



Digital Health & Care
Innovation Centre



Phase 2 - Year 1 Annual Report

(August 2019 to July 2020)

Authors

Phase 2 – Year 1 Annual Report has been produced by the Digital Health & Care Innovation Centre Senior Management Team.

Acknowledgements

Phase 2 – Year 1 Annual Report reflects all work carried out by the Digital Health & Care Innovation Centre between 01 Aug 2019 and 31 July 2020.

Disclaimer

Phase 2 – Year 1 Annual Report has been prepared in good faith using the information available at the date of publication without any independent verification.

It has been reviewed and approved as an accurate reflection of the work of the Digital Health & Care Innovation Centre by our Executive Board before submission to the Scottish Funding Council.

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Contents

Chief Executive Summary	4
Phase 2 Achievements – Year 1	5
Innovation Cluster & Engagement	6
Project Portfolio	10
Skills Development & Knowledge Exchange	14
Demonstration & Simulation Environment	16
DHI Finances	19
Phase 2 - Year 2 Priorities & Plans	21

Foreword by the Chairman

As DHI has transitioned into its second phase of development it's clear that the enterprise has established itself as a highly respected player in the international digital health and social care community. This is evidenced not only by awards won, new sources of income secured, and commendations received, but also by the growing number of active participants in its innovation cluster.

Leveraging the platforms and competences built over the previous 5 years, the DHI has been able to rapidly engage with the challenges presented by the Covid-19 pandemic and support the Scottish and UK governments' efforts to address this public health crisis.

Innovative digital solutions have been developed within very short timescales and deployed into routine clinical practice by teams who have had to embrace completely new ways of working.

This outstanding achievement should not overshadow the many other important projects and programmes that have continued to be delivered and are outlined in detail in this report.

The Board would like to pay a special tribute to the DHI leadership and team who have shown an unrelenting commitment to the enterprise and all the many stakeholders it serves during these unprecedented times.

John Jeans CBE - Chairman of DHI Board



Chief Executive Summary

The first year of Phase 2 of DHI has been interesting, satisfying and challenging in equal measure. This year has seen the successful closure of a number of projects, whilst others have further evolved and expanded as the results of our work have demonstrated real added value to the health and care system as well as real benefits to patients, service users and their families. With the emergence of coronavirus in late December 2019 and the subsequent global pandemic that we are all living through, the real value that DHI delivers for Scotland has come to the fore. The whole team have been actively involved in support of the Scottish and UK Governments in the management of Covid-19. DHI has both informed, designed and delivered significant components of the digital response to the pandemic.

Utilising our DSE infrastructure, DHI has assisted in the delivery of the Test and Protect response. We produced, in an accelerated timeframe, the digital tools used by Scotland's Health Protection Teams, the result notification service for patients and the patient focussed contact tracing self-service app. The DHI team has also assisted in the development of the coronavirus clinical assessment app for doctors, nurses and carers, as well as ensuring data can flow seamlessly and securely into the NHS public health services and the intelligence function.

These are just some examples in a much larger list of activities that DHI has been engaged in and delivered. As well as this, DHI has continued to build its pipeline of future initiatives and has evolved and refined an innovation process that ensures that anything that we do is not simply interesting or exciting but is regarded as a local, regional or national priority for Scotland and is capable of adoption and scaling over time.



Professor George Crooks OBE

Now we have in place a number of strong strategic relationships with both national and international leaders in digital health and care. Some of the international organisations that we have secured as collaboration partners over the past year include the European Connected Health Alliance, the Ministry of Health and the Health Service Executive in the Republic of Ireland, Kaiser Permanente in California, the University of California San Francisco and the Commonwealth Centre for Digital Health. Closer to home we are building working relationships with NHS Digital and the Ministries of Health in Wales and Northern Ireland. These relationships will not only benefit DHI but also the broader digital and health and care community across Scotland over time.

We are determined to build on our existing successes and continue to lead this important agenda through secure, effective and sustainable person centred services for all of Scotland's people.



Phase 2 Achievements - Year 1

“A huge thank you to everyone at DHI for the efforts on responding to Covid-19. The DHI team have responded brilliantly to the challenge set and many have gone above and beyond to deliver or drive forward the tools and systems that have made a major difference to citizens and key workers across Scotland. The ongoing support from DHI is hugely appreciated and I look forward to continuing to build on all of the hard work to date.”

Jonathan Cameron,
Deputy Director – Digital Health and Care, Scottish Government



Innovation cluster

An active innovation cluster of **1664**

28 DHI led events

9 partner events

Over **6** new strategic partners (MOU)

5 Awards won

5 International field trips



Number of Projects

Total of **25** projects managed

13 phase 2 projects onboarded:

2 Core funded

6 joint funded

5 additionally funded

12 projects carried over from phase 1b

4 projects ready for adoption and scale



Education & Skills

19 Research reports

4 Publications

12k report downloads

24 MSc students

32 team applications from 128 students from across Scotland participated in Digi Inventors Challenge

1301 MOOC students

2 Work placements



Demonstration & Simulation

Demonstrations

320 visitors

Simulations

6 completed

Procurements

3 completed

1 in progress

Partnerships

Joint innovation model development with NHS GGC & NHS Lothian

5 transferrable digital solutions delivered

Investment

DHI has secured £2.56m of additional funding

Innovation Cluster & Engagement

We currently have **1664** people listed as part of our innovation cluster. This is comprised of individuals who have attended and participated in niche meetings in our DSE, our network of commercial and academic contacts and our healthy ageing innovation cluster membership. We will be updating this list to remove non-active participants and ensure GDPR compliance, using a new sign up form on our website. This will create one central database for all communications and calls to action.

