ACCELERATING RESEARCH FROM IDEAS TO INCOME
Annual Report 2008-2009

www.ndrc.ie
The National Digital Research Centre is an independent enterprise dedicated to accelerating research from idea to income. Our collaborative approach with technology and business innovators drives greater collective success while cultivating bolder attitudes towards invention and investment.
NDRC (National Digital Research Centre) is about making the emergence of Irish digital success stories less the exception and more the rule. As an independent, not-for-profit, centre of excellence, NDRC is developing footholds that technology and business innovators need to scale between the world of ideas and the cliff face of commercial investment and real world success. At its very simplest, NDRC is about future indigenous job creation and companies’ market value.

NDRC is the sole collaboration centre in the country where all research activities have a clear commercial objective, with commercial expertise directly engaged in each project. The unique nature of NDRC is central to its ability to address the challenge of commercialisation.

On a day to day basis NDRC is actively sourcing the best entrepreneurs and researchers, accelerating their late stage research ideas to the marketplace and driving collaborations and relationships with industry partners and venture investors. Its current project areas range from education and entertainment, to healthcare and the environment.

In 2008-09, NDRC’s first year of project operations, it has over 100 people in late stage applied research, 14 commercial partners and 26 academic investigators – proving that NDRC is fast becoming a centre of significant scale in the race to turn digital ideas into income. This is a critical part of the Government’s framework for sustainable economic renewal in the form of the Smart Economy, namely ‘Building the Ideas Economy – Creating the Innovation Island’ and ‘Securing the Enterprise Economy.’

The above highlights of the past year give a sense of the tremendous progress that has been made in NDRC to bring it from a green field starting position to a vibrant enterprise. This would not have been possible without the outstanding and committed efforts of NDRC’s staff and management team, and our Board of Directors. On behalf of the Board of Directors, I would like to congratulate CEO, Ben Hurley, and the entire NDRC team for their excellent work over the past year and the achievements they have accomplished.

I would also like to express my gratitude and personal thanks to the Board of Directors of NDRC, which includes academia and industry players and has taken shape from its diverse origins to provide solid, transparent governance of the affairs of the company, as well as hands-on assistance to management and staff in the planning and execution of NDRC’s activities. The Board members all fulfil their duties as directors of NDRC on a pro bono basis, and for this I offer my personal thanks.

Finally, I wish to express appreciation to the Department of Communications, Energy and Natural Resources. The Department has been very supportive of NDRC throughout 2008-09, both at Ministerial and Senior Management level. The Government’s Smart Economy and the Knowledge Society are aligned with NDRC’s vision and mission, and we look forward to working further with the Department and their colleagues.

As NDRC looks forward, it is embarking on a second phase of investment in an environment where we and our potential collaborators face tough times. We recognise that in a time of global economic recession, those who choose to innovate are those who are focused not only on surviving the downturn but on collaborating to emerge in a stronger position. It is therefore timely that NDRC’s programmes, research and investments are producing a practical approach that business, research, investors and Government can use for economic and social benefit.

To conclude, 2008-09 was a very good year for NDRC; it was the critical year of operational establishment for the enterprise. It has been an inspirational pleasure to serve as Chairman of the Board of Directors and to be part of the emerging and evolving NDRC story.
IN THIS, NDRC’S FIRST ANNUAL REPORT, we outline the foundations built for the future success of the centre’s ambition: to drive the commercialisation of innovation by accelerating research from ideas to income. Building on our unique collaborative partnerships with an extensive network of outstanding partners, people and programs we have positioned NDRC to play a critical role in Ireland’s future economic prosperity.

