The role of public research institutes in innovation for inclusive development in South Africa

How can research and innovation managers at the Medical Research Council promote innovation and interaction to wider social and economic benefit?

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PRESENTATION OUTLINE

1. Research approach
2. Organisational conditions that facilitate and constrain interaction at MRC in 2013
3. Mapping patterns of interaction of individual scientists at MRC in 2013
4. Implications for MRC revitalisation strategy going forward?

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A shifting emphasis

1. Public research institutes roles in economic growth and development - innovation and interaction with firms to enhance global competitiveness

2. Role in improving quality of life through engagement – innovation and interaction with local communities, participation, equitable development

3. Scientific excellence / global knowledge base

$\Rightarrow$ Innovation for inclusive development: opportunity to align and balance multiple roles of post-1994 science council mandate

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Mapping patterns of interaction

- Extending scientific knowledge to the benefit of ALL external partners, through research, development and technology transfer, in line with unit and organisational missions

- What are the dominant and significant niche patterns of interaction of scientists in practice?

  - Main **partners** – firms, farmers, government, knowledge, communities

  - Main **types** of relationship and channels of interaction

  - Main types of outcomes and **benefits**

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Institutional conditions that facilitate and constrain interaction?

- Strategic mandate, historical trajectory and policy orientation: reputational and scientific concerns primary
- Conceptions of interaction and partnership
- External and internal interface structures:
  - Research office, contracts office, innovation office, strategic initiatives
  - Technology transfer office, incubator, research translation
- Interactive mechanisms:
  - Incentives (promotion, reward, awards)
  - Open days, websites, industry / community forum, publications, radio platform
- Role of individual scientific leaders and ''entrepreneurs''
- Functional integration and internal alignment
- INTERACTIVE CAPABILITIES?

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METHODOLOGY

- *Research conducted in a period of turbulence and uncertainty*

- Site visit, documents and interviews with range of internal stakeholders: executive, senior managers, heads of units

- Survey of scientists: in 2013, a total of **451** scientists; **283** participated in the telephonic survey

- => a response rate of 63%

What are the organisational conditions at MRC that facilitated and constrained interaction?

- Historically a mission oriented public research institute reporting to DoH – SETI 1994 commended excellence

- Currently facing the challenge of 'revitalisation strategy'

- An organisation in flux: lack of shared goals/ vision, lack of cohesion; structure fragmented and duplicative, incoherent; research excellence declining, little coordination and synergy internally; skewed allocation of resources to intramural research; lack of alignment with national health priorities

- New vision: reprioritize scientific excellence, and re-organise intramural research in terms of the 10 most common causes of disease and mortality in South Africa

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A laissez faire approach to interaction

- Internal fragmentation, tendency to work in silos

- Ad hoc initiatives

- Driven by individual scientific reputations

- General view: interactions important, and can be seen as implicit requirements for success. A practice that depends on the nature and requirements of duties and the nature of the research unit and how it functions

- Few clear enabling structures or steps for achieving effective internal collaboration or external interaction

=> engagement will primarily depend on individuals, their commitment, experience and networks: *"It's all done by personal contact"*

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Internal interface structures

- Internal interface mechanisms tend to operate in relation to key priority research areas, involving specific groups and individuals, and not collaboration broadly across the entire organisation

- Strategic Research Initiatives : responsible for promoting links with external partners

- Technology and innovation directorate: management of IP; Innovation office; National Collaborative Research Programmes

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External interface structures

- Technology transfer office

- Provincial and national health research committees

- Capacity development programmes

- Research translation unit?

- Radio Production studio

- Community outreach – health material, training, websites, information centres, toll free enquiry line

- ☐ activity driven by individual academic champions and senior managers

- ☐ most interaction viewed as collaboration with academic partners and funders, or ''stakeholder relations''

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Mapping patterns of interaction at MRC

- The analysis allows identification of dominant and emergent trends as well as niche areas

- It provides insight into the ways in which science councils balance the three fold mandate and roles in the national system of innovation

- It provides a basis for innovation and research managers to align activity more strategically across the organisation

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Scientists who do not engage

- Over a fifth, 21%, indicated they do not engage

- More junior staff: slightly more likely to be African and women, scientists and senior scientists, with diplomas and certificates or bachelors degrees

- Almost a third, 39% were based in ''platforms'', that is 23 of the 85 scientists in platforms

- Main reasons preferred:
  - not appropriate given the nature of my scientific field or discipline
  - not central to my scientific role
  - limited financial resources are available

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Most frequent partners of those who do engage?

