



A composition and performance environment
for sharing live music technologies

Final Report

Summary

The **Integra** project, a multi-annual co-operation agreement (no. 2005-849) supported by the Culture 2000 programme of the European Union, has been running from September 5th 2005 to September 4th 2008. Led by Birmingham Conservatoire, part of the Performance, Media and English Faculty of Birmingham City University¹, the project brought together five new music ensembles and nine research centres across eight European countries and Canada.

Integra was borne out of an ambitious vision: to simplify, standardize and humanize the use of live, interactive music technologies. We intended to empower composers and performers to work with technology in a more intuitive way, at the same time addressing the fundamental issue of sustainability of the existing live electronic music repertoire. We identified the distance between artistic practice and scientific research as one major obstacle to achieve our aims. The activities of the project were centered on bridging the gap between the two cultures, and spreading the new, shared knowledge.

As an innovative, interdisciplinary project at the fertile intersection of art, science and technology, **Integra** took in turn different identities: research, software development, heritage preservation, creation and dissemination. Bringing together all the strands presented an interesting challenge from a project management perspective, but it was a clear strength of the project. An objective measure of its effect is the amount of spin-offs and additional activities generated by the project. **Integra** has acted as a catalyst for a vast number of new ideas, artistic collaborations and research projects across our network and with other existing networks across Europe and further afield.

After three years we are in a position to assess what has worked well and what has worked less well during the delivery of the project. The artistic activities of **Integra** have largely surpassed our expectations. Twenty-three concerts (eight more than planned) eleven commissions (one more), and an unexpected spin-off, the **Integra 2008 International Festival and Conference** (please see the attached programme), are just three among the objective indicators of the success of the project. From the scientific perspective, we would have liked to see the research centres engaging in a more co-ordinated effort towards the development of the **Integra** software environment and the transfer of existing repertoire. We planned to deliver by the end of the project period a fully functioning application to support performers and composer in their interaction with

¹ Since October 2007 Birmingham City University is the new name of the former University of Central England in Birmingham.

BIRMINGHAM
CONSERVATOIRE



Education and Culture

Culture 2000

technology, and twenty-four transfers of works using obsolete technology. Our final outcomes are a prototype of the environment and sixteen transfer of existing works (eight less than planned). It is fair to say that we lost in quantity what we gained in depth and relevance. The scientific group took some time to agree on the architecture of the environment and a set of standards, but this foundation work has proved invaluable to build a scalable, sustainable system that is gaining growing recognition in the scientific community. For a more detailed evaluation of individual outcomes please see the activities sections 1 to 11 of this report.

Integra has started to bridge the gap between artistic practice and scientific research in the field of new music. A lot more work is needed to build usable, musically meaningful interactive tools and maintain a growing interdisciplinary community around the project and its objectives. We are delighted that our main exit strategy - the submission of a second funding application to the Culture 2007-2013 programme - has been successful. **Integra 2 – Fusing music and technology** will start in a few weeks. The experience gained in running **Integra** will be a great advantage during the delivery of **Integra 2**. We are confident that the ambitious vision initiated four years ago with the conception and design of the original **Integra** project will eventually come to its complete fruition, securing **Integra**'s role as the environment of choice for composing, performing and maintaining live electronic music across Europe.

Summary of expected and delivered outcomes

Activity	Expected outcomes as per grant agreement	Delivered outcomes at the end of the project
Steering Group	6 meetings	6 meetings
Artistic Working Group	4 meetings	5 meetings
Scientific Working Group	7 meetings	6 meetings and 2 working sessions
Environment Development	Release of a final version of the Integra software environment	Released a prototype of the Integra software environment
Transfer of Existing Repertoire	24 works transferred to sustainable technology	17 works transferred to sustainable technology
Commissions	10 commissions	11 commissions awarded
Composers Training	10 training sessions for composers	11 training sessions for composers
Performers Training	10 training sessions for performers	10 training sessions for performers
Concerts and Performance Events	15 events featuring 10 performances of the 10 commissions and 10 performances of transferred works from the existing repertoire	23 events featuring 22 performances of the 11 commissions and 13 performances of transferred works from the existing repertoire
Project Dissemination	Website, Conference, DVD, AEC presentation, Final publication and live electronics guide, newsletter	Website, Integra 2008 International Festival and Conference, DVD, AEC presentation, web-based communication, presentations at international festivals and conferences and participation to international networks

1. Steering Group

The Integra **Steering Group (SG)** had overall responsibility for the operational and financial management of the project. Representatives of the five co-organisers, plus the Project Manager and the Project Administrator composed the **SG** as detailed below:

Anders Beyer, Artistic Director, Athelas Sinfonietta, Copenhagen
Stein Olav Henrichsen, Artistic Director, Bit20 Ensemble, Bergen
Pierre-André Valade, Artistic Director, Ensemble Court-circuit, Paris
Luca Francesconi, Head of Composition, Malmö Academy of Music
Lamberto Caccioli, Integra Project Manager and Head of Music Technology, Birmingham Conservatoire, Birmingham City University
Richard Shrewsbury, Integra Project Administrator

Other members of the co-organisers attended the **SG** as appropriate. The Project Manager chaired all **SG** meetings while the Project Administrator took minutes and prepared action lists. The **SG** met six times during the project period.

SG 1 – Birmingham, September 2005

At the first meeting the **SG** looked closely at the application and obligations of the contract. As a result of this process it became clear which co-organisers and partners were responsible for specific actions and outcomes of the project. The **SG** observed three website presentations for the commissioning of the Integra website www.integralive.org. The **SG** decided to offer the contract to 3form Ltd. a Birmingham-based web development company who understood the web based communication needs of the project fully and presented a system to fit those needs. The **SG** was also given a presentation about the financial systems in place for the project by the Project Manager and the Project Administrator providing a clear understanding of the grant allocation per activity and the match funding per activity and per Integra Co-organiser or Associated Partner.

SG 2 – Birmingham, February 2006

The second meeting coincided with the plenary meeting of both the Scientific and Artistic Working Groups. The **SG** met for a day at the end of this meeting to discuss various elements of the project. In depth discussions were had about the format of the final Integra conference/festival, links to other projects in the field of contemporary music and electronic music. The current Integra finances were presented by the Project Administrator, indicating that the project was running within the agreed grant allocations for activities up until that point.

