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Globalisation and Competitiveness: Challenges to the Purpose, Performance and Impact of Higher Education

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Higher Education Policy Research Unit

"It is the quality of European higher education institutions, measured (among other ways) through the volume and scope of institutions' scientific - in the widest sense of the word - and technological research activities, which is crucial." (EU Communication on strengthening cooperation with third countries in the field of higher education /* COM/2001/0385 final */ , 2001);

"Universities should be funded more for what they do than for what they are, by focusing funding on relevant outputs rather than inputs..." (EU, *Delivering on the modernisation agenda for universities: Education, research and innovation* of 2006, p7);

"'Valorisation' is the process of **disseminating and exploiting** project outcomes to meet user needs, with the ultimate aim of integrating and using them...at local, regional, national and European level." (EU Leonardo da Vinci programme)

Content

- Changing Role of Higher Education
- Building Competitive Global Regions
- Embedding Engagement and Innovation
- Indicators of Valorisation
- Conclusion: Implications for Policy and the Academy

1. Changing Role of Higher Education

Setting the Context (1)

- Investment in higher education and R&D is seen as vital for ensuring sufficient indigenous human capital, and providing the knowledge base essential for economic growth. Higher education has become a magnet for mobile talent and capital.
- Globalisation is forcing change across all knowledge-intensive industries, creating a "single world market". Knowledge production transcends national boundaries requiring membership of global networks. Worldwide comparisons are becoming increasingly significant.
- At the same time, national boundaries are becoming porous, and in some context, less important. Mega regions – which often span national borders – are new globally competitive centres of economic activity via clustering;

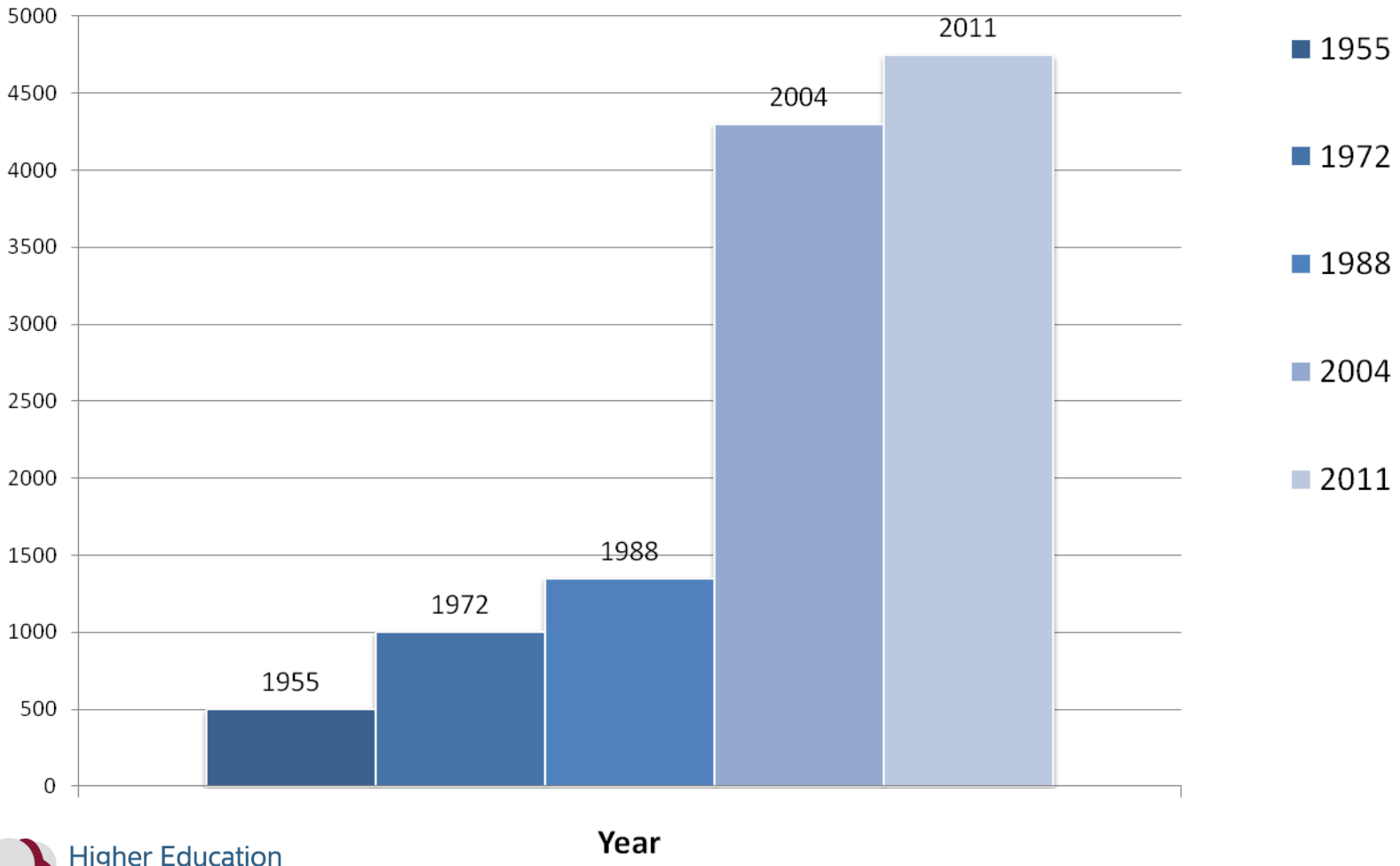
Setting the Context (2)

