

IUGS Commission for Geoscience Information

ANNUAL REPORT 2011

Contents

1. Overall objectives, mission and aims
2. Role within IUGS science policy
3. Organization, Council Members and Officers
4. Extent of national/regional/global support from sources other than IUGS
5. Interaction with other international projects
6. Chief accomplishments and products
7. Main problems encountered
8. Summary of expenditure
9. Work plan for next year
10. Critical milestones
11. Anticipated results to be achieved next year
12. Budget for 2012 and potential funding sources
13. Review chief accomplishments over last five years (2007-2011)
14. Objectives and work plan for next 5 years (2012-2017)
15. Suggestions for improvement of IUGS activities, especially in reference to activities of IUGS bodies

1. OVERALL OBJECTIVES, MISSION AND AIMS

An understanding of geology is crucial in protecting human life, health and assets, and sustaining our environment and resources. As in many areas of life today, information technology is having a dramatic impact on the way geological data and knowledge is being captured, processed and disseminated. The effective application of IT is the key to the future exploitation of geological knowledge for the benefit of society.

CGI aims to:

1. provide the means for transferring knowledge on geoscience information and systems
2. stimulate international dissemination of best practice in geoscience information
3. stimulate and support initiatives which are developing standards
4. establish and occupy an accepted position in the international geoscience information community and represent IUGS on geoscience information matters.

The CGI 4 year Action Plan for 2008 – 2012 can be summarised as follows:

- Catalyse alliances
- Stimulate progress and standard geological concepts
- Promote use of data exchange standards: evidence
- Facilitate outreach
- Role in coordination of regional initiatives

2. ROLE WITHIN IUGS SCIENCE POLICY

The CGI fills the role of the geoscience information body of the IUGS. It represents IUGS on geoscience information matters, provides the means for transferring knowledge on geoscience information and systems, assists international dissemination of best practice in geoscience information, stimulates and supports initiatives which are developing standards and its Council members hold several significant positions within the international geoscience information community.

3. ORGANIZATION, COUNCIL MEMBERS AND OFFICERS

Members of the CGI Council 2008 – 2012

- Kristine Asch (Chairperson) - Germany
- Ian Jackson (Secretary General) - UK
- François Robida (Treasurer) - France
- Koji Wakita - Japan
- Jun Wang - China
- Anna-Karren Nguno - Namibia
- David Percy - USA
- Bruce Simons - Australia
- John Broome - Canada
- Peter Baumann - Germany
- Gabriel Asato - Argentina
- Linda Gundersen - USA

4. EXTENT OF NATIONAL/REGIONAL/GLOBAL SUPPORT FROM SOURCES OTHER THAN IUGS

Other than the substantial in-kind contribution of the geological organisations who pay the salaries and expenses of CGI Council and members, there is no additional support from other sources.

5. INTERACTION WITH OTHER INTERNATIONAL PROJECTS

The CGI is continuing to develop Geoscience ML (GeoSciML), a markup-up language allowing the digital exchange of geoscience information locally, continentally and globally. Both, the linked global OneGeology project and the European EC project OneGeology-Europe are using GeoSciML to make geological data interoperable and accessible via their web portals. The EC Directive INSPIRE in its geology theme is also working on a solution to use GeoSciML as part of their legal Implementing Rules. The CGI is hosting Earth Resource ML which is a mark-up language to exchange mineral and energy resources information. This is also planned to be used by the INSPIRE Directive within its mineral resources theme.

6. CHIEF ACCOMPLISHMENTS AND PRODUCTS

Africa

In 2011 two major African events were delivered first, the common GIRAF-AEGOS-OneGeology workshop at the CAG 23 meeting in Johannesburg in January, and second, the 2nd GIRAF workshop (Geoscience InfoRmation in Africa) in December 2011 in Dar es Salaam.

