Developing Sustainable University-Industry Relations

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OECD Workshop
Saratove State University
November 2005

'Universities are vastly underutilized and potentially powerful vehicles for development in developing countries, particularly with respect to science and technology. If both universities and industry are encouraged to work actively together, universities will be able to assume new roles that could accelerate local and national development.'

(*Innovation: Applying Knowledge in Development*. UN Millennium Project Task Force, 2005)

Changing Idea of the University

- Classical University: mission and role of higher education and academic research distinct from commercial activity
- American Graduate School: mission to train the next generation of scholar-researchers
- Polytechnics and New Generation Universities – new model catering for wider range of socio-economic groups and educational requirements

New Model of HEI

- Traditional 'stereotypes' fading
  - Elite vs.. Mass
  - Vocational vs.. Academic
  - Technological vs.. Traditional
  - Undergraduate vs.. Postgraduate
- New areas of knowledge via 'innovative courses suited to the new economies'
- Engaging directly with industry & wider community
- Supporting both applied and long-term R&D

International Policy Trends

- Accountability and responsibility
  - Management by market forces
  - Stricter regulatory environment
- Battle for 'world class excellence' via concentration of resources around select few universities or departments
- Creation of knowledge transfer networks via feeder institutions
- 'Social' or institutional contract between government and universities
- Differential, competitive or externally earned funding

R&D Policy Trends

- Strong focus on science and technology as 'wealth creators'
- Designation of a few priority research domain
- Growing emphasis on knowledge and technology transfer activities
- Emphasis on 'entrepreneurial' activities and reorganisation of university to enable such activities
- Growing separation between teaching and research activities and careers
- Academic salaries pegged to market value

