no up front infrastructure or license costs and risks. Through on line web interface the programmers can in effect buy the full development environment, languages, components, databases, tools etc. As the user and buyer of these services there is a significant overhead reduction in that capacity can be purchased as needed, all the basic system administration, monitoring and support functions are provided by the vendor so the user can concentrate on building the business application. (e.g. [Amazon web services](http://Amazon.com), [Google Code](http://Google.com) and [Collaboration in the Cloud](http://Collaboration.com))

**3. Infrastructure as a Service (IaaS):** Modern Hardware platforms enabled by virtualisation and security software have become highly configurable and adaptable. In effect at the touch of

a button IT resources can be enabled, scaled, changed or upgraded for a user or organisation. With web enabled management software technology you can in effect start a new company and on day one, with a credit card, buy a set of IT resources on a rental basis. Once purchased the platform is immediately accessible enabling, adapting and scaling on a just in time basis. With this model you only pay for what is used opposed to investing in something you may or may not ever use. (e.g. [Amazon Elastic Compute Cloud](#) (Amazon EC2))

**4. Web 2.0 / Social Media:** Social media, platforms, and networks are one of the fundamental components of Web 2.0 which has and is changing the way people, live, work and communicate. Web 2.0 is about dynamic web pages, personalised pages and information and knowledge sharing. Whether it's social or business the platforms have changed the speed at which we can find or impart information and knowledge, they have also enabled mass social co ordination and collaboration. From an organisation perspective there are 3 core streams of innovation and productivity enhancement enabled by social media platforms whether public or private. Creating an internal platform for staff globally to change the way they work, communicate, share and re use information, Lotus Connections being one of the leading platforms. Trans organisation collaboration is where many different organisations need to work together towards a common goal. It could be charity or aid organisations mobilising to address a global disaster, an academia, semi state or private sector working for specific common economic development agendas and finally the external organisation platform where your organisation engages with its external stakeholders and customers perhaps crowdsourcing, engaging active and dynamic research on an ongoing basis with your clients. [TeamPark](#) is a structured approach to drive business and cultural change in the way we work enabled by social media platforms. (e.g. [Lotus Connections](#), [Me the Media - the Rise of the Conversation Society](#), and [TeamPark](#))



**5. Mobile Computing:** Smart portable phones such as the iPhone or Blackberry are just some of the everyday devices billions of people have world wide , how and when we interact with computer systems is more defined now by the applications we have on our mobile devices than availability of the device or its location. Knowledge workers can be connected to their collaboration platforms and corporate knowledge bases on the road. Enterprise applications are now extended to have mobile access thus increasing quality, flexibility, speed and performance of the

organisation. The Sales person can enter an order just taken while with the customer, credit ratings can be checked, the service engineer can be re directed to an emergency repair, the social worker can update a case and initiate a new workflow on the go. One challenge for now is that there are multiple operating platforms for mobile devices so often an application may have to be ported for several device types. The mobile platforms we use day to day are enabling the convergence of social, personal and business technology and applications. The intelligence enabled allows dynamic information and applications that can adapt to stimulus from the environment and personal usage profiles in addition to rich location based service applications. (e.g. [Mobile Application Solutions](#))

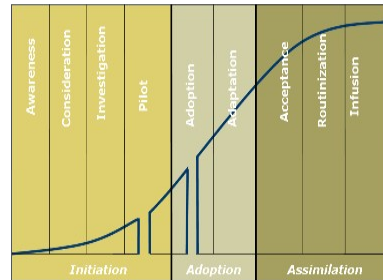
**6. Open Source:** Perhaps the first truly mass collaboration and innovation environment coming directly from software professionals and stakeholders. It is software just like any other but free of license costs. Open Source is a software that comes with a license that provides the user with certain **freedoms:**

- freedom to **use** for any purpose
- freedom to **copy** the software
- freedom to **view** and **modify** the source code
- freedom **re-distribute** modified versions.

There are several definitions and there are licenses but in effect the software innovators make their products and tools available free of charge to anyone to use and build upon. The only obligation you have is that if you develop or enhance the software you make it available back to the community.

Proponents of Open Source suggest that the solutions are more feature rich, perform better and are more robust as they have been developed continuously in the Open Source software community. I think I can safely say that virtually any piece of proprietary software you can purchase has an alternative free and Open Source equivalent such as Linux (Unix), OpenExchange (Mail), CMS (Plone), ERP (Compiere), CRM (SugarCRM), Database (MySQL) . For more information [www.openforumeurope.org](http://www.openforumeurope.org) and [www.openapp.ie](http://www.openapp.ie).

**7. Agile:** The evolution of software development has gone through many different phases once recognised as a core engineering discipline then frameworks for building robust, reliable and interoperable software evolved. However the agility, flexibility, usefulness, usability and availability of the software was not always what was expected. The move to agile development which does not undermine good software engineering practice but focuses more on business and development stakeholders working closely as a team. This newly formed team is required to design, build, test and put into operation useful software in small, short deployment cycles focusing on time boxes rather than functional packages has given significant advantage to many businesses. Focus is more on user involvement and user functionality availability, quality, and flexibility. The [Agile Manifesto](#) is:



*"We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:*

- *Individuals and interactions over processes and tools*
- *Working software over comprehensive documentation*
- *Customer collaboration over contract negotiation*
- *Responding to change over following a plan*

*"That is, while there is value in the items on the right, we value the items on the left more."*