GIRAF-AEGOS-OneGeology Workshop: Johannesburg on 12 January 2011, at the CAG 23 meeting. This was an excellent opportunity to exchange information about the status of all 3 initiatives/projects, to investigate common goals, opportunities for cooperation and plan further milestones and proposals. The workshop was attended by around 30 participants and participants were presented with the details of the GIRAF, AEGOS and OneGeology projects and had the opportunity to discuss differences, complementarities, gaps and overlaps. The Commission for the Geological Map of the World expressed interest to use the GIRAF network to help create a new Geological Map of Africa at a 1 : 5 million scale. The possibility of short courses, e.g. on GeoSciML and/or digital mapping were discussed.

GIRAF 2011 Workshop: Dar es Salaam, 2 - 9 December 2011.

From The second workshop for Geoscience Information in Africa – GIRAF 2011 took place. It was organized and financially supported by the International Union for Geosciences/CGI and UNESCO, and hosted by the Southern and Eastern African Mineral Centre (SEAMIC). Aims of the event were to strengthen the building of the pan-African GIRAF network (GIRAF = Geoscience Information in Africa), to gather and review feedback on the actual situation of geoscience information and progress in Africa, to connect African experts working on geoscience information not only within the countries but also across political boundaries, to review the progress of building the GIRAF network as set up at the 1st workshop in Namibia 2009, and in the long run improve the way geoscience information contributes to improve the health and prosperity of the people in Africa. The programme comprised keynote speeches from representatives of the UNESCO, SEAMIC, OAGS and CGI and thematic presentations by the workshop participants in particular on geoscience information projects and initiatives in the fields of geohazard management and mineral resources. Break-out groups discussed burning issues and a special AEGOS session will be organized, and two short courses on both GeoSciML and “The Preparation of spatial data for the publication through the Internet” (i.e. web services) will be offered.

Asia

The CGI related activities in the ASEAN region had mostly been on the outreach workshops to train ASEAN member countries on the setting up of Web Map Services (WMS), development of spatial databases and the dissemination of CGI standards such as GeoSciML and EarthResourceML. The workshops were conducted through the ASEAN Mineral Resources Database training courses which are funded by the Japanese government from 2011 to 2013. The first workshop was conducted in February 2011 in Tsukuba and Tokyo, Japan. The training focused on the introduction of OGC standards and data preparation for Web Mapping Service (WMS). The second workshop was conducted in June, 2011 in Bali, Indonesia. The workshop focused on the setting up of WMS servers using the ASEAN member countries' data and the setting up of PostGIS database. The training also includes writing of PHP scripts to automatically upload data to the PostGIS database and the generation of mapfiles for WMS servers. The CGI outreach workshop from November 15 to 16 in Bangkok, Thailand was cancelled and moved to February 2012 because of the flooding in Bangkok city. The WMS servers of the maps of the ASEAN region which are registered to OneGeology are moved to the GeoGRID clusters. Because of this, the ASEAN OneGeology WMSs are now hosted redundantly in several GeoGrid clusters of servers making the services very fast. The new system is now capable of handling high volume of requests. The WMS of the Geological Map of Papua New Guinea is now ready for OneGeology registration. The WMS would be submitted to the OneGeology secretariat after the official approval from the Papua New Guinea government is received. The WMS is hosted by GSJ server. The fifth Workshop on 1:5,000,000 International Geological Map of Asia – Geological Evolution of Asia was conducted in Beijing, China on 25-29th April, 2011. The workshop was supported by China Geological Survey, Chinese Academy of Geological Sciences and CGMW Sub-commission for South and East Asia. In this workshop, final draft of IGMA 5000 was discussed. Based on this discussion, work on the final edition of digital database of IGMA5000, which is one of the CGI related products in the Asian Working Group has progressed. The main products of 2011 are: *J-iView* - an open source based online viewer of Japan's WMS. It is used for the management, storage and delivery of geographically referenced information. *J-iView* would now be used for viewing the OneGeology registered maps of the East Asian region. *J-WPS*: This is the web computing service for processing satellite image of GSJ. The developed system is composed of 3 modules which are the Web Processing Service (WPS), Web Map Service (WMS) and the user interface provided by *J-iView*. The first service available is the change detection system of satellite images to automatically map areas affected by natural disasters. Input data are provided by WMS servers and generated maps are displayed by *J-iView* as WMS. *J-MapMobile*: smartphone app for viewing WMS based maps in iPhones. The app is presently submitted for inclusion to Apple's App Store. The digital compilation of International Geological Map of Asia at a scale of 1:5,000,000 is almost ready as a final version.