In addition to all the national and international external events that our Senior Management Team are asked to participate in we have also led 28 events. This includes 4 events where there were over 100 attendees (DH&C conference, Discover Digital, CHANCE - Midterm conference and KP - virtual event) and 24 events with under 100 attendees.

Strategic Collaborations

We have worked with other Innovation Centres and strategic partners on nine high profile partner events. These being

1. DigilInventorsChallenge in association with Glasgow Warriors, Swarm Online, Orcha, Aberlour Children's Charity, Scottish Institute for Enterprise and TEDxGlasgow
2. Digital Health and Care conference and fringe events
3. Discover Digital in association with the Alliance at the Glasgow Science Centre
4. The development of #IDEA59 exhibition in association with Glasgow Science Centre
5. #STEMFEST in association with STEMFEST Glasgow and Glasgow Science Centre
6. Glasgow City Innovation District events in association with University of Strathclyde
7. CAN DO Innovation Summit
8. Cancer Innovation challenge in partnership with The Datalab
9. FUTUREquipped in partnership with the Construction Scotland Innovation Centre



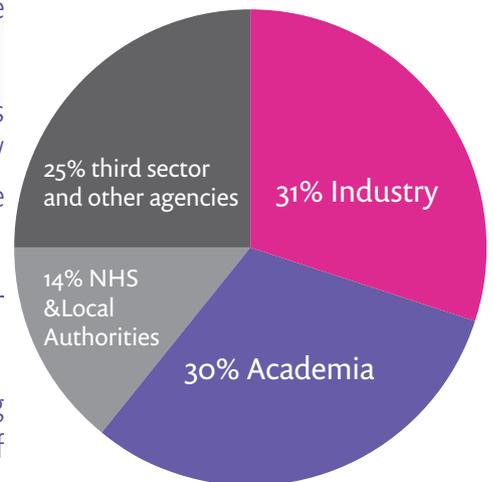
“As a Scottish based digital health SME, Sitekit has worked closely with DHI since its foundation, partnering on several projects including the DHI demonstration and simulation environments. DHI has uniquely facilitated innovative collaborations, bringing together partnerships that would not have been possible without DHI’s trusted catalyst role”.

Elgar Finlay, CEO of Sitekit Solutions

Healthy Ageing Innovation Cluster (HAIC)

Since July 2019:

- HAIC have met three times across the central belt, with the fourth meeting postponed due to Covid-19 restrictions
- HAIC has grown the membership to over 267 individuals representing academia, Industry), NHS/Local Authorities/HSCPs and the third sector and other agencies (refer to pie chart)
- The Cluster has also been included in the European Cluster Collaboration Platform
- We were exploring a collaboration with Healthy Ageing Great Week Japan, but this has not progressed because of Covid-19.
- We are researching new virtual ways to deliver our events for next year



Engagement & Marketing Communications

- We have published 13 news stories over the period
- We have undergone a brand refresh and are developing a new website . Launches October 2020
- Monthly e-newsletter
 - We have reached an audience of 1097 active subscribers (an increase of 24% from the previous year)
 - We have an average click rate of 9.7% which is above the industry average of 5.2%
 - Our unsubscribe rate is 0.2% which is better than the industry average of 0.3%
- Social media
 - Our Twitter following has increased by 19% to 4300 followers since last year. We have posted 236 messages.
 - Our LinkedIn following has increased by 244% to 5274 followers. We have shared 81 posts during the period and our post engagement has increased to 5.47%
- We have received 48 significant enquiries via our different communication channels and have signposted 14 onto other partners and stakeholders for assistance

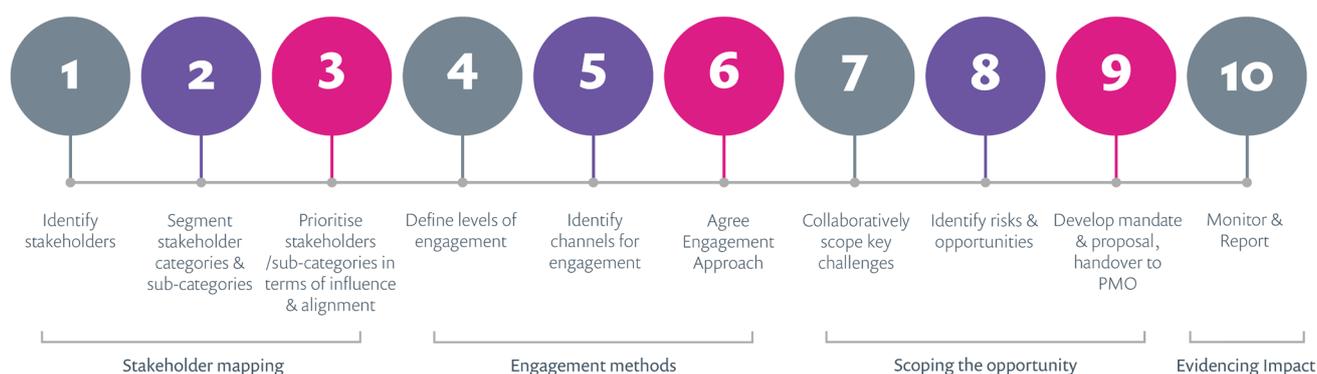
“Glasgow Warriors are delighted to partner with the Digital Health & Care Innovation Centre(DHI) and support their #DigiInventorsChallenge. It is great for us to align with an organisation that is focused on making a positive impact on Scotland’s people and their communities through digital health and care. We take real pride in our commitments that contribute to our community, and I look forward to working with the DHI over the coming years to inspire Scotland’s young people and make a difference.”