- Students are becoming more market savvy, and diverse, forcing HEIs to respond to diverse range of global, national, regional and local stakeholders and ensure value-for-money. The role and mission of higher education is under the spot-light.
- In response, governments are busy reshaping/restructuring HE systems and institutions to ensure efficiency and competitiveness. The EU is doing likewise: U-Map, U-Multirank, EIT, ERC, FP8 will reframe the EHEA and ERA;
- These developments help explain:
  - Significance of global rankings at a geo-political level;
  - Changes in the role and public perception of higher education.

Changing Idea of the University

- Classical University: mission and role of higher education and academic research distinct from commercial activity;
- Land Grant University: teaching agriculture, science, and engineering as a response to industrial revolution, and changing social class rather;
- American Graduate School: mission to train the next generation of scholar-researchers;
- Polytechnics and New Generation Universities: catering for wider range of socio-economic groups, learner groups and educational requirements;
- New Providers and HE Models: public and for-profit, distance and open-learning/MOOCs; franchising, over-seas campuses – with joint and dual awards;
- Multi-polar rather than bi-polar world: global competitiveness accelerating changing the world order; alliances/global networks.

University Growth, 1955-2011



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Changes in Knowledge Production

- Traditionally, knowledge production was divided simplistically and hierarchically between basic/fundamental research and applied research;
- Progression from simple to complex knowledge has led to:
  - Emergence of new disciplines, methodologies and ways of thinking;
  - Transformation in way knowledge is created, by whom/where and how used.
- Today, boundaries blurring, and knowledge production is increasingly conducted in the context of application, both within and outside universities:
  - Translation of findings into new/improved products, services and social-cultural practices is integral part of the research process – which is seen as a continuum;
  - Knowledge democratized in sense that more people are aware of the issues, involved in the process, and social actors in its application.

