

Institution: The Glasgow School of Art
Unit of Assessment: 34 Art and Design: History, Practice and Theory
a. Context

- **The impact of our research – a key driver for GSA**

GSA research is grounded in and designed to advance our specialist disciplines, however, to progress GSA's creative impact beyond the academy into public, private and third sector fields, the research environment in GSA actively supports collaborations for impact with partners beyond our discipline demarcations and beyond HE. This objective has been central since RAE2008 and was one of five Key Objectives in the GSA's Research and Knowledge Transfer Strategy 2009-2013: 'to form alliances with partners of quality beyond our disciplines and higher education sector, locally, nationally and internationally to develop interdisciplinary and applied research'. The objective is carried forward from 2013 and beyond REF in Strategic Plan GSA2025, presently cited as 1 of 4 key drivers for the institution: 'Our Research and the growing impact it has', see <http://www.gsa.ac.uk/research/>.

- **Diversity of collaboration and influence – a representative selection**

The selected Impact Case Studies (ICSs) evidence success with this key institutional driver and demonstrate both a representative diversity of collaborations for GSA research and a high-level of influence. Our ICSs describe partnership with and impact upon: the Scottish Government; National Health Service Education, Scotland; Historic Scotland; CyArk, California; Ford Motor Company; Royal College of Surgeons, Edinburgh; Royal College of Physicians and Surgeons, Glasgow; Royal Incorporation of Architects Scotland; Glasgow City Council; UK Government, Department of Health; Royal Society of Arts; Directorate-General, Energy, European Commission; Building Research Establishment; and Cube Housing Association. These non-academic groups have all benefited directly from GSA research, as have users of co-designed products and services arising from the collaborations (e.g. digital models produced with CyArk; teaching technologies produced with NHS Education, and building technologies developed with Cube).

- **Routes to impact of GSA research – ICSs and beyond**

The ICSs submitted are drawn from three mature RKE entities within GSA's research community: Digital Design Studio (DDS), Mackintosh Environmental Architecture Unit (MEARU), and Design for Health and Care (DHC). 4 of GSA's 8 RKE Strategic Themes are foregrounded by the case studies: Digital Visualisation; Health and Wellbeing; Sustainability, and; Design Innovation. The full spectrum of GSA research impacts upon many other agencies and sectors and covers all seven of the given impact types. The following select examples, pertaining to all 8 of GSA's RKE Strategic Themes, further evidence strategic activity undertaken since 2008 to form alliances beyond our disciplines and beyond HE to increase the reach and impact from our research: Design Innovation: i) Institute of Design Innovation-led 'Creating Cultures of Innovation' in partnership with the Institute of Directors, bringing design thinking to bear in developing capacity for innovation in business: <http://www.culturesofinnovation.co.uk/about/who-we-are>; ii) Institute of Design Innovation-led 'Future of Public Libraries' in partnership with Argyll and Bute Council, Glasgow Life and South Lanarkshire Council, to promote the strategic vision and professional development of nine decision-makers in library services: <http://vimeo.com/76940056> iii) Institute of Design Innovation main partner in successful SFC £10m-funded 5-year Innovation Centre project, 'Digital Health Institute', to use digital technology to tackle the increasing demands on the health and care system in Scotland caused by an ageing population, launched October 2013: <http://www.scottish-enterprise.presscentre.com/Press-releases/Scotland-s-new-Digital-Health-Institute-unveiled-67e.aspx>; Contemporary Art and Curating: i) £300k AHRC-funded project, 'The Glasgow Miracle', in partnership with the Centre for Contemporary Arts, Glasgow, to make publicly available and transferable, previously inaccessible archive material to assist research and cross-sectoral understanding of the causes and conditions which encouraged the renaissance of the visual arts in Glasgow since the late 1970s: <http://glasgowmiracle.blogspot.co.uk/>; ii) an extensive public exhibitions programme, with four gallery spaces, attracting on average approximately 30,000 visitors per annum (HE-BCI) to exhibitions and events since 2008; Material Culture: i) an SFC-funded 'Centre for Advanced Textiles' (CAT) which makes commercially available research and expertise in digital textile technology: <http://www.catdigital.co.uk/pages/index.cfm/about/what-we-do/>; Education for Art, Design and Architecture: i) GSA lead on national sectoral Scottish

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Enhancement Themes work on Research Teaching Linkages for Creative and Cultural Practice disciplines, with attendant publication publicly available:

