

Creative Informatics E1 1

report



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Synopsis

This report reflects on the investment of Creative Informatics (CI) at Edinburgh Napier University in the physical infrastructure of a lab, E11 to support the use of emerging new creative technologies by creatives. The report discusses the types of equipment invested in and how this equipment supported R&D that was used by both creatives and academic practitioners and considers how this type of low threshold borrowing might be supported in the future to support the development and uptake of CreaTech in the creative industries. The report reflects on the different types of R&D activities which took place in the E11 space for exploration, experiencing and experimentation of creative tech by creative businesses and researchers. Additionally, the studio was used to support over twenty individual creative and academic R&D projects. A programme of E11 outreach events (Studios and Friday Forums), hosted in-person and online during the global pandemic, reached with 758 participants.





Introduction

Creative Informatics (CI) received £10 million funding to support R&D in the creative industries in Edinburgh and Southeast Scotland city Region deal¹, primarily from the Arts and Humanities Research Council (AHRC) as part of the Creative Clusters² programme which invested £80 million in innovation and skills development for the creative industries across nine clusters as part of the UK Government's Industrial Strategy.

Creative Informatics³ brought together the City of Edinburgh's and the southeast of Scotland's world class creative industries together with the tech sector by providing funding and development opportunities for creatives in the use of 'CreaTech' – where creativity meets technology- and a data-driven approach to innovation. Creative Informatics took a 'whole sector' approach which views the creative industries as an industry comprised of nine subsectors as defined by the UK Government's Department for Culture, Media and Sport (DCMS): 1) Advertising and Marketing, 2) Architecture, 3) Crafts, 4) Design and Fashion, 5) Film, TV, Video, Radio and Photography, 6) IT, software and computer services, 7) Publishing, 8) Museums, Galleries, Archives and Libraries (GLAM) and 9) Music, Performing Arts and Visual Arts.

Creative Informatics took a multi-faceted approach to R&D that supported 1) a programme of *outreach* events, 2) the investment in *physical infrastructure*, 3) a *start-up programme* 4) a programme of strategic *investment in R&D funding* streams (Connected Innovator, Resident Entrepreneur and Challenge projects) over a four-year period (2019-2023). In this report we reflect on the investment of Creative Informatics (CI) at Edinburgh Napier University in the *physical infrastructure* of a space. The purpose of the E11 studio was to support the local creative industries by providing physical space and access to specialist equipment, including specific technologies requested by creatives to prototype and investigate new opportunities. This report reflects on the effectiveness of E11 as a tangible venue for exploration of new creative technologies and an intangible asset that provided opportunities for experimentation, testing and networking during the period that Creative Informatics was active, including two years of intermittent lockdown during the global pandemic⁴.

¹ <https://esescityregiondeal.org.uk>

² <https://creativeindustriesclusters.com>

³ <https://creativeinformatics.org>

⁴ Creative Informatics received a no-cost extension from the AHRC to continue its activities until March 2024 but core programming had been delivered by then.

1. E11 Studio

The physical studio space called E11 was established at the Merchiston campus of Edinburgh Napier University in December 2019 as an informal studio space offering creative practitioners access to a range of state-of-the-art technology equipment (e.g., VR headsets, robotics kits, audio and video, motion capture, 3D scanning and holographic equipment), along with support for using this equipment. Its strapline of ‘explore, experience, experiment’ reflected the ethos of the space to encourage a low-threshold, safe space where creatives would be encouraged to try out pieces of technology. They may not be familiar with CreaTech or want to explore the potential benefits of a specific technology for their creative practice. E11 provided both time and opportunity for creatives to experience a range of technologies prior to deciding whether to integrate them into their practice in the longer term. The equipment (see list in appendix 1) supported experimentation with various new emerging technologies including audio, such as directional sound, moving image technology, such as state-of-the-art 360 degree camera equipment, immersive technologies, such as Virtual (Oculus quest 2) and Augmented reality headsets (Magic Leap, Holo Lens and HTC Vive), holographic technology (Looking Glass and HyperVSN), motion capture, projection and mapping technology (Lidar for iPad Pro, Lightform) and robotics (Anki Vector, Peto Bittle) as well as basic introductory starter kits to coding and robotics (Sphero Bolt, Arduino, Raspberry Pi) and associated screen, lighting and audio infrastructures to support the above technologies. E11 has an online presence where creatives can view the list of equipment and get in touch with staff to discuss equipment needs and use of space: <https://e11.studio>.