South America

The CGI activities in South America are focused on the development of outreach activities to encourage the development of geoinformation and associated skills, promote the adoption of CGI standards and create awareness about the importance of information technologies in GS activities at decision-making levels. During this year three different training courses were prepared:

- Accessing and Using Geoscience Information on Internet. From GEO-RSS to WMS, and ONE GEOLOGY. Argentina Geological Congress. A training course oriented to general geoscientist.
- Electronic Geoscience Languages. Spain Cooperation Agency.
- Digital Cartography in the Context of NSDI. An Introduction to Geographic Data Modelling and ISO19103. Latin America Geological Congress.

Unfortunately due to circumstances beyond the control of the organisers the last two courses were cancelled. A new technical group on Electronic Geoscientific Languages was created. The aim of this group is the development of a consistent set of geoscientific terms in all of the Spanish speaking countries in order to guarantee the semantic interoperability of the data across the continent.

During 2011 the objectives and the work plan for 2012 was defined. It's expected that during 2012 this workgroup will start with its activities. A new regional contact was made with Cuba; this country is planning to join OneGeology in the medium term. CGI is also actively encouraging the development of geoinformation systems by technical support (mainly OneGeology) to several countries like Colombia and Ecuador. The Ibero-America Geological and Mining Survey Association produced several documents supporting One Geology, although there is not a concrete action at present. The main products in South America are related to the development of material that supports outreach activities. These are:

- OneGeology Curricula for Latin America. A document that defines what skills have to be mastered in order to understand and use GeoSciML
- OneGeology Level One Training Course. A first course basically prepared to understand WMS and related data services.
- Geospatial Data Models. A training course preparation for understanding the importance of geospatial data models and the relationship with GeoSciML.
- A CGI cd-rom with presentations about geoscience information in SA is nearly complete.

Oceania

For the Oceania region, the year has mostly been about improving and hardening the software required for interoperability, and establishing OGC Web Feature Services. As part of the Spatial Information Services Stack (SISS) the main software development has concentrated on:

- improving performance of middleware to deliver and filter application schema, such as GeoSciML and EarthResourceML, and making it GML 3.2 compliant;
- improving Sesame to allow SPARQL queries to a vocabulary service;
- developing FullMoon to generate application schema from UML models;
- developed an OpenSource portal to access Web Feature Services.

The Spatial Information Services Stack (SISS) project is a collaboration across multiple open source projects to provide a complete suite of tools that allow for spatial data interoperability. SISS has been deployed to numerous geoscience and research organisations to deliver mineral resource, groundwater, hyperspectral, geochemistry, geothermal and surface water reservoir data. A three-day workshop was held in March 2011 to demonstrate how communities can use SISS to provide interoperable data services. Over 150 people from more than 50 organisations (government agencies and departments, research organisations, industry and university) attended the workshop. AuScope has assisted seven geological surveys from Australia and New Zealand, along with CSIRO and the University of Ballarat to establish a variety of Web Feature Services using GeoSciML, EarthResourceML, GroundWaterML and the OGC Observations & Measurements exchange languages. These services can all be queried and the results displayed in the AuScope Discovery Portal. Relationships between the Australian and New Zealand geological survey information groups remain strong, as a result of CGI and Government Geologist Information Committee (GGIC) activities. AuScope released version 2.8 of the AuScope Discovery Portal in early 2011, allowing users to discover, browse, save, and process geospatial information from earth science data sources around Australia. The AuScope Extension project will ensure the continuation of the AuScope Discovery Portal and infrastructure deployed at the Australian geological surveys until 2013. The Australian State/NT geological surveys have established independent data services that are providing geology, mineral resource and down-hole hyperspectral, data, based on CGI's GeoSciML and EarthResourceML data exchange standards. The University of Ballarat (UB) and the Victorian Department of Primary Industries Future Farming Systems Research (DPI-FFSR) established groundwater Web Feature Services delivering Borehole and MappedInterval (GeoSciML) and WaterWell (GroundWaterML) features. The CSIRO Minerals DownUnder Flagship has established the following OGC Web Feature Services using GeoSciML and O&M:

- PressureDB geothermal borehole services to deliver well information, temperature, salinity and pressure;

- Laterite (regolith) specimens (AlterationUnits) and geochemistry;
- National Virtual Core Library boreholes and downhole hyperspectral data.