SG 3 – Milan, October 2006

The third **SG** meeting was kindly hosted for free by the Foundation “Teatro alla Scala”. In view of the forthcoming Interim Report, the **SG** went through an Integra objectives checklist for the first period of the project and looked at a detailed financial breakdown by activity and partner. Any potential weaknesses in delivering the objectives were discussed, and an action plan was drawn up as a result of the meeting. The **SG** also welcomed as Integra new partner the Sonic Arts Research Centre (SARC), Queen’s University, Belfast, following the unexpected closure of La Kitchen in Paris.

SG 4 – Malmö, March 2007

At the fourth meeting the **SG** took some important strategic decisions: it was agreed that the planned Final Conference in Birmingham should become an International Festival as well, with the participation of all the ensembles. The financial implications of this were discussed, with the co-organisers pledging to find additional funding to make the Festival possible. The decision was also taken to assign the DVD production to stalkervideo, a Milan-based new media production company with an impressive track record of creative collaborations with theatres, artists and musicians across Europe. The **SG** welcomed as a new partner the Institut für Elektronische Musik und Akustik (IEM), Universität für Musik und darstellende Kunst, Graz; **SG** also approved the change of Polish partner from Krakow Academy of Music to Muzyka Centrum Art Society. The signatory, Marek Choloniewski, remained the same.

SG 5 – Birmingham, October 2007

The fifth meeting took place in Birmingham in October 2007. The Project Manager and Project Administrator presented a proposal for Integra 2, as a way to develop further the work of Integra. The **SG** discussed the proposal and agreed to finalise and submit an application to the EU Culture 2007-2013 programme for another three years of funding from November 2008. This was seen as the best exit strategy for Integra. The **SG** also looked at the plans for the Integra 2008 International Festival and Conference from an organisational and financial perspective.

SG 6 – Birmingham, June 2008

The sixth and last meeting coincided with Integra 2008, International Festival and Conference. The **SG** was satisfied with the procedures put in place by Birmingham Conservatoire to evaluate internally the project and to produce the final report.

Outcomes

- Organised six **SG** meetings as originally planned
- Delivered efficient management, planning, and operation of the project
- Delivered efficient management of finances
- Ensured compliance with EU regulations
- Monitored the activities of the two **Working Groups**
- Maintained constant evaluation of the project's activities
- Delivered a suitable exit strategy for the project

2. Artistic Working Group

The Integra **Artistic Working Group (AWG)** was responsible for the artistic content, planning, delivery and dissemination of the following project activities: **Commissions** to the composers, **Concerts** and **Performance Events** and the **Final Conference** concert. Representatives of the five new music ensembles, plus the Project Manager and the Project Administrator composed the **AWG** as detailed below:

Anders Beyer, Artistic Director, Athelas Sinfonietta, Copenhagen
Stephen Newbould, Artistic Director, Birmingham Contemporary Music Group (BCMG)
Stein Olav Henrichsen, Artistic Director, Bit20 Ensemble, Bergen
Pierre-André Valade, Artistic Director, Ensemble Court-circuit, Paris
Stefan Östersjö, Artistic Director, Ensemble Ars Nova, Malmö
Lamberto Caccioli, Integra Project Manager, Birmingham Conservatoire, Birmingham City University
Richard Shrewsbury, Integra Project Administrator

Other members of the new music ensembles attended the **AWG** as appropriate. The Project Manager chaired all **AWG** meetings while the Project Administrator took minutes and prepared action lists. The **AWG** met four times during the project period.

AWG 1 – Copenhagen, December 2005

Athelas Sinfonietta hosted the first **AWG** meeting at Anders Beyer's residence in Copenhagen. The busy **AWG** agenda included listening sessions to select the first group of five composers to be commissioned, agreeing on a common commissioning contract, planning of artistic activities, and looking at possible collaborations with other European artistic networks and projects (Ensemble Network, European Festival Association, etc.). The selected composers were:

Malin Bång (Sweden), Athelas Sinfonietta commission
Natasha Barrett, (UK/Norway), Ensemble Ars Nova commission
Andrea Cera (Italy), Court-circuit commission
Tansy Davies (UK), Bit20 Ensemble commission
Juste Janulyte (Lithuania), BCMG commission

It was decided that the five composers would be invited to the plenary meeting in Birmingham, and that a sixth composer should be kept as a reserve in case any of the composers could not deliver the commissioned work.

AWG 2 – Birmingham, February 2006

The second meeting of the **AWG** coincided with the Integra plenary meeting. All Integra partners, and the commissioned composers so far took part in the meeting. The **AWG** held listening sessions to select five composers for the second group of commissions and discussed the planning of artistic activities including the possibility of linking Integra events with major European festivals. The **AWG** also agreed on marketing strategies and the importance of maintaining a coherent identity in all Integra-related public-facing activities, including the website.

AWG 3 – Paris, June 2006

At the Paris meeting, hosted by Court-circuit at Pierre-André Valade's residence, three commissions from the second set were finalised. These were the selected composers:

Ondrej Adamek (Czech Republic), Court-circuit commission
Pierre Jodlowski (France), Ensemble Ars Nova commission
Alwynne Pritchard (UK), Athelas Sinfonietta commission

The **AWG** looked carefully at the planning of the artistic activities of the project. Plans for the performance of the commissioned works and works from the repertoire transferred to reliable technology were circulated and agreed. The **AWG** also started initial discussions on the format for the final year performances.

AWG 4 – Malmö, April 2007

The fourth **AWG** meeting was organised by the Ensemble Ars Nova and dealt with many practical issues: time-tabling and co-ordination of performance activities, filming of the Integra project DVD, organising performers' training sessions. Two further commissions were agreed:

Michele Tadini (Italy), Bit20 Ensemble commission
Rolf Wallin (Norway), BCMG commission

The **AWG** also worked on the programme of the Integra 2008 Festival, the dissemination of the activities of the project, and plans for a possible continuation of the project as Integra 2.

AWG 5 – Birmingham, June 2008

This additional meeting of the **AWG** coincided with Integra 2008 International Festival and Conference. The **AWG** evaluated positively the artistic activities of the project and considered possible ways to maintain the momentum of Integra over the coming years, especially in connection with the second round of funding from the European Union. It was also an opportunity to meet with members of the scientific group and composers.