The contribution of Edinburgh Napier University research support technician has been invaluable to the operational side of the E11 space since the re-opening of the space after lockdown. This support included setting up wireless networks to connect the equipment and resources, install software and keep it up to date, and set up demo reels to be able to demonstrate its capabilities. The support also included providing informal support and signposting, as well as individually tailored technical advice sessions for users of E11. This ENU in-kind contribution to Creative Informatics has made the functioning of the E11 space possible and has opened it up to a wider audience.

“I received absolutely crucial advice about the best suited equipment for my project [using the Hololens] on the very first visit [to E11]. Furthermore, on another 3 or 4 occasions I got specific technical support and equipment demonstration from [the research technician] in the E11 studio. Thanks for that – the project wouldn't work without it! The provided technical expertise, advice and shared knowledge started, grounded and positioned my project. It also opened new directions for my own research and new collaborations with Digital Past Lab (Israel) and ISOLabs (Glasgow). As part of collaborative research, I would like to further explore and expand many of the starting points and research questions initiated through work and discussions in E11.”

(academic researcher)

It was identified that the provision of technical support of the E11 studio will be crucial for its future use as a creative lab space. As a current user put it: “A continuation of technical expertise to maintain and ensure the smooth running of the equipment loans and E11 space”.

This in turn supported the creation of knowledge and assets which could benefit others. For example, with support from the technical support, the loan of the Hololens by a recipient of a CI Small Grant supported the production of a workflow which established a methodology for using Unity and created holographic assets, which can now be used for demonstration purposes of this equipment by others.

E11 supported specific Creative Informatics funded projects by providing access to, and loans of, technical equipment but also provided access to kit for projects by members of the community that were not necessarily funded by Creative Informatics. Equipment loaned included a 360-degree camera to a performer for inclusion in a Fringe show in summer 2023. The camera was also loaned to a glass maker in September 2021 whose practice was pivoting to include immersive technology provided through the Creative Informatics supported DISTANCE project (Panneels, 2023)⁵. DISTANCE had introduced VR technology to craft practitioners during the global lockdown and enabled them to work collaboratively remotely in digital space in both synchronous and a-synchronous ways. It was noteworthy that the project encouraged several makers to experiment with other digital media and introduce and mix it into their analogue working practices such as 3D scanning, 3D printing as well as still and moving imagery. These examples demonstrate how the same equipment might find different applications in different disciplinary fields.

The loan of VR headsets to the CI community included a month-long loan to experiment with in their own space and the use of VR in school workshops by creatives.

“The kit has allowed us to take our VR work and practice to much larger groups and work with them in a more embedded and creative way. We took headsets to youth groups in locations from Cumbria to Kirkcaldy and it was fantastic to see them get creative in VR”

(Creative in receipt of CI funding)

The loan of the 3D scanner (Wavetable) facilitated the scanning of objects in live mix media for live coding performances:

“Access to the studio and scanner has helped me explore 3D scanning for form finding in my art practice. Continued free access to and advice surrounding digital tools (3D scanning, motion tracking, VR/AR/XR, cameras) [would be helpful for future developments]”

(creative practitioner)

The purchase of a Real Sense Depth camera was instigated by a creative business in receipt of CI funding who were keen to try this new lidar technology to test its appropriateness for real-time live tracking of live performances on a stage to enable responsive projection mapping. The subsequent loan of the camera also supported the Creative AI Residency funded by Creative Informatics in autumn 2022. It is thus clear that access to equipment which might ordinarily be out the price range of creatives, without the certainty that this type of equipment

⁵ Panneels, I. Helgason, I., Smyth, M. and Darzentas, D. (2023) Distance: digital immersive technologies and craft engagement. Track: digital futures/hybrid reality. Cumulus conference, Antwerp, March 2023.

is right for them or appropriate to their needs, was an important role that E11 provided by giving access to and support of creative technology.

Audio kit such as headphones were also lent out to support the participation of Creative Informatics supported creative businesses in South by Southwest (<https://www.sxsw.com>), an international gathering in Texas, USA, that celebrates the convergence of tech, film, music, education and culture and a key event for CreaTech. Similarly, E11 kit travelled to several Beyond conferences (<https://beyondconference.org/#>), the UK headline events which support CreaTech.