GNS Science (New Zealand) have established 1:250k South Victoria Land, Antarctica geology web mapping services and are currently establishing New Zealand 1:250k geological map services for OneGeology.

Europe

In Europe, following the successful conclusion of the OneGeology-Europe project that has adopted and implemented the GeoSciML standard (data model and vocabularies), EuroGeoSurveys (the Association of European Geological Surveys), together with the National Geological Surveys, have committed themselves to maintain the OneGeology-Europe infrastructure. Furthermore, the Directors of the national surveys have decided to build and develop the European Geological Database Infrastructure, extending the OneGeology-Europe foundation. The Member States that were not involved in the OneGeology-Europe project will be included in the infrastructure and their experts will be trained to the implementation of GeoSciML standards, in order to setup the appropriate services on their national geological maps. Promine, the European funded research flagship project about mining has contributed to the ERML development and its adaption to European requirements. ERML will be used to model and distribute the information about mineral resources through the Promine project and the OneGeology-Europe portal. Regarding the development of the INSPIRE European regulation, the Thematic Working Groups setup by the European Commission for the geology and mineral resources themes have proposed basing the INSPIRE data specifications upon GeoSciML and ERML. This proposal has been submitted for review through an extended consultation process involving the major stakeholders. The final proposition taking into account the comments will be prepared for March 2012. The AEGOS project, a European funded project to develop an African-European Georesources Observation System has proposed to adopt GeoSciML as the standard for exchanging geological information. One of the major achievements in Europe have been the inclusion of IUGS/CGI standards in the draft INSPIRE specifications for geology and mineral resources. The likely adoption of those specifications in 2012 will obviously trigger their implementation by GIS software providers that would largely facilitate their dissemination.

Global

CGI, its Working groups and members deliver GeoSciML, which is the "interoperability engine" that powers OneGeology. OneGeology is a project tightly linked to CGI; it made progress on several fronts in 2011: 117 nations are now participating, data services are increasing in number and sophistication, an accreditation scheme was launched, and critical governance issues (incorporation) were taken forward by the Steering Group which met in Tokyo in September. CGI also contributes significantly to ICSU CoData progress and to developments in Open Geospatial Consortium standards. OneGeology and CODATA are summarised below.

OneGeology

OneGeology has four basic objectives and progress is reported against these below. Two significant additional tasks in the 2011 period were: taking forward the proposal to incorporate OneGeology and development of the Accreditation Scheme for web services.

Improve the accessibility of geological map data

Despite considerable efforts we have not managed to significantly increase the number of nations participating in the last year. The number is now 117 countries. We have, however, increased the number of state/provincial surveys participating and serving data. Over 50 countries and 6 states/provinces are now serving data. There are currently 229 WMS and 23 WFS data layers being served through the portal. The data has come from 57 data providers and is being served by 46 service providers. There are one or more layers for 51 nations, 20 continental or other large world

regions and 8 smaller sub-national regions. We have had official confirmation that data for the Russian Federation will be served in the next few weeks. This would be a major step covering a large part of the Earth's surface and we very much look forward to it. We have strengthened our linkages with GeoParks and also held a meeting with Map Action the international humanitarian organisation which provides responsive mapping capability in disaster zones (eg Pakistan and Haiti).

