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NEWSLETTER

ACGT on Cancer

Advancing Clinico Genomic Trials

EDITORIAL

Dear ACGT community,

We are glad to provide all ACGT members and interested collaborators with this third issue of the ACGT newsletter. This autumn 2008 edition will be the occasion to present our work to date and expose the challenges and the great opportunities that are showing up.

Almost entering into its fourth year, the ACGT project is now showing the full scope of its ambitions with the integration of high level computable solutions for full clinical trials management. Great progresses have been made and exiting new opportunities for developments, with new organizations such as EORTC and other practitioners getting on board, that will considerably expend the scale for collaboration across Europe.

The ACGT annual conference in Crete has been a particular achievement, from the excellent service members got in an exceptional location, to the very challenging meetings and workshops where user organizations met with developer organizations to ensure that the objectives remain user oriented and friendly. The participation of the partners in the plenary sessions and optional workshops has helped speeding up the process of work so that practitioners can get rapidly on new clinical trials.

next >>>

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To achieve that purpose, all technologies developed in the project are now entering in a new phase of integration, thanks to the excellent communication between all partners of the consortium and the extensive work provided by the management of the ACGT project.

This autumn edition of the newsletter is the opportunity for us to highlight the ACGT Data Architecture as a whole, in the light of its current developments and we are happy to invite you to travel with us inside the project.

We wish you a good reading and want to thank you for your interest in the ACGT project, looking forward to very exciting developments in the near future.

Samuel Keuchkerian,
HealthGrid

Clinical Trials News

Latest developments in the world of clinical trials in cancer

ACGT aims to provide a Europe-wide infrastructure to support multi-centric, post-genomic clinical trials on cancer, and thus, enable the smooth and prompt transfer of laboratory findings to the clinical management and treatment of patients. ACGT is then a mean to facilitate bench-to-bed communication in Cancer Management. To achieve this communication aim, semantic integration of diverse biomedical databases is needed. Within the ACGT framework, Integration of data is achieved by means of a mediator system that is based on an ontology [1].

Ontologies are a major trend in IT systems. They provide a formalized scheme of reference for different data resources and different users. A basic objective of ontologies is to enable better semantic integration of data, not only between humans, but also facilitating human-machine communication. Thus, ontologies are one strategy within the huge field of Artificial Intelligence. It is important to note that with respect to different terms and languages used, ontologies are completely neutral. Since ontologies aim at providing a formal definition of a class within a specific domain, it is possible to build an ontology in a completely language-neutral way. There is no need to attach any natural language term to the classes. Nevertheless, it can be done, since naming the classes with natural terms facilitates the development of the ontology and fosters its transparency for users.

After reviewing existing terminologies and taxonomies a new ontology was hand-tailored for the specific use within the ACGT system. This representational artefact is called the ACGT Master Ontology, (ACGT MO).

The scope of the ACGT MO is cancer research and management. Its initial version consists of 1300 classes and is

written in the Web Ontology Language, OWL. OWL was developed specifically to develop ontologies. Even if based on the RDF syntax it exceeds the expressiveness of the RDF schema by far. OWL exists in three sublanguages, one of which is OWL DL. The latter is the one completely computable among sublanguages of OWL. In effect, this means that all conclusions drawn from the ontology are guaranteed to be computable [2].

The ACGT MO does not only represent classes as linked via the basic taxonomical relation, the "is_a"-relation or subsumption, but connects them via other semantic relations. Many existing categorizations focus on the classes or types of things in a given domain, health care or cancer management for instance. These representations might give a hierarchy of those entities, which will basically look like a taxonomy, e.g. in biology. But it is obvious that only representing other relations between classes, e.g. "x is part of y", "z is adjacent to u", "a is prior to b", can lead to a comprehensive representation of the phenomena occurring in medicine.

Even though the decision was taken to create a new resource for ACGT, the development built highly on pre-existing material. The relations in the ACGT MO provide an excellent example, since we re-used relations already present in other ontologies or Knowledge Management Systems. For one, we imported an ontology of biomedical relations that exists within a collaborating group for ontology based engineering called Open Biomedical Ontologies (OBO) Foundry [3]. The OBO Foundry presents a library of interoperable biomedical ontologies, all subject to specified criteria. It is the aim of the consortium to make the ACGT MO a member of this initiative and thus, ensure the quality of the ontology development.