As an independent enterprise dedicated to cultivating bolder attitudes towards invention and investment, NDRC is addressing the crux of the innovative technology transfer challenge, namely the chasm between promising research outputs and investable product opportunities. Recognised internationally as a key challenge, where many promising ideas succumb to the difficulties, this gap between the research lab and the industry environment is particularly wide in Ireland. NDRC’s collaborative approach with technology and business innovators drives greater collective success to bridge the gap between Principal Investigators on the one side and Venture Investors on the other. It leverages ideas, and transforms discovery to enterprise. The NDRC approach seeks to capitalise both on Ireland’s unprecedented investment in R&D under the country’s strategy for Science, Technology and Innovation, and on the country’s progressively maturing and innovation-aware industry and entrepreneurial sectors.
As a new entity, NDRC’s strategic objectives concentrate on establishing and positioning the centre within the innovation ecosystem in Ireland and preparing the enterprise from the outset to leverage the potential for continuous learning. The progress from green field start-up to a well established centre has been remarkable. A twin track approach entailing both development phasing and investment phasing has enabled NDRC to build a strong team and instantiate its processes, and to create a translational research platform with potential. The phased roll-out approach enabled NDRC to advance from its early stage aspirational foundations to an emerging but solid platform comprising pragmatic processes; a translational research base with compelling potential; and strong engagement with approximately 140 people directly involved to varying degrees in NDRC activities.

‘I am motivated to work with NDRC because it provides the opportunity to identify, create and build innovative, scalable, blockbuster ideas and companies out of Ireland.’
Mark O’Donovan, Raglan Capital

In short, the accelerated commercialisation of research ideas is being achieved through a unique range of management, legal, collaborative and evaluation tools, many of which have been put in place in this initial period of operation, and all of which ensure the most effective ecosystem for multi-disciplinary and multi-party research. A key differentiator and a unique attribute for NDRC is the fact that NDRC acts as a participant in the activities carried out under its auspices rather than just as an agent.

This differentiator is also a crucial element of how NDRC works. We assume a nexus role positioned at the centre of the triangle of academic research, industry innovation and venture investment. A selection of our collaborations, in the form of what are in effect unincorporated joint ventures where real and trusted collaboration takes place, are presented throughout this report. This nexus role is more than a networking hub: it is an amalgamation of the capabilities of all three critical players – NDRC has an applied research capability that enables peer relationships with other research centres, a commercial development capability that reflects the capabilities of industry partners, and a translational research investment fund that is managed in a similar way to very early stage, high risk venture capital. This unique combination enables NDRC to better meet the needs of its translational research collaborations.

NDRC’s nexus positioning is also relevant to our other stakeholders such as Government and State Agencies. We have collaborations with several Science Foundation Ireland (SFI) supported centres and clusters, and with multiple Enterprise Ireland (EI)
client companies. A number of IDA Ireland partner multinationals and EI provide insight and expertise through NDRC’s board. Active liaison between NDRC as an independent entity and its state partner in the form of the Department of Communications, Energy and Natural Resources ensures good alignment between national policy and entrepreneurial pragmatism.

‘NDRC is absolutely central to the vision and mission of IADT. We cannot achieve this vision alone and NDRC presents the best possible model for collaboration and for the achievement of industry/commercially-relevant outcomes in the digital convergence space.’

Jim Devine, Director, IADT Dun Laoghaire

Another differentiator for NDRC is our focus on Collaborative Translational Research (CTR) as the central means through which potential innovations are realised. In our drive to accelerate research from ideas to income the critical issue is not the source of the idea but the confidence in its value potential that is informed by intimate collaborations between industry and academia. However, even great ideas with great potential backed by strong collaborations are yet dependent on execution excellence. NDRC’s translational expertise is embodied within its resources and processes that enable technology advancements to be made hand-in-hand with commercial development and exploitation. This hand-in-hand approach of technical and commercial progress being made both concurrently and interdependently is the ‘Translational’ in Collaborative Translational Research.

The uniqueness of NDRC’s nexus position comes through in what NDRC means for each partner. For industry, NDRC provides a trusted partner for the pursuit of higher risk but potentially game-changing research initiatives as part of the industry partner’s own research strategy. For academic partners, we are an active, participatory collaborator that complements their own expertise and increases the prospects for success in the process of commercialisation through translational research. For the investment community, NDRC provides de-risked investment opportunities through product validation and business planning. For all three constituencies NDRC bridges existing gaps, reduces the requirement for a ‘leap of faith’ and provides a credible brand and framework under which creative innovation can succeed.

‘Ireland needs some entity to bridge the gap between innovative research and innovative products. The bridging of this gap will create Ireland’s economic future.’