Nathan Bombrys, Managing Director, Glasgow Warriors

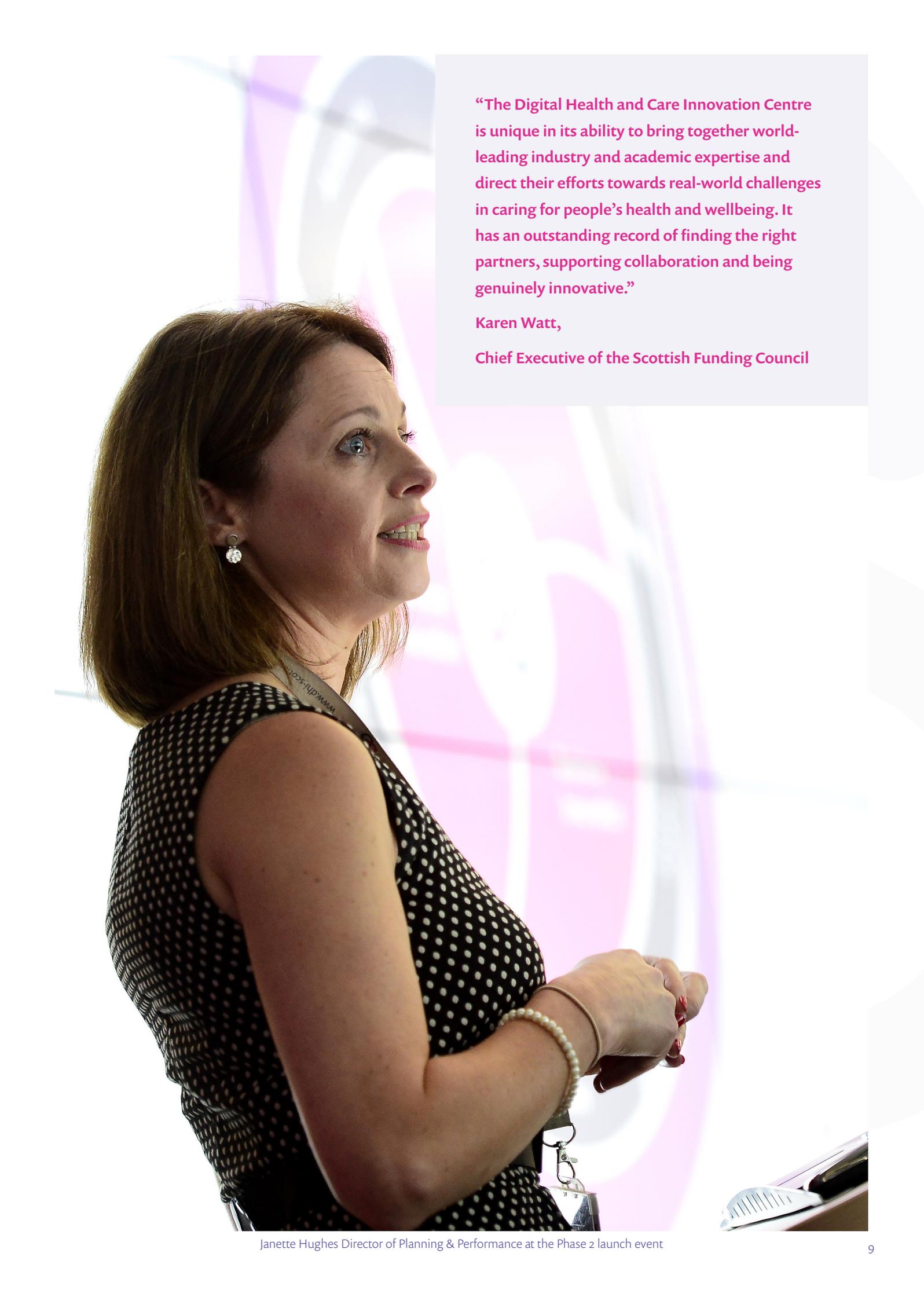
- Awards - DHI (and our partners) have won 5 key awards over the last year:
 - Three applications to the Innovation in TEC Awards 2019 - **Our Chief Executive Officer, Professor George Crooks OBE, won the Individual TEC Leadership Award for Strategic Leader**
 - Five applications to the Scottish Health Awards 2019
 - Three applications to the Digital Health & Care Awards 2020 – **Our ARMED project won the Independent Living Award**
 - EHTEL Symposium 2019 - **Our Chief Executive Officer, Professor George Crooks OBE, was awarded with Honorary Membership for his relevant and continued support to the organisation**
 - One application to the Interface Knowledge Exchange Awards 2020 – **Our ARMED project was named Innovation of the Year**
 - One application to the Tomorrow’s Care Awards 2020 – **Our ARMED project won First Place**
 - Three applications to the Holyrood Connect Awards 2020 – postponed due to Corona Virus but all 3 have been shortlisted as finalists (Kate Mark & Jay Bradley for Rising Star Award and SCOTCAP for Industry Collaboration Award)
 - One application (SCOTCAP) for Life Sciences Awards Dinner 2020 – postponed due to Corona Virus but shortlisted as a finalist
- DHI have focused this year on developing a comprehensive engagement strategy and model that will allow us to prioritise on key digital health and care opportunities. This includes a refresh of the stakeholder map in partnership with others in the Scotland ecosystem, reinforcing engagement methods and tools to ensure we fully understand the opportunity and can evidence impact.

DHI engagement model

This is structured into 10 non-linear phases to support iterative development



See Appendix B for a detailed review of DHI innovation cluster activity

A woman with shoulder-length brown hair, wearing a black sleeveless dress with white polka dots, is shown in profile from the waist up. She is looking towards the right and appears to be speaking. Her hands are clasped in front of her. She is wearing a pearl bracelet and a diamond earring. A lanyard with a badge is visible around her neck. The background is a bright, abstract pattern of pink and white shapes.