The ACGT MO is not only a representation of biomedical entities and processes. The scope of the ACGT project includes

scientific observation by different well-established, standardized methods stemming both from clinical research and molecular biology. In order to cover these areas the ACGT MO relied on CIDOC Conceptual Reference Model (CRM) [4], a formal reference for cultural heritage documentation. The CIDOC CRM is official standard ISO 21127:2006.

As mentioned above the mediator system will exploit the MO to integrate pre-existing data into the semantic schema of the ACGT system. This process is basically part of well-established integration strategies. Besides this use of the ontology ACGT aims to provide a completely novel tool to collect data, which are already in accordance with the ontology.

In the past, the method of choice to bring data in accordance with terminology resources was to code it with expressions from the terminology in question. Coding, however, has proved to be a source of mistake to a huge extend. Therefore, ACGT aims at providing an Ontology-based Clinical Trial Management System (ObTiMA), which will annotate data with terms referring to the ontology the very moment the data are created. The huge number of relations given in the ACGT MO is necessary to provide a representation of clinical reality and thus, ena-

ble, for instance, the creation of forms necessary in conducting clinical trials [5].

Supporting the two strategies mentioned above the ACGT MO provides the necessary reference framework for all data that is handled in the system. The ontology-based approach ensures that data can be disseminated over the borders of different databases and different biomedical disciplines, even over the borders between different real-world languages.

Mathias Brochhausen, University of Saarland

[1] Tsiknakis M, Brochhausen M, Nabrzyski J, Pucaski L, Potamias G, Desmedt C, Kafetzopoulos D, "A semantic grid infrastructure enabling integrated access and analysis of multilevel biomedical data in support of post-genomic clinical trials on Cancer". IEEE Transactions on Information Technology in Biomedicine, (Special issue on Bio-Grids) March 2008, Vol. 12, No. 2, 205-217.

[2] www.w3.org/TR/owl-features

[3] www.obofoundry.org

[4] cidoc.ics.forth.gr

[5] Brochhausen M, Weiler G, Cocos C, Stenzhorn H, Graf, Doerr M, Tsiknakis M, "The ACGT Master Ontology on Cancer – a New Terminology Source for Oncological Practice". Proceedings of the 21st IEEE International Symposium on Computer-Based Medical Systems, Jyväskylä, Finland, June 17-19, 2008. 2008, 324-329.

Products and Services

News on the latest products or services in our area of interest

Oncosimulator

The ONCOSIMULATOR is at the same time a concept of multilevel integrative cancer and (treatment affected) normal tissue biology, an algorithmic construct and a software system which aims at supporting the clinician in the process of optimizing cancer treatment by performing individualized in silico experiments.

Functioning of the «Oncosimulator» following its thorough clinical validation

First step: obtain patient's specific data

The following sets of data are collected for each patient:

- Clinical (age, eventual previous treatments etc.);
- Imaging (images of MRI, ultrasound, PET, CT etc.);
- Histopathological (histopathology slide images whenever biopsy is allowed and feasible);
- Molecular (specific molecular marker values and/or DNA array data based on biopsy and/or blood samples).

Second step: preprocess patient's data

The data collected are preprocessed in order to take an adequate form allowing their introduction into the "Oncosimulator." For example the imaging data are segmented, registered, interpolated, 3-D reconstructed. Similarly the molecular data are combined via molecular interaction networks in order to perturb the average pharmacodynamic or radiobiological cell survival parameters and so on.

Third step: describe candidate therapeutic schemes

The clinician describes a number of candidate therapeutic schemes to be simulated in silico i.e. on the computer.

Fourth step: run the simulations

The tumour growth and therapy response computer code is executed on distributed GRID computational resources so that several candidate treatment schemes incorporating many possible unknown tumour parameter values combinations are simulated concurrently. Predictions concerning the toxicological permissibility of each candidate treatment scheme are also produced.

Fifth step: visualize the predictions

The expected reaction of the tumour as well as indications of the

toxicological side effects for all scenarios simulated are visualized using several techniques ranging from graph plotting to virtual reality rendering.