Outcomes

- Organised five **AWG** meetings, one more than originally planned
- Efficient planning and implementation of artistic activities
- Agreed on eleven commissions to composers across Europe
- Agreed on a strategy for the transfer of existing works from the repertoire
- Defined a common European strategy for production, performance and dissemination of new and existing music with live electronics
- Developed innovative formats for performance of new music with live electronics
- Expanded the European repertoire of live electronic music

3. Scientific Working Group

The Integra **Scientific Working Group (SWG)** was responsible for the scientific content, planning, delivery and dissemination of the following project activities, **Environment Development** and **Transfer of Existing Repertoire**. Representatives of the seven research centres, plus the Project Manager and the Project Administrator composed initially the **SWG** as detailed below:

Henrik Frisk, Malmö Academy of Music
Marek Choloniewski, Director, Electroacoustic Studios, Krakow Academy of Music
Jøran Rudi, Director, Norwegian Centre for Technology in Music and the Arts (NOTAM), Oslo
Mantautas Krukauskas, Music Technology, Lithuanian Academy of Music and Theatre, Vilnius
Thierry Coduys, Founder and Director, La Kitchen, Paris
Sean Ferguson, Associate Director Centre for Interdisciplinary Research in Music and Media Technologies (CIRMMT), Schulich School of Music, McGill University, Montreal
Jamie Bullock, Research Assistant in Interactive Technology, Birmingham Conservatoire
Lamberto Coccioli, Integra Project Manager and Head of Music Technology, Birmingham Conservatoire, Birmingham City University
Richard Shrewsbury, Integra Project Administrator

During the course of the project La Kitchen and the Krakow Academy of Music left us, while three new partners joined Integra, the new Polish partner being represented by the same person representing the old:

Michael Alcorn, Director, Sonic Arts Research Centre, (SARC), Queen's University Belfast
Gerhard Eckel, Director, Institut für Elektronische Musik und Akustik (IEM), Universität für Musik und darstellende Kunst, Graz
Marek Choloniewski, Director, Muzyka Centrum Art Society, Krakow

In addition, the following researchers from Integra scientific partners attended one or more **SWG** meetings:

Jonathan Green, Birmingham Conservatoire
Gregory Sporton, Visualization Research Unit, Birmingham City University
Joe Malloch, CIRMMT
Marlon Schumacher, CIRMMT
Thomas Musil, IEM
Mateusz Bien, Krakow Academy of Music
Marcin Wierzbicki, Krakow Academy of Music
Pierre Jullian de la Fuente, La Kitchen
Kent Olofsson, Malmö Academy of Music
Krzysztof Trzewiczek, Muzyka Centrum
Alexander Jensenius, NOTAM
Vegard Sandvold, NOTAM
Henrik Sundt, NOTAM
Anders Vinjar, NOTAM
Eric Lyon, SARC
Chris McClelland, SARC

The Project Manager chaired all **SWG** meetings while the Project Administrator took minutes and prepared action lists. The **SWG** met six times during the project period, plus two working sessions for smaller groups of researchers.

SWG 1 – Oslo, October 2005

NOTAM hosted the first **SWG** meeting at their headquarters. The two main aims of the meeting were to devise a strategy for addressing the problems of existing music repertoire using obsolete technologies, and the development of a user-friendly software environment to compose and perform interactive, live electronic music. The meeting was also a way of enabling the skills sets of

each partner to be linked to specific parts of the project. Every partner gave a presentation of the work that they had achieved so far in their own specialised areas.

In the meeting it was established that the development of a protocol for audio and control modules and module intercommunication could provide a solid foundation for both the Integra software environment and the migration of repertoire works. It was decided that this protocol should be based around the existing OSC (Open Sound Control) specification. It was also decided that a comparison of existing environments should be conducted to avoid duplication of work and seek possibilities for further collaboration with other projects in Europe and worldwide. Partners were given specific tasks to research for presentation at the next meeting.

SWG 2 – Birmingham, February 2006

A draft proposal for the Integra protocol and OSC namespace was presented by Henrik Sundt, NOTAM and discussed by the rest of the group. There was general agreement that this was a suitable way to proceed and that a more detailed specification should be drawn up for the next meeting.

Jamie Bullock, Birmingham Conservatoire gave an overview of a possible model for the complete Integra system. This included a web-based database for storing Integra modules and possible platforms for development of the Graphic User Interface (GUI) and the DSP (Digital Signal Processing) engine. Jonathan Green, Birmingham Conservatoire presented a visual impression of a potential GUI design. This included a tabbed interface, the ability to connect modules using “magnetic” patch chords and a flexible input/output design.

Sean Ferguson, CIRMMT, McGill University attended this meeting and expressed a specific interest in the development of the Integra GUI. Henrik Frisk, Malmö Academy of Music suggested XML as a possible format to be adopted for module definitions and parameter storage and agreed to work on this aspect of the project.

Matches between research centres, composers and new music ensembles were discussed and agreed.

SWG 3 – Krakow, May 2006

The Krakow Academy of Music hosted the third **SWG** meeting. Jamie Bullock gave a presentation resulting from research into a range of database and MVC (Model View Controller) systems and suggested three possibilities for further research and consideration by the working group. The proposals were accepted after a short discussion and it was agreed that three systems would be tested with findings to be presented at the next meeting.

Marek Choloniewski and some of the students from Krakow Academy gave presentations on the work they had been developing through an existing software environment called MaWe. It was agreed that MaWe was a powerful tool and that Integra could adopt some MaWe elements.

NOTAM presented further work on the Integra namespace and protocol. Thierry Coduys, La Kitchen gave a short presentation on IanniX, a piece of software inspired by the UPIC system developed by the late Iannis Xenakis, and how it could be integrated in the Integra environment. Each partner presented the work done on completed repertoire migrations.

SWG 4 – Vilnius, September 2006

The fourth **SWG** meeting was hosted by the Lithuanian Academy of Music and Theatre. Henrik Frisk presented a proposal for the XML file format to be used for the data transfer between database and the Integra environment and for storage on the users machine. The group discussed the ideas and agreed that Malmö Academy should continue to extend the format and improve its integration with the rest of the system.

Jamie Bullock presented an evaluation of the database technologies outlined in his previous presentation in Krakow and provided a system design involving the most suitable technology. This approach met with the approval of the **SWG**. The CIRMMT team gave a detailed presentation about their work on the GUI including demonstration of a working prototype.

A decision was made by the group to use the MaxMSP programming language as the host environment for the Integra system. Marcin Wierzbicki, Krakow Academy of Music and developer of the MaWe system presented in Krakow, agreed to deconstruct certain elements of MaWe to make them Integra-compliant and therefore be used as part of the Integra environment.

