

Annual return [Section 1]

Return approval

Reporting period:	Only adjust dates if, by agreement with SFC, you are reporting for different period than the previous academic year.	01/08/2015	31/07/2016
Award activity:	Please give the start and end dates for all the activity funded by this award.	01/08/2015	31/07/2020
SFC project code:	H07016		
Award title:	Scottish Informatics and Computer Science Alliance (SICSA)		
Reporting institution:	University of Glasgow		

Guidance

Please complete the table for each of the agreed outcomes, as set out in your SFC letter of award, with progress over the reporting period.

Progress on agreed outcomes**1. How many outcomes does your award have?****0**

	Agreed outcome Use most up-to-date version. If <u>Outcome</u> has been revised since your award letter, insert date of revision.	Is your award on track to achieve this outcome?	Commentary on and evidence of your progress achieved in current reporting year If you have reported yes , provide supporting evidence referring to any key <u>progress indicators</u> set out in your <u>award letter</u> . If you have reported pending , please explain circumstances e.g. work not scheduled to start until later. If you have reported no , please provide an explanation of the specific circumstances. Also briefly outline the effect this is having / will have on the delivery of award.	Geographical Reach of outcome to date
1	A Scottish Informatics and Computer Science base that is internationally competitive and improving its reputation and standing in the world.	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Pending <input type="checkbox"/>	<p>During the reporting period, SICSA has continued to facilitate activities and projects, whose main aim is to increase the quality and position of Scottish Computer Science research.</p> <p>The SICSA Research Themes continue to support research communities in key areas of Computer Science. During the reporting period the SICSA Directors and the SICSA Committee initiated a SICSA-wide consultation to reassess the research and funding landscape in Scotland for Computing Science. As a result of this initiative, 7 new SICSA Research Themes were launched in August 2016. During the reporting period there were 25 SICSA Research Theme events, held at institutions across Scotland. Further details of the specific events and activities can be obtained on request.</p> <p>SICSA continues to provide funding for Short-Term Themes and Research Challenges, which aim to support research in emerging areas; and facilitate interdisciplinary collaboration.</p>	[Choose an item]

		<p>There are currently 3 funded short-themes http://www.sicsa.ac.uk/research/short-themes/ and 5 SICSA Research Challenges http://www.sicsa.ac.uk/research/research-challenges/. There was a total of 2 Research Challenge events and 2 Short-Theme events during the reporting period, with more planned for the coming months.</p> <p>The SICSA Graduate Academy (SGA) programmes continue to fund a broad range of activities to support this specific outcome. For example, during the reporting period the SGA funded 7 Distinguished Visitors from across the world to visit Scottish Universities. These are now supported by part-funding (20%) from the host Universities as a measure to increase the sustainability of these programmes. A total of 3 International Conferences hosted by Scottish Institutions were funded by the SGA. SICSA continues to support Summer Schools and as a result we funded 1 international Summer School (held in Edinburgh) and provided bursaries for 10 Scottish PhD students to attend Summer Schools in the rest of the UK; Europe; and USA. The SICSA PhD Conference http://www.sicsa.ac.uk/news-events/phd-conference/ continues as one of our most important SGA events and this year the conference was held at the Technology and Innovation Centre, University of Strathclyde in June. The conference attracted approx. 200 delegates – including PhD students from every SICSA Institution. The event was organised by a dedicated Committee of PhD Students from across SICSA. The event received sponsorship by Google, JP</p>	
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		<p>Morgan and Think Analytics and a funding plan is now in place for future events.</p> <p>In the first year of this second phase of SICSA, we have continued to support Knowledge Exchange activities, albeit at a slightly reduced level. During the reporting period, surplus funding from the SFC restored funding award has facilitated 3 Postgraduate Industrial Internships; 3 Early Career Industry Fellowships; and 1 Distinguished Industrial Visitor. We have also been in a position to support 10 fully funded places on the Research Ventures Entrepreneurship course, held at the University of Glasgow in June 2016.</p> <p>SICSA DEMOfest http://www.sicsa.ac.uk/knowledge-exchange/industry-collaboration/demofest/, our annual industry-focussed showcase of Computer Science Research continues to be a key event in our calendar and during this reporting period it took place at the University of Edinburgh in November 2015. The event attracted around 200 industry and academic delegates and was supported by ScotlandIS, The Data Lab and Enterprise Campus. Plans for the next event (November 2016) were underway during the reporting period and sponsorship for the event was secured from The Data Lab. A selection of Research Pitches from DEMOfest 2015 can be found at http://www.sicsa.ac.uk/research/video-wall/.</p> <p>SICSA has continued to support early career researcher exchanges with the PECE programme and we have funded a</p>	
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			number of activities via the PEER programme. Please see the separate report on these schemes for further detail.	
2	Value created for the Scottish economy and society	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Pending <input type="checkbox"/>	<p>We see this as a long-term objective and as such, the SICSA Directors are establishing mechanisms for collecting the data relevant to this outcome. For example, we are in the planning stages for developing a map of research expertise within the SICSA institutions and capturing data around interactions between Computer Science researchers and the relevant SFC Innovation Centres. We are also exploring methods for ascertaining the extent to which SICSA institutions are meeting demand for skills in the Scottish economy. We expect to report on these more fully in the future.</p> <p>Currently, we have strong relationships with the 3 most relevant SFC Innovation Centres to SICSA (TDL, DHI, CENSIS) and we continue to work together closely. There are 7 SICSA Universities currently involved in The Data Lab sponsored MSc programme, for example. Our Research Themes, such as Data Science and Cyber-Physical Systems also act as a point of linkage between SICSA academics and the Innovation Centres.</p> <p>Our Knowledge Exchange programmes provide early career researchers with the opportunity to develop linkages with industry and vice versa. The SICSA Pools Engagement in European Research (PEER) programme assists the SICSA institutions in positioning themselves for EU funding.</p>	National (Scotland)