E11 equipment was also used to specifically support R&D activities by academic staff to support their CreaTech projects. The loan of Liteform 3D projection mapping kit was used in support of development work for a multi-media interactive performance developed with theatre companies Upswing and Unlimited. The output from the R&D project was a pitch video for further funding. The end result was a large scale afrofuturist aerial performance called Ancient Futures <https://unlimited.earth/project/ancient-futures/>.

It is notable that there was not just an interdisciplinary approach to working within creative disciplines but the use of CreaTech by other disciplinary fields. The 3D scanner was used for example for the scanning of bone fragments by engineering students to support a feasibility study and establish whether this technology was suited for their purpose.

2. E11 Studio Programme

At the start of the Creative Informatics, an outreach programme was launched as informal events to provide opportunities for creatives of all disciplines to explore new approaches and to try working and experimenting with data and emerging technologies in a friendly, practical environment. CI Studios were regular, informal events open to creative practitioners, presented both in-person and, during Covid-19, online. The choice of themes for the studios was responsive to suggestions from the Creative Informatics community and audiences, including topics such as building chatbots, digital music making and data sonification, coding and no-code, climate data and green making and 3D scanning (see appendix 2). These Studio events were intended to be introductory and informative, and to enable peer collaboration and knowledge exchange. The events were open to anyone to attend and were designed to offer benefit to both novices as well as creatives with more experience. Between 2019 and 2023, twenty-three CI Studios were hosted as hands-on events typically for 10 to 20 participants each, with overall 415 participants (see appendix 3). At the height of lockdown in summer 2020, the Studio programming pivoted to deliver a weekly online event which was branded as the Friday Forum programme as a means to keep the CI community together over summer 2020 and reached an audience of 343 people (254 creatives and 79 no-creative enterprises)⁶.

It was envisaged that the Studios programme would be delivered in E11 but in anticipation of the space being completed by December 2019 it was delivered through a programme of 'roving' Studios (#1, #2 and #3) in venues across the city of Edinburgh. E11 was completed in December 2019 with the first Studio (#4) taking place in E11 in January 2022. When the UK went into lockdown in March 2020, and necessitated the closure of the E11, the Studio programming pivoted online during the pandemic of 2020-2021. Once restrictions were lifted

⁶ Please visit <https://vimeo.com/483637667> for records of the twelve Friday Forum

in early 2022, a tentative programme of events was launched and a further six studio events were delivered in E11, covering topics such as ‘Music Making with a Game Boy’ and ‘An introduction to coding with BBC Micro: bit’ or ‘Building a chatbot to find out what your customers really think!’. The Studios were programmed by CI staff, often in response to and in collaboration with members of the Creative Informatics community. For example, Creative Informatics supported a local start-up by hosting two Studio events (#7, #20) which introduced the Creative Informatics community to the concept on chatbots, how to design and deploy chatbots in a creative context and explore the potential of conversational AI for collecting feedback on their own products or services, using their no-code platform, which allows users to define chatbot dialogue, manage deployments and capture responses without any technical knowledge.



3. E11 users

Besides the use of E11 as a hub for storing and demonstrating CreaTech and its associated programme of Studio events, the space was also used for other purposes. In this section we reflect on the impact of E11 on its users. The investment in creative technology, especially emerging technology provided, supported both the creative community that Creative Informatics served, but also supported the development of research by academic staff, particularly through the Small Grants scheme which Creative Informatics dispersed. The user groups were thus categorized into two distinct groups: creative freelancers or SMEs from the

Creative Informatics community and academics in receipt of Creative Informatics funding to support research.

Informal conversations between CI staff and members of the CI community, informed observations on how and why E11 was used by its users. Furthermore, five practitioners who each represent different categories of user of the E11 studio, were asked to respond to a questionnaire to reflect on how the use of E11 space and equipment supported them in their creative practice or research. Their feedback and comments are included below. From their responses, four categories of use of E11 were identified: 1) as a testing space, 2) research lab, 3) film studio and 4) host space.



1) Testing Space

When borrowing equipment from E11, creatives from the Creative Informatics community sometimes also needed access to a dedicated space where they could test their ideas, bring in user groups to test their product or service or bring an invited audience to showcase their work in a professional environment if perhaps their own creative workspace might not have been appropriate or suitable.

“Primarily we just used the [E11] space without borrowing any of the specific equipment. The resources in the space - it being easy to rearrange and with various projection surfaces etc was great for us.