Social partners (P)		<>	1	2	3	4	Wtot	WAI
24	SA universities	226	27	39	59	101	686	3.0
29	Funding agencies	226	37	40	66	83	647	2.9
26	SA Science Council	226	39	56	66	65	609	2.7
4	Clinics and health centres	227	62	43	51	71	585	2.6
8	A specific local community	227	74	31	54	68	570	2.5
28	Hospitals	226	62	53	49	62	563	2.5

Are these traditional academic collaborations around knowledge production? How they are to the benefit of external social partners?

Correspondence analysis

MRC: External Partners & Relationship Types
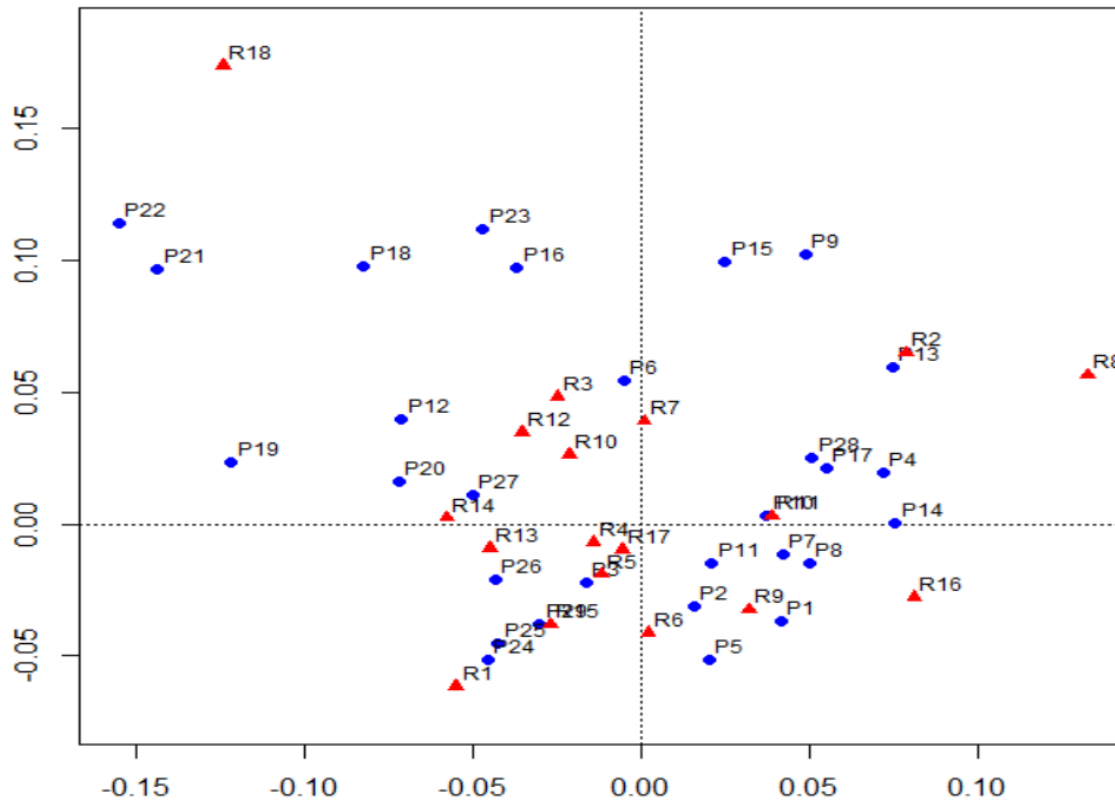
3 clusters with similar relationships

| CLUSTER 1: KNOWLEDGE PARTNERS	CLUSTER 2: HEALTH AND COMMUNITY-FOCUSED PARTNERS	CLUSTER 3: INDUSTRY RELATED PARTNERS
P3 – National government	P1 – Local government agencies	P6 – National regulatory and advisory agencies
P24 – SA universities	P2 – Provincial government	P9 – Welfare agencies
P25 – International universities	P4 – Clinics and health centres	P12 – Trade unions
P26 – SA science councils	P5 – Schools	P15 – Social movements
P29 – Funding agencies	P7 – Individuals and households	P16 – Political organisations
	P8 – A specific local community	P18 – Large SA firms
	P10 – NGOs	P19 – SMMEs
	P11 – Development agencies	P20 – Multinational companies
	P13 – Civic associations	P21 – Small scale farmers
	P14 – Community organisations	P22 – Commercial farmers
	P17 – Religious organisations	P23 – Sectoral organisations
	P28 – Hospitals	P27 Inter'l science councils