Sixth step: evaluate the predictions and decide on the optimal scheme to be applied

The Oncosimulator's predictions are carefully evaluated by the clinician by taking into account their logic, education and even experience. If no serious conflicts are detected, the predictions can be used to support the clinician in taking their final (expectedly optimal) decision on the actual treatment of the patient.

Seventh step: apply the optimal therapeutic scheme and further optimize the Oncosimulator

The expectedly optimal therapeutic scheme (schedule) is applied on the patient. In parallel the prediction vs. reality comparison data are collected and used as a continuous optimization feedback to the Oncosimulator.

Other envisaged application areas of the oncosimulator:

- Basic science (dynamic integration of multilevel biodata and biomechanisms, in silico experimentation);
- Design of new clinicogenomic trials;
- Medical education;
- Education of interested patients and/or parents.

Georgios S. Stamatakos, NTUA

Data access services

One of the challenges in carrying out bio-molecular research is that relevant data is distributed across many heterogeneous data sources. The trial-specific data includes imaging data, DNA microarray, and clinical data reported on Case Report Forms. Next to that, bio-informaticians need to access data stored in public bio-molecular databases such as Swiss-Prot, KEGG, and GEO. These databases use different access protocols, data formats, query mechanisms, schemas, identifiers, ontologies, etc. The ACGT platform uses data access services to hide the syntactic differences of the databases from other web services and end-users.

The ACGT platform currently contains data access services for the trial-specific databases. The data access services provide a uniform interface for querying the data and for delivering large datasets to temporary storage, where the data can be analyzed by data-mining algorithms. The data access services have recently been fully integrated in the ACGT security framework, ensuring that only authorized users have access to the clinical trial data. Future work focuses on the integration of data from public bio-molecular databases. The challenge here is to provide a unified data access interface that does not needlessly restrict users when accessing the data.

Anca Bucur, Erwin Bonsma, Philips Medical Research

Genomic-enabled EHR

It is already well known that cancer is a genetic disease, and therefore genomic information should be required to diagnose, stratify and treat cancer. The main current domains and applications of genomic data in research and clinical practice can be divided in the following categories:

- Gene expression profiling;
- Measure genetic variation (SNPs);
- Identification of predisposition risk factors;
- Pharmacogenetics,

An important observation is that current EMR and EHR solutions do not support clinical research requirements, despite the fact that the data in clinical practice is regarded as a valuable source of information for new research and for validation of results in many important cancer centers. Not being able to properly query their clinical practice data deprives the healthcare organizations of a valuable resource that could be used for improving the treatment of cancer patients. As more and more data of various types (clinical, genomic, imaging, pathology, etc.) is being collected for current clinical practice, it becomes increasingly important to preserve that data and to use it for research but also for the future benefit of the patient, in the light of new discoveries. Preserving the data is especially meaningful when storing and maintaining it is significantly cheaper than acquiring and analyzing it, and when new insight can be obtained based on old data, as it is the case with genomic information. In this context, we also focus on identifying the relevant pieces of information and proposing a data model for genomic data to become part of a future, genomic-enabled EHR.

Anca Bucur, Erwin Bonsma,
Philips Medical Research

Grid News

Latest developments in the world of computer grid research

The best proof that ACGT achieves its goal of advancing medical science through offering an IT platform that facilitates seamless and secure access and analysis of multi-level clinico-genomic data, is a demonstration of its capabilities in the field, using "real" data. Thus the success of the ACGT project partially depends on the volume of high quality data that can be analyzed in the different cancer related pilot trials.

Sharing and exploiting sensitive medical data in trans-European network raises a large number of ethical and legal privacy related questions. The ACGT Data Protection Framework, a synergy between legal and technical components, tries to provide a convenient way for ACGT users to be compliant with governing laws and existing best practices. One of the technical components of the ACGT Data Protection Framework that is highlighted here, is the "Custodix Anonymisation Tool" (CAT) which aims to simplify the process of de-identifying personal data that is used to import data from participating centers into the ACGT platform.