(creative practitioner, CI community member)

E11 was used to host events that showcased work-in-progress, to gather feedback from audiences: ‘The Sound Beneath Your Feet’ audio project, for example, supported by a CI small Grant, performed volcano sounds working with sensor and volcanic data, using directional sound systems. A Creative Informatics supported business used E11 to test their app in July 2023 for example. Similarly, a CI Challenge fund recipient hosted several beta testing workshops with and for CI community members to inform the development of a haptic VR app in 2022.

2) Film Studio

As part of the Creative Informatics outreach work, E11 was used as an ad-hoc film studio to make two short demo films that showcased two case studies of how creative technologies have impacted creatives in the Edinburgh region. The use of Virtual Reality by a craft practitioner and knit wear designer was filmed in E11 (<https://vimeo.com/799154359>) to demonstrate how VR could be used to ‘play’ and iterate designs quickly and without material use. Similarly, the use of creative coding by a novice coder and applied to a visual arts practice was explored in another short video filmed in E11 (<https://vimeo.com/799085490>). These resources were made to demonstrate both the use of CreaTech to others and promote E11 as a resource.

3) Academic Research Lab

Whilst Creative Informatics mostly dispersed small R&D funding to creative practitioners and small businesses, it also funded academic research, mostly through the Small Grants scheme which supported twenty R&D in academic research with small seed funding of up to £ 5,000 across University of Edinburgh (8) and Edinburgh Napier University (12). These funds supported academic time and resources and were often supported by E11 through equipment loans, technical support and networking opportunities.

Examples of Small Grants funded research project supported by E11 include the loan of directional audio equipment, motion capture for novel sound application, motion capture for dance performance (leading to international collaborations), sensors for deployment outside or the 360-degree camera to support lipreading. The equipment loans included technical support and advice.

E11 was also used by the ENU Interaction Design Research group, introducing them to E11 kit and encouraged further research developments.

4) Hosting Space

E11 was also used for non-R&D purposes but related CreaTech activities. The Scottish Game Week Steering Group, for example, held their debrief meeting in E11 in December 2022 to reflect on the impact of the annual Scottish Game Week industry event. E11 was also used by the University to demonstrate its industry engagement, by hosting Industry Innovation Day in May 2023 for example. Similarly, E11 was used to showcase this type of industry engagement to international delegations to ENU, including UX research groups from Finland in May 2023, or VIP visits to the University.

Bright Red Triangle (<https://www.brightredtriangle.co.uk>), the University incubator and enterprise hub, hosted business advice session for the creative Informatics community in autumn 2023 as part of business skills Masterclass plan.



Conclusion

The experience of E11 and its concomitant programme of Studios and emergent community of practice supported the development of R&D in the field of CreaTech. The E11 studio functioned as a central spoke in a range of activities which focused on the hosting of specialist creative technology which the Creative Informatics community could borrow to experience and experiment with and explore how these might fit into their creative practices and businesses. The availability of creative tech on its own however, is not sufficient. Knowledgeable technical support service is essential to make the technology function, maintain it and build up resources to facilitate its introduction to users. This supportive and handholding activity was crucial. There were additional activities such as the Studio programme to introduce or expose creatives to its possibilities. E11 also functioned as a space to test, network and host related events. Feedback from E11 users noted that it was the combination of equipment and technical support which were critical to their successful projects and supported by access to both physical space and networks of knowledge people. In short, the provision of a space such as E11 is brought to life by the staff that support it and the community that uses it and requires as much input as the capital expenditure.

Recommendation

It is our recommendation that future (University) spaces that have specific industry focused remit to encourage the use of creative technology for R&D purposes in the creative economy is supported by 1) access to equipment not normally afforded to creative SMEs, 2) technical support, 3) space and 4) networks.