Clusters of relationships

Clustering on relationships

Factor map
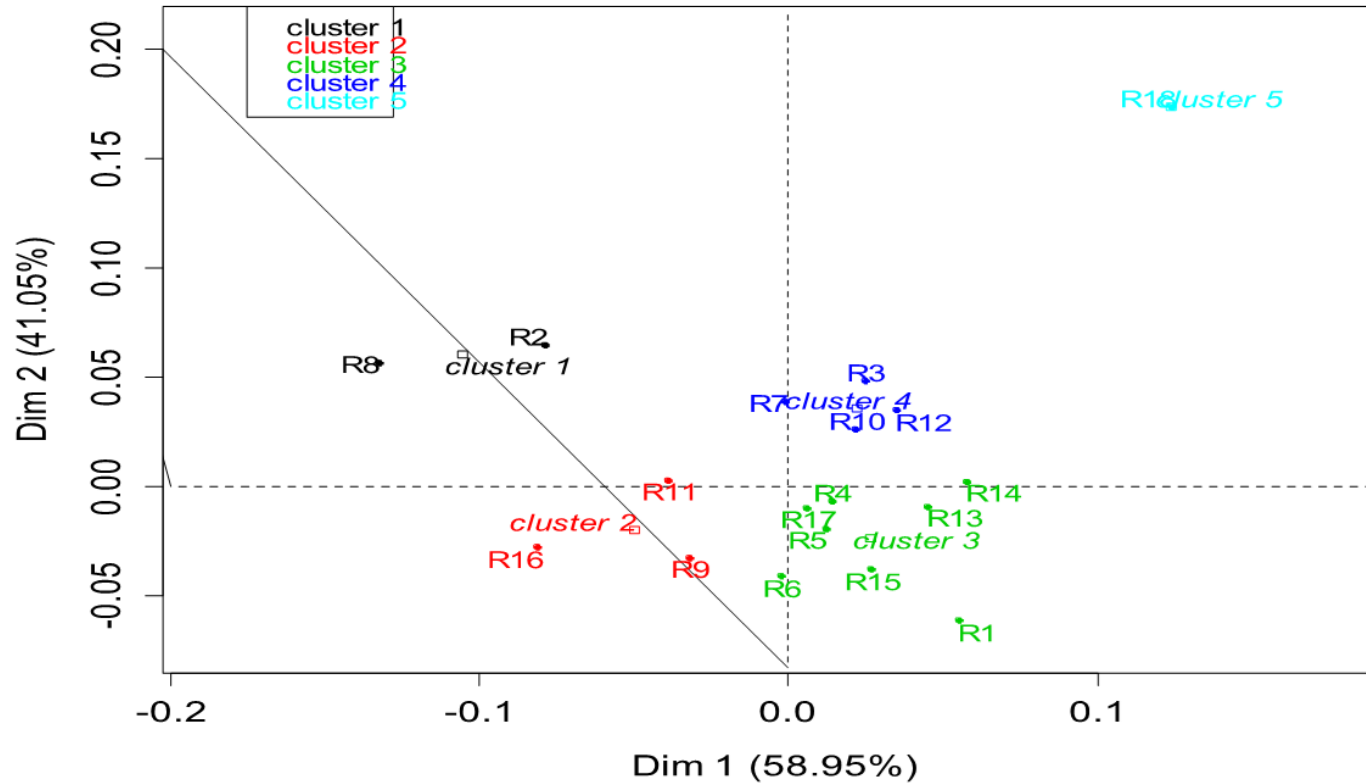
Outputs and outcomes

MRC: Relationship Types & Outputs/Outcomes
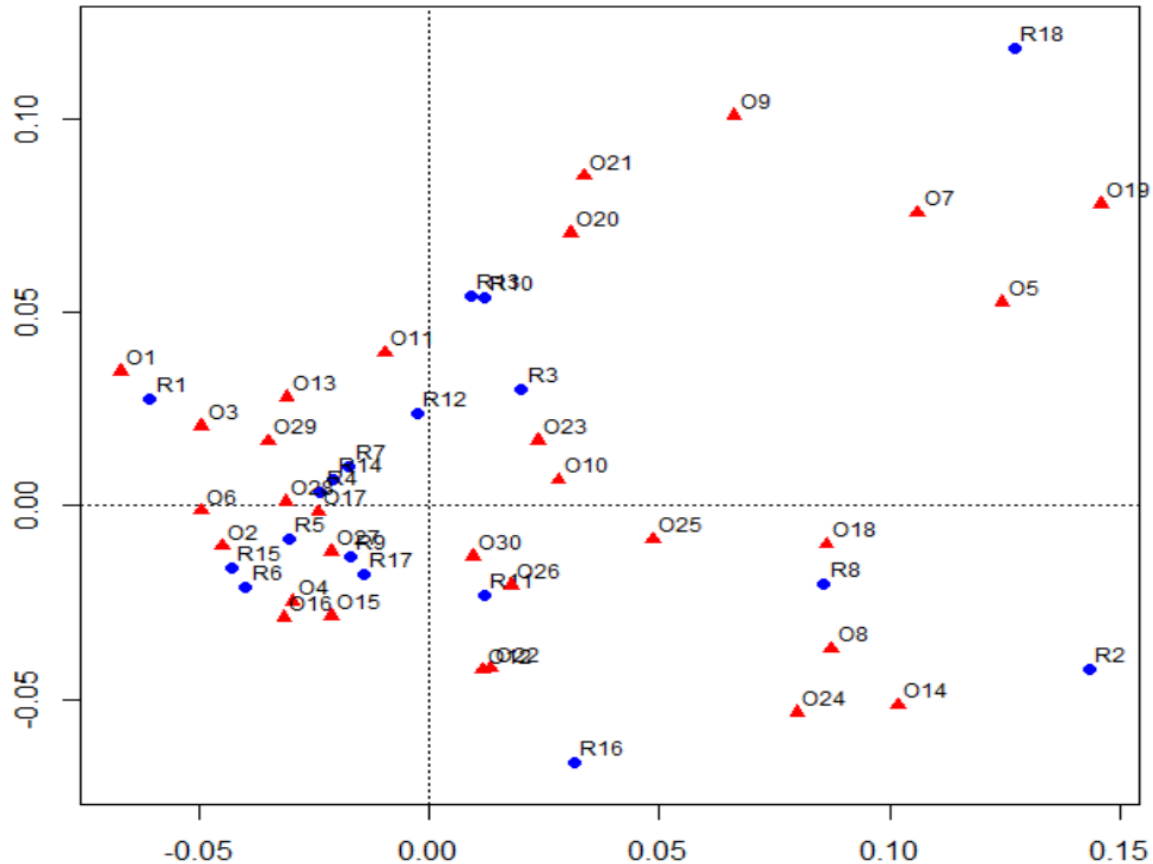
Key trends: common MRC patterns

- Interaction with Funding agencies in Collaborative R/D projects is likely to enhance *joint academic publications* and *scientific collaborations* between all stakeholders

- Interaction with South African and International universities in the Education of postgraduate students is most likely to result in *Post graduates* with relevant skills and values, in *Dissertation*s, in *Improved postgraduate teaching and learning* as well as *theoretical and methodological development in a scientific field*

- Interaction with National Government Departments in Policy research analysis and advice is most likely to result in the *development of Intervention* plans and guidelines as well as *Reports, policy documents* and popular publications

- Interaction with Local Government, Provincial Government, Schools and National Government Departments typically takes the form of Designing and Testing of intervention protocols and Participatory Research Networks, and are likely to result in *Relevant research focus* and *new research projects* for the MRC as well as *Policy intervention outputs* for the partners.

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Niche or emergent patterns

- Interaction with NGOs in Monitoring, Evaluation and needs assessment is most likely to result in *Participatory research processes*, *Cross-disciplinary knowledge production* to deal with multifaceted social problems and the Incorporation of *indigenous knowledge*

- Community organisations in Community-based research projects are likely to result in the enhancement of *Public awareness and advocacy* as well as in *Improved quality of life* for individuals and communities