De-identification is no straightforward task. It certainly is not sufficient to remove obvious identifiers from a dataset. Adequate privacy protection involves thorough risk assessment in order to define how the data must be transformed (e.g. through perturbation, suppression, aggregation, etc..) to guarantee that data cannot be re-identified. Privacy protection means balancing re-identification risk versus data usability (both are related to information content).

CAT does not have the ambition to offer a complete solution to the mentioned data protection issues. It was designed as a generic solution (as opposed to the many ad-hoc solutions that pop-up with every new data collection initiative) to remove a large part of the "practical" burden when people want to exchange information compliant with governing legislation and ethical guidelines.

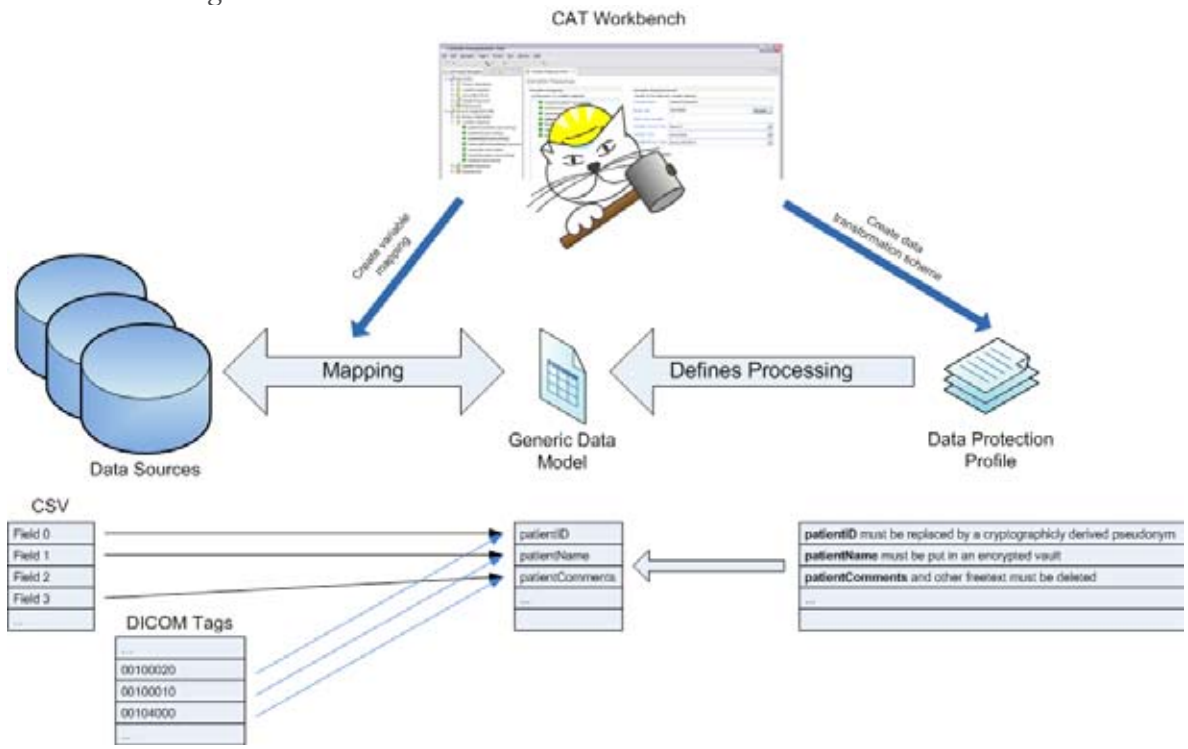
Using CAT

CAT basically consists of a "workbench" and a "wizard". The "CAT workbench" serves at defining the mechanics (data protection profile) through which data is exported for sharing, the "wizard" allows to apply those mechanics over and over again on new datasets. The execution of these profiles and thus the exporting of data doesn't necessarily need to be a manual exercise, next to the wizard CAT can be used as a command line tool (perfect for scripting) or even as a (Java) library for full integration.

Designing a data protection profile in the workbench consists of two important tasks:

- Creation of a mapping from a specific data format to a more generic internal format;
- Definition of actions that should be performed on the generic data format in order to de-identify data (data protection profile).