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Appendices

See pages 12-17

Appendices

Appendix 1: List of Equipment of E11

List of digital equipment purchased and housed in E11, dated summer 2023.

| | Equipment Name | Type | Category | Product Page |
|----|---------------------------------|--------------------|------------------|---|
| 1 | Zoom H4n Pro Microphone | Microphone | Audio | https://zoomcorp.com/en/gb/handheld-recorders/handheld-recorders/h4n-pro/ |
| 2 | Focusrite Scarlett 4i4 | Audio Interface | Audio | https://focusrite.com/en/usb-audio-interface/scarlett/scarlett-4i4 |
| 3 | U-PHORIA UMC22 | Audio Interface | Audio | https://www.behringer.com/product.html?modelCode=POAUX |
| 4 | Anker Soundcore Boost | Speaker | Audio | |
| 5 | Emeet Officecore M2 | Conference speaker | Audio | https://emeet.com/products/speakerphone-m2 |
| 6 | Neewer RL18 Ring Light | Light | Lighting | |
| 7 | BI-FLEX M7 Kit | Light | Lighting | https://www.prolightdirect.co.uk/product/micro-1x1-bi-flex-m7-30x30cm/ |
| 8 | Keith McMillan BopPad x 2 | MIDI Controller | Audio | https://www.keithmcmillen.com/products/boppad/ |
| 9 | Launchpad Pro | MIDI Controller | Audio | https://novationmusic.com/en/launch/launchpad-pro |
| 10 | Neewer NW600 Dolly | Tripod Dolly | Camera Equipment | https://www.bhphotovideo.com/c/product/1638554-REG/neewer_10094541_nw_600_heavy_duty_photography.html |
| 11 | Rotolight Neo 2 | Light | Lighting | https://www.rotolight.com/product/neo_2/ |
| 12 | Haoge LH-E52T 52mm | Lens Hood | Camera Equipment | |
| 13 | K&F UVL Concept 67mm | Lens Filter | Camera Equipment | |
| 14 | K&F UVL Concept 52mm | Lens Filter | Camera Equipment | |
| 15 | Canon EOS R | Camera | Camera Equipment | https://www.canon.co.uk/cameras/eos-r/ |
| 16 | Canon RF 35mm 1.8f Macro IS STM | Camera Lens | Camera Equipment | https://www.canon.co.uk/lenses/canon-rf-35mm-f-1-8-macro-is-stm-lens/ |
| 17 | Canon RF 24-105mm f4 IS USM | Camera Lens | Camera Equipment | https://www.canon.co.uk/lenses/canon-rf-100mm-f2-8l-macro-is-usm/ |
| 18 | Fujifilm X10 | Camera | Camera Equipment | |
| 19 | ZOMEI Q111 Tripod | Tripod | Camera Equipment | https://www.manfrotto.com/uk-en/befree-3-way-live-tripod-head-mh01hy-3w/ |
| 20 | Manfrotto MH01HY-3W | Tripod | Camera Equipment | https://www.manfrotto.com/uk-en/befree-3-way-live-tripod-head-mh01hy-3w/ |
| 21 | Generic Stand x 2 | Tripod | Camera Equipment | |
| 22 | Neewer 155cm Tripod | Tripod | Camera Equipment | https://www.amazon.co.uk/Neewer-10087146-Professional-centimeters-Aluminum/dp/B01I1C9FOE |
| 23 | Neewer Reflector | Reflector | Camera Equipment | |