Mark Keane, Chair of Computer Science, University College Dublin

The year 2008-09 was an impressive one for NDRC. In the period, NDRC created a unique context and expertise for facilitated technology transfer comprising expert resources, capable and effective processes, and a true ‘centre’ of collaborative innovation. Moreover, we established a €12m platform of Collaborative Translational Research, comprising €10m NDRC investment coupled with €2m contribution from other sources. This 20% leverage for a new entity playing in a high risk space indicates the degree to which there
It’s critical that we provide environments for industry and the HEIs to work together. These engagements need neutral space, financial incentives, and in many cases some mixture of mentoring and external monitoring. NDRC provides these, and acts as a route to commercialise HEI research, and even more importantly, it links companies with technical challenges to academic research groups with experience that can help. NDRC is a unique centre in Ireland, with these as its primary goals, and this provides the strong interest for me.’

Sean Baker, former CTO, Iona Technologies Ltd.

Given the foundational nature of the year in review, it has been a year of many firsts, and many more achievements that are best exemplified through our Collaborative Translational Research projects that appear as case studies throughout this report.

It has been a singular honour and privilege to lead the development of NDRC, particularly in terms of the opportunity presented to build and work with a motivated and expert team that is excited by the opportunity to be part of an enterprise focused on fundamentally changing the dynamic for government sponsored research in Ireland, and creating an accelerated path to commercialisation. I would like
to take this opportunity to congratulate all our employees for their successes and dedication over the past year. I also wish to thank our Chairman, Paul McCambridge, and our Board of Directors – all experts in their fields who bring strategic insight, tremendous experience and great commitment to their roles. Our joint efforts, both now and in the years to come, will be of critical importance to Ireland’s economy, its indigenous and foreign businesses, and its people.

Last, but by no means least, I reserve a special word of thanks for our industry and academic partners in our endeavours to create market value. The potential of partnering with NDRC is open to a broad spectrum of players in both industry and academic circles. Those who stepped forward did so as pioneering partners with NDRC, and demonstrated both quality of ideas and openness to the challenge of innovation.

‘I am involved as a Board Member to contribute to the development of NDRC in its innovative approach towards commercialisation of research through targeted partnerships between academic and industrial teams supported by the business, marketing and technical expertise of NDRC’

Eugene Kennedy, Vice President for Research, Dublin City University

I also wish to thank the five member institutions of NDRC, namely Dublin City University, Dun Laoghaire Institute of Art, Design and Technology, the National College of Art and Design, Trinity College Dublin, and University College Dublin. Having succeeded as a consortium in proposing the initial vision for the centre, their willingness to have that early vision shaped by both industry experts and the commercial expertise of the centre, and their openness to other institutions participating strongly in the centre, are hallmarks of their collaborative intent and commitment to commercialisation.

‘I am motivated to contribute as an experienced executive in digital media, in order to turn NDRC into a success. My role as Board member provides a unique position for Ericsson to understand the opportunities, the market direction and the potential interests the company may leverage in Ireland’

Jean-Marc Soustre, Director of Multimedia, LMI Ericsson

While being pleased to report impressive progress at NDRC, we know that more progress is yet to be made and that more successes, inspiring collaborations and innovative initiatives lie ahead for NDRC. The centre will expand upon its work with researchers, industry and investors to bring new programmes and further follow-on investment into the frame, and to optimise the potential for previous investments in R&D to be converted into success in the global marketplace. Together with our partners and other stakeholders, NDRC is playing its part in creating the environment for systemic innovation in Ireland led by dynamic innovators with fresh ideas and bold vision.
THE WORK OF NDRC spans four application areas: education, entertainment, healthcare and the environment. These important application areas for both the economy and society reflect some of the most interesting digital convergence domains, and NDRC is now seeing ideas emerging not only from computer scientists and electronic engineers, but from health researchers and clinicians, education professionals, content developers, and designers.

To deal with some of society’s biggest challenges, innovators are using digital technologies and digital content to provide answers. NDRC is working with these people to understand where the solutions might come from.

Our healthcare-related projects represent 40% of our platform and span: development of new clinical systems and medical devices; interactive systems to deliver treatment programmes for patients; health informatics to better manage the scale and level of data for clinical decision making, and platforms for streamlining delivery of training to healthcare professionals.