<http://www.enhancementthemes.ac.uk/pages/docdetail/docs/publications/enhancing-graduate-attributes-creative-and-cultural-practice>; Architecture, Urbanism and the Public Sphere: i) ii)

Editorship of journal 'The Drouth' (Rodger), Scotland's Literary Quarterly, with public events around Glasgow on urbanism the heritage of the built environment: <http://www.thedrouth.org/drouth-large/>;

ii) GSA-led public seminar series and publication, in partnership with the University of West of Scotland, 'Cultures of Independence', on the role of culture in Scotland within the referendum debate and beyond 2014: <https://www.facebook.com/culturesofindy>; Digital Visualisation: i)

DigiDoc Conference 2011, generated from the DDS Centre for Digital Documentation and Visualisation, an international gathering of digital technologists in the fields of architecture, archaeology and design, a collaboration between GSA, Historic Scotland and CyArk: <http://www.digitaldocumentation.co.uk/>; Sustainability: i) 'ZEMCH 2012', an international conference at GSA on zero energy mass customisation, led by MEARU (Noguchi), attracting over one hundred delegates from a range of sectors, including, academic, government, construction and architecture practices: <http://www.zemch2012.org/>. These few examples are chosen in part to indicate the coverage of GSA impact across policymaking; public services; civil society; cultural life; public discourse, and; education.

ii) GSA-led public seminar series and publication, in partnership with the University of West of Scotland, 'Cultures of Independence', on the role of culture in Scotland within the referendum debate and beyond 2014: <https://www.facebook.com/culturesofindy>; Digital Visualisation: i) DigiDoc Conference 2011, generated from the DDS Centre for Digital Documentation and Visualisation, an international gathering of digital technologists in the fields of architecture, archaeology and design, a collaboration between GSA, Historic Scotland and CyArk: <http://www.digitaldocumentation.co.uk/>; Sustainability: i) 'ZEMCH 2012', an international conference at GSA on zero energy mass customisation, led by MEARU (Noguchi), attracting over one hundred delegates from a range of sectors, including, academic, government, construction and architecture practices: <http://www.zemch2012.org/>. These few examples are chosen in part to indicate the coverage of GSA impact across policymaking; public services; civil society; cultural life; public discourse, and; education.

b. Approach to impact

- **Investment in support for Knowledge Exchange, dissemination and impact**

Since RAE2008 GSA has invested in four specific support and mentoring posts to advance the impact and reach of our research: i) a full-time, permanent Knowledge Exchange Manager; ii) a dedicated Business Development Manager for the Digital Design Studio; iii) a 0.8FTE Knowledge Exchange Manager, and; iv) a Client Relationship Manager dedicated to developing the impact of DDS research. As REF5 elaborates, in 2010, a f/t permanent Senior Research Manager and a f/t permanent Research Developer were appointed, the remits for which expressly cover the development of research outputs, dissemination and impact. The environment for dissemination and impact benefits from two further strategic posts: i) the Research Information Manager, with responsibility for the operation of RADAR, the GSA research repository; and, ii) the Institutional Repository and Records Manager, with responsibility for the GSA-wide development of the repository into the public domain, linked to the GSA website and informed by sector policies on Open Access. The Research Office has staged a number of developmental workshops for GSA researchers since 2011, including: i) Opportunities for Knowledge Exchange; ii) Impact Unpacked; iii) Bid Writing for Research; and, iv) Collaborative Research – why, how and who.

- **Knowledge Exchange Incentivisation Fund**

GSA established (2011) a £30k open application KE development fund to support staff to take their research beyond the academy and to form new and interdisciplinary partnerships beyond their specialist disciplines. To date, 8 projects have been supported, each contributing pathways to impact to at least one of GSA's Strategic Themes. Projects funded are i) 'Understanding Impact: Sculpture and Environmental Art Student Placements in Prisons', a project to explore the gains for prison educational programmes, learning from artist-led, studio-based contexts; ii) 'Smartest Place', the development of an urban planning tool with European development agencies, for dissemination through the EU COST Programme 1204: People Friendly Cities in a Data Rich World; iii) 'Cultures of Independence', a series of public debates on the role of culture within the Scottish referendum question and political positioning at large; iv) 'Philosophical Inquiry', a pilot project to deploy methods of philosophical inquiry in city schools, connected to Scot Gov Widening Participation agendas and objectives for the Curriculum for Excellence; iv) production of a film about the 'Futures of Public Libraries' project to make accessible the research and expertise of staff in the Institute of Design Innovation; vi) production of a dynamic CAD model of a product design specification of a hospital food trolley, to facilitate production discussions with manufacturers and NHS trusts; vii) the production of a catalogue to disseminate to non-academic audiences the research materials within the exhibition, 'Interwoven Connections: The Stoddard Templeton Design Studio and Design Library', 1843-2005; and, viii) 'Peripheral Visions', the transfer of a fine art photographic practice method to Government-defined 'fragile rural areas' to enhance understanding of place and placemaking amongst peripheral communities.