Privacy processing actions in CAT are defined towards an internal generic data model. The big advantage of this approach is that a single privacy protection profile can be applied to different data sources (in different formats). The mapping of the data sources to the generic data model can be easily done in the workbench itself. This principle is illustrated in the figure below:



CAT support CSV ("Comma Separated Values"), XML, DICOM, CEL files (microarray data) and direct operations on relational databases, through a modular plug-in mechanism which allows developers to add support for their own proprietary data formats.

CAT in ACGT

CAT will be used for example by Jules Bordet to share TOP trial data on the ACGT platform. Two types of data are available the pool of patients included in the study: i.e. medical images (DICOM) and associated lab results which are put in a CSV file ("Comma Separated Values" file, e.g. exported from Microsoft Excel).

Assume that for example, the privacy risk analysis includes requirements such as: "identifiers and free-text (which could contain identifiers) must be removed". These requirements can be formalized in the CAT workbench in terms of operations on a generic data model. In this example:

- Patient identifiers have to be removed and replaced by a pseudonym, such that patients in CSV and DICOM files remain linked;
- The patient demographics must be stored in an encrypted way. This way, a exported record can be re-identified at a later point in time by the people that made the data originally available. This can be useful when reporting for example adverse events.

CAT aims to contain a full library with privacy processing functions including: a wide range of pseudonym generators, placeholders for encrypted storage, free-text de-identification, date transformations, ... and allows users to easily add custom transformation functions.

Once data mappings and a data protection profile exists, users can use the wizard to easily process several input sources at once with a single mouse-click, or use the profiles to script a command-line CAT.

Brecht Claerhout, Custodix

Feature Article

Combined usability methods and procedures in ACGT

The use of computers, software applications and IT in daily medical life and in research is rapidly increasing. The main task to ensure the usability of the systems developed is to accomplish what the users need. Generally, software is developed without much evaluation during the development process. To avoid this well known risk, it is of utmost importance to involve the end-user from the design phase of new software, during the development process and to secure an iterative evaluation of the software by end-users.

Without taking the end-user into account the software will fail usability at the product stage and end-users would not use the software and the platform what a serious loss of time, money and resources for the project.

To assure the usability, criteria has to be defined, that:

- can be used as a guideline for the end-user and helps him to evaluate the software (most of the end-users are not used to evaluate software);
- provides an efficient feedback for the developer to optimize his software.

Simplified, the expectations for software systems are two fold:

- the software must do the right things: software systems must do what they are supposed to do (end-user perspective);
- the software must do the things right: software systems must perform the tasks correctly (developer perspective).

To assure that the software used in ACGT will meet the high demands of the end-users needs, the usability must be clearly defined and guarantee that:

- The software developed by ACGT is evaluated by the end-users throughout the development period;
- The software implemented in the ACGT platform fulfils the requirements for usability of the ACGT main target groups.

The individual specifications and functions of new software must be defined from case to case. The end-user usability criteria of software are part of the top-down perspective and various categories of end-users are defined and criteria in terms of its suitability to achieve its intended goals are given.

To produce usable software for the target users and to reduce unnecessary implementation costs during the development, it was important to start very early with the usability process. This causes to consider the needs of the end-users with the whole context of use.

A usability engineer will accompany the whole development process and conduct the usability tests with the first developed prototypes. During the life-time of the project he has the functionality of an independent agent between the end-users and the software developers. For the success of ACGT it is on high importance that the software is self-explanatory and easy to use, because the main user groups have none or basic knowledge of computer systems or applications. The user interfaces are of fundamental impact as a gateway between project and end-users.

A couple of tools are developed in ACGT for different target groups. To these target groups belong clinicians, biostatisticians, software developers, consultants, patients and the general public. The needs of these end-user groups as well as the use of the platform itself are separated as shown in the figure below.