“The Digital Health and Care Innovation Centre is unique in its ability to bring together world-leading industry and academic expertise and direct their efforts towards real-world challenges in caring for people’s health and wellbeing. It has an outstanding record of finding the right partners, supporting collaboration and being genuinely innovative.”

Karen Watt,

Chief Executive of the Scottish Funding Council

Project Portfolio

DHI’s project portfolio has evolved rapidly over the last year. It is aligned to our strategic priorities, ensures we have a diverse spread of projects across our Innovation Model all with improved readiness levels.

As an impact of Covid-19 we have exceeded the number and range of projects in the first year of phase 2, and accelerated projects to be adopted at scale in light of the exceptional circumstances surrounding the crisis.

To manage the increased demand and pace, DHI reinforced the Programme Management Office over the last 6 months. We have further refined the 5-stage process to ensure all projects are qualified and scoped, with standard procedures in place to plan, onboard, deliver and monitor performance, impact, and associated risks and issues robustly.

Our Phase 2 project portfolio from August 2019 to July 2020 therefore consisted of a total of 25 projects being undertaken:

- 12 projects were carried forward from Phase 1b;
- 13 projects were onboarded as part of this new Phase 2 (7 of which were Covid-19 related)

The tables below list the projects managed in this 12-month period.

The projects carried forward from Phase 1b	New projects in Phase 2
SCOTCAP	Person Centred Records (PCR) -NHS Grampian
Atrial Fibrillation	T2 Diabetes and childhood weight mgt (NHS Tayside)
Type 2 Diabetes conversation at diagnosis	NHS GGC (Diagnostics)
Next Generation Asthma Care	Mental Health – Scottish Government
Care 4.o (Future of Care)	Frailty - Midlothian pathfinder
Scottish Access Collaborative	ValMed (Janssen – Stage 2)
Decision Support	Dynamic Scot
Project ValMed (stage 1)	C-19 Test and Protect - NNS
My Cancer mAI Care (Macmillan Cancer Care) (Stage 1)	C-19 Test and Protect - STT
NWE.CHANCE (EU Interreg)	C-19 Test and Protect - Co3
TITTAN	C-19 Clinical assessment tool (CAT)
NHS GGC (Gastro/Trauma & Orthopaedics)	C-19 Care in Place (CHAT)
	C-19 Decision Support

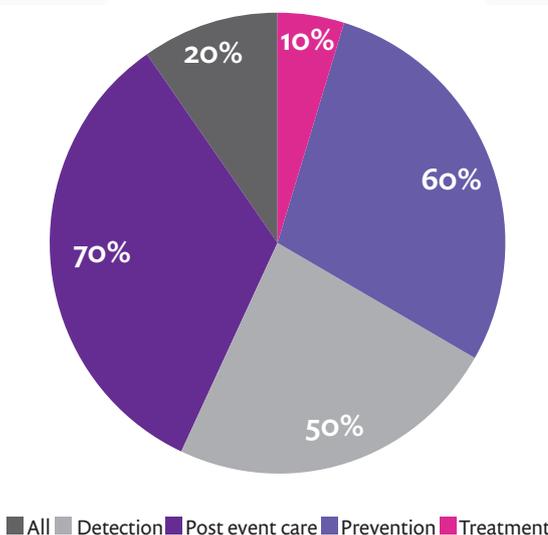
The 25 projects align to the main DHI priorities set out in the Phase 2 business case, this includes:

Healthy ageing projects like Mid-Lothian frailty and the ARMED project gaining traction, a range of innovations that respond to some of the greatest **non-communicable condition** demands placed on the system (i.e. diabetes, cardiovascular, respiratory, cancer and mental health) to projects that build **capability and capacity**, with all of the Covid-19 projects strongly within this space e.g. TAP (test and protect) the Covid-assessment app, Care in Place, decision support tools, and the NWE.CHANCE 'Hospital at home' project lending itself to more effective and efficient services.

However, in the last year our focus on **citizen empowerment** has received much enthusiasm locally and internationally, with the future poised for the moment that true person centred innovations and data sharing becomes a reality for health and care. Projects like Care 4.0, ValMed and Next Generation Asthma have paved the way for constructive conversations and real progressive action for year 2 in this field. Full project details including key impacts can be found in Appendix C.

Not only do the 24 projects align to DHIs strategic objectives, the project portfolio covers the entire Care Continuum well with the lowest number of projects within Treatment (10%), and the majority of projects covering the DHIs purposefully focussed domains; Prevention (60%), Detection (50%) and Post event care (70%) within community settings (see pie chart for breakdown).

An important focus for DHI within our Phase 2 business case was not only the number and breadth of health and care innovation projects progressing through our pipeline, but also our ability to deliver projects that were ready for adoption and scale at a national level.



Adoption readiness

When DHI talk about ‘Adoption Readiness’, we are looking at the ability for a health or social care service to take on a new or refined digital service and roll it out at scale. Over the last 12 months, DHI have delivered **four key projects** that have reached a maturity level in which the technical and service innovation could be adopted and scaled up nationally. This has exceeded our year 1 target.

Out of the four projects, three were Covid-19 specific and the fourth is our flagship project SCOTCAP. The Covid-19 projects (Test and protect National notification service - NNS and Test and protect Simple tracing tool - STT, Decision support tools) were developed rapidly in partnership with key industry partners (Scottish Government, the NHS, and NHS National Services Scotland) and deployed with some made available nationally within 6 weeks, an exceptional result for DHI and all partners involved.