Elite to Mass to Universal

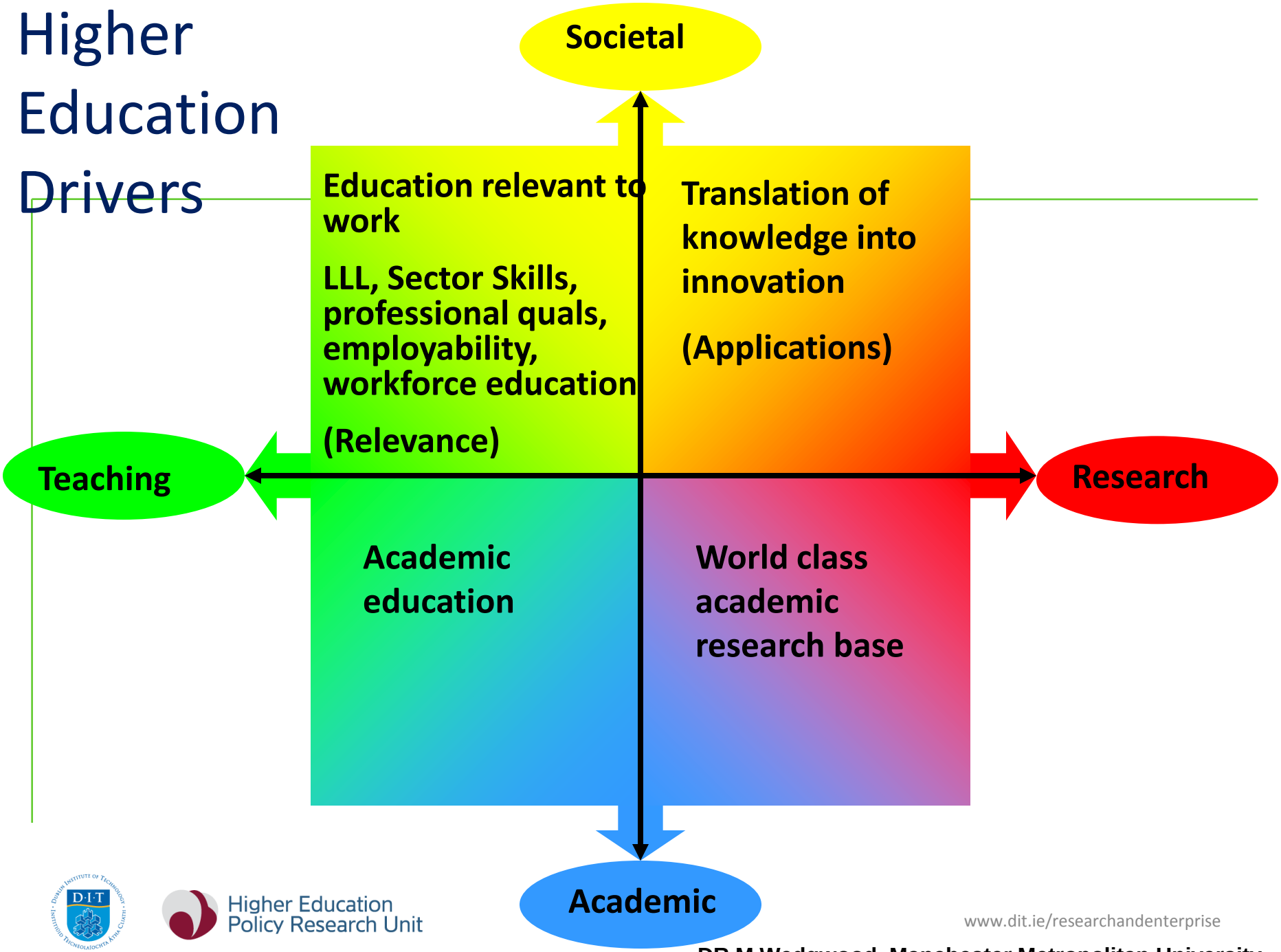
	Elite	Mass	Universal
Attitudes to access	*Privilege* of birth or talent or both	*Right* for those with certain qualifications	*Obligation* for the middle and upper classes
Functions of higher education	Shaping mind and character of ruling class; preparation for elite roles	Transmission of skills; preparation for broader range of technical elite roles	Adaptation of "whole population" to rapid social and technological change
Curriculum and forms of instruction	Highly structured in terms of academic conceptions of knowledge	Modular, flexible and semi-structured sequence of courses	Boundaries and sequences break down; distinctions between learning and life break down
Institutional characteristics	Homogeneous with high and common standards; small residential communities; clear and impermeable boundaries	Comprehensive with more diverse standards; "cities of intellect" – mixed residential/commuting; boundaries fuzzy and permeable	Great diversity with no common model; aggregates of people enrolled but...many rarely on campus; boundaries weak or non-existent.
Research and knowledge transfer	Pursuit of understanding of fundamental principles focused around "pure disciplines" and arising from curiosity, with no (direct or immediate) commercial benefits. Conducted by a limited number of research actors in a secluded/semi-secluded environment. Achieves accountability via peer-review process. Mode 1.	Pursuit of understanding of principles in order to solve *practical problems* of the modern world, rather than to acquire knowledge for knowledge's sake. Broad range of research actors across breadth of disciplines/fields of inquiry. Achieves accountability via mix of peer review and social accountability. Mode 2.	Research is focused on solving complex problems via bi-lateral, inter-regional and global networks, not bound by borders or discipline. Knowledge production is democratised with research actors extending/involving "beyond the academy". Emphasis is on "reflexive knowledge", co-produced with and responsive to wider society, with an emphasis on impact and benefit. Achieves accountability via social and public accountability. Mode 3.

(Adapted from Brennan, 2004, which was adapted from Trow, 1973); highlighted section is author's addition)

Higher Education: part of Eco-system

- Over last decades, role of universities changing dramatically:
  - Emblem of nation-building, the engine of the economy and source of human capital, and innovation and entrepreneurship;
  - Provides medical schools, museums, theatres, galleries, sports facilities and cafes – which play a significant role in their community, city and nation;
  - Meets needs of demographically, ethnically and culturally diverse populations, and responds to complex and challenging political-economic environments;
  - Actively engages with a diverse range of stakeholders, and acts as magnet for mobile talent and investment, underpinning the global competitiveness of nations and regions.
- Idea of the university as single norm or a stand-alone "ivory tower" is fading.