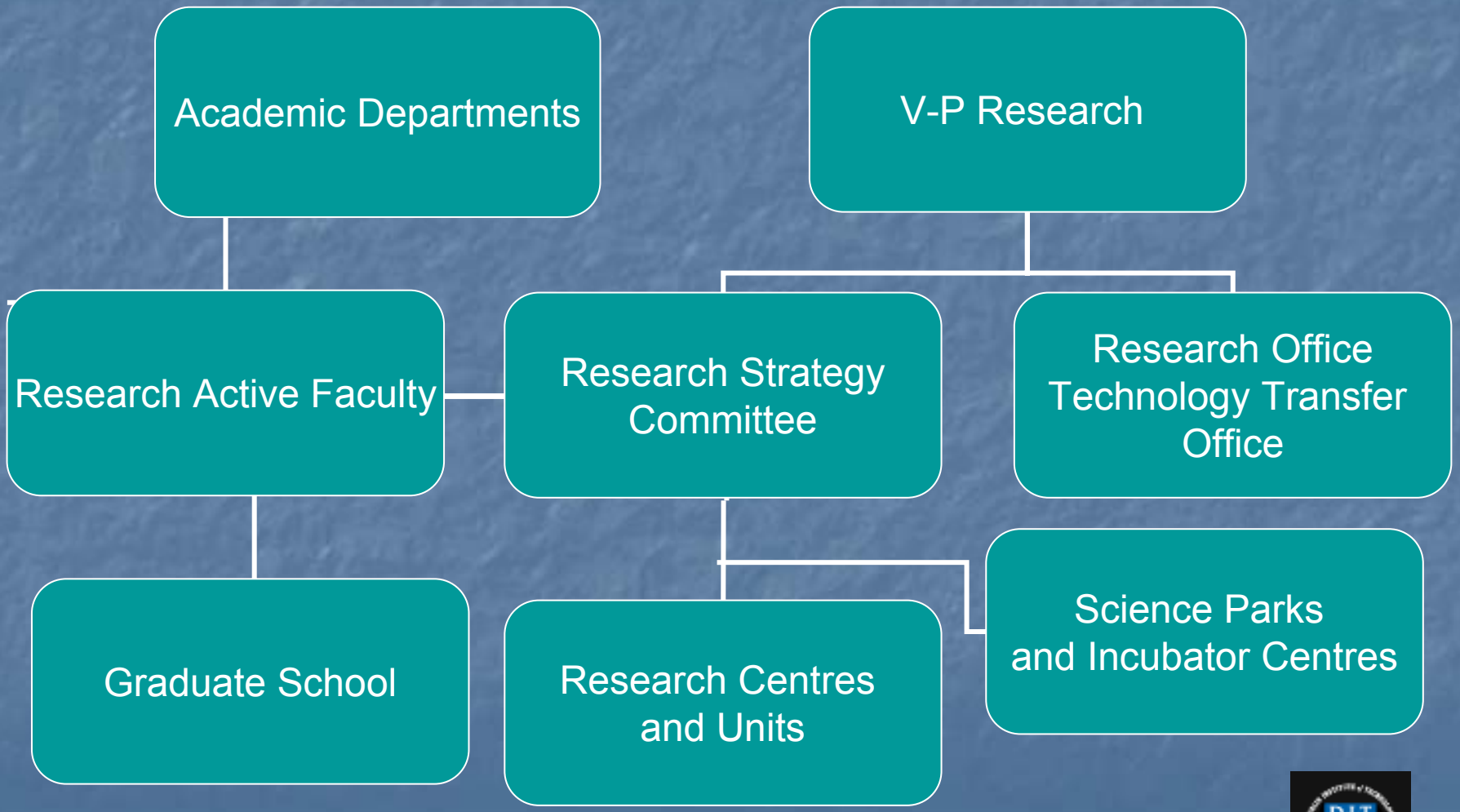
International Experiences

- Denmark/Sweden: tradition of research-based teaching
- Canada: Innovation Fund focus on innovation/return on investment in research, i.e. commercialisation
- UK and Australia: Research Assessment Exercise provides competitive funding to 'best' research departments and institutions, and forcing developing of 'centres of excellence'
- Ireland: National Development Plan, Science Foundation Ireland and Enterprise Ireland developing institutional capacity in internationally competitive HE research and collaboration with industry
- New Zealand: HE resource allocation driven by economy and society and no longer student choice

Institutional 'Best Practice'

- Change from collegial to managerial structures
- Develop good research strategy, infrastructure, supports, training
- Greater selectivity to support high quality research via evaluations
- Emphasis on inter- and intra-institutional and disciplinary collaboration
- Monitor staff research activity, outputs, performance
- Focus on formulaic drivers (research income, outputs, completions)
- Develop Graduate School

Indicative Research Structure



Case Study: NDRC (1)

- Policy Objectives
  - Support enterprise development in Ireland
  - Stimulate increased R&D investment in Ireland
  - Support high quality human capital formation in Ireland
  - Attract high quality inward investment and human capital
- National 'Centre of Excellence' in Intelligent Media
  - Research
  - Knowledge and technology transfer, including commercialisation of research
  - Enterprise development
  - Education and training
  - Community out-reach

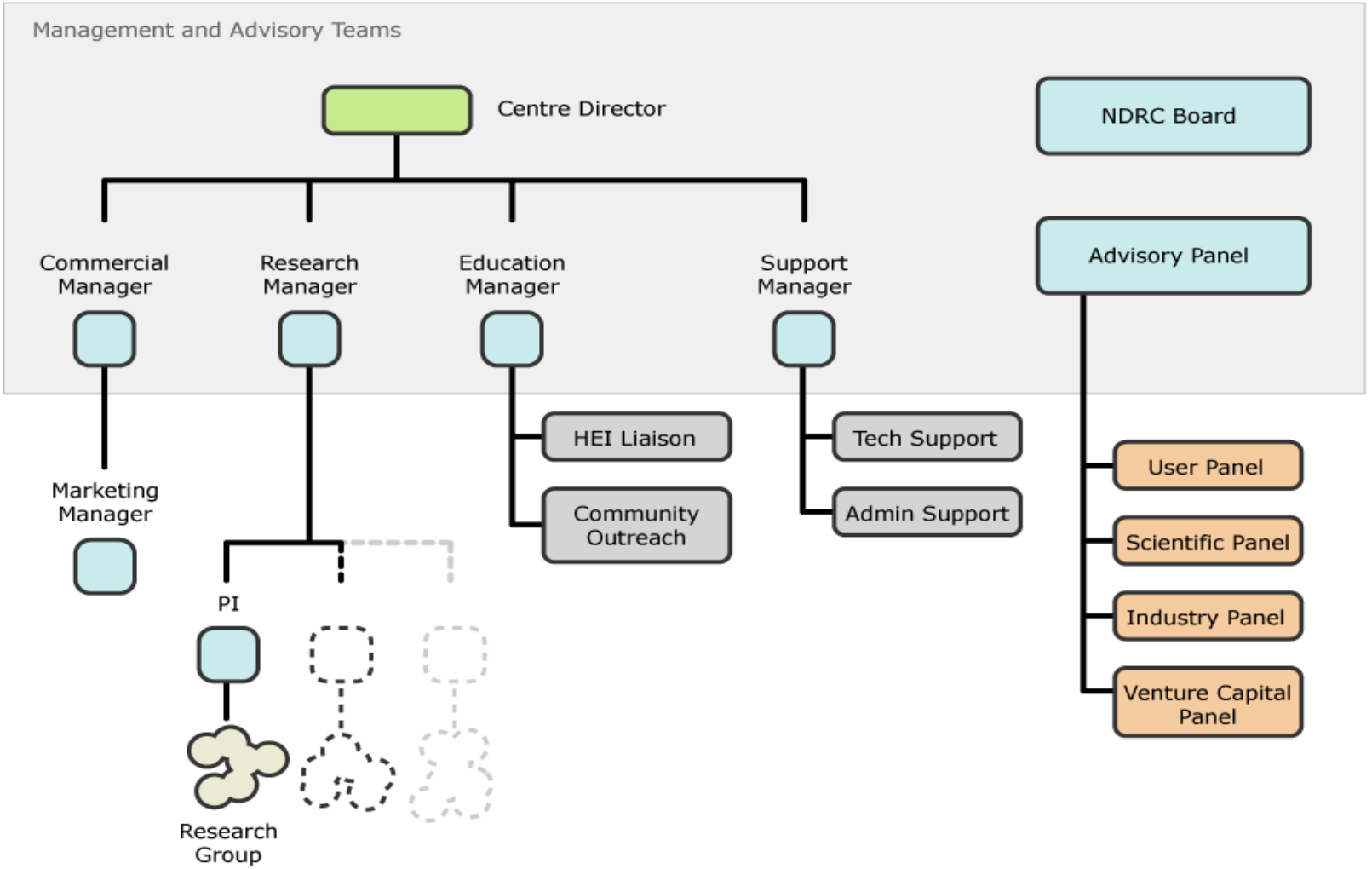
Innovation and Exploitation Activities: NDRC (2)