Specific tasks were allocated to each project partner for the development of the Integra environment. Small working sessions were scheduled to optimise the development of specific aspects of the environment and maximise the productivity of the **SWG**.

Working Session 1 – Oslo, December 2006

Attended by Birmingham Conservatoire, CIRMMT, NOTAM and Malmö Academy of Music, this session aimed to consolidate the ideas that had previously been discussed in the last **SWG**, during on line meetings and in email discussions. NOTAM presented recent migrated works and the group discussed matters arising from these. Jamie Bullock presented a working prototype of the database with a web-based user interface and suggestions for further improvements were noted.

Working Session 2 – Birmingham, March 2007

Attended by Malmö Academy and Birmingham Conservatoire this session aimed to develop a working proof of concept model demonstrating the entire Integra system using a simple use case scenario.

SWG 5 – Belfast, May 2007

The Sonic Arts Research Centre at Queen’s University, a new partner in the project, offered to host the fifth **SWG** in its impressive facilities in Belfast. Jamie Bullock and Henrik Frisk presented the library libIntegra, the “glue” that allows all the modular elements of the environment to work together: database, DSP engine, GUI. Sean Ferguson presented the ongoing work on the GUI prototype developed in MaxMSP. The Integra commissioned composer Michele Tadini presented the TadiniTools, a musically stimulating set of software tools for live electronics developed in MaxMSP. Discussions were held on future work and the possibility of applying for further funding.

SWG 6 – Birmingham, June 2008

Held at the end of the Integra 2008 International Festival and Conference, the sixth and last **SWG** saw the pre-release of the Integra GUI prototype by CIRMMT and further work on libIntegra, the database and the XML schema. The **SWG** reflected on the work done so far and the growing international recognition of the results achieved by Integra. The **SWG** also discussed the best strategy to maintain the current momentum and arrive at a final release of the Integra software environment. The opportunities offered by Integra 2 were also taken into account.

Outcomes:

- Organised six **SWG** meetings and two working sessions, instead of the seven meetings originally planned
- Agreed on a clear development strategy for the Integra environment.
- Agreed on a strategy for the transfer of existing works from the repertoire
- Designed an innovative, standards-based, modular software environment for people to engage with live electronics and store their work in a standards compliant way.
- Developed a database model and user interface prototype.
- Developed libIntegra library, the Integra XML file schema, and examples.
- Produced written protocol specification with examples and an online record of development and migration work, all under version control.
- Produced project documentation all available online and in printed format.
- Produced conference papers (ICMC, 2005; IEEE MELECON 2008) and journal articles (Organised Sound, Volume 11, No. 3 Dec 2006; Nordic Sounds, no. 4 December 2006).
- Worked alongside artistic ensembles and composers in the development of the Integra commissions and the transfer of existing repertoire.

4. Environment Development

The development of a new software environment for the composition and performance of live electronic music - the real-time interaction between performers and computers - was the core scientific activity of the Integra project. The Scientific Working Group (**SWG**) was responsible for the development of the Integra software environment. Soon after the start of the project a dedicated wiki was set up as development portal at wiki.integralive.org. The stated outcome of the environment development activity of the project was the release of a final version of the Integra system. This has not been possible yet, although a prototype of the environment has been released. It can be downloaded from the Sourceforge servers at sourceforge.net/projects/integralive/. It comprises the library libIntegra written in C, a kind of glue that allows all the components of the Integra environment (Graphic User Interface, DSP Engine, Remote Database) to interact among them and with the outside world, and a prototype of the GUI written in MaxMSP. The GUI prototype is a user-friendly and musically meaningful interface that uses Integra modules as building blocks to compose and perform live electronic music.

There are good reasons for the delay in delivering the final system: first, the **SWG** consortium presented an exceptional opportunity to find an effective, practical solution to address the issues associated with composing and performing music with live electronics. Accordingly, the **SWG** took some time carefully considered the appropriateness of different approaches by researching and evidencing existing open source technologies currently available. Secondly, it soon became apparent that in order to achieve the desired results the scope of the development had to be increased. In order to develop a standards-based, open, flexible, scalable and powerful environment, the foundations had to be right. The work carried out on the namespace, the OSC protocol, the C library libIntegra and the XML file format was not part of the original plans, but is immensely useful as a solid, cross-platform, software-independent and standards-based framework to develop the Integra environment in the best possible way. Integra 2 represents now a precious opportunity to bring the efforts of Integra to fruition.

The approach taken has gained Integra international recognition. A growing community of developers has been taking interest in the project and providing ideas: two new partners, SARC and IEM, joined the project, while CIRM in Nice and the University of Oslo both expressed interest in joining Integra. There have been discussions about Integra on various mailing lists (i.e. SuperCollider, pd) and meetings with members of the CASPAR project (concerned with storage of data for interactive performances) coordinated by IRCAM. Members of the Integra project are involved in the related Jamoma project, and are engaging in dialogue with members of the FAUST project from GRAME.

All partners were given clear tasks and allocated with specific duties to contribute to the environment development as follows:

Birmingham Conservatoire	Database engineering and development, systems integration (libIntegra) and testing
CIRMMT	Development of a working GUI prototype
IEM	PureData (pd) bridge, DSP modules in pd
Krakow Academy of Music/Muzyka Centrum	DSP modules development from MaWe
La Kitchen	Conceptual modelling of GUI
Lithuanian Academy of Music and Theatre	Research into existing XML technologies
Malmö Academy of Music	Integra XML file format development
NOTAM	Protocol and namespace development
SARC	Data visualization and workflows

Roles within the environment development were designated according to areas of expertise and interest of personnel within each research centre. These areas of expertise were presented as part of **SWG** meetings in the first period of the project.