Exchange know-how and skills so that all nations can participate

The WMS Cookbook (technical manual) has been updated several times and is available for download on the OneGeology website. A new WFS cookbook will be produced over the coming year (the release depends on software developments to support the new WFS v2.0.0 standard which is also an ISO standard). In 2011 we ran a OneGeology workshop at the 23rd Colloquium of African Geology in January 2011, in Johannesburg in association with the GIRAF network and AEGOS projects. The OneGeology-Europe project significantly improved the competence of EU geological surveys in data standards, access and a whole range of digital map capabilities. All of this know-how is now available through its associated documentation to OneGeology global participants. Similarly the GIN project in the USA is sharing methods and understanding in providing data access via web systems. The OneGeology web site provides general and specific technical guidance and queries are answered via email and phone calls. The buddy system (where one nation provides assistance to help another nation serve data) is being used by 15 nations. OneGeology has excellent links with the YES Network (Young Earth Scientists) and they receive our newsletters and documentation. The ESRI grant offer has been taken up by a number of OneGeology participants and is improving capability in GIS and digital mapping.

Accelerate interoperability in the geosciences and the take up of a new "standard" (GeoSciML)

As geological surveys move to WFS (Web Feature Services) they are fully incorporating GeoSciML standards. Currently there are 23 WFS services, however we are not pressing for new WFS services until the final release of GeoSciML v3 and the release of a new WFS cookbook to cover how to set up GeoSciML v3 services. OneGeology-Europe took forward and deployed the geological concept definitions and vocabularies developed by the IUGS-CGI GeoSciML team. This helps the geological sciences move on from interoperability to semantic harmonisation; a pre-requisite of full (geometric) harmonisation. OneGeology is an active contributor to GEO/GEOSS.

Use the global profile of OneGeology to increase awareness of the project and the relevance of the geosciences

OneGeology has maintained its high profile. The website is dynamic and is updated at least weekly. Several editions of the newsletter have been produced and is disseminated to over 2000 contacts worldwide. In the last 12 months over 40 presentations have been given by OneGeology team members and a number of articles and papers have also been generated. The audiences for these presentations range from geological surveys, to international conferences and workshops on geoscience, informatics and spatial data infrastructures. The European Environment Agency have agreed an MoU with EuroGeoSurveys to use OneGeology (European) data in their work programmes. OneGeology participants and the secretariat have been improving the content of our 'OneGeology4Kids' pages and these have now been translated into several languages. They are a fun introduction to geology linked to OneGeology maps and aimed at children under 10 years old.

CODATA

CGI continues to represent the IUGS at the CODATA General Assembly though delegate John Broome. The evolution and acceptance of the GeoSciML standards and its demonstration through the OneGeology initiative has led to the IUGS and CGI being recognized in the CODATA community as union leaders in data management leadership. At the 2010 CODATA conference, a technical session focused on ICSU Union data activities with 4 unions, including CGI, presenting their approaches to data leadership and coordination. Associated discussions resulted in the decision to pursue ICSU funding through a grant proposal to build upon best practices identified at the session and share this knowledge within the ICSU community. A proposal was submitted

entitled *"Harmonization of Scientific Data Standards within the ICSU Community"*. IUGS was one of the endorsing unions for the proposal but unfortunately the proposal was not funded. Some of the proposed work will proceed but at a much slower rate. At the 2010 General Assembly, John Broome was elected as a member of the CODATA Executive which will facilitate communication between CGI and CODATA; he also represented CGI/IUGS on an *ad hoc* ICSU Strategic Coordinating Committee for Information and Data (SCCID), which delivered its final report to ISCU in 2011. This report provides ICSU with recommendations on strategic direction in the area of scientific data and information management including on future directions for CODATA and the World Data System (WDS).

"BIG DATA"