| | | | | |
|----|---|---|---------------------|---|
| 24 | RODE Lavalier GO | Microphone | Camera Equipment | https://rode.com/en/microphones/lavalier-wearable/lavalier-go |
| 25 | Universal Audio VOLT 1 | Audio Interface | Audio | https://www.uaudio.com/audio-interfaces/volt-1-usb.html |
| 26 | GoPro 360 MAX | Camera | Camera Equipment | https://gopro.com/en/us/shop/cameras/max/CHDHZ-202-master.html |
| 27 | Ultimate Ears Mega Boom | Speaker | Audio | https://www.ultimateears.com/en-gb/wireless-speakers/megaboom-3.html |
| 28 | Anker Nebula Capsule Max | Projector | Screens | https://uk.seenebula.com/collections/all/products/d2423 |
| 29 | iomega 120GB Firewire HDD | Hard Drive | Storage | N/A |
| 30 | CN-160 LED Video Lighting | Light | Camera Equipment | https://neewer.com/products/on-camera-led-lights-66600043 |
| 31 | JVC DVP-7E | Camera | Camera Equipment | N/A |
| 32 | Phillips Hue G93 E27 bulb | Light | Lighting | N/A |
| 33 | Oculus Quest x 3 | Virtual Reality Headset | Virtual Reality | |
| 34 | HTC Vive x 2 | Virtual Reality Headset | Virtual Reality | |
| 35 | Looking Glass | Hologram Projector | Hologram | https://docs.lookingglassfactory.com/getting-started/looking-glass-16 |
| 36 | 2 x Apple iPad Wifi | Tablet | Tablets | |
| 37 | 3 x Galaxy Tab A | Tablet | Tablets | https://www.samsung.com/uk/tablets/galaxy-tab-a/ |
| 38 | 3 x Galaxy Tab A8 | Tablet | Tablets | https://www.samsung.com/uk/tablets/galaxy-tab-a/ |
| 39 | Microsoft Surface Pen and Dial | Accessories | Accessories | N/a |
| 40 | 3 x Pico Neo 3 Pro | Virtual Reality Headset | Virtual Reality | https://www.picoxr.com/us/neo3.html |
| 41 | Neuron Perception Motion Capture Studio | Motion Capture Kit and Axis Software Studio | Motion Capture Suit | |
| 42 | Peel 3D Hand Held Scanner | 3D Scanner | 3D Scanner | |
| 43 | Magic Leap | Augmented Reality Headset | Virtual Reality | https://www.magicleap.com/magic-leap-1 |
| 44 | 3 x Holo Lens 2 | Augmented Reality Headset | Virtual Reality | https://www.microsoft.com/en-us/hololens/ |
| 45 | Generic Monitors | Monitor | Monitors | N/A |
| 46 | 2 x Intel RealSense LIDAR | 3D Scanner | 3D Scanner | https://www.intelrealsense.com/lidar-camera-l515/ |
| 47 | Lightform Projected AR | Projected Augmented Reality | Projected AR | https://lightform.com/ |

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|----|---|--------------------|------------------|---|
| 48 | 5x Arduino Starter, Joysticks and Motors | Arduino Components | Microcontrollers | https://store.arduino.cc/products/arduino-starter-kit-multi-language |
| 49 | Raspberry Pi components (8x Pi 4 model B) | RPI Components | Microcontrollers | N/A |
| 50 | 5 x Medium micro:bit s + 10x micro:bit | Micro:Bit | Microcontrollers | N/a |
| 51 | Lego Box | Lego | LEGO | N/A |
| 52 | 6 x Google Cardboard | VR Headset | Virtual Reality | https://arvr.google.com/cardboard/ |
| 53 | Bnext VR Headset | VR Headset | Virtual Reality | N/A |
| 54 | Nanoleaf Canvas | Light | Lighting | https://nanoleaf.me/en-GB/products/nanoleaf-canvas/ |
| 55 | Phillips Hue Play Light Bar + smarplug + light | Light | Lighting | https://www.philips-hue.com/en-gb/p/hue-white-and-colour-ambiance-play-light-bar-double-pack/7820230P7 |
| 56 | Beyerdynamic DT-770 Pro | Headphones | Audio | https://europe.beyerdynamic.com/dt-770-pro.html |
| 57 | 3DiSmart 3D Printing Pen | 3D Printer | 3D Printing | Can't Find |
| 58 | Petoi Bittle Robot Dog | Robot | Robotics | https://www.petoi.com/ |
| 59 | Anki Vector | Robot | Robotics | https://www.digitaldreamlabs.com/collections/vector-products |
| 60 | Sphero Bolt x 5 | Robot | Robotics | https://sphero.com/products/sphero-bolt |
| 61 | Audio Spotlight AS-16iX x 1 Audio Spotlight AS-168iX x 2 | Soundbeam Speakers | | https://www.holosonics.com/audio-spotlight-24ix |
| 62 | Avocor Large Interactive Display | Model AVF-8650 | | |
| 63 | UC Video Conference Smart Soundbar & Camera | UC-SB1-CAM-L-FLEX | | |
| 64 | HyperVSN Solo | Holographic | Holography | https://hypervsn.com/hypervsn-solo-combo |

Appendix 2: Eventbrite Data on Studio Programming

The listing below details the Studio programming which predominately took place in E11 and other venues across Edinburgh, as deemed more appropriate to fit the content or audience of the studio subject. For example, Studio nr 23 took place in a venue with a cinema style auditorium to accommodate the screening of a film or Studio 17 took place in the Fruitmarket Gallery to coincide with another CI Lab event at this city centre venue.