- **University Technology, and sectoral engagement**

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GSA is a participating member of online community 'UT.com' (University Technology: Invented in Scotland) and also the SFC-funded agency 'Interface', with GSA completing a 100% response rate to submitted requests. GSA staff have membership of: Universities Scotland Research and Knowledge Exchange Committee; Universities Scotland Research and Commercial Directors Group. GSA subscribes to: Culture.Info, Research Professional and Research Fortnight, with funding calls circulated to all staff via monthly email bulletins from the Research Office. KE staff are members of the Institute of Knowledge Transfer and the Design Research Society.

- **Public engagement**

GSA is particularly active in the role of public engagement and outreach, and seeks to promote widely the importance of its research. 2013 saw the inaugural, annual GSA Research Excellence Showcase, a public event structured around presentations by GSA researchers that demonstrated the range and critical mass of research in our groups and across our Strategic Themes. Over 50 attended representing organisations such as: Scottish Medical Civil Service; West of Scotland KTP Centre; Glasgow City Council and; Creative Scotland. Impact beyond the academy has been strengthened by investment in events, exhibitions and enterprises, all supported by an overhauled GSA public website and a new Media Centre. Our Annual Higher Education-Business and Community Interaction survey evidences a rising trajectory for GSA in respect of this dimension, with an average of c30k visitors per year to GSA public exhibitions.

- **KE Metrics**

Scottish Funding Council (SFC) measures evidence a return from the above approach and institutional investment in GSA's capacity to disseminate research and consultancy for impact beyond the academy. For example, firstly, consultancy income from SMEs in 2008-2009 was £104,164, rising to £243,147 in 2012-2013. Secondly, KE income overall was £500,187 in 2008-2009 rising to nearly £1.9m in 2012-2013.

c. Strategy and plans

GSA Research and Knowledge Transfer Strategy 2009-2013 placed a premium on forming alliances with partners beyond our disciplines and on diversification of funding. This objective is corroborated in the current strategic plan, GSA2025, as the institution foregrounds the importance of 'our research and the impact it has'. For the impact agenda, since 2008 capacity has been built around existing groups of research excellence, including those submitting ICSs, as well as emerging areas of RKE activity, such as Design Innovation (DI). In addition to investment in support for RKE noted above, capacity building for impact and knowledge exchange is evidenced by: i) establishment of DDS in a state-of-the-art facility in media hub Pacific Quay; ii) appointment of f/t permanent bid writer in DDS; iii) appointment of two f/t researchers and a p/t Research Fellow in MEARU; iv) extension of Fellow contract in DHC; v) establishment of Institute of Design Innovation, launched by Cabinet Secretary for Finance, Scottish Government; vi) launch of Experience Labs for DI in Inverness and Forres. GSA2025 progresses the impact agenda with the following published commitments: i) Be internationally recognised as thought-leaders in our key areas of research and scholarship; ii) Have an established reputation as a source of knowledge and expertise for policy-making and future thinking; iii) Have academically and financially sustainable research centres of international importance; iv) Be recognised for our interdisciplinary research and knowledge exchange grounded in our disciplines; v) Be an institution of choice for academic staff and research students of the highest calibre; vi) Have extended our strategic partnerships across academia, private, public and third sectors. Our research groups are key to the visibility of our research and its transferability, so too the aggregated institutional description of the critical mass of research excellence at GSA under the 8 Strategic Themes, especially for connection to networks and opportunities beyond the academy.

d. Relationship to case studies
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- **DDS – Digital Visualisation and Health and Wellbeing**

Launched in 1997 the Digital Design Studio (DDS) is a state of the art research centre focussing on developing cutting-edge, real-time 3D visualization and interaction technologies undertaking projects from basic, strategic and applied research through to consultancy and technology transfer. Research and industrial contracts span arts, science and engineering disciplines and are integrated with postgraduate academic activities to embrace multi-disciplinary thinking and the development and utilisation of new and emerging technologies. Core research focusses on developing new techniques for interaction, user oriented interfaces, haptics, gesture, 3D sound and