“Working as part of the team to deliver the NNS and STT showed the power of a collective ‘can do’ attitude and what can be achieved when faced with a crisis. The way that stakeholders across all the agencies played their part was impressive and made the delivery of the solutions in a pressurised environment a positive experience to be part of. The job of pulling this together and holding it all together should not be underestimated and the partners like the DHI and NSS should receive the acknowledgement they deserve for delivering the NNS and STT. The DHI brought to the table a level of expertise and experience in delivering products and joint working with industry partners, and they provided a safe environment to develop the tools. The DHI development process ensured that what is delivered is built with service users in mind and fits with the required service model. As a Department we look forward to working with the DHI on new projects in the future.”

Martin Egan, Director of Digital, NHS Lothian

The SCOTCAP project is a key national project led by DHI which has delivered in all aspects, blending robust academic evaluation with service, technical and business innovation to develop an at scale service offering for capsule endoscopy which is ready for adoption. This new innovative service model is now being adopted by NHS Scotland as part of the Covid-19 Remobilisation plans for Endoscopy Services.

The impact and benefits of the project include

- Enabling early and effective community-based point of care diagnostics for suspected bowel cancer
- An alternative to colonoscopy to avoid unnecessary referrals for outpatient appointments and reduction in waiting times
- Minimise disruption and potential to reduce unnecessary travel for patients/carers
- Delivery of an Innovation Partnership Framework to support innovative procurement for Public Services in Scotland and an exemplar approach to scaling up innovation

In this first year of phase 2 our expertise and experience in collaborating, co-designing and successfully delivering projects has been further recognised, we have proven ourselves to be a trusted and a credible resource which reliably delivers.

DHI projects differentiated

All DHI projects embrace a team-based approach and the use of innovative digital methods to engage, which has played an ever-increasing importance when working under the current Covid-19 situation. In bringing together all the necessary disciplines to allow innovation for this sector to be understood and realised quickly, this multi-team approach has been key.

Co-design is a fundamental part of all our projects. A unique aspect of the DHI, and a factor differentiating it from other innovation centres is the role played by design and by our GSA design team. From the initiation of the first phase of DHI, the purpose of the group was to employ design to ends ‘beyond the aesthetic’.

This means that in addition to determining how a service appears or functions, a purpose of design in this context is to act as a method through which the needs of users and citizens are established, understood and documented in a way that supports the co-design and development of scalable, adoption ready solutions. See Appendix D to learn more about the design innovation and critical work undertaken by our design team.

The Digital Health and Care Innovation Centre (DHI) delivered a stimulating Healthy Aging workshop at TEDxGlasgow 2019. It was well chaired and generated a thought-provoking discussion amongst the groups with a diverse range of views and suggestions. The materials provided were a really innovative way of facilitating a discussion. The outputs from the session were fed into the healthy ageing cluster chaired by the DHI.

Jamie Steed, Innovation Strategy & Life Sciences DED: Enterprise and Innovation Division



SCOTCAP Readiness Checklist

Leadership, Stakeholder Engagement and communications

- Secure executive sponsorship for service change and agree with the Senior Responsible Owner (SRO) how best they can influence and support the project.
- Identify the key stakeholders to engage with early and agree how best to keep all stakeholders informed of progress.
- Agree and identify key champions, their roles and secure commitment for duration of the project.
- Secure input from Communication Team within Health Board to develop communication briefings for all staff and wider public locally.

Local Project Team Mobilisation

- Establish a local project team within Health Board with clearly defined roles and responsibilities for Clinical and Service Leads and ensuring cross sectoral representation.
- Review SCOTCAP adoption resources developed to support the project which are available in the shared information repository.
- Agree how the project team will make decisions and co-ordinate project reporting requirements.
- Identify any additional project resources required by the team to deliver the changes.

Governance and IT Interface

- Review and approve the SCOTCAP Information Governance baseline documents - early engagement with Information Government Lead.
- Review and approve the Patient Specific Directive (PSD) for supply and administration of specified bowel preparation products for CCE.
- Review and consider IT requirements associated with EMS and agree delivery timescales.

Service Pathway Mapping (current and future state)

- Review "current state" Colonoscopy pathway with a view to anticipating any barriers or issues.
- Work with SCOTCAP Adoption team to identify local service requirements and needs. Make early decisions including preferred a) location of SCOTCAP Clinics, b) Belt and Recorder "drop-off points" and c) considering how many patients will require the procedure on a weekly basis.
- Agree how Vetting will be coordinated locally.

“Reduced capacity for optical colonoscopy combined with an increasing demand for lower GI diagnostics in health care systems resuming in the post Covid-19 era, has further defined the need for increased diagnostic capacity within Health Boards and the role of CCE within that.”

Scottish Government

Skills Development & Knowledge Exchange

The work carried out by Research Knowledge Management team (RKM) underpins and informs the work carried out for our partners and key stakeholders.

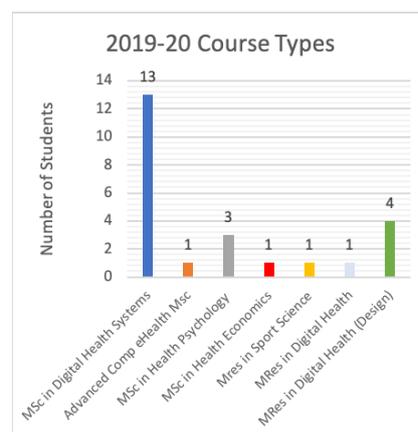
Research Reports & Publications

Over our last 12 months the RKM team have delivered 19 research reports, including a contribution to an academic report to the government. In addition, one large extensive piece of commissioned research by SDS and three factsheets have been produced. The majority of the reports (16/20) have contributed to supporting decision making on a strategic level by the NHS or the Scottish Government. More specifically, seven research outputs have contributed to the national response, with two flash reports produced (see Appendix C - Covid-19 projects).