			Individual reports by recipients of these funding schemes can be obtained upon request.	
3	Access to excellent learning experience and support for students and early career researchers	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Pending <input type="checkbox"/>	<p>SICSA continues to support an environment for high-quality learning for research students across the 14 SICSA Member-Institutions, primarily via the SGA programmes and events; the SICSA Research Themes; and the Knowledge Exchange activities. Via the SICSA KE; PEER; and PECE funding schemes, we are able to provide opportunities for early career researchers who wish to collaborate with international institutions; engage in European funding; or collaborate with industry.</p> <p>We are currently in the process of producing a detailed overview of the PhD landscape in Scotland for Informatics and Computer Science. This will give an analysis of the health of the discipline and will aim to highlight potential issues regarding gaps in PhD funding. We hope to explore ways in which we can address these issues in future years. This overview will be published in 2017. In summary, we continue to support the SICSA institutions in exploring ways in which we can leverage further funding across the community for an increased number of PhD Studentships and research opportunities.</p> <p>During the reporting period we have continued to monitor the successes and first destinations of the original 90 SICSA funded PhD Studentships. To date, 31 of the SICSA funded students have responded to our requests for information Of</p>	International

		<p>these, 7 did not state a first destination of employment; 15 stated an academic institution; and 9 stated a position within industry. We provide a selection of case-studies from previous SICSA-funded students in Appendix I for further detail about some of the success stories.</p> <p>Engagement with SICSA funding programmes, Research Theme activities and events, and the larger SICSA events (DEMOfest, SICSA PhD Conference) has been high across most of the SICSA institutions. Individual reports for events and activities (including attendance data in some cases) are available at http://www.sicsa.ac.uk/about-us/reports/.</p> <p>The SICSA Education group continues to focus on the key issues surrounding Computing Science education both at Scottish Universities, FE and Scottish Schools. The SICSA Education Director, Dr Karen Petrie, acts as the SICSA representative on a number of strategic panels; and works closely with The Data Lab in regard to its own education activities (e.g. The Data Lab MSc programme). Furthermore, SICSA Education has funded a range of events over the reporting period including, among others: The Christmas Cyber Security lectures for High-Schools; workshops on Computing Science education; the CAS Education Conference; an induction event for new teaching staff at SICSA member-institutions; and a number of events aimed at young people (e.g. Young Rewired State; Girl Geek Scotland; The First Lego League).</p>	
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Add more rows to the table if you have more outcomes.