Here is a non-exhaustive list of Integra-related scientific papers, presentations and meetings over the project period:

Jul-06	Meeting at IRCAM with CASPAR team, Paris, 9 June
Oct-06	Integra presentation at the , "Music as Memory" Conference, European Festival Association, Ultima Festival, Oslo, 6 October.
Dec-06	Bullock J. and Coccioli L., 'Modernising musical works involving Yamaha DX-based synthesis: a case study', Organised Sound, vol. 11 no. 3, December 2006, Cambridge University Press, Cambridge, UK. Coccioli L., 'Integra. A novel approach to music with live electronics' Nordic Sounds, no. 4, December 2006.
Jan-07	J. Rudi, Integra presentation at NOTAM, Oslo, 31 January.
Mar-07	J. Bullock, meeting with the FAUST' project (GRAMME, France) team in Berlin, Linux Audio Conference
Aug-07	Bullock J. and Frisk H., 'libIntegra: a system for software-independent multimedia module description and storage' ICMC 2007 Proceedings, Copenhagen.
Nov-07	Integra presentation and performances at AEC Congress Strasbourg, 8-10 November
Dec-07	Integra presentation at DMRN +2 Workshop, Queen Mary University London, 18 December
Feb-08	Meeting at IRCAM with Hugues Vinet, Scientific Director, and CASPAR team, Paris, 13 February
Apr-08	Integra at MT Incubator, CIRMMT, McGill University, Montreal 18-20 April. Interview on Integra on new notes , Society for the Promotion of New Music
May-08	Bullock J., Coccioli L. and Frisk H., "Sustainability of 'live electronic' music in the Integra project", Proceedings of the 14 th IEEE Mediterranean Electro-technical Conference, 2008, IEEE, Ajaccio, France. Integra presentation at CODA Symposium, University of West England, Bristol, 31 May.
Jun-08	Integra 2008 International Festival and Conference Birmingham, 5-7 June Presentations by Integra members: Coccioli L., 'Why Integra?' Francesconi L., 'Des-integrations' (Keynote speech) Coduys T., 'High tension lines' (Keynote speech) Barrett N., 'Composition and the "Live-Electroacoustic": time, sound-worlds, control and ensemble' Bullock J., Frisk H. and Sundt H., 'The Integra OSC protocol, from idea to implementation' Östersjö S. and Frisk H., 'The augmented score: Documenting the process rather than the result' Ferguson S. and Schumacher M., 'The Integra GUI prototype'
Aug-08	Bullock J., 'Implementing audio feature extraction in live electronic music', Ph. D dissertation, Birmingham City University

Outcomes

- Implemented a model of shared development that can be sustained after the end of the project
- Built a growing community of developers and researchers, also through linking with other projects of a similar nature
- Produced feasibility and comparison studies and a database of existing environments to support development
- Developed an Integra protocol and namespace
- Developed a library written in C, libIntegra
- Developed Integra XML file specification (schema) and examples
- Developed Integra class hierarchy and UML model
- Developed Integra database schema and ERD (Entity Relationship Diagram)
- Developed a prototype graphic user interface in Max/MSP
- Developed a selection of Integra modules to test and illustrate the Integra concept
- Developed a database and web interface prototype using Postgres and Python
- Released alpha versions of libIntegra and Integra GUI

5. Transfer of Existing Repertoire

The transfer of existing works that use obsolete live electronics technologies to the Integra software environment is an essential part of the scientific activities of the project. Under the responsibility of the Scientific Working Group (**SWG**), this is the ‘heritage’ aspect of Integra, focusing on the long-term sustainability of artistic works that are no longer in the repertoire because of the difficulty or impossibility of reproducing their original technological set-up. The migration process has allowed neglected works of the past to become again part of mainstream concert programming.

The transfer activities have been thoroughly documented. A series of “transfer models” has been produced that can now be applied to different types of works, and adopted by the wider research community. In a number of cases composers were involved directly (J. Harvey, A. Schaathun, K. Olofsson and P. Hurel) in the reconstruction of their works. This transfer activity was also useful in connection with the environment development activity, providing a series of models to test the adaptability of the tools being developed.

At the beginning of the project all partners were asked to draft a list of works they would like to see transferred. The European Ensemble Network and a number of European music publishers (Ricordi, Universal Edition, Boosey & Hawkes) were involved as well in this phase.. By May 2006 a list of around 40 works had been prepared. This was a very valuable achievement in itself, bringing together the collective intelligence of the new music community across Europe in order to expand the repertoire of existing live electronic music works. It was felt that priority should be given to those works chosen by the new music ensembles, in order to ensure their performance during the project period Working in collaboration with the Integra new music ensembles, each research centre completed the following migrations:

Research Centre	Composer	Title	Ensemble
Birmingham Conservatoire	Jonathan Harvey	Madonna of Winter and Spring	
Birmingham Conservatoire	Jonathan Harvey	Ricercare	BCMG, Sep 07
Birmingham Conservatoire	Jonathan Harvey	Wheels of Emptiness	BCMG, Jun 08 (twice)
Birmingham Conservatoire	Jonathan Harvey	White as Jasmine	
Birmingham Conservatoire	Philippe Hurel	Diamants	
Birmingham Conservatoire	Philippe Hurel	Fragments de Lune	
Krakov Academy of Music	Wlodzimierz Kotonski	Spring Music	
La Kitchen	Tristan Murail	Treize couleurs du soleil couchant	BCMG, Sep 07, Apr 08
La Kitchen	Iannis Xenakis	Electroacoustic work	
Malmö Academy of Music	Kent Olofsson	Tarpeian Rock	Ars Nova, Aug 06, Jun 08
Malmö Academy of Music	Miklos Marós	Manipulation III	Ars Nova, Aug 06
NOTAM	Arne Nordheim	Partita für Paul	Athelas Sinfonietta, Mar 07
NOTAM	Asbjørn Schaathun	Our whispers woke no clocks	Bit20 Ensemble, Jun 08
NOTAM	Asbjørn Schaathun	Physis	NOTAM, Jan 07
NOTAM	Asbjørn Schaathun	‘S’	Bit20 Ensemble, Jun 08
NOTAM	Lasse Thoresen	AbUno	
SARC	Roger Reynolds	Traces	Court-circuit, Jun 08

The target for this activity was to transfer twenty-four works from the repertoire. The final count shows sixteen completed migrations of works by eleven composers, with thirteen performances by the five ensembles. The smaller output was due to the unexpected complexity of the migrations, involving in some cases (Harvey, Hurel) the software reconstruction of entire hardware synthesis engines. This time-consuming, meticulous activity proved quite difficult to complete with the resources available to the research centres.

Outcomes

- Identified significant works from the live electronics repertoire to become again part of the European performance tradition.
- Ensured survival of neglected works by transferring the technology from obsolete hardware to the new software environment
- Developed a system to make the transfer of existing repertoire Integra-compliant
- Completed seventeen migrations from the live electronic music repertoire
- Presented thirteen performances of ten migrated works by six composers
- Developed Yamaha DX7 open source emulation solution as an Integra module
- Tested existing technology within different environments to establish the feasibility for migration of existing repertoire
- Implementation of a series of “transfer models” to be applied to many different existing works with live electronics
- Thorough documentation produced of several works in order to facilitate further repertoire transfer, including papers and presentations.