Masters Scholarship Funding

The DHI supports the development of a pipeline of talent for the Digital Health and Care sector by awarding annually up to 20 FTE Master's scholarships for students taking an MSc or MRes studies in Digital Health and Care. In 2019/20, DHI awarded 16 full-time and 8 part-time students (equates to 20 FTE). These were allocated across seven Scottish universities, and cover a broad range of courses, including:

- Systems-focused
- Psychology
- Design-led Digital Health



These courses (see bar chart above) prepare a broad range of skilled graduates catering for the growing needs within the digital health and care domain. In addition to the MSc, DHI has partnered with other organisations to develop the 'Power of Data for Health and Care' MOOC which has attracted over 1301 students over the last 12 months.

Work Placements

Between August and September 2019, two students undertook short work placements with DHI:

- Athina Tatsi, an MSc student at the University of Strathclyde completed a report that explored the key challenges of healthy ageing ([Report on Health Ageing 2.0 Key Challenges: High Level Review of the Scottish Context](#))
- Ross Macintosh, an MRes student at the Glasgow School of Art, assisted with the co-design of Macmillan (My Cancer MAI care) workshops prototyping a tool that will use analytics to predict the service needs of people living with cancer in the future

Additional Funding

Our RKM team have attracted £219,740 additional funding in 2019-20:

- £27,000 - Skills Development Scotland (SDS) for Skills and workforce survey, a follow-on study to solidify findings from the Spotlight -report (2019), an animation aimed at 11+ year old school students to inspire them to think about careers in digital health and care, and organising two Catalyst workshops to start implementing the recommendations from the Spotlight report, and to produce a call for action by SDS
- £147,740 - MSc funding (2020-21) confirmed, which will be implemented in year 2
- Additional projects also leveraged over £330k in academic grants commissioned by partners (Janssen, Macmillan and Scottish Government) distributed to a range of Scottish Universities (i.e Aberdeen University, Strathclyde University and Abertay University).

Knowledge exchange (Local and International)

DHI undertake a range of activities to increase exposure of DHI and Scotland's Innovation ecosystem. In the past 12 months there have been over ten keynote presentations to international audiences with a range of field trips to, Finland, Ireland, and the USA (Boston and California) resulting in a range of Memorandums of Understanding (MoU) being established, with common areas of focus:

- Knowledge exchange – sharing best practice
- Joint bid opportunities
- Expansion of DSE

These trips have resulted in strong partnership working to progress on the commitments outlined above. In addition, discussions continue with the Commonwealth Digital Health division on a joint bid being developed, to set up a Global network of DSEs in four regions (e.g. Sri Lanka, Rwanda, Pacific islands and Caribbean). Another key partnership that has gathered momentum in the last three months is with Kaiser Permanente (California division) where a range of webinars are planned for 2020. The most recent Kaiser Permanente webinar that DHI organised attracted over 95 delegates, who participated to understand how Kaiser Permanente implemented remote digital tools in response to Covid-19 in the Southern Californian area.

DHI continue to further our strong partnerships with Europe and work closely with the SG European team. In the last twelve months we have strengthened our connections with Norway, Slovenia and Denmark which has resulted in collaborative activities such as successful Twinning applications which will be progressed in DHI 2.0 – Year 2.

See Appendix E for a detailed review of all RKM activity.

DHI is 1 of 12 European Digital Innovation Hubs based in the UK and 1 of 2 in Scotland

Demonstration & Simulation Environment

Our DSE is a key pillar of Phase 2 allowing DHI to demonstrate and simulate collaboratively the 'Art of the Possible' to progress the adoption of digital within health and care in Scotland. Over the last 12 months the DSE has created a set of infrastructures that follow and can be controlled by the citizen (rather than an organisation), to rebalance the power dynamic to help achieve the desired objective of co-managed, integrated, person-centred services in Scotland.



Summary

- Delays to the DHI Health Data Exchange Infrastructure re-procurement were extended because of Covid-19 pressures. This procurement will now take place up to October 2020. This effectively defers the start of the expenditure for DSE asset development (capex) to now run across year two and three of DHI Phase 2
- In parallel strategic partnering processes are being set up with NHS GG&C and NHS Lothian to be core partners in simulation delivery
- While awaiting the HDE procurement we delivered simulations (and subsequently live services) for four Covid-19 related projects (see Appendix C for the Covid-19 project details).
- In parallel, DHI DSE completed two further simulations, centred around the Personal Data Store Infrastructure, in partnership with Scottish Government
- This means that the DSE has hit its target number of simulations for the year
- Our simulation services have created high demand, which shall be met by significant activity in Autumn 2020 once the Health Data Exchange is procured
- Governance has been matured over the last 12 months with the DSE team convened the first Technical Steering group in November 2019, and the second in June 2020. This group includes NES with key representation from NDP (National Digital Platform). The Covid focused projects were shared with the steering group who were supportive.
- Demonstrations have been suspended due to the Covid-19 situation, and we are taking advantage of this to scope a move of the physical DSE environment to elsewhere on the Strathclyde campus over the autumn

Partnerships

- Joint innovation model development and asset sharing with NHS Greater Glasgow & Clyde / NHS Lothian commenced in year 1 and will be formalised further in year 2.

Procurements

Complete	In progress	Pending
<ul style="list-style-type: none"> Appointed a Distributed Ledger Technology Supplier (Wallet Services) Appointed an OpenEHR consultancy, infrastructure provision (as proxy for the National Digital Platform) and support service (Better.Care and Inidus) Appointment of a Personal Data Store supplier (Mydex CIC) 	<ul style="list-style-type: none"> Appointment of a Health Data Exchange supplier by October 2020 	<ul style="list-style-type: none"> Appointment of an app quality assurance / regulatory compliance supplier (Q4 2020) Appointment of 5-8 individual product development suppliers on a project by project basis (Q3 2020 Onwards) – see simulation schedule for content.