Within our education-related projects we are developing competencies in new technologies for education and learning. Working with a range of partners we’re creating new spaces for learning through web, mobile and virtual worlds as well as developing supports for teachers. We have 5 education projects, representing 15% of the platform.

Entertainment projects represent a further 40% of the platform and span our work with games publishers on new tools for gaming developers, work with audiology experts to enhance personal

CONTINUED ON PAGE 11
Case Study

Heartphone

Remote monitoring for effective management of congestive heart failure

Heartphone is a unique connected healthcare solution capable of intelligently monitoring congestive heart failure patients in their own home. Heartphone is a mobile enabled healthcare system capable of monitoring, managing and accurately tracking ‘at risk’ changes in the weight of congestive heart failure patients remotely. This improves overall management of the patient through connected care, reduces healthcare costs associated with chronic heart illness and reduces the number of visits by patients to hospital.

Team

John Cogan  Device Communications Engineer
Conor Hanley  Project Committee Member, BiancaMed
Lorraine Lawlor  Clinical Nurse
Helen McBreen  Commercial Development Associate
Ken McDonald  Project Committee Member, Crofton Cardiac
Scott Rickard  Project Committee Member, UCD

HeartPhone is a collaboration between NDRC, BiancaMed, Crofton Cardiac and UCD
CASE STUDY

DViz

DViz enables business users to interact with and interrogate their data in a streamlined, easy to use, real-time, online environment.

While a picture may be worth a thousand words, having the right pieces of data associated with that picture can be invaluable to IT professionals and business managers alike. DViz works by facilitating the contextualisation of statistical data in real-time using dynamic visualisation technology, enabling business users to create and interact with dynamic real-time visualizations based on complex data matrices. The end result is more effective decision making based on consistent real-time analysis.

TEAM

Ajit Baht Research Assistant
Martin Jamrozberg Research Assistant
Majella Murphy Commercial Development Leader
Hilary Kenna Project Committee Member, IADT
Gabrielle Stafford Project Committee Member, Twelve Horses
Andre Manning Software Engineer
Aaron Quigley Project Committee Member, UCD
Roberto Schioppa Research Assistant

DViz is a collaboration between NDRC, IADT, Twelve Horses and UCD
entertainment experiences, work with next generation social networks to place the user needs more centrally, and work with mobile technology providers to better deliver location-based content.

Our environmental focus has been slower to develop, We’re constantly ensuring our digital developments take account of the latest improvements in Green IT and our upcoming projects have an even stronger focus on energy efficiency and carbon reduction. We’re working with multinationals to develop these areas, with the providers of new cloud computing platforms and data centres, and we’re developing international connections to ensure low carbon energy supports innovations in IT.
MARKET & COMMERCIAL EXPERTISE: COLLABORATIVE INNOVATION

WORKING WITH industry and research institutions, NDRC analyses and assesses new and emerging technologies, market need, and opportunities within the economy’s most important sectors. Supporting the development of ideas, we bridge the gap in knowledge, expertise and financial support that separates innovations from the marketplace.

Our teams include product management, business development, engineers, content and domain specialists, designers, and expert researchers. In each project, NDRC’s own translational research leaders and commercial development associates reinforce understanding of the market and an agile approach to technology development.

The sole aim of commercial development at NDRC is to develop and realise the commercial prospects of NDRC’s investments. NDRC’s commercial team comprises an adept group of fulltime professionals together with a number of consulting and part-time resources. Each NDRC project has at least one commercial development team member working directly with the project’s scientific and engineering staff and its Principle Investigators.

A substantial part of the function involves analysis of the market for the project output, and then feeding market requirements back into technical development. This occurs through a combination of direct market research, such as discussions directly with potential buyers, as well as indirect analytics using intelligence gathered from commercial databases, conferences, and research papers. Another vital role is in helping form the business plan or licensing plan that will carry the project forward beyond its immediate tenure at NDRC. Additionally, the team has a major role in developing commercial and other relevant relationships to develop effective partnerships and routes to market for project outputs.