The year 2011 was characterized by broad recognition of the data tsunami - "Big Data" is the keyword, meaning: we have more (and more complex) data than we can reasonably cope with. At the same time, demand for evaluation is growing aggressively. Satellite imagery is one example: while in the past it was a challenge to get image files online, today "on-demand processing" is causing problems as users come with variable ad-hoc queries so that predefined product archives are no longer a solution. The buzzword is "Big Data Analytics". This challenge is not just a matter of resources. More and larger disks for storage will not resolve it. A large part of these new data comes are "raster data" - an effect of the sampling that takes place during data acquisition. A simple example of raster data are (2D) satellite images, which grow to substantial sizes when combined to seamless maps, as we use them today in services like GoogleMaps. Composing time series out of satellite images yields 3D x/y/t "data cubes", while seismic data occur as 3D x/y/z data. 4D data appear in climate and ocean simulation. In the life sciences we find 3D and 4D CAT scans of human brains, gene expression data, and many more raster data. Statistics per se deals with data cubes. Scientific initiatives are emerging. The first-ever workshop solely dedicated to Array Databases ("array" is the IT term for "raster") was held in Spring 2011. The SciDB project has embarked on establishing scientific database support, using an approach very similar to SciQL, another project. A special case is rasdaman ("raster data manager") which has been developed over more than 15 years, and hence is the one system that can readily be deployed today. The Open Geospatial Consortium (OGC) is particularly active in promoting open access standards, including on-demand processing. Standards like the Web Coverage Service (WCS) have been enabled in 2011 with flexible format encoding and coordinate system support. In this year's OGC Web Services (OWS) testbed activity strong emphasis has been put on aspects like geo processing and applications like aviation. It is felt in OGC that "Big Data" is an overarching theme for both science and industry. The EarthServer project (www.earthserver.eu) has set out to establish comprehensive, scalable support for Earth Science data. Topics include integrated data / metadata queries, cloud-based raster query optimization, and versatile client technology. Six Lighthouse Applications, each one with 100+ TB, are being established. The extended rasdaman technology will allow for distributed queries among these archives.

7. MAIN PROBLEMS ENCOUNTERED

Asia

The chief problems encountered in 2011 related to natural disasters that severely damaged the information technology infrastructure in Japan. The strong earthquake that struck Japan in March 2011 damaged most of GSJ's servers including the machines hosting the OneGeology WMSs and related online databases. J-iView and J-WPS are still awaiting open servers for them to be hosted on. For the moment, they are just accessible within AIST and GSJ. Fortunately, all OneGeology WMS are now back online. Another natural calamity that affected our activity is the flooding in Bangkok,

Thailand. This caused the cancellation of the CGI Outreach Workshop scheduled from November 15 to 16, 2011.

South America

Despite many successful activities (CGI-Seminar 2009, Cartagena training course 2010) and the network of collaboration now created, communication between professionals from different countries is still not easy. This problem has different causes: 1) the geoscience information discipline is still not fully recognised as part of geological science. 2) Trips and travel expenses are usually allowed only for senior positions in organisations. The difficulties in communication and meeting organization make it also more difficult to maintain group cohesion and stay informed about the problems and issues that each of SA countries have. In this context, outreach activities have to be organized based on immediate opportunities when support and funding appear, rather than a clear medium term strategy.

Oceania

The Government Geologists Information Committee (GGIC) is a committee of geoscience information managers from the Australian State/Territory/Federal geological surveys and the New Zealand Ministry of Economic Development and GNS Science agencies. It reports directly to the Australian/New Zealand Chief Government Geologists Committee (CGGC). Its mission is to provide and promote a coherent national strategic direction for the management and delivery of geoscience information on behalf of CGGC. GGIC is currently in a state of flux. Many of the State geological surveys are being re-organised (for example GeoScience Victoria has been disbanded) and the respective information sections are under funding pressures. The Ministerial Councils the CGGC answer to are being re-organised. CGI made initial contact with SOPAC (Pacific Islands Applied Geoscience Commission) in late 2010. At the time SOPAC was going through significant changes, but their initial reaction was that "it would fully support close ties between SOPAC (on behalf of its island members) and (IUGS-CGI)". This has not progressed.

Europe

The INSPIRE working groups have mobilized most of the European experts of GeoSciML. As a consequence their contribution to global testbeds within CGI has been reduced. After the end of the OneGeology-Europe project, the funding of this activity has been fully supported by the national geological surveys but there is period of strong tension on all the national budgets.

Global

It is important to mention here that an overarching problem for CGI is the issue of lack of IUGS funding for travel and thus reliance on national budgets that are under increasing pressure. This has limited CGI progress. It is a problem that is being exacerbated because national priorities are seemingly increasingly domestic. Finally, we should report that progress with the Multilingual Thesaurus has not been as planned because of a difficult mix of different views on strategies and political and personal issues within the groups and individuals involved. CGI Council has resolved this by rationalising the working groups involved and we hope the MLT now has clear leadership and goals .