Integrations

A key purpose of the DSE is to support interoperability and person-centred data sharing.

Complete	Pending
<p>Health Data Exchange (HDE) connected to:</p> <ul style="list-style-type: none"> NSS integration hub (and then onto SCI store, Docman and Trakcare) Personal Data Store Apple Healthkit / Google Fit Fitbit <p>Organisations that have connected to HDE:</p> <ul style="list-style-type: none"> Sitekit Lifebook ResMed home oxygen devices Bluetooth blood pressure cuff A range of bespoke apps for Patients and professionals <p>Citizen Wallet integrations:</p> <ul style="list-style-type: none"> Cohesion life wallet to OpenEHR CDR Cohesion life wallet to PD 	<p>Health Data Exchange (HDE) to:</p> <ul style="list-style-type: none"> OpenEHR CDR 5-8 developments to connect to HDE and PDS PDS to Open EHR CDR

Demonstrations

- DSE attracted over 320 senior visitors, resulting in pipeline projects being progressed and some projects transferred for further adoption
- Covid-19 has required the temporary cessation of physical demonstration environment activities.
- A move of the DSE is planned for the end of 2020, to be enhanced and functional by March 2021



Simulations

As per the Phase 2, the DSE will host six simulations over the year. Below is an outline of the target simulations that align with the DHI Project Portfolio. Note that this is a long-list, and some may not reach full maturity. The simulation schedule is dependent on partnership agreements, procurement activity and third-party funding. As such, the portfolio will be managed dynamically with work re-prioritised to deliver as constraints allow each quarter.

Complete	In progress
<ul style="list-style-type: none"> Care Review Wallet - Quarter 1 2020 Digital Identity VA Prototype - Quarter 2 2020 C-19 Clinical Assessment App – Q2 2020 C-19 Simple Tracing Tools – Q2 2020 C-19 Covid Community Co-Management – Q2 2020 C-19 National Notification Service – Q2 2020 	<ul style="list-style-type: none"> Macmillan Co-Managed Care Plan - Quarter 4 2020 Asthma Care Planning - Quarter 3 2020 SG Verified Attributes for COVID – Q4 2020
Scoping	Paused
<ul style="list-style-type: none"> PAMIS Digital Passport, Fitness for Surgery App - Quarter 4 2020 BHF Cardiac Support Services Community Pharmacy BP Tools 	<ul style="list-style-type: none"> Midlothian Frailty Circle of Care v2 Lanarkshire Diabetes Care Planning

Transferable Digital Solutions

Five were achieved, in excess of the two targeted, including:

1. Dynamic Scot (COPD) - Targeted
2. Digital Dermatology – Targeted
3. C-19 Simple Tracing Tools
4. C-19 National Notification Service
5. C-19 Clinical Assessment Tool

The success of attracting Industry in year 1 through the DSE assets has led to a strong pipeline of industry partners and international parties interested in replicating such a facility and methodology. The DSE growth plans in year 1 included the expansion into the North of Scotland, through the Moray Growth deal. These plans will increase opportunities for more focussed economic development capabilities and will be progressed in year 2.



“Collaborating with DHI to develop transformed care pathways has been very rewarding and highly enjoyable. Their vision for and expertise in digitally enabled healthcare aligns with our own ambition - to fundamentally transform patient centred healthcare using patient generated data from apps and devices, and integrations with healthcare systems leading to improved outcomes for patients and healthcare staff alike. Working with DHI on the Demonstration and Simulation Environment (DSE) presented opportunities to collaborate with other digital health innovators and sector specialists in both health and care. Together, with encouragement from DHI, we’ve been able to reimagine new models of care for a range of specialties that place increasing value on securely exchanging patient data to generate new insights, improve treatments and help those working on the front line in health and social care.”

Craig Turpie, Co-Founder & Director, Storm ID

DHI Finances

Core Income

At 30th June 20, the total budgeted core income was £2,048,078. This included the Scottish Funding Council grant of £1,500,000 and The Scottish Government grant of £500,000 respectively. Additional Scottish Government core income of £86,809 was confirmed after the initial budget was set and was profiled to be spent at the end of Year 1.

An adjustment of £98,251 was made in March 2020 to reflect the reconciliation of £98,251 of SFC funding for Phase 1a and Phase 1b. This offset a corresponding reduction in the SFC grant funding received in March 2020.

Core Expenditure

Actual core expenditure as at the end of June 20 was £1,775,292 with a positive YTD balance of funds of £311,517. This represents an additional £78,050 positive balance from the May 2020 position and has been broken down into approx. £153,611 in SFC core grant underspend, and £157,906 in Scottish Government grant underspend at this point in DHI 2.0. Actual staffing costs were £1,277,554 representing 72% of overall core expenditure. Actual operational costs were £497,738 (28% of all core costs).

It should be noted that there are five significant underspends and one overspend in the year to date:

Staffing

- £54,815 underspend on Corporate staff. This is mostly due to slippage in vacancy recruitment and actual figures for salaries being less than anticipated. A large proportion of the underspend has been utilised to offset the unbudgeted costs of the Service Development staff in Year 1, which was approved after the budget had been established.

Non-Staffing

- £50,000 underspend on academic grants. Slippage on this element has now been addressed with a call for academic grant proposals for £75k issued in June and three responses received. Award currently pending.
- £44,670 underspend on Marketing/Events/Comms. This was due to legal issues associated with new website development, which have since concluded. Website development and rebranding have progressed with the new website due for launch in October 2020. A further £32k of Marketing spend has fallen into July, with the remainder anticipated to be spent early in Year 2.
- DSE Capex underspend of £84,636 due to a managed procurement delay to partner with NSS and NHS GGC on the data exchange layer contract, representing a more integrated, beneficial solution.