Higher Education Drivers



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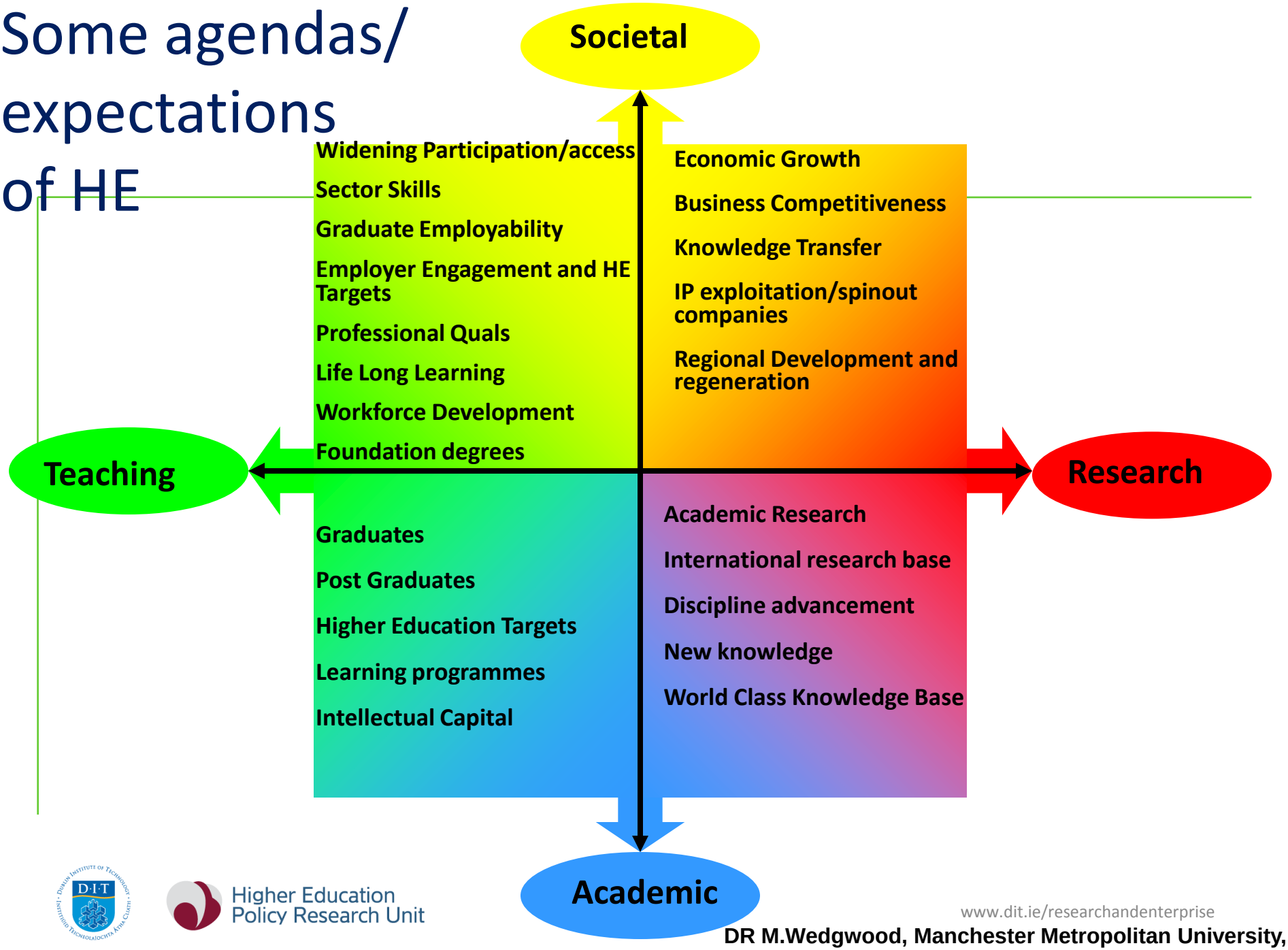
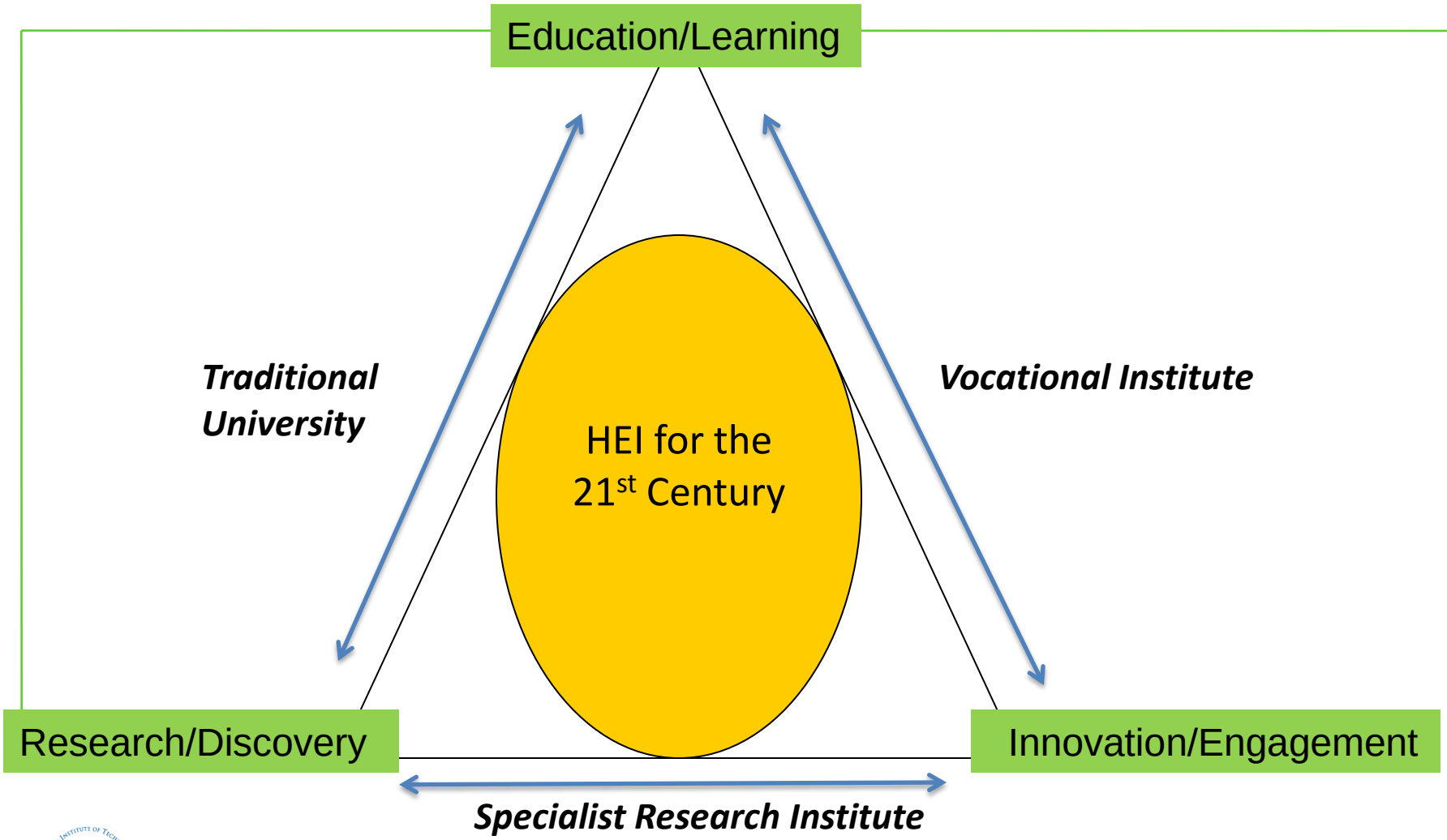
Some agendas/ expectations of HE