- Technology Foresight and Market Watch
- Business and Product Development
- Exploitation of Intellectual Property
- Digital Media Forge™
- Enterprise Platform Programme
- Spin-in Company Formation
- Spin-off Company Formation
- NDRC@School
- On Show
- Community Outreach and Science in Society Digital Media Skillnets
- Digital Dialogue™
- Internships
- NDRC International Digital
- Media Research Conference
- NDRC Workshops and Seminars

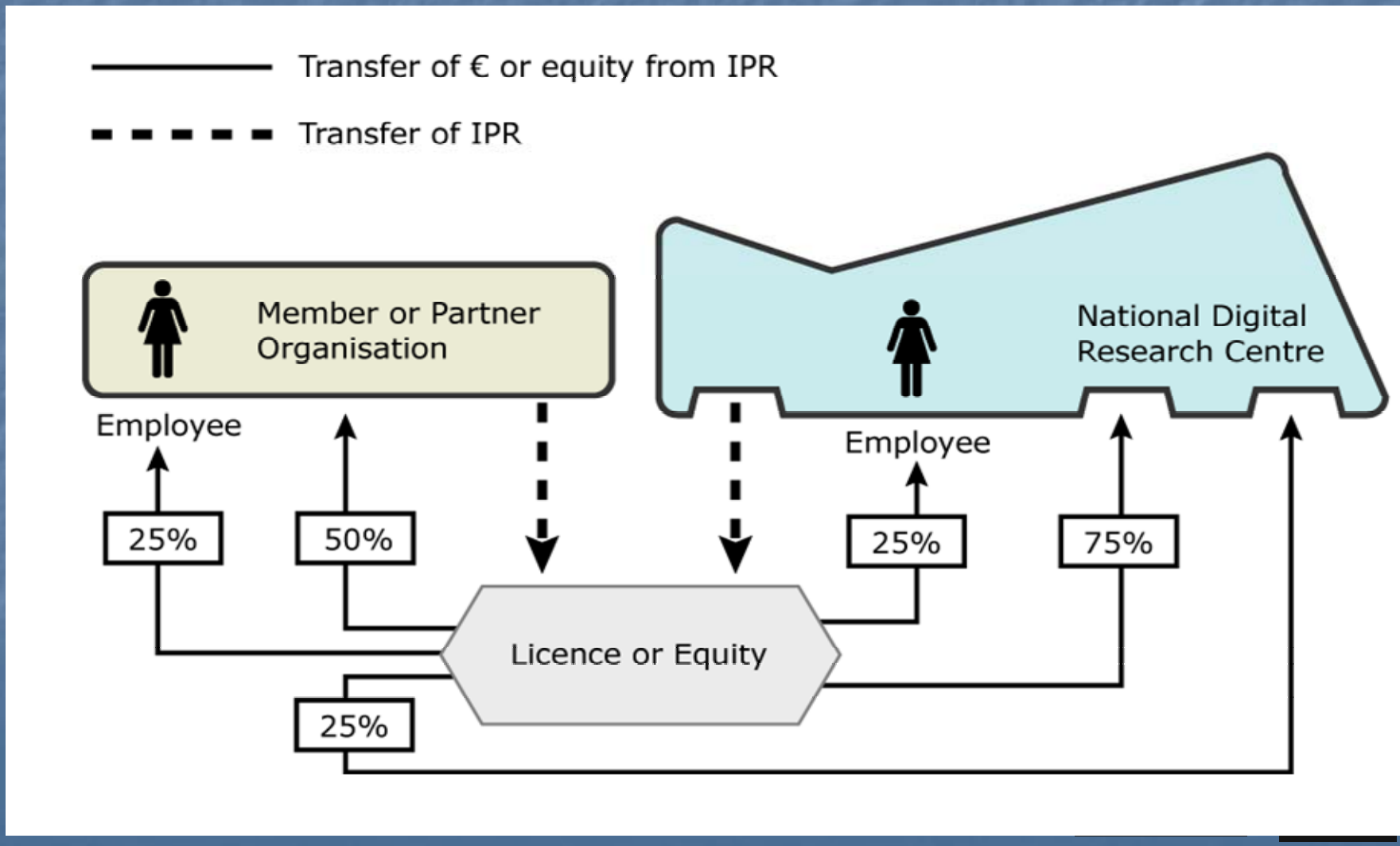
Management Structure: NDRC (3)