6. Commissions

The Integra Artistic Working Group (**AWG**) was responsible for agreeing on a common commissioning strategy, and for selecting the ten Integra composers for phase 1 (small ensemble and live electronics) and phase 2 (large ensemble and mixed media). The **AWG** listened to the portfolios of more than fifty European composers before coming to a decision. The final choices were made following these criteria:

1. Ensure quality and originality of the commission
2. Take into account each ensemble's specific artistic and practical considerations in programming new works
3. Ensure representation of both experienced and young composers, with a wide variety of technological skills
4. Ensure added European value, by commissioning a composer from a different country than the ensemble.

In consultation with publishers and the ensembles, a commissioning agreement was drafted, legally binding composers, publishers, ensembles and research centres. The **AWG** expressed the wish to include more than one of the Integra commissions in their programming and for this reason the commissioning agreement included a preference clause that prioritises the Integra ensembles for a period of three years after the first performance of the piece. It is at the discretion of the **AWG** to give permission to other ensembles should they wish to perform the piece.

The five phase 1 commissions were awarded in December 2005. One extra commission was agreed upon and kept as a reserve in case any of the composers failed to deliver their work. Three phase 2 commissions were awarded in July 2006. Between October 2006 and March 2007 two more phase 2 commissions were awarded. In September 2007, thanks to collaboration with the New Generation Arts Festival in Birmingham an additional commission was awarded for a total of eleven:

Composer	Title	Ensemble	Research Centre	Performances
Phase 1				
Malin Bång (Sweden)	sparkling box	Athelas Sinfonietta (Denmark)	Birmingham Conservatoire (UK)	Norrköping, Aug 07 (twice)
Natasha Barrett (UK/Norway)	Crack	Ars Nova (Sweden)	La Kitchen (France)	Malmö and Lund, Mar 07, Birmingham, Jun 08
Andrea Cera (Italy)	Dueling Zombies	Court-circuit (France)	NOTAM (Norway)	Parma, Sep 07, Paris, Jun 08 (twice), Birmingham, Jun 08
Tansy Davies (UK)	Grind Show	Bit20 Ensemble (Norway)	Krakov Academy of Music (Poland)	Bergen, Oct 06, Birmingham, Sep 07, Apr 08 and Jun 08
Juste Janulyte (Lithuania)	Eclissi	BCMG (UK)	Malmö Academy of Music (Sweden)	Birmingham, Sep 07
Phase 2				
Ondrej Adamek (Czech Republic)	Ça tourne ça bloque	Court-circuit (France)	Malmö Academy of Music (Sweden)	Paris, Jun 08
Ed Bennett (Ireland)	Noise Machine	Ars Nova (Sweden)	NOTAM (Norway)	Malmö and Birmingham, Jun 08
Pierre Jodowski (France)	Respire	Ars Nova (Sweden)	NOTAM (Norway)	Malmö and Birmingham, Jun 08
Alwynne Pritchard (UK)	Frame	Athelas Sinfonietta (Denmark)	IEM (Austria)	Copenhagen, Oct 07
Michele Tadini (Italy)	Walking through boundaries	Bit20 Ensemble (Norway)	SARC (Northern Ireland)	Birmingham, Jun 08
Rolf Wallin (Norway)	Strange News	BCMG (UK)	Birmingham Conservatoire (UK)	Birmingham and Shrewsbury, Jun 08

As shown in the table above, there have been twenty-three performances of Integra commissioned works, more than doubling the expected ten performances. The success of the commissions was

reflected in the decision to celebrate the project achievements by organising the Integra 2008 International Festival in Birmingham in June 2008.

Outcomes

- Awarded eleven commissions in two separate phases, one more than expected
- Ensured a European dimension with eleven composers from eight different countries
- Developed relationships between composers and research centres
- Enlarged the European live electronics repertoire with eleven new works
- Achieved twenty-three performances of the new works in six European countries
- Encouraged mixed media collaborations between composers and artists
- Dissemination of the works to the wider European music community
- Created a commissioning document template with preference clause

7. Composers Training

The Integra commissioned composers collaborated with the Integra research centres to create the electronics of their works. Composers and research centres were paired in order to offer composers the most appropriate environment for the development of their pieces, so that specific expertise and guidance could be provided as required. According to the technological knowledge and experience of the composer the contribution of the research centre could range from offering simple technical support for the realisation of the piece to playing a far more important role in assisting the composer from a conceptual and musical point of view.

Some examples:

Natasha Barrett needed advanced sensors technology for her piece and was paired with La Kitchen, developers of commercial hardware sensor interfaces.

Michele Tadini wanted to work with interactive video and was paired with SARC, who have a strong track record in motion capture and Jitter programming (Jitter is a video extension of the MaxMSP programming language).

Malin Bång was interested in a semantic description of audio and was paired with Birmingham Conservatoire, researcher doing a PhD on high-level real-time analysis of audio features.

Juste Janulyte had only limited knowledge of technology, and was paired with Malmö Academy of Music, where Kent Olofsson, an outstanding composer with in-depth knowledge of technology supported her.

The interaction between composers and research centres was very flexible, with the composer travelling to the research centre or the researchers and the composer travelling to the new music ensemble. Some of the training sessions corresponded with the performers training sessions, enabling composers to test directly with the ensemble the electronic interaction.

Linking to the environment development activity, technology developed through the commissioned works will be used to build modules of the Integra environment. All Integra commissioned works are either Integra-compliant or will be ported to be Integra-compliant in the near future.

Composer	Research Centre
Phase 1	
Malin Bång (Sweden)	Birmingham Conservatoire (UK)
Natasha Barrett (UK/Norway)	La Kitchen (France)
Andrea Cera (Italy)	NOTAM (Norway)
Tansy Davies (UK)	Krakov Academy of Music (Poland)
Juste Janulyte (Lithuania)	Malmö Academy of Music (Sweden)
Phase 2	
Ondrej Adamek (Czech Rep.)	Malmö Academy of Music (Sweden)
Ed Bennett (Ireland)	NOTAM (Norway)
Pierre Jodlowski (France)	NOTAM (Norway)
Alwynne Pritchard (UK)	IEM (Austria)
Michele Tadini (Italy)	SARC (Northern Ireland)
Rolf Wallin (Norway)	Birmingham Conservatoire (UK)

Outcomes

- Eleven composers attended training sessions organised by the research centres
- Supported the design and implementation of interactive technologies for the commissioned works
- Generated useful feedback for the development of the Integra environment
- Documented the creative process and the role played by technology in the development of the composer's musical ideas

8. Performers Training

For a performer there is no substitute for a positive, direct experience of interacting with technology. The **Performers Training** sessions were designed specifically to empower performers of the new music ensembles. They learn how to interact with the new tools and become familiar with the technology. Co-ordinated with the composers training sessions, the performers training sessions took place in the research centres or at the ensembles' location.