The Knowledge Triangle



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2. Building Competitive Global Regions

Global Regions and Higher Education

- Globalization demands regions are dynamic in their approach to social and economic development to enhance their comparative advantage;
- Sustainable prosperity is based in knowledge and innovation-intensive regions, which requires greater diversity of educational and research opportunities and perspectives – and people to work in jobs we don't yet know about (Porter, 2002; IHEP, 2010);
  - "Regions of knowledge" strengthen European regions via "research-driven clusters", associating universities, research centres, enterprises and regional authorities (EU, 2011);
  - "Specialized clusters of higher education and research institutes that interact with creative enterprise, exchanging ideas and personnel" (OECD, 2006);
  - "Systemness": coordination by a collective of multiple institutions (SUNY, 2012)
- Maximising capacity beyond individual capability.

Maximising Capacity beyond Capability (1)

•*Successful global cities and mega-regions* (e.g. Florida, Sassen):

As the distribution of economic activity has gone global, cities now compete on global terrain. Successful cities are those which attract the key resources of talent and capital.

•*Innovation clusters or corridors* (e.g. Porter, Nelson, Lundvall, Etzkowitz and Leydesdorff):

Competitive advantage is built through developing clusters of activity, in order to build capacity beyond individual capability. Innovation stems from "interactions within a network of different actors" and that it is rarely "the result of efforts within a single firm" (OECD, 2006, p124).

Maximising Capacity beyond Capability (2)

•*Mode 2 research networks* (e.g. Gibbons, Nowotny et al):

Higher education is no longer the sole provider of new ideas or innovation; rather research is conducted increasingly through bi-lateral, inter-regional and global networks, with inter-locking innovation systems because complex problems require collaborative solutions.

