



Approaches to Research and Innovation Management

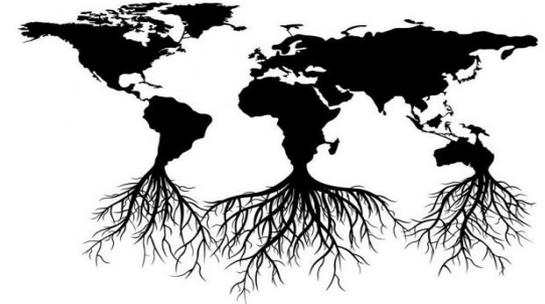
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R&I MANAGEMENT

Where does it come from?



- 1940 - National Defence Research Committee created by order of Pres Franklin Roosevelt
- 1941 - Vannevar Bush (American engineer, inventor and science administrator) headed the U.S. Office of Scientific Research and Development (OSRD) converting scientific research into usable military technology
- Systems, procedures to manage research grants, rules for financial management, reporting etc.

Initially:

Researcher responsibility
Emphasis on financial accountability



R&I MANAGEMENT

Changed:

- International science & technology “explosion” over last fifty years
- Need to get research out for public use
- Multiplicity of Govt and other sponsored research opportunities
- Increasingly multi-disciplinary, multi-partner, larger scale projects
- Need to advance activities from the scientist/inventor to a body of professionals, with distinct increasingly expert roles

R&I Management is an activity and profession that continues to mature and progress



The management of research and development (R&D) and innovation has emerged as a specialised area within funding agencies, research institutes and higher education institutions.

....what used to be a strand of general administration is now a profession with numbers of areas of specialism, and with a large number of people of different types involved either fully or to some extent.” (Carter & Langley, 2009, Overview of research management and administration)



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R&I MANAGEMENT

Is it important?

“Research management guides, directs and oversees the many opportunities that universities have to maximize the impact of their research. It includes assistance in identifying new sources of funds, presenting research applications and advice on costing projects and negotiating contracts with external sponsors. It incorporates project management and financial control systems. It also involves help in exploiting research results - through technology transfer and licensing or dissemination to wider society.”

Global Research Network



R&I MANAGEMENT

What does it encompass?



R&I management - embraces anything that institutions can do to maximise the impact of their R&I activity.

- Work in a broad range of organisations - universities, science councils, government, research institutions, NGO's, medical centres.
- Research managers not only responsible for developing and implementing research policy at institutional level but also play a key role in ensuring that the researchers have adequate skills (research grant writing, grant management, project management, team management, student supervision, writing for publication and ethics)
- Transformation of university-based research into innovation – from building collaborative links with business through to the more technical aspects of technology transfer (IP negotiation, licence deals, etc).



Development of high level training programmes and qualifications for research management and administration and technology transfer, as well as specialised associations for research and innovation managers.

US

NCURA 1959
SRA 1967
AUTM 1974

UK & Europe

ARMA 1990, 2004
EARMA 1995
PraxisUnico 2002

Australia

ARMS 1999

Africa

SARIMA 2002
WARIMA 2006
EARIMA 2011
CARIMA 2012

INORMS 2001
ATTP 2009



R&I MANAGEMENT

Is it important



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Important for universities and funders that:

- Resources are properly costed, priced, negotiated and managed;
- Researchers supported by skilled, high-quality professional colleagues throughout;
- Risks well managed;
- Highest standards of research integrity and ethics are maintained
- Research has the greatest potential to deliver key milestones, achievements, innovation and impact.

Requirements for effective National R&I System



- Research and innovation are activities that have long been associated with strong economic activity and social health and well-being
- These activities typically account for between 1% and 4% of a country's gross domestic product (GDP), with developed countries such as Australia, Denmark, France, Germany, Japan, Korea and the United States spending between 2% and 3.5% of GDP on R&D.
- A country's performance in research and innovation is underpinned by the work of a number of different people at different levels of responsibility.
- These include the government officials who assist politicians in the formulation and implementation of national research policy, the leaders and senior staff of research institutions, and the staff who provide essential institutional functions to ensure that the management of research is conducted effectively.

Enabling environment –making research easy for researchers and research and innovation management easier for R&I managers/administrators

External environment

Supportive environment

Policy
Standards
Funding agencies
Partnerships

Institution

Supportive enabling environment

Vision, mission reflect R&I
Leadership - committed, pro-active, visionary
Quality of human capital
Stable support structures
Sound Policies (user-friendly, realistic)
Minimal bureaucracy
Focusing capacity, resources
Sufficient time (too many conflicting demands)
Effective communication
Resources (appropriate allocation)
Rewards/incentives

Individual

Well prepared individual

Qualified
Motivation
Personal commitment
Knowledge
skills



Changes in nature of research contributing to complexity of R&I Management

- “increasing diversity in the location of research activities – with a greater range of organisations involved in research (e.g. universities, research institutes, hospitals, firms, industry associations, etc.);
- increasing focus on interdisciplinary and transdisciplinary research – with teams of researchers coming together to work on common problems that cannot be tackled adequately within a single disciplinary framework (e.g. environmental or health problems);
- increasing focus on problems, rather than techniques, with solutions being sought from a range of disciplinary “toolboxes”, but findings valued for their contribution to the solution, rather than to the toolbox;
- increasing blurring of organisational borders and greater emphasis on collaborative work and communication, with a more flexible team based approach in which teams form around problems, and then break up and move on to form different teams around different problems;
- changes in the modes of communication, including some increase in commercial guarding of intellectual property, somewhat less emphasis on publication in refereed journals and more emphasis on informal communication through networks of researchers and practitioners; and
- more diverse forms of accountability, with economic and social, as well as disciplinary outcomes taken into account, and quality judged on a broader range of criteria”. (McWilliam, *et al.*, 2002, p 41 cited in Houghton, 2005)