- Board of Directors (academic & industrial partners, representatives of national development agencies)
- 4 expert panels to advise direction and programmes of activity: Scientific, Industry, End-user & Venture Capital
- Centre Director (chief scientist and chief executive)
- Research Manager
- Commercial Manager
- Education Manager
- Support Manager
- Researchers (Principle Investigator, Post Doctoral Research Fellow, Researcher, Student Researcher)
- Administration & Technical Staff

Management Structure of the NDRC (4)



Distribution of Income from Commercialised IP: NDRC (5)



Evaluation Criteria

- Research
- Innovation and Exploitation
- Teaching and Learning
- Potential for Collaboration between Irish third-level institutions and Irish industry
- Management of Centre
- Value for Money/Funding Leverage

Challenges (1)

- Proximity matters for university-industry collaboration
  - Reduced research capacity has knock-on consequences for regional economic performance and technology innovation
  - SMEs find it difficult to work with research departments on other side of the country
- Technology foresight studies can narrow fields of investigation
  - Implications for new ideas and new theories
  - Implications for arts, humanities and social sciences

Challenges (2)

- Industry and university have different missions, needs and timetables
  - Mission of university is to produce new knowledge not new products and services
  - 'Short-term applied knowledge needs of research buyers' vs. research as discovery
  - Research and teaching vs. research and commercialisation
  - Requirement for 'peer-review' vs. need for confidentiality
  - Research is dependent upon individual researcher's 'creativity' and commitment

Challenges (3)

- Managing economic/commercialisation expectation
  - Academic knowledge production + Innovation = Economic growth?
  - Spin-off numbers and commercialisation possibilities often inflated
  - IPR policies can inhibit or enable exploitation
  - Ability to earn significant 'third stream' income to overcome decline in public funding over-exaggerated

Challenges (4)

- Assuring the integrity & productivity of research
  - Research integrity vs. Patron productivity
  - Public/government vs. private/industry funding: does the 'piper play the tune'?
  - Does emphasis on 'return on investment' & 'value for money' undermine research as experimentation or discovery?
  - Does commercialisation of publicly funded research potentially conflict with putting the public interest ahead of institutional benefit?
  - Managing ethical concerns, e.g. 'conflict of interest'

Policy Initiatives (1)

- Widen funding mechanisms to
  - Underpin collaborative, inter-organisational research
  - Support research across all disciplines and research methodologies
  - Underpin link between research and teaching, especially postgraduate level
  - Encourage innovation networks, learning regions, community engagement, innovation and knowledge/technology transfer
  - Investment strategy to grow research capability and capacity

Policy Initiatives (2)

- Overcoming late development
  - 'Head-start' grants
  - Staff development, mobility and HR strategies
    - Support research training and career development
    - Strengthen institutional/research management and leadership
    - Appropriate reward and award systems,
    - Researcher career structures
  - Build critical research infrastructure

Policy Initiatives (3)

- Widen evaluation metrics to
  - Reward research (basic and applied) across all disciplines, and knowledge and technology transfer activities
  - Support diverse institutional missions
  - Encourage and reward potential

Summary

- Today, new knowledge produced
  - by a multiple of organisations in the public and private spheres
  - in partnership between these spheres
- Higher education is only another player in a complex global knowledge industry
  - HEIs (re)examining mission, strategies and organisation
  - R&D is both an institutional and national strategic concern
- Role of Government is critical

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