Performers had the opportunity to collaborate with composers on the design of the interaction between instruments and technology and experiment with the new environment tools. During the sessions research assistants worked with the composer and the performers, helping them to develop together novel forms of interaction. Most importantly, the experimental, inquisitive nature of the sessions enabled performers to explore beyond the written score and break some of the barriers that prevent them from including technology in their instrumental practice. An achievement of the training was the development of a more experienced set of performers keen to get involved with technology in performance.

Performers from the ensemble worked with researchers of the following research centres:

Ensemble	Research Centre	Location
Ars Nova	La Kitchen	Paris, Malmö
Ars Nova	NOTAM	Oslo, Malmö
Athelas Sinfonietta	Birmingham Conservatoire	Birmingham, Copenhagen
Athelas Sinfonietta	IEM	Copenhagen
BCMG	Malmö Academy of Music	Birmingham
BCMG	Birmingham Conservatoire	Birmingham
Bit20 Ensemble	Muzyka Centrum	Bergen
Bit20 Ensemble	SARC	Bergen
Court-circuit	NOTAM	Paris
Court-circuit	Malmö Academy of Music	Paris

Outcomes

- Increased the number of performers familiar with live electronics technology
- Supported the development and delivery of the technology of the commissioned works
- Facilitated innovative forms of interaction between performers and technology
- Included performers' feedback in the development of the new environment

9. Concerts and Performance Events

The Integra concerts and performance events are the natural outcome of the **Commissions** and **Transfer of Existing Repertoire** activities. Integra concerts were planned and programmed by the Artistic Working Group (**AWG**), who developed a clear European strategy to maximise the dissemination of Integra outcomes. The five ensembles committed each to present three Integra concerts during the project period. In fact, because of the enthusiasm generated around the project and thanks to additional funding, the ensembles managed to present twenty-three Integra concerts, eight more than required.

An important strategic decision was taken already in 2006 to try and find a way of programming a large event including all the Integra ensembles, without compromising the European dimension of the project. Finally, it was agreed to organise Integra 2008, International Festival in Birmingham to coincide with the final Integra conference initially scheduled from 5-7 June 2008. All the ensembles took part in the Festival, presenting six concerts over three days.

The artistic content of the Integra concerts reflected the idea of a dialogue between past and present creation, juxtaposing transferred live electronic works from the repertoire with new creations using mixed media interaction.

Ensemble	Concert 1	Concert 2	Concert 3	Concert 4	Concert 5
Ars Nova	Suså, Denmark, Aug 06	Malmö, Mar 07	Birmingham, Jun 08	Birmingham, Jun 08	Malmö, Jun 08
Athelas Sinfonietta	Copenhagen, Aug 06	Copenhagen, Mar 07	Norrköping, Aug 07 (twice)	Copenhagen, Oct 07	Birmingham, June 08
BCMG	Birmingham, Apr 07	Birmingham, Sep 07	Shropshire Tour, Apr 08	Birmingham, Jun 08	Shrewsbury, Jun 08
Bit20 Ensemble	Paris, Jun 06	Oslo, Oct 06	Bergen, Sep 07	Birmingham, Jun 08	
Court-circuit	Lyon, Jun 06	Parma, Sep 07	Birmingham, Jun 08	Paris, Jun 08	

The ensembles performed Integra works at the following European festivals:

Festival Traiettorie, Parma, Italy
 Festival Présences, Maison de Radio France, Paris
 Festival Agora, IRCAM, Paris
 IRCAM On Tour, Lyon
 Sound Around Festival, Copenhagen
 UNM Young Nordic Music Festival, Copenhagen
 Suså Festival, Denmark
 Connect Festival, Malmö, Sweden
 Nordic Music Days, Norrköping, Sweden
 Edvard Grieg September Festival, Bergen, Norway
 Integra 2008 International Festival, Birmingham

Outcomes

- Delivered twenty-three concerts featuring all the Integra commissions and migrated works from the repertoire
- Developed innovative concepts for music creation with live electronics and mixed media interaction
- Presented innovative formats for music with live electronics/mixed media interaction
- Disseminated new and existing works with live electronics to a wider audience.
- Provided a suitable vehicle for the dialogue between past and present creation

10. Project Dissemination

Integra website – www.integralive.org

Three website presentations were given by three Birmingham-based companies at the first meeting of the Steering Group (**SG**) in September 2005. As a result the website contract was offered to 3form (www.3form.net) both for their simple but effective design concept and their ideas on how the architecture of the site would be developed.

www.integralive.org was originally developed with Plone a powerful open source content management system. For some reason, on the Integra website it was also painfully slow. After 3form tried unsuccessfully to fix the speed of the site the **SG** asked them to rebuild it with a different system. 3form agreed to carry out this new build of the site for free, recognising their responsibility in providing the project with a suitable solution. The new site is elegant, fast and reliable, proving to be a great tool for internal and external communication and dissemination, including RSS feeds of Integra events, news and blogs. The site is currently receiving an average of 500 absolute unique visitors per month.

The development portal **www.wiki.integralive.org** is the main resource for Integra developers and the research community. It includes detailed documentation on every aspect of the development, papers and presentations from Integra members and screencasts of the GUI and the libIntegra library.

Integra 2008 International Festival and Conference (programme included)

Initially planned as a two-day scientific conference with a concert by a group of performers from the Integra ensembles, the final conference soon became a much larger event. **Integra 2008**, International Festival and Conference, was made possible thanks to the additional support provided by Birmingham City University, New Generation Arts Festival, the Italian Institute of Culture in London, the Norwegian and Danish Embassies, the Danish Arts Council and Musik i Syd (Sweden). In line with its theme of **fusing music and technology**, Integra 2008 presented in six concerts seven new project commissions, of which four were world premieres, and six works from the history of live electronic music migrated by the Integra members. Sharing the opening night with New Generation Arts Festival, Integra 2008 was characterised by innovative programming of interactive mixed media works.