Award achievements

2. Please provide details of the achievements of your award during this reporting period.

If your response is **yes** to the questions below, please complete the relevant table as requested restricting your answers to this reporting period.

Has your award <u>enhanced people capacity</u> ?	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Table 1
Were there any difficulties in filling any of the posts?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Table 1
Has your award <u>improved facilities or infrastructure</u> at your or other institutions?	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Table 2
Was further funding secured by your award over this reporting period?	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Table 3
Has your award created new products or inventions?	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Table 4
Has your award contributed to colleges' and universities' engagement with external bodies?	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Table 5
Is your award connected to any wider recognition for the work of your project or team members?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Table 6
Has your award delivered any other significant achievements that we should be aware of?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Table 7
Have you put in place arrangements to sustain the <u>outcomes</u> of your award after our funding has ended?	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Table 8

NB You are only required to complete the sections in Tables 1-5 which are relevant to your award. All other sections should be left blank.

Table 1	Type of <u>enhanced people capacity</u> (You should report here on all additional posts created for this project <i>in this reporting period</i> at both HEIs and colleges, not just those funded directly from this SFC funding, but not replacements for existing posts.) (Please do not include any personal details)	Total full-time Equivalent (FTEs) recruited	Nos of FTEs recruited on a permanent appointment	Nos of FTEs recruited on a fixed term basis for the duration of the project
a	Academic research posts	13	12	1
b	Academic teaching posts	3	3	

c	<u>Non-academic professional / managerial posts</u>	0		
d	<u>Non-academic technical posts</u>	0		
e	<u>Non-academic communications posts</u>	0		
f	Administrative posts, including clerical posts, secretary and receptionists	0		
g	Studentships or other student opportunities e.g. apprenticeship place	11		11
h	<u>Consultant</u>	0		
i	<u>Business secondment</u>	0		
j	Other (please describe)			
Total		27	15	12
h	Please describe any recruitment difficulties	None Stated		
<p>Commentary: RGU have employed 1 FTE for 18-months (co-funded by BT) as a direct result of SICSA Industrial Fellowship funding. University of Abertay has made 2 full-time permanent lectureship appointments – both of whom were previously funded SICSA PhD students. University of Strathclyde has made one full-time lectureship appointment, as an indirect result of the SICSA grant.</p> <p>Edinburgh state that SICSA funding has led indirectly to 12 new academic research appointments on a permanent basis and 8 new studentships.</p>				

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Table 2	<u>New or improved facilities or infrastructure created in this reporting period?</u>	Please provide details here about improvements created by your award	What was the reach of this improvement?
a	Equipment	RGU: SICSA Industrial Fellowship with BT has led to the development of a large-scale measurement platform	International

		<p>to monitor the quality of experience of BTs broadband network.</p> <p>Abertay: SICSA membership was the determining factor in the University's decision to invest £35K in equipment to support RKE in the Computer Arts and Games area. This equipment provides state-of-the-art facilities for developing novel forms of interaction with interactive media in a dedicated space.</p>	
b	Teaching / training facilities	See point A. (Abertay)	Within a single institution
c	Research facilities	See point A. (Abertay)	[Choose an item]
d	Buildings e.g. laboratories / accommodation		[Choose an item]
f	Institutional or sectoral collaborations, including college and university collaborations		Scotland wide
g	Teaching / training networks/ training delivery partnerships		[Choose an item]
h	Research networks/ knowledge exchange partnerships	<p>Abertay: the dissemination of SICSA work at SICSA conferences/DEMOfest facilitated links between Abertay and a number of organisations, such as the Scottish Business Resilience Centre who have expressed interest in the training tools developed, and links with a German Institution (OTH Amberg-Weiden), for the placement of students at Abertay. Finally, the work has resulted in Christmas lecture events. Training in digital forensics/ breaking passwords was provided to Police Scotland.</p>	International