• *Biodiversity* (e.g. Rosen, Wilson):

Biodiversity is the variation of life forms within a given ecosystem – within which, each species plays a critical role, mutually supporting each other, without which the entire system may collapse.

(co)Production of Knowledge

- Knowledge is created increasingly through/with bi-lateral, inter-regional and global networks, with inter-locking innovation systems because complex problems require collaborative solutions:
  - Research-informed teaching and teaching-informed research;
  - Teaching which uses real-life problems and issues;
  - Research agenda derived/developed in tandem with end-users;
  - Social, business and technological innovation;
  - Knowledge exchange rather than knowledge transfer;
  - "Industrial partners" which includes public and NGO sectors.
- Most successful high-science locations take multiple form, rather than linking firms with a single university (OECD, 2006, 119).

3. Embedding Engagement and Innovation

The Civil Society Agenda

- *Carnegie Foundation for Advancement of Teaching*: Community Engagement (2006, 2008) – collaboration between HEIs and larger community for the "mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity"

- *Calhoun* (2006) refers to the "four senses of public" in the context of the contribution, obligations and responsibilities of higher education to civil society and public knowledge;

- *Goddard* defines the Civic University (2009) as one which engages as a whole not piecemeal with its surroundings, in such a way that location forms part of its identity.

Reconfiguring Higher Education

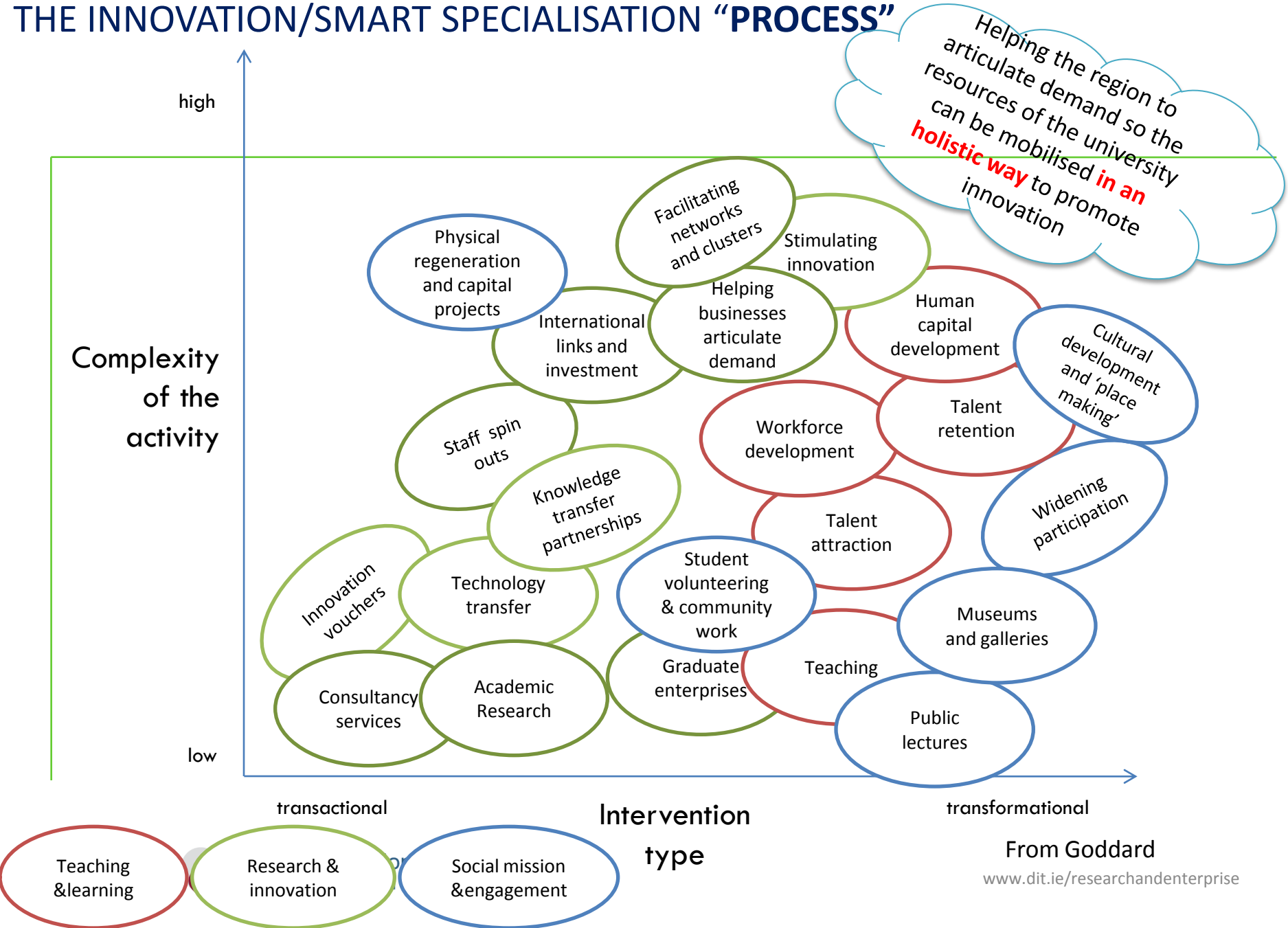
- Universities can make a multifaceted contribution to the economy, as a source of knowledge and skilled employees, and as the centre for regional economic clusters (NESTA, 2009);
- New knowledge co-creators:
  - Research is conducted increasingly through bi-lateral, inter-regional and global networks, with inter-locking innovation systems because complex problems require collaborative solutions.
  - New kinds of university structures, boundary crossing organisations, that promote and embed partnerships with the community, industry and government.