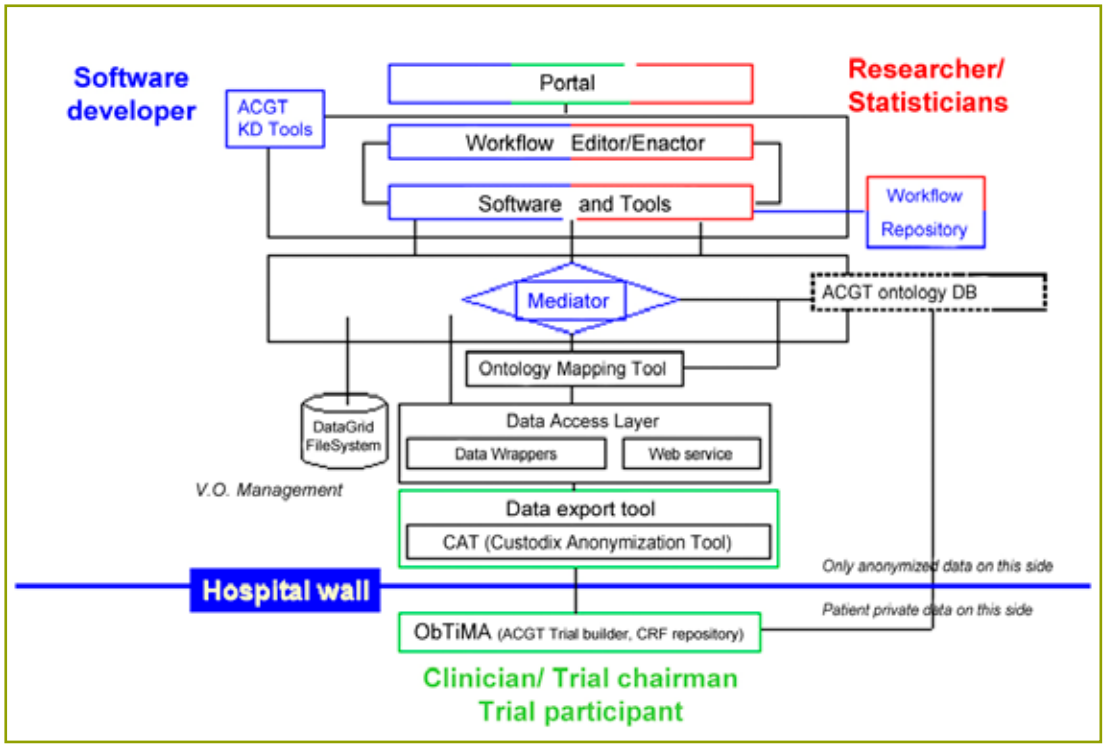


Fig.1: Use of the ACGT platform regarding the main target groups

Usability and End-user driven design in ACGT

Many standards are related or affect the usability of computer software and applications. These standards have to be taken in account during the development process. For the evaluation of usability regarding developed software and tools the ISO 9241-11 guidance of usability is the most relevant standard as it describes an objective, structured process to identify the users' requirements for the software and the mechanism to modify software applications and procedures with regard to the functionality and usability of the software. To respect the complexity of the ACGT project, the standard IEEE 830 is used to comprise the software developer needs.

The applied usability method in ACGT is based on the DATech Test Handbook. DATech is the German accreditation instance of laboratories in a variety of fields of technology. The Test Handbook is only written in German and can be accessed at www.datech.de. It offers a guideline for usability professionals to test the usability of interactive systems, in particular corresponding to the international standard of usability (DIN ISO 9241 part 11 to 17 and 110) and to the user-centred design process (DIN ISO 13407).

To define the requirements for usability for the software and tools the following three major target groups have been taken into account which will use the software in their daily work:

- the clinicians;
- the administrator (trial chair) and;
- the biostatisticians.

The first four interviews were taken with one clinician, the administrator (clinician) and two biostatisticians from different institutions. These interviews were documented in an objective report which is sent to the end-user for evaluation and to the software developer for achieving a common understanding of the whole task. The written context scenarios cover important and realistic aspects of clinical trial data mining and respectively analysis methods the statisticians are working with. They describe the real life situation of the employee/end-users taking into account.

As the clinician needs a functional and easy to use interface, the biostatistician has to get information on the interoperability and internals of the software and the tools for efficient and effective analysis of

the clinical data. The administrator has all rights of the software and should use the clinical tool in an easy and efficient way, too. The user's aim is to conduct his task supporting by the system in an efficient and satisfied way, e.g. to reach his/her goals with minimal effort.