The CI Studio Programme data was retrieved from Eventbrite:
(<https://www.eventbrite.co.uk/o/creative-informatics-18717122091>)

| Studio Nr | Date | Title | Venue |
|-----------|---|--|---------------------------------|
| #1 | 4 April 2019 | Creating Experiences | Glass Room, ENU |
| | https://www.eventbrite.co.uk/e/creative-informatics-ci-studios-1-creating-experiences-tickets-59181868562?aff=ebdsoporgprofile | | |
| #2 | 17 May 2019 | Scanning 3D artefacts | Edinburgh Sculpture Workshop |
| | https://www.eventbrite.co.uk/e/creative-informatics-ci-studios-2-scanning-3d-artefacts-tickets-61029045518?aff=ebdsoporgprofile | | |
| #3 | 22 October 2019 | What makes creative data different? | Skylight Venue |
| | https://www.eventbrite.co.uk/e/creative-informatics-ci-studio-3-what-makes-creative-data-different-tickets-75202630091?aff=ebdsoporgprofile | | |
| #4 | 20 th January 2020 | Speculation and Fictions | E11 |
| | https://www.eventbrite.co.uk/e/creative-informatics-ci-studio-4-speculation-and-fictions-tickets-85954870331?aff=ebdsoporgprofile | | |
| #5 | 21 February 2020, | Tools for Greener Making | Royal Botanic Gardens Edinburgh |
| | https://www.eventbrite.co.uk/e/creative-informatics-ci-studio-5-tools-for-greener-making-tickets-90793099605?aff=ebdsoporgprofile | | |
| #6 | 10 March 2020 | Digital Publishing – Do's and Don'ts | Fruitmarket Gallery |
| | https://www.eventbrite.co.uk/e/creative-informatics-ci-studio-6-digital-publishing-dos-and-donts-tickets-95425595525?aff=ebdsoporgprofile | | |
| #7 | 4 June 2020 | Introduction to Designing Chatbots | online |
| | https://www.eventbrite.co.uk/e/ci-studio-7-introduction-to-designing-chatbots-tickets-106650861598?aff=ebdsoporgprofile | | |
| #8 | 23 June 2020 | Stop Motion Animation Workshop | online |
| | https://www.eventbrite.co.uk/e/ci-studio-8-stop-motion-animation-workshop-tickets-109287080600?aff=ebdsoporgprofile | | |
| #9 | 22 October 2020 | Getting Creative with climate data | online |
| | https://www.eventbrite.co.uk/e/ci-studio-9-getting-creative-with-climate-data-tickets-123513679741?aff=ebdsoporgprofile | | |
| #10 | 16 March 2021 | Knowing your users – understanding your customers and market | online |
| | https://www.eventbrite.co.uk/e/ci-studio-10-knowing-your-users-understanding-your-customers-and-market-tickets-144983352109?aff=ebdsoporgprofile | | |
| #11 | 30 March 2021 | Exploring Livestreaming Economies | Online |
| | https://www.eventbrite.co.uk/e/ci-studio-11-exploring-livestreaming-economies-tickets-146890703047?aff=ebdsoporgprofile | | |
| #12 | 20 April 2021 | Introducing BBC MakerBox | Online |
| | https://www.eventbrite.co.uk/e/ci-studio-12-introducing-bbc-makerbox-tickets-148803271591?aff=ebdsoporgprofile | | |
| #13 | 24 June 2021 | Getting started with No Code | online |