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real-time photorealistic 3D visualization. DDS has been engaged with commercial research from inception and has won major research funding from industrial partners such as Ford Motor Company USA, QinetiQ, the Defence Evaluation and Research Agency (DERA), BAE Systems, Thales, Fisher Defence, BBC Scotland and Historic Scotland. The DDS also has a very strong academic background securing research grants from EPSRC, NESTA, AHRC, Scottish Enterprise, EU FP6&7 and was also successful in winning an RCUK Academic Fellowship. The DDS has a large portfolio of projects with business and industry in Scotland, the UK and Europe, centred on expertise in real-time 3D visualization, 3D sound, modelling and animation. It includes work for Glasgow City Council (Glasgow Urban Model), Clydebank Rebuilt (Titan crane), QinetiQ (visualising innovative ship design), Thales (Future Infantry Soldier programme), James Fisher Defence (Submarine Rescue Service), and the BBC (real-time virtual model for BBC Scotland's new headquarters). It has also been successful in growing its CPD activities providing specially tailored courses to industry and local government. The three case studies offered illustrate, chiefly, impact on policymaking, public services, education, and cultural life.

- **MEARU – Sustainability and Health and Wellbeing**

The two case studies illustrate the scope of MEARU's impacts in urban housing in the social sector. The first, 'Environmental assessment of domestic laundering', a multidisciplinary, four-year research project (2008-2012) is an EPSRC-funded in-depth research study of the environmental impacts involved with domestic laundering. Peer-reviewed at planning and outcomes stages, impacts have already been considerable in terms of increased awareness of the issues, but it is hoped that longer term tangible impacts will emerge with revised housing standards and best practice leading to better health and wellbeing of occupants as well as to manufacture of improved components within the building industry. The beneficiaries of impact comprise governmental bodies, housing developers (private and public sector), consultants involved in new-build and retrofit housing design and procurement, construction and building component manufacturing companies, public health bodies and residents. The study provides evidence that an everyday domestic routine has environmental consequences for heating efficiency, indoor air quality as well as for various health risks, including asthma. The second case study, 'Wyndford options appraisal for Cube Housing Association' was designed around a much smaller budget and time-frame, however the impacts have been relatively rapid and tangible in terms of radical change to construction practice, which promises significant long-term benefits to occupants. The remit of this research consultancy was to provide a route to compliance with the Scottish Housing Quality Standard (SHQS) by April 2015, but also to take the residents out of fuel poverty and improve their general living environment. A district combined heat and power (CHP) system has been installed to provide wet central heating to all homes. The CHP package is a flagship development for Glasgow, which is a high-profile example of a very immediate applied impact for one set of residents and one housing association, but one that is likely to induce a significant ripple impact effect to other housing associations and other cities. The two ICSs provided by MEARU thus evidence impact, chiefly, on public services and policy making in the fields of construction and housing.

- **DHC – Health and Wellbeing and Design Innovation**

Design for Health and Care is recognised in having made progress towards the aims of cross-council research initiatives and challenges of inter-related lifelong health and well-being, ageing and healthcare agendas through collaborations in the UK and with Japanese institutions and rehabilitation centres concerned with 'super-ageing' populations. Commencing with the GSA/Bank of Scotland 'Challenge of Age' work in 1995, DHC has been supported (robustly) since 2002 by RCUK and other grant bodies: EPSRC (Extending Quality of Life, 2002-05); Japan Foundation (Research Fellowship, 2004); Royal Academy of Engineering (Global Research Award, 2004); AHRC/EPSRC (Designing for the C21st, 2006); ESRC (New Dynamics of Ageing, 2007-09, and 2008-12; MRC (Lifelong Health and Wellbeing, 2010-13); AHRC/SFC (A Healthier Scotland (2011-12); Royal Society of Arts (2011-12); National Institute of Health Research (Programme Grants for Applied Research, 2013-2018), and Great Britain Sasakawa Foundation (Butterfield Award for UK-Japan for collaboration in medical research and public health practice, (2007-10). DHC's core specialisms are in: i) optimising inter-disciplinary healthcare team collaboration through co-design processes and methods; ii) the co-development and co-design of 'complex interventions', and technological tools for health- and care-related research such as for nutrition management, and physical rehabilitation post surgery or stroke; and iii) the re-design of healthcare processes (e.g. end-of-life care for dementia, and psychological rehabilitation post spinal cord injury).