When the first prototypes are developed the next stage of usability activities will take place, namely the usability tests with potential users. These users are clinicians and biostatisticians. In a later phase patients are also involved in this process. Use scenarios result from the usability tests. They are written to identify the problems the user will have when conducting his task.

In general a use scenario describes the user interaction with the aim to identify problems related to the interaction, to denote norm conformity and to discover critical incidences and weaknesses of the system. The use scenario is based on the evaluation of the context scenario in which the minimal functions and requirements of the system were derived from the users implied needs. During the use scenario the usability engineer is involved as an observer. The usability engineer records only the direct interaction of the user with the system, excluding the general behaviour except the loud thinking denoted by "thinking aloud".

The use scenario template is divided into four columns. The first column describes the task to be executed by the user with the system. This task can be subdivided into several mini tasks.
Column number two describes the process, during which the user interacts with the system and his loud thinking of his actions. Additionally, column two tests the behaviour of users in an unsuspected reaction of the system, like a system error. The third column reports the reaction of the system in detail (errors, failure, messages, etc.) and the fourth column analyses the single task process respecting on the norm of conformity or violation norm.

In contrast to use cases the use scenario gives more detailed information about the problems that the end-user will have during performing his task. A use scenario identifies the weaknesses and violation of the system. A use case shows only the action of the end-user and reaction of the system. For evaluation purposes by end-users it is more fruitful to write use scenarios with detailed documentation of the human-system interaction.

The usability engineering process describes a pragmatic approach for interface design, which emphasizes on empirical methods and operational definitions of user requirements for tools concerning software ergonomics. To define these requirements the usability engineer defines the users' needs in relation to his working place and the software concepts or developed prototypes. In ACGT this process is performed during the prototyping period to assure that the users' needs are satisfied.

Marie-Luise Christ-Neumann, Fraunhofer

Community View

Invited contributions from non-ACGT members of the wider research community

The relation between European and Japanese organizations is really important For the ACGT project in the ICT field. This is the reason why ACGT is identified in the Euro-Japan ICT cooperation. This web portal is devoted to S&T cooperation between Europe & Japan in the field of Information and Communication Technology. This Web site is: www.eurojapan-ict.org

This portal contributes to establish friendship and mutual esteem between the European and Japanese ICT communities. The Awareness workshop for Research and Technological Development and the ICT theme among the Japanese ICT community could be very interesting to widen the ACGT community and relationship in Japan.

EVENTS

Information on upcoming events of interest

ICT 2008 in Lyon: Europe's biggest research event for information and communication technologies

ICT Lyon will be the occasion to gather the widest community working on ICT, aiming at designing the European schedule of research for the next decade. Knowing that the general investment planned around ICT is around 2 billion Euros for the next 2 years, the needs for collaboration and common objectives is strong and this event will be the occasion for the EC to meet with all ICT actors to establish the strategy for the future use and design of web technologies. The largest academic and corporate organizations will be present ensuring that the event will have a major impact.

This year, the ICT conference in Lyon will focus on:

- Main technological tendencies having an impact on the strategic planning of research;
- Priorities as regards European financing of the search for 2009 to 2010;
- Public policies of support for research and l' innovation.

Medica 2008

Fraunhofer-Institut Biomedizinische Technik will introduce the ObTiMa technology in Düsseldorf (germany) on Wednesday 19th - Saturday 22nd November 2008 during the 40th International Trade Fair with Congress World Forum for Medicine. A poster has been made to help in disseminating the Obtima interface during this event.

Internet: www.medica.de

Legal and ethical

The latest thinking on legal, ethical and data security issues surrounding clinical trials

ACGT's aim is to develop a European Knowledge Grid infrastructure offering methods and systems for ameliorated medical knowledge discovery. This can only be done through a complex integration of biomedical data and information which includes not only the modelling, visualization, data mining and grid technology of clinical information relating to tissues, organs or personal health-related information, but also information at molecular and cellular levels. By collecting, storing, sharing, analyzing and collating all these cellular and intracellular data particularly from cohorts of cancer patients we enter into a bundle of Intellectual Property Rights (IPRs). Whereas data protection has been in the focus of ACGT from the very beginning, IPR-issues will become a second focal point of legal research in the second half of the project.