Developments in conduct of research contributing to complexity of R&I Management

- increased use of the internet, linked datasets, and electronic information repositories
- requirements of funding agencies for open access publishing
- performance measurement and data-based evaluation at institutional and individual levels
- use of these data in compilation of international rankings of institutional performance
- an increased emphasis on technology transfer and the translation of basic research towards practical outcomes for businesses and society (Kitagawa, 2005)
- greater consideration of risk-taking and entrepreneurialism (Shattock, 2005)
- increased government interest in sponsoring and supporting the notion of research clusters between public and private institutions driven by innovation (Watson and Freudmann, 2011)
- increasing interest in the governance of international co-operative research endeavours (OECD, 2012)



Requirements for effective Research & Innovation Management

Every institution is different – there is no “fixed” model or recipe

- All research and innovation leaders and managers need to be aware of the requirements established by their government.
- Setting of national priorities for research, innovation, infrastructure and capacity building – knowledge & skills required by policy makers & regulators therefore need to be a consultative process
- Public funding to support research and innovation (HEI's & other national research agencies) through institutional grants &/or competitive mechanisms
- Government funding usually accompanied by rigorous accounting, reporting, audit requirements & procedures to ensure compliance with the government's funding rules and regulations - research leaders and managers in these institutions need to appreciate and address the procedures that are required.
- Up to date with trends in public and private investment in R&D

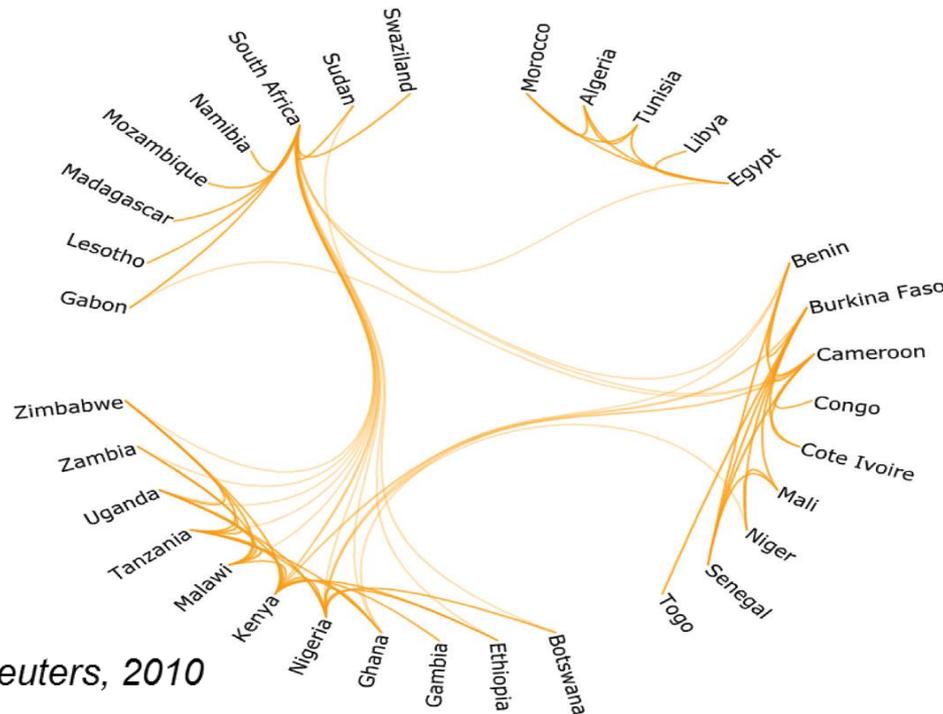


Requirements for effective Research & Innovation Management

- Governments also require other forms of performance reporting on research and innovation (graduates, publications, theses, patents, licence deals, financial returns) – systems to monitor and record these.
- Successful research institutions need leaders who are as aware of the conditions and developments outside their institution as those inside it – provide support & conditions based on current trends in R&I
- Awareness of national & international policy settings for publicly funded research agencies and universities, as well as the policy settings for business R&D - impact on potential for effective collaboration
- “Operational”, “managing” and “leading” roles should be adequately resourced and supported
- Financial management is important – the rigour with which the accounting requirements of institution and funding agencies are met have a bearing on reputation and credibility

Internationalisation of Research and Innovation

- World class research is inherently international
- Global, interdisciplinary, transnational research and innovation should be embedded into national and organisational strategies
- Adds to reputation and profile of a university/research institute
- Major funding bodies are beginning to offer support for international collaborations



Source: Thomson Reuters, 2010



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Do Your Research In Partnership



The big picture

- Biggest challenge for HEIs is to work coherently and make the whole > sum of the parts
- Must demonstrate how we add to the totality of activities rather than appear as disparate groups of individual research projects
- Need to work in partnership with other universities, (nationally and internationally), much, much more
- Will need stronger and more meaningful institutional and Govt research strategies (more 'top down' leadership?)



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