- interactions with Clinics and health care centres and civic associations in Clinical services as well as Voluntary outreach programmes is likely to result in *Community employment generation*, the installation of *Community infrastructure and facilities*, Community *empowerment and agency* as well as Community based *campaigns*

- Interaction with the National regulatory agency in activities of Design, Prototyping and testing of new technologies; and SA Science councils in Technology transfer projects is likely to result in *Firm productivity* and *competitiveness* and *Novel uses of technology* respectively

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How can the MRC use the analysis to inform its revitalisation strategy?

- New vision and goals – how well aligned are *existing* patterns of interaction with new goals?

  - More (international) collaboration to achieve scientific goals / reputation?

  - Or/ and to address national health priorities?

    - Through innovation for competitiveness – more commercialisation? Firm partners? Contracts or networks?

    - Through innovation for quality of life – partners? Communities as partners or beneficiaries?

=> How promote such an ideal pattern of partners and type of relationship ?

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Possible structures and mechanisms as part of 'New Path'?

- Strategy on innovation, engagement, research impact on beneficiaries?

- Role of SHIP as structure driving interaction *across* the MRC?

- Coordination of activity of extra-mural units?

- Clear commitment in KPAs as incentive for individuals?

- Build on current structures and mechanisms in a coherent and coordinated manner?

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