- An underspend of £28,544 on Property and Facilities is being analysed against previous yearend adjustments to ensure accuracy. This underspend is anticipated to reduce by £4,000-5,000 depending on accruals.
- An overspend of £16,790 on Other Running Costs this has increased significantly since the May report. A detailed analysis of this overspend is underway to inform budget planning and controls for Year 2.

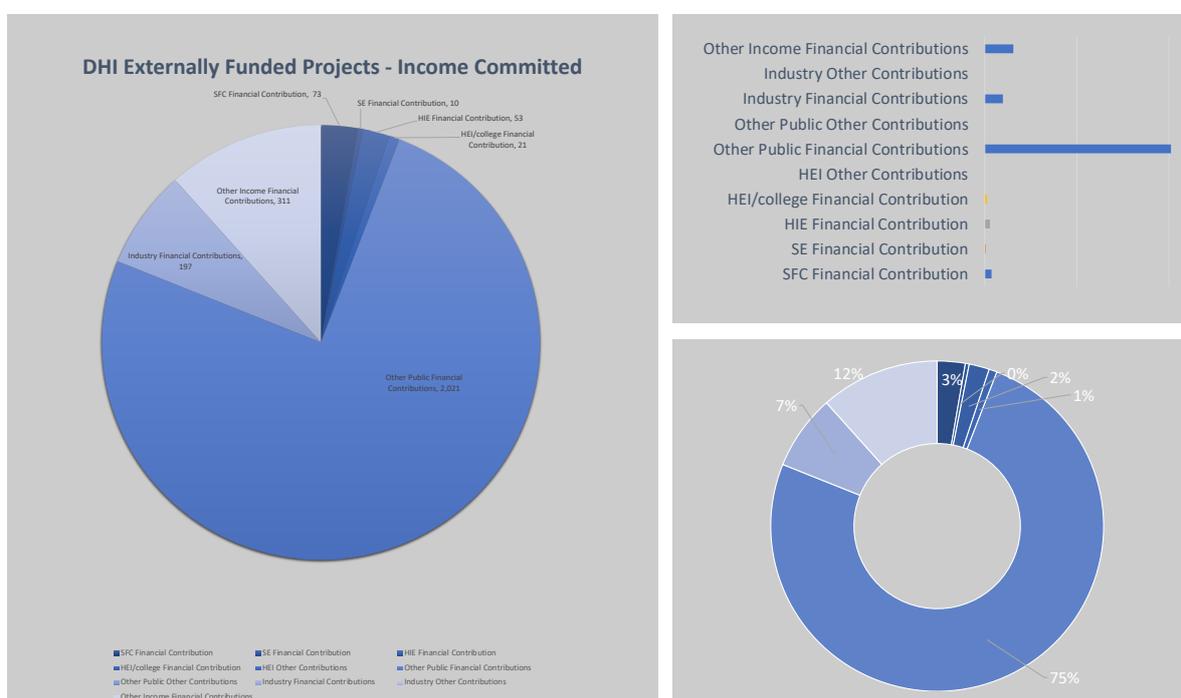
The positive end of year position for Phase 2/Year 1 has mainly resulted from a range of unconnected activities and issues i.e. additional Scottish Government carryforward of £87k from Phase 1; initial slippage in staff recruitment timescales pending formal approval of Phase 2; slippage against academic grant awards, DSE procurement and the new website development.

Most of these activities have been progressed over the course of the year and/or are scheduled for early Year 2. The positive balance has been reprofiled as part of the Year 2 budget setting processes, and as detailed in Section 4 of this report.

Additionally funded projects as at end of July 2020

There is currently a total value of £2.56m associated with DHI leveraging additional funding. The income from additional funding is associated with a range of key stakeholders; Industry, Public sector and economic development agencies (see the pie chart below for the split as per SFC MEF categories). There are also six significant pipeline proposals awaiting formal approval / grant awards with an estimated value of £139,060.

If all of the pipeline projects are funded, this will equate to £2,699,145 in additional funded projects secured in DHI Phase 2/Year 1 against our 5 year target of £3m. It should be noted that a potential contribution of £121k to the DHI Growth Fund is anticipated. This will offset increased operating costs associated with the recruitment of temporary posts as outlined in the DHI 2.0 Business Plan, and as required to address the needs of managing this extended portfolio of activity.



Phase 2 - Year 2 Priorities & Plans

DHI will continue to work closely with all funders, partners and stakeholders to understand the demands on the system, with a pledge to evolve DHI services to reflect key capabilities. In doing so, over the last 12 months we have already commenced putting this insight into action, with our priorities for the second year of Phase 2 under our 4 key delivery pillars including a focus on:

- Refining our engagement process to further develop our Innovation Cluster and partner activities
- Maintaining a balance portfolio of live project that cover both the Health & Care sectors that delivers against the care continuum and readiness levels (to ensure the pipeline of innovation and adoption ready projects surface). From this, some key areas of focus have been identified:
 - Care at home
 - Hospital at Home
 - Diabetes
 - Mental Health
 - Citizen empowerment
 - Service remobilisation
- Promoting future skills and workforce capabilities by sharing innovation and best practice globally. This will increase workforce capacity within Scotland through HE/FE collaborations and knowledge exchange
- Expand DSE to other regions and nations: build a strong local and international network of experts in this field to demonstrate, simulate and test innovations using living labs which will allow DHI to share and transfer innovations across regions and test and share innovations
- We remain committed to building on the momentum, success and hard work the entire DHI team and partners contributed in the first year of Phase 2. We will continue to position Scotland as world leaders in this field, with a key focus on pioneering new innovation methods and approaches to accelerate digital health and care adoption and scale.