In the last six months NDRC has developed and rolled out a detailed commercial deliverables framework that helps achieve consistency of work across projects as well as setting expectations for Commercial Development contribution to project success. To date we have delivered almost 30 separate commercial deliverables within the framework. We have also built out the team substantially and made significant progress in integrating commercial activities into existing and incoming project plans.
Winnow is a platform for enabling the automated appraisal of trustworthy and relevant content in Internet environments. There is a wide and varied range of information available on the web and online forums, social networks, and many other channels all provide an effective communications mechanism. However, attributing trustworthiness to such communications and subsequently deriving a relevant set of communications is a difficult appraisal task. Winnow provides an architecture that is used to automatically appraise and select trustworthy and relevant content from the Web.
CASE STUDY

Comenius

Online article ranking and retrieval tool for multi-lingual search

Comenius will develop a platform to generate learning content for second language acquisition that will aid both second language learners and teachers. The Comenius tool will retrieve online articles in a specified language, on a requested subject and at a requested difficulty level from the web. Providing a linguistic analysis of the article at the word, sentence and discourse level, it will be used to automate the generation of learning content. Comenius brings together academic techniques for linguistic analysis with a practical software approach to automate a process that can be both labour-intensive and expensive.

TEAM

Joseph Allemandou, Postdoctoral Researcher
Noel Fitzpatrick, Principle Investigator
Tina Hedayet, Commercial Development Associate
John Kelleher, Principle Investigator
Brian MacNamee, Project Committee Member, DIT
Eamonn Newman, Postdoctoral Researcher
Louise Veling, Domain and user trials lead

Comenius is a collaboration between NDRC and DIT
Following a successful first phase of investment, NDRC has launched three programmes in our second phase of investment, recently calling for proposals as a first action in our second phase of investment (2010/11).

This investment phase will signal a new chapter, implementing our learnings to date, and introducing diversity into the scale of NDRC, with continued development of our programme offerings.

The new programmes complement the established programme, in particular offering smaller scale projects, which are focused on either strengthening the outcomes of larger scale projects, in the CTR programme, or expanding NDRC activities to include short-term high impact projects.

We are sourcing proposals under the following programmes:

**ENTREPRENEURIAL INTERNSHIP**

This programme is designed to develop small scale projects with aspiring entrepreneurs to produce commercially focused applications in the web and mobile space. This investment programme is an avenue for individuals or small teams with links to a third level institution to pursue potential opportunities, from idea to application, in a supportive environment and among a set of peers.

**SCALE**  
Up to €25k for 3 month projects.

**ACTIVITIES**  
Build a prototype or develop a business approach in the area of application development.

**OUTPUT**  
Product on the market through rapid routes market plus demonstration of revenue or revenue potential.
CTR FEASIBILITY

We are investing in a programme to develop projects with established academics and companies that are potential Collaborative Translational Research projects, but would benefit from upfront problem-solution and market validation. The focus of projects within the programme will be in the areas of health, education, entertainment and the environment.

SCALE
Up to €50k for 3 – 6 month projects.

ACTIVITIES
Determine scientific validity; assess market demand; prove the concept.

OUTPUT
Case for future development through evidenced technical feasibility/market need; CTR-ready proposal with accompanying roadmap.

COLLABORATIVE TRANSLATIONAL RESEARCH

Having built a portfolio of Collaborative Translational Research projects, NDRC is embarking on a second investment phase in further Collaborative Translational Research. As such, NDRC is seeking to facilitate further collaborations between established academics and industry partners to develop commercially-focused research projects in the application areas of health, education, entertainment and the environment. NDRC is particularly interested in receiving proposals for environmental technologies in a digital context. We are not, however, excluding good ideas in other digital application areas.

SCALE
Investment over a two year project with outcome shared between partners.

ACTIVITIES
Build on academic research to develop applications; translational research through twin and interdependent streams of technology and commercial development.

OUTPUT
Pre-production prototype and go-to-market strategy.
**NDRC KEY CONTACTS**

**Ben Hurley**, CEO

**Douglas Dowley**, COO

**Amy Neale**, Programme Manager

**Carl Power**, Project Operations Manager

**Bairbre Byrne**, Office Administrator

**Kevin Jennings**, Translational Research Leader

**Kevin Smith**, Translational Research Leader

**Daniel Crowley**, Commercial Development Leader

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