		<p>All SICSA Member-Institutions are engaged in the SICSA Research Themes; Research Challenges; and Industry-Focussed Short-Themes. Leadership positions for the Themes and Challenges rotate on a biennial basis. SICSA Research Themes/Challenges create an environment for institutional collaborations and partnerships across disciplines.</p> <p>SICSA DEMOfest, our annual showcase of Computing Science research creates an environment for collaboration between Scottish institutions and industry. This event is delivered in partnership with the Scottish ICT trade-body, ScotlandIS.</p> <p>We have continued to develop close working relationships with the relevant SFC Innovation Centres; in particular CENSIS, The Data Lab, and DHI. For example, we have established good communications channels to ensure effective cross-promotion of activities and sign-posting. The 3 ICs stated above are also now members of the SICSA Advisory Board. During the reporting period, the SICSA SGA Director and KE Director were both members of The Data Lab board. It was agreed during the reporting period that the newly created SICSA Themes would closely link to the SFC ICs where appropriate and that SICSA will aim in the next reporting period to provide a map of specific areas of expertise within the SICSA Schools/Departments for the benefit of the ICs. The</p>	
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	SICSA Directors see the continuous development of the relationships with the ICs as a priority for the Pool.	
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Table 3	Source of further funding secured in this reporting period and its purposes (please tick all that apply)	How much further funding was secured? £	Academic staff (Teaching & Research)	Non-academic staff	Studentships/ other student opportunities	Facilities & Infrastructure	Teaching & Learning activities	Research activities	Knowledge Exchange & commercialisation activities	Other purposes (please describe in box below)
1	Own Institution(s)	681,000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	UK Research Councils	1,247,1987	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Scottish Government	927,562	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	UK Government	546,878	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Enterprise agencies	449,667	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Industry / Business	1,400,895	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	Charities	660,522	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	EU	9,897,815	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9	International sources	465,700	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Others	682,014	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Total	28,184,040							
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Commentary: Of the 14 SICSA Institutions that were polled, 11 returned figures for this section. The figures for UHI, UWS and Dundee were not submitted.

This data relates to the total value of grants won by the 11 Institutions where figures were available, for the reporting period.

For information about further funding won centrally by SICSA, see Table 8 (Sustainability Arrangements).

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Table 4	New products and inventions created <i>in this reporting period?</i>	Total number created?	Estimated total financial value?
a	Software products	3	£ Not Stated
b	Technical products	1	£ Not Stated
c	Artwork and other creative products		£
d	Diagnostic tools or other interventions		£
e	Training packages		£
f	Curriculum enhancements		£
g	Good practice guidelines		£
h	Toolkits		£
i	Research tools / methods / databases / models		£
j	New communities of practice		£
k	Other (please describe)		£
	Total	4	£ Not Stated
<p>Commentary: Abertay: As a direct result of investment into academic staff, University of Abertay has, in partnership with St Andrews, published a new software product that provides an interactive dynamic visualisation of a computational model of cancer cell signalling in response to anti-cancer drugs. This was published as open source in March 2016. Furthermore, SICSA</p>			

student funding: The PhD studentships resulted in a digital forensic visualisation tool and a tool that monitors users' security behaviour and delivers effective feedback on user behaviour; both tools are open source (public domain).

RGU: SICSA Industrial Fellowship funding has led to the development of software products in partnership with BT.

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Table 5	Type of engagement with external stakeholders <i>in this reporting period</i> (Tick all that apply)	General public	Local authorities including schools	Other public sector	Business (including SMEs)	Charities/ Third sector	Other (please briefly describe)
a	Communicating knowledge	<input checked="" type="checkbox"/>					
c	Sharing / exchanging knowledge	<input checked="" type="checkbox"/>					
d	Building relationships	<input checked="" type="checkbox"/>					
f	Informing decision making	<input checked="" type="checkbox"/>					
h	Contractual relationship	<input checked="" type="checkbox"/>					
i	Other (please describe)	<input type="checkbox"/>					

Commentary:

University of Stirling: Commented that SICSA funding for workshops and lectures has enabled them to communicate knowledge to the general public, local authorities and schools. A SICSA funded Hackathon helped to build relationships with a wide range of stakeholders.