#### **Drivers for Agile**

- Commercial
  - Faster time to market/deployment for new software products and services (**competitive advantage**)
  - More accurate matching of software functionality to customer needs (**value\* creation**)
  - Ability to operate in a fast changing environment (**respond to change**)
  - Improved software release quality (**e.g. reduced defects**)
- Fashion
  - Staying with current trends (**employee retention & satisfaction**)

**8. Service Orientated Architecture (SOA):** SOA is a framework for integrating business process and supporting IT infrastructures as a secure, standardized set of components/services that can be re used and combined to address changing business priorities. Like Agile SOA it is a means rather than an end, in that it is an approach that aligns IT to enable business performance and/or competitiveness. SOA is about how IT should be organised and used rather than the narrow definition of "Having an architecture based on services". The seven easy concepts taken from [SOA for Profit](#) are:

- i. **Componentize** – A small block of processing that can be call upon to support something the business does to add value (A service)

- ii. **Agree how you do things** – Integration is key, how people and groups collaborate and how components will work together, standards are important.
- iii. **Use what you have already** – reuse means less technology to maintain, less cost, bugs, hardware, software license, skills. It means less technology and changes are easier to make, so more IT agility.
- iv. **From made to order to infrastructure** – The availability of tools kits, and options to buy a service move innovation and productivity of developers up a level, so they “buy, before reuse, before build”
- v. **Facilitate change and continuously improve** – this is leveraging the stable building blocks of SOA such as components and services infrastructure and architecture to be very agile in IT responding to changes in business needs.
- vi. **Do it for a business reason** – It’s about defining services that support real business functions (capabilities). IT becomes more business orientated
- vii. **React to the environment** – this is about synchronisation across the value chain where IT can and do react when changes occur in the business environment rather than synchronisation into weekly, monthly batches of work to be planned and executed.

**9. Connecting with High Bandwidth:** Though connectivity is underpinned primarily by hardware innovation, making available this bandwidth to users and applications and deriving business and societal value only happens because of system and management software that removes complexity, allows robustness, reliability and flexibility to us all. Mobility and Wireless access any place any where any time and are now becoming the norm both in our normal social and business lives. The devices we have and use now have multiple ways of communicating with other devices, networks and network access points. A simple smart phone will potentially have a minimum 6 types of connections GPRS, 3G, WiMax, WiFi, Bluetooth, IR. The underpinning embedded software access continues to develop, optimise the value for the user and accelerate the quality of service every day. Social users want to be connected to their online communities and will pay for applications that enrich their access or lives, while businesses want to improve their connection with partners, customers and markets through extensive mobile access creating differentiation and revenue streams.

**10. Disaggregation of the value chain:** Including the software supply value chain. If we consider an example of the disaggregation of the value chain allowing for greater stakeholder value creation, how has software itself enabled this continuing

process!? Industrialisation of the software development and delivery process, enabled by decentralised and globally integrated computing (ERP/CRM business and back office systems), automation and integration of each stage of the process and the code from requirements management, through to production acceptance testing. SAP/Oracle and now SaaS office productivity toolsets continue to evolve as do Rational and HP toolsets for the management of the SPDL process. The outsourcing, near and or off shoring of the software development or test process has been enabled by a whole set of software solutions that break down the barriers of time, culture, geography and to a lesser extent language:

- ERP
- SPDL
- Collaboration
- Web conference & meetings  
(e.g. [Rightshoring](#) and [MTS Development](#))

## Conclusion

Various analyst surveys and reports have highlighted the benefits innovation has on a countries overall growth and in particular their economic growth. In the Global Innovation Studies Ireland comes in 19<sup>th</sup> place out of 132 countries. It is clear we are on the right path of rebuilding our economy but it is imperative that we continue this growth through innovation.

Again we emphasize The 10 Hot Software Innovations of today:

- Software as a Service (SaaS)
- Platform as a Service (PaaS)
- Infrastructure as a Service (IaaS)
- Web 2.0 & Social Media
- Mobile Computing Applications
- Open Source
- Agile
- Service Orientated Architecture (SOA)
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Consistent with numerous studies we at Sogeti see these 10 Hot software related innovations as driving and facilitating economic recovery. These are essential innovations in the software industry that create value within that industry directly as an important segment but more importantly enable performance and competitiveness within the public and private sector.

## Related links

### Sogeti

- [Me the Media - the Rise of the Conversation Society](#)
- [TeamPark](#)
- [Agile Services](#)

### Other

- [\*\*\*The Global Innovation Index Report 2009-2010\*\*\*](#)
- [IDC Top 10 Predictions](#)
- [Capgemini Global CIO Report 2009](#)
- [Amazon Web Service & Google Code](#)
- [Salesforce](#)
- [MS Online](#)
- [Lotus Connections](#)
- [Mobile Application Solutions](#)
- [Open Forum Europe](#)
- [Open App](#)
- Amazon Elastic Compute Cloud ([Amazon EC2](#))
- [Rightshoring](#)
- [MTS Development](#)

## About the author

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Declan Kavanagh is CEO of Sogeti Ireland. Prior to joining Sogeti, Declan co-founded Insight Test Services in 2003. Declan has had a highly successful career in most facets of the IT industry, including hardware, software, professional services and consulting. He has extensive experience in delivering and managing software and hardware development and associated quality assurance. He also has a particular interest in related areas such as innovation, collaboration, outsourcing, and managed services.

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