8. SUMMARY OF EXPENDITURE

	\$ account		€account	
	in	out	in	out
october 2002 kickoff "new" CGI	2 172.81		1 113.59	
2002 allocation IUGS (3000\$)	3 000.00			
2001/2002 grant ICSU (5000\$)	5 000.00			
Council meetings				-10.00
new web site		-2 512.32		
CGI bank account costs		-0.60		
balance 2002	7 659.89		1 103.59	
2003				
2003 allocation IUGS (5000\$)			4 104.75	
Council meetings				-826.27
MT workinggroup				-426.00
CGI bank account costs				-25.00
Balance 2003	7 659.89		3 931.07	
2004				
2004 allocation IUGS (5000\$)			4165.28	
debudgetting unclaimed expenses 2003			426.00	
Council meetings				-138.00
CGI Flyer				-696.00
MT Workinggroup				-426.00
Firenze prep. & participation				-294.60
Website				-2006.05
CGI bank costs				-20.00
Balance 2004	7 659.89		4 941.70	
2005				
domain name CGI website (28.2£)				-43.00
2005 allocation IUGS (5000\$)	5000.00			
council meetings				-286.30
Cost CGI bank account 2005				-20.00
Balance 2005	12 659.89		4 592.40	
2006				
IUGS Grant outreach workshop (10000\$)	10 000.00			
UNESCO Grant outreach workshop leaflet (5000\$) contract 4500027900	5 000.00			
2006 IUGS allocation (5000\$)	5 000.00			
Refund Datamodel workshop Perth dec 2004		-367.68		-27.83
Maputo outreach workshop		-2941.23		-3510.85
Printing and Shipping leaflet		-4690.00		-2390.49
internal transfer \$ => €		-5000.00	3857.73	
Balance 2006	19 660.98		2 520.96	
2007				

cost CGI bank account 2006			-20.00
2007 IUGS Grant allocation	7500.00		
Cost domain name CGI website (24.99£)			-41.79
cost CGI bank account 2007			-30.00
Balance 2007	27 160.98		2 429.17
2 008			
Travel expenses preparation Giraf Schutte			-240.00
cost CGI bank account 2008			-30.00
cost transfer accounts Fortis--> LCL			-43.26
Balance 2008	27 160.98		2 115.91
2 009			
ACCOUNTS TRANSFERED			
Travel expenses Broome CODATA		-1139.69	
Repro banner Giraf			-216.91
2009 IUGS allocation	15 000.00		
cost transfer IUGS --> CGI		-23.01	
Travel expenses S. Richard - MLT St Petersburg		-2808.85	
transfer charges		-24.60	
2 010			
Payment maintenance of CGI web site (NERC/BGS)		-2300.00	
2010 IUGS allocation	7 500.00		
transfer charges		-23.17	
transfer charges		-21.16	
2 011			
transfer charges			
2011 IUGS allocation	10000.00		
transfer charges		-23.54	
Payment maintenance of CGI web site (NERC/BGS) 1549.87£			-1779.01
transfer charges			-30.00
transfer charges			-22.00
transfer account USD --> €		-1900.00	1377.81
transfer account USD --> €		-19000.00	13777.10
transfer charges			-25.90
Payment to BGS - Giraf workshop			-13783.00
transfer account USD --> €		-8900	6610.71
transfer charges			-22
Payment to BGS (update cookbooks, schematron rules)			-6600

Balance December 2011	23 496.96	1 402.71
	\$ account	€account

9. WORK PLAN FOR NEXT YEAR

The major aims for 2012 are:

- Continue GeoSciML and Earth Resource ML development, ensuring consistency between INSPIRE data specifications, or other regional developments and CGI standards.
- Formalise the relationship between IUGS and OGC, with the objective of making GeoSciML an OGC standard.
- Make the ISC stratigraphic chart web accessible.
- Prepare the participation of CGI in a geoinformation meeting in South America.
- Hold the postponed Asian CGI outreach workshop in mid-February in Thailand.
- Prepare for the Geoinformation supersession at the IGC2012
- Manage the CGI election and provide a sound base for the continuation of the CGI activities after the change of the Council.