University of St Andrews commented that The general work of the pool promoting CS in Scotland (for instance in schools) leads to increased demand for our courses and increased political visibility of the subject. The institution also states that SICSA provides a clear link to key organisations, such as the SFC Innovation Centres (in particular The Data Lab) and the trade body for ICT in Scotland, ScotlandIS.

The SICSA Research Themes and Research Challenges foster an environment for academic collaboration across SICSA institutions in relevant areas of the discipline. In some cases, activities also involve representatives from Local and Central Government, Police Scotland, The Innovation Centres, charities, the NHS and the public sector, among others.

As discussed, SICSA DEMOfest is our main industry-facing event, which aims to create an environment for academics to communicate their research to the public and private sectors.

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Table 6	<p>Wider recognition for the work of your project or team members? (Please do not include here any personal details)</p>	<p>Please tell us about any prizes, honours or other recognition achieved <i>in this reporting period</i> by any member of your project team connected with the award, including business and public sector awards as well as academic recognition</p> <p>SICSA has created a community for Universities engaged in Athena Swan applications in order to share good practice and experience. Two SICSA academics (Professors Carron Shankland and Muffy Calder) were recently awarded a Suffrage Science award for their work in addressing the gender balance in STEMM.</p>
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Table 8	<p>Have any <u>sustainability</u> arrangements been developed or implemented in this reporting period?</p>	<p>The SICSA Directors continue to focus on developing the health of the Computer Science PhD landscape in Scotland and are currently compiling information for a SICSA-wide report on this issue. It is our aim to explore the opportunities for increasing the number of PhD Studentships in Computer Science in Scotland.</p> <p>We have developed a fundraising strategy with the aim of developing the sustainability of the bigger SICSA events (e.g. DEMOfest and the PhD Conference. This has been a high priority, given the recent SFC funding cut to the Pool. Our aim is for the SICSA PhD Conference to be 50% funded by industrial sponsorship by the academic period 2018-19 (equating to approx. £12.5K). Alongside this, we aim to be able to support the continuation of SICSA DEMOfest by raising 100% of the event cost (equating to £12.5K) by 2018-19. During this reporting period, we have secured approximately £10K in industrial funding for events. Added to this, our Distinguished Visitor Programme is now part-funded (20%) by host institutions.</p> <p>We recently secured a further £50K funding from Scottish Government / SFC for a Cyber Security Network Integrator for a 12-month period initially. It is our hope that this will result in further funding awards for SICSA, particularly in the area of Cyber Security.</p> <p>We continue to explore other options for external funding and maintain this as a high-priority area.</p>
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Overall award progress

3. What is your overall assessment of award progress within the reporting period?

a	<p>Please summarise your award's progress during the reporting period. (This summary may be used to illustrate your award to various audiences.)</p>	<p>This reporting period (2015-16) marks the first year of the second phase of the SICSA award. Whilst the award is much reduced compared to the previous, SICSA continues to perform very well and has made good progress on two of the three agreed outcomes. Whilst we no longer have funding for PhD Studentships or Research Staff; engagement with the SICSA funding programmes, events and activities remains very high across most of the member-institutions. The Research Themes and SICSA Graduate Academy have provided a varied and exciting programme of regular events, promoting collaboration across the SICSA members and with other disciplines. The SICSA Research Themes and Challenges continue to provide clusters of expertise in key areas of the discipline. A recent refresh of the SICSA Research Themes has ensured that they remain relevant and up-to-date. Connections with the SFC Innovation Centres continue to develop; and through our Knowledge Exchange programmes and events, we are able to facilitate meaningful and productive relationships with the private and public sectors. The SICSA Education group continues to play an active role in shaping Computing Science teaching and education for the future.</p>
b	<p>Please describe any <u>impacts</u> of your award realised over the reporting period.</p>	<p>We continue to gather relevant information and data in order to monitor the longer term impacts of this award. We expect to be able to start reporting on impact in the future.</p>