As part of Integra's **audience development strategies**, an original site-specific performance event was successfully organised in collaboration with Birmingham-based new music promoters Capsule. A band, The Bays ("performance is the product") and Bit20 Ensemble shared the stage with two composers, all interacting in a live improvisation/live composition made possible by sophisticated technologies that generated score and instrumental parts in real-time. Bit20 also presented two migrated works and a new Integra commission. A large, heterogeneous and enthusiastic audience crowded Space 2, at the Custard Factory in Digbeth, Birmingham.

AEC Presentation

AEC, the Association of European Conservatoires, invited Integra to participate to its annual Congress in Strasbourg from 8-10 November 2007. The Integra team presented an overview of the project and a demonstration of the Integra environment possibilities in a live performance with two students from Birmingham Conservatoire, in front of an audience of more than two hundred directors, heads and principals of music schools and colleges from Europe and around the world. The event was very successful and generated genuine interest from many of the AEC members. The Integra team was composed by:

Mark Racz, Vice-Principal, Birmingham Conservatoire
Stein Olav Henrichsen, Bit20 Ensemble
Jamie Bullock, Birmingham Conservatoire
Angela Balint, violin, Birmingham Conservatoire
Andrew Bunting, Jazz piano, Birmingham Conservatoire
Lamberto Caccioli, Integra Project Manager
Richard Shrewsbury, Integra Project Administrator

Integra DVD (copy included)

One of the main vehicles of dissemination of the project is the Integra DVD. After reviewing the portfolios of a number of European media companies the Steering Group decided to offer the DVD contract to stalkervideo, a Milan-based new media production company led by Luca Scarzella with an impressive track-record of creative collaborations with artists across Europe: opera and concert productions, mixed media installations and exhibitions, documentary films.

The filming of the DVD started in June 2007. Over the next twelve months the film crew followed composers, research centres and ensembles, documenting the activities of the project in various locations across Europe: Birmingham, Toulouse, Paris, Copenhagen, Bergen, Malmö, Norrköping, Graz. Interviews were realised with all Integra participants, together with footage of the performances of the eleven commissioned pieces and a number of transferred works. The scientific section of the DVD includes demos of libIntegra and the Graphic User Interface prototype.

Postproduction of the DVD took place between June and August 2008, involving the project management team in the final editing. The DVD is in English, with French and German subtitles. 2000 copies have been printed and are currently being sent to arts organisations, music colleges, higher education institutions, composers and musicians across Europe.

Integra final project publication and Live Electronics user guide

The final project publication and the Live Electronics guide have not been produced. It was decided that the Integra website and the development portal could document the various strands of the project in a more effective way. In view of the continuation of the project for another three years, it was felt that a final publication published today would have rapidly become superseded by Integra 2 activities. Regarding the Live Electronics guide, the delay in releasing a final version of the Integra environment meant that relevant content was still missing.

Integra project newsletters

2 e-mail newsletters were sent out at the beginning of the project. Once the Integra website was launched, it was decided that the available RSS feeds for Integra news, blogs and events represented a more efficient way of disseminating information throughout the community on a regular basis.

International conferences

Please see the list of conferences where Integra presentations have been given in the Environment Development section (no. 4).

International networks

Contacts with other groups, projects and established networks outside Integra have been an important aspect of the dissemination activities.

Artistic	Ensemble Network European Festival Association
Academic/scientific	Digital Music Research Network, Queen Mary University, UK BEAST, University of Birmingham Centre for Music and Science, University of Cambridge, UK musicSpace, Southampton University, UK AGON Acustica Informatica Musica, Milan CASPAR project, IRCAM, Paris FAUST project team, GRAME, Lyon AFIM, Association Française d'Informatique Musicale Jamoma project, BEK, Bergen, Norway University of Oslo M&T Music Technology Incubator, UCSD, California
Publishers	Ricordi, Milan, London Boosey & Hawkes, London Universal Edition, Wien, London Chester Novello, London

Throughout the dissemination activities of Integra the Culture 2000 logo and a short text referring to the EU support of the programme have always been a priority. Concert programmes, conference activities, web-based promotion and media and press releases have always included mention of the EU support of the project.

Outcomes

- Raised awareness of live electronic music across Europe
- Contributed to bridge the gap between artistic practice and scientific investigation in the field of interactive music technologies
- Built a growing research community around the Integra software environment
- Organised Integra 2008 International Festival and Conference
- Produced a project DVD with interviews and documentation of Integra activities
- Launched a website, www.integralive.org and a wiki development portal
- Created a long-term network of composers, performers and arts organisations in Europe already active in this field
- Communicated and promoted the supporting role of the European Union through the Culture 2000 programme

11. Project Management

Birmingham Conservatoire, Birmingham City University (BCU) is the co-ordinator of the Integra project. From October 1 2007 BCU is the new name of the former University of Central England. Together with the Integra **Steering Group**, BCU has been responsible for management of the project. As the final recipient of the European grant, BCU has put in place a robust management structure at project, faculty and university level:

Project level		
Lamberto Coccioni	Project Manager	Operational and financial management of the project
Richard Shrewsbury	Project Administrator	
Integra Steering Group		
Faculty level		
Rob Baxter	Finance Manager	Scrutinising and reviewing of project finances
Jeanette Davey	Finance Clerk	Processing of financial transactions
University level		
Mary Martin	Pro Vice Chancellor, External Funding, BCU	Chair of the Integra Directorate Review until July 2008
Richard Spilsbury	Director of Finance, BCU	Chair of the Integra Directorate Review from July 2008
Michele Mooney	Director, Corporate Development Centre (CDC)	Internal monitoring and review of Integra project performance, financial and non-financial outputs
Ray Lambourn	Head of Contract Compliance, CDC	Contract and EU compliance
David Price	Funding, Audit and IT Manager, CDC	Internal financial auditing and risk assessment
George Caird	Principal, Birmingham Conservatoire	Overview of project performance and interaction with Conservatoire activities

Chaired by the Pro Vice Chancellor for External Funding, seven Integra Directorate review meetings were held during the project period, to ensure accountability and transparency of the project management and efficient monitoring and evaluation of the project financial and non-financial outputs. The Directorate reviews looked also at developing practical and sustainable exit strategies for Integra.

The ongoing internal evaluation and risk assessment of the project carried out on behalf of Directorate by the Corporate Development Centre constituted a reliable support during the project period.

Outcomes

- Delivered efficient planning, organisation and implementation of all aspects of the project
- Delivered efficient financial management including internal auditing
- Delivered efficient internal evaluation and risk assessment of the project