| | | | |
|-----|---|---|---------------------|
| | https://www.eventbrite.co.uk/e/ci-studio-13-getting-started-with-nocode-tickets-159480453329?aff=ebdsoporgprofile | | |
| #14 | 3 rd November 2021 | An Introduction to Creative coding | |
| | https://www.eventbrite.co.uk/e/ci-studio-14-an-introduction-to-creative-coding-tickets-198834388007?aff=ebdsoporgprofile | | |
| #15 | 10 March 2022 | An Introduction to coding with the BBC Micro:bit | E11 |
| | https://www.eventbrite.co.uk/e/ci-studio-15-an-introduction-to-coding-with-the-bbc-microbit-tickets-260923147157?aff=ebdsoporgprofile | | |
| #16 | 16 March 2022 | Making Music with a Game Boy | E11 |
| | https://www.eventbrite.co.uk/e/ci-studio-16-making-music-with-a-game-boy-tickets-276644540267?aff=ebdsoporgprofile | | |
| #17 | 13 April 2022 | Exploring Data Visceralisation with Theodore Koterwas | Fruitmarket Gallery |
| | https://www.eventbrite.co.uk/e/ci-studio-17-exploring-data-visceralisation-with-theodore-koterwas-tickets-313255424407?aff=ebdsoporgprofile | | |
| #18 | 26 April 2022, | Making Music with a Game Boy | E11 |
| | https://www.eventbrite.co.uk/e/ci-studio-18-making-music-with-a-game-boy-tickets-316602465497?aff=ebdsoporgprofile | | |
| #19 | 12 May 2022 | Exploring Creative Cred for the Creative Industries | InSpace |
| | https://www.eventbrite.co.uk/e/ci-studio-19-exploring-creative-cred-for-the-creative-industries-tickets-322580666457?aff=ebdsoporgprofile | | |
| #20 | 21 st July 2022 | Build a Chatbot to find out what your customers really think! | E11 |
| | https://www.eventbrite.co.uk/e/ci-studio-20-build-a-chatbot-to-find-out-what-your-customers-really-think-tickets-383454471647?aff=ebdsoporgprofile | | |
| #21 | 21 st October 2022 | Protecting your creative digital assets: a consultation | E11 |
| | https://www.eventbrite.co.uk/e/ci-studio-21-protecting-your-creative-digital-assets-a-consultation-tickets-433445636567?aff=ebdsoporgprofile | | |
| #22 | 3 rd November 2022 | Ted Koterwas | Summerhall |
| | https://www.eventbrite.co.uk/e/ci-studio-22-somewhere-in-the-universe-it-rains-diamonds-aether-tickets-433456358637?aff=ebdsoporgprofile | | |
| #23 | 18 January 2023 | Data Driven Innovation for Sustainable Creative Practice | Assembly Roxy |
| | https://www.eventbrite.co.uk/e/studio-23-data-driven-innovation-for-sustainable-creative-practice-film-tickets-486776721277?aff=ebdsoporgprofile | | |

Appendix 3: Studio attendance figures

| | | | | | Attendees | Attendees |
|---------------|------------|-----------|------------|----------------|---------------------|-------------------------|
| Event | Date | Paid/Free | Registered | Total attended | Creative Enterprise | Non-creative enterprise |
| CI Studio #01 | 04/04/2019 | Free | 45 | 42 | 36 | 6 |
| CI Studio #02 | 17/05/2019 | Free | 17 | 14 | 9 | 2 |
| CI Studio #03 | 22/10/2019 | Free | 20 | 23 | 18 | 2 |
| CI Studio #04 | 20/01/2020 | Free | 23 | 13 | 19 | 4 |
| CI Studio #05 | 21/02/2020 | Free | 34 | 30 | 30 | 4 |
| CI Studio #06 | 10/03/2020 | Free | 30 | 18 | 24 | 6 |
| CI Studio #07 | 06/04/2020 | Free | 15 | 6 | 4 | 2 |
| CI Studio #08 | 23/06/2020 | Free | 26 | 15 | 12 | 3 |
| CI Studio #09 | 22/10/2020 | Free | 22 | 15 | 13 | 2 |
| CI Studio #10 | 16/02/2021 | Free | 26 | 14 | 21 | 5 |
| CI Studio #11 | 30/03/2021 | Free | 30 | 12 | 11 | 1 |
| CI Studio #12 | 20/04/2021 | Free | 86 | 39 | 76 | 10 |
| CI Studio #13 | 24/06/2021 | Free | 49 | 23 | 16 | 7 |
| CI Studio #14 | 03/11/2021 | Free | 26 | 11 | 15 | 11 |
| CI Studio #15 | 10/03/2022 | Free | 5 | 5 | 3 | 2 |
| CI Studio #16 | 16/03/2022 | Free | 6 | 6 | 5 | 1 |
| CI Studio #17 | 13/04/2022 | Free | 33 | 20 | 11 | 9 |
| CI Studio #18 | 26/04/2022 | Free | 9 | 9 | 6 | 3 |
| CI Studio #19 | 12/05/2022 | Free | 15 | 12 | 13 | 2 |
| CI Studio #20 | 21/07/2022 | Free | 6 | 6 | 5 | 1 |
| CI Studio #21 | 21/10/2022 | Free | 24 | 16 | | |
| CI Studio #22 | 03/11/2022 | Free | 34 | 22 | | |
| CI Studio #23 | 18/01/2023 | Free | 63 | 44 | | |
| TOTAL | | | 644 | 415 | 347 | 83 |

/end