– Sustained, embedded and reciprocal engagement: Learning beyond the campus walls, discovery which is useful beyond the academic community and service that directly benefits the public.

Intensification of Engagement

Terms	Examples
Volunteerism	Students working alongside community, e.g. to salvage an old house or rebuild a community garden. Not connected to academic learning.
Outreach/ Extension	"Extending" resources of HEI to community, e.g. workplace training or education programmes.
Service-Learning	Pedagogical /curricular engagement where students/academic staff working collaboratively with community partners and linking to classroom learning, theory, and reflection, e.g. study of obesity as part of study of nutrition, and then sharing results with community.
Knowledge & Technology Transfer	Knowledge transfer (KT) support transfer of tangible and intellectual property, expertise, learning and skills between academia and the non-academic community. Technology transfer (TT) focuses primarily on commercialization of research to business and industry.
Community Engagement	Collaboration between HEI and community (local, regional, national) for mutually beneficial exchange of knowledge and resources in context of partnership and reciprocity; e.g. forming community development council to work on comprehensive revitalisation plans.
Regional Engagement	Mobilising resources for benefit of socio-economic development of region: 1) research and innovation, 2) enterprise and business development, 3) human capital development and 4) enhancing social equality; e.g. science parks, innovation parks, enterprise centres, city-university-enterprise initiatives.
Engaged Institution	Engaging as a whole not piecemeal with its surroundings, providing opportunities for individual learners, businesses, public institutions; managed in a way that facilitates institution-wide engagement with the city and region of which it is part; operates on a global scale but uses its location to form its identity.

MECHANISMS FOR UNIVERSITIES TO PARTICIPATE IN THE INNOVATION/SMART SPECIALISATION "**PROCESS**"



From Goddard

www.dit.ie/researchandenterprise

4. Indicators of Valorisation

Why assess higher education?

- Quality and cross-national comparisons are inevitable by-product of globalization and will intensify in the future;
- Systems and HEIs must be accountable and responsible – whether dependent on public or private funding;
- Measuring research, faculty performance and productivity, student learning outcomes etc. is unquestionably important;
- Good quality, international comparative information is essential to underpin strategic leadership and decision-making at the national and institutional level;
- Enable countries/universities to gain a greater understanding of their own situation by learning from/sharing experience and “good practice”.

Implications for Higher Education

- Primacy of fundamental scientific research (Techno-science paradigm) for social and economic progress has been defining characteristic of research policy over the last decades.
  - Underpinned expansion of university-based research, and sealed the "social contract" between taxpayer, structured governmental research financing, and research community;
  - Science would be privileged as long as useful.
- Severity of the global economic crisis has reignited debate about being accountable and ensuring value-for-money and return on (taxpayer) investment: assessing value, impact, and benefit of research.
- Shift in emphasis means it will no longer be possible to rely on the L'Oreal rationale: "because we're worth it."

Changing practices

Once research is seen to have value and impact beyond the academy, there are implications for what is funded, research organisations/management, and how it measured and by who;

- Balance between
  - Human capital development vs. economic/industrial strategy;
  - National priorities vs. Researcher curiosity;
  - Selectivity (funding excellence wherever it exists) vs. Concentration (targeted funding to strengthen capability/build scale);
  - New and emerging fields/HEIs vs. Existing strengths;

Challenges of Demonstrating Value

- Peer-review is backbone of academic culture, but it can also be a gate-keeper;
- Valuing the contribution of all disciplines – avoiding the narrowness of "techno-science" view of innovation:
  - Arts, humanities and social sciences find it difficult to explain/demonstrate value when compared with "scientific" discoveries – immediate impact is not always obvious.
- What is impact and how is it evaluated and over what timeline?
  - Results not easily codified into intellectual property or translated into new products and services;
  - Research creates value by causing "ripples" that are played out throughout society (Benneworth, 2012).
- Policymakers and HEIs need to revise how academic activity is valued and rewarded.