Planned publications in Episodes or through the IUGS website

The CGI is planning to publish articles about their work on GeoSciML and GIRAF and a paper on "the challenges and issues of geo-information training in Latin America "

Planned participation in the next IGC

In this era of data-intensive scientific discovery – the so-called ‘Fourth Paradigm’ – the significance of interoperable data, information, systems and infrastructures is paramount in advancing the entire geoscience discipline and responding to the great societal challenges. The CGI, along with the IAMG and GIC is organising this major theme in a Geoscience Information Super-Symposium at the 34th IGC. It aims to build on the successes of the 33rd IGC by attracting leading speakers from across the globe to present ‘the state of the science’ and to stimulate discussion on the major challenges ahead that must be addressed in order to move the field of geoscience information to the next level. The theme encompasses spatial data infrastructure and regional geoinformation initiatives; interoperability and standards; delivery, dissemination and exploitation of geoscience data and information; mathematical geology and geostatistics; model fusion, visualisation, exploration and 3D & 4-D modelling; tools – software, hardware, open source and super computers.

10. CRITICAL MILESTONES

The most important critical milestone for CGI by far will be the installation of a new Council and officers at the IGC in August 2012.

11. ANTICIPATED RESULTS TO BE ACHIEVED FOR NEXT YEAR

See section 9

12. BUDGET FOR 2012

CGI Council anticipates a similar budget to that provided by IUGS in previous years.

13. REVIEW CHIEF ACCOMPLISHMENTS OVER LAST FIVE YEARS (2007-2011)

CGI developed an Action Plan in 2008 which is set out in section 1 of this report. Evidence indicates that, despite issues of resources and travel constraints, CGI through its Working Groups, members and associated initiatives, has been extremely successful. The Commission has: catalysed alliances, vide 1G, 1G-E, GIC, ICSU, IAMG, INSPIRE, GGIPAC, AUSCOPE, ICS, CGMW, EGS, OGC; stimulated progress and standard geological concepts, vide CDTG, MTG, 1G-E multilingual vocabulary; promoted the use of data exchange standards, vide IWG, 1G, 1G-E; facilitate outreach, vide GIRAF, S. American workshop, 1G; Played a full role in the coordination of regional initiatives, vide INSPIRE, 1G-E, CCOP .

14. OBJECTIVES AND WORK PLAN FOR NEXT 5 YEARS (2012-2017)

Given the substantial changes in the composition of CGI Council and officers in August 2012 final decisions on the next 5 year aims and strategy will not be made until the new Council is in post. However, the provisional goals are:

- Catalyze productive alliances between geo-information bodies, including OGC;
- Stimulate progress in development and application of standard geoscience concepts and their representation in multiple languages;
- Promote international use of data exchange standards;
- Facilitate outreach, knowledge transfer and take-up of best practice in geo-information (e.g. with the South America initiative, the Asia initiative and GIRAF)
- Enhance collaboration with other IUGS commissions, e.g. ICS
- Play a role in coordination of regional initiatives, e.g. by organizing geoscience information, standard and language Workshops,
- and short and longterm organize geoinformation super-symposiums at the IGC 2012 and 2015 (Melbourne and Capetown)

15. SUGGESTIONS FOR IMPROVEMENT OF IUGS ACTIVITIES, ESPECIALLY IN REFERENCE TO ACTIVITIES OF IUGS BODIES

Understandably, given the remit of our Commission, we would urge the IUGS Executive to give greater prominence in terms of discussion time, publication space and funding, to the area of geoscience information and especially digital standards. In a world which is increasingly data and IT driven and dependent, it is imperative that the IUGS takes a lead in pushing forward digital advances and ensuring consistency of approach in geoscience data content and applications. Without this, holistic solutions to transnational geological challenges will be that much more difficult to deliver. We believe there is a need for geoscience information expertise to be present at the highest level in IUGS, ie a member of the Executive; if necessary by co-option.