Democratizing knowledge

- Wider dissemination and adoption of research by society requires new tools:
  - Open source;
  - Digital repositories
  - Web-based tools, e.g. Google Scholar
- Democratizes knowledge production through greater public accessibility and transparency of scientific communication.
  - Peer-review can no longer be the sole or primary method by which research is assessed;
  - End-user or stakeholder esteem becomes a vital component ;
  - Broader range of indicators and methodologies required.

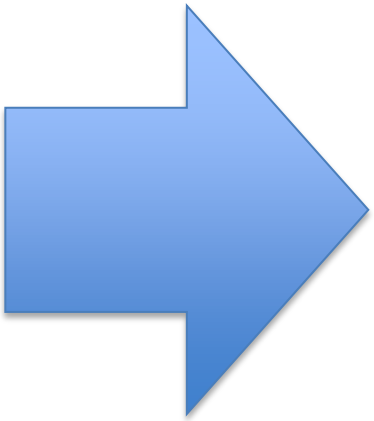
Social & Economic Impact

- ***Economic Benefits***, e.g. improved productivity; adding to economic growth and wealth creation; enhancing the skills base; increased employment; as well as unquantifiable returns resulting from social/policy adjustments.
- ***Social Benefits***, e.g. improving people's health and quality of life; stimulating new approaches to social issues; changes in community attitudes; influence upon developments or questions in society at large; informed public debate and improved policy-making;
- ***Environmental Benefits***, e.g**.** improvements in environment and lifestyle; reduced waste and pollution; improved management of natural resources; reduced consumption of fossil fuels; and adaptation to climate change;
- ***Cultural Benefits****, e.g.* supporting greater understanding of where we have come from, and who and what we are as a nation and society; contributing to cultural preservation and enrichment; and bringing new ideas and new modes of experience to the nation.

Research Outputs/Impact

- Journal articles

- Book chapters
- Computer software and databases
- Conference publications
- Editing of major works
- Legal cases, maps
- Major art works
- Major works in production or exhibition and/or award-winning design
- Patents or plant breeding rights
- Policy documents or brief
- Research or technical reports
- Technical drawings, designs or working models
- Translations
- Visual recordings



- Peer Esteem

- Impact on Teaching
- Improved Productivity, Reduced Costs
- Improvements on environment and lifestyle
- Improving people's health and quality of life
- Increased employment
- Informed public debate
- New approaches to social issues
- New curriculum
- Patents, Licenses
- Policy change
- Social innovation
- Stakeholder esteem
- Stimulating creativity

5. Conclusion: Implications for Policy and the Academy

Making an Impact

- The university can be a important connecting site for society – but it needs to engage directly and pro-actively rather than sitting on the sidelines (Delanty, 2001);
- Grand challenges require "sustainable solutions [to problems] in areas such as global warming, tightening supplies of energy, water and food, ageing societies, public health, pandemics and security" (Lund Declaration,2009).
- "Researchers who benefit from opportunities in cities should ask what they can give back. More than half of the world's people live in cities, and that number is growing rapidly. So if scientists want to help the majority of the population, they need to turn their attention to urban areas" (*Nature*, 2010).
  - In contrast, pursuit of world-class university status is driving HEIs to turn their back on needs of region/nation.

Because Policy Choices Matter...

- Create systems and structures that open higher education up to the region and include stakeholders equally in the research and knowledge production process;
- Actively encourage and support the formation of research and knowledge clusters as part of regional/spatial strategy;
- Recognise the value and contribution of all disciplines and fields to innovation;
- Review criteria for competitive research and assessment criteria;
- Adopt progressive inventor-ownership IP policy – Open science could enhance innovation by reducing the costs of knowledge transfer;
- Review academic career conditions and structures – particularly aimed at new researchers and women – to support research and innovation;
- Remove legislative and other governance constraints.

Because Academic Leadership Matters...

- Recognise the importance of use-inspired and socially-robust knowledge – which is socially and regionally engaged and globally competitive;
- Recognise the value and contribution of all disciplines and fields to innovation;
- Build collaborative knowledge clusters with other institutions and the wider community that occupy the distributed knowledge production system;
- Broaden definition of academic activity to embrace breadth of Knowledge Triangle, including recognition of research "beyond the academy";
- Align policy with assessment and recruitment practices, by developing appropriate incentive and reward systems to support and incentivize the production of socially robust research.

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