IPRs have always been considered as one of the most important legal tools to protect and recoup the investment of authors, researchers, institutions and investors, allowing them to acquire a limited monopoly of their ideas and creations.

With the proliferation of genetic databases such as the ACGT Grid infrastructure, a correlating need for means of protecting the value linked with these sorts of data has dramatically risen.

The access to data and the ability to extract and re-utilize the data will play an important part in ACGT's scientific investigation and exploitation. As always in intellectual property law it is a question of achieving a balance between a sufficient incentive and adequate protection of investment to encourage the creation and use of information.

The study will be drawn up in different parts. To start with, the international and European legislation regarding this cluster of IPRs will be briefly described. Following, particular emphasis will be added in the law of patents, copyrights and the sui generis right for databases. Finally, it will close by providing guidance as to which measures should be taken for the Intellectual Property protection in ACGT. Special emphasis will be given to the best possible equilibrium between the interests of patients giving their data and/or body material for ACGT and the researchers producing results out of these data/materials within the project.

Marcelo Corrales,
University of Hannover

Life in ACGT

Technical workshops in Lausane (18 to 19 november 2008)

The Technical Management Committee of the project met at the Swiss Institute of Bioinformatics in Lausanne (Switzerland) on 18-19 November 2008, for an intermediate internal review of the technical advances of the platform. The emphasis of the session was on the integration of the software components forming the data-analysis tools used by bioinformaticians and biostatisticians involved in clinical trials.

Thierry Sengstag, SIB

UICC'08: Experts on Cancer Brought together at Geneva (27 to 31 August 2008)

More than 2500 World leaders in cancer control were brought together from 27 to 31 August 2008 in Geneva, Switzerland for the one of the biggest and most important event worldwide: the international union against cancer (UICC 2008).

During the conference, representatives of ACGT partners, SIB and HealthGrid, had the opportunity to introduce the ACGT concept and present the latest developments to researchers, clinicians, nurses, management's administrators, government and public health officials, health journalists and patients.

GenOuest bioinformatics platform sixth workshop (Oct 21st, 2008)

OUEST-genopole is a research network established between national institutions (AFSSA, CNRS, Ifremer, INRA, INRIA, Inserm) and Western universities,

hospitals and engineering schools. The goal of OUEST-genopole is to support research in genomics and post-genomics and help create new biotech companies. This support can be achieved by technological platforms: sequencing, proteomic, transcriptomic and bioinformatics.

GenOuest is one of OUEST -genopole's platforms and provides computing infrastructure, support, expertise and development in bioinformatics for the community. The sixth edition of its workshop took place at the INRIA Rennes-Bretagne Atlantique research centre on Oct 21st, 2008. The workshop's central theme was "Bioinformatics and Cancerology". More than 60 attendees have assisted to the different talks given by 10 lecturers coming from different french institutions (CNRS, Inserm) or foundations ("Ligue contre le Cancer"). The talks covered different aspects ranging from the transcriptomics analysis of glioblastoma to the study of chromosomic rearrangement in the Ewing tumour, including also the presentation of projects like the European ACGT Project.

OUEST-genopole Homepage:
www.ouest-genopole.org/index.php?pa=N100&la=en

GenOuest Homepage:
www.genouest.org

Julien Jacques, INRIA

Plenary ACGT meeting in Crete (22 to 24 September)

The last ACGT meeting has been taking place in Fodele Beach in Crete, Greece from 22 to 24 September. This was a friendly and positive meeting for the ACGT project. The next plenary meeting with all partners will take place to Vienna, Austria in January 2009. We are looking forward to meet all the partners during this event.

ACGT PEOPLE

Georgios STAMATAKOS

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Georgios S.Stamatakos received the Diploma degree in electrical engineering from the National Technical University of Athens (NTUA), Athens, Greece, in 1987, the MSc degree in bioengineering from the University of Strathclyde, Glasgow, Scotland, in 1988, and the Ph.D. degree in physics (biophysics) from NTUA in 1997. In 1999 he completed a post doctoral fellowship research project on medical technology in NTUA. In 1989 and 1990 he was with the Hellenic Army General Staff, Medical Corps Directorate. Between 1991 and 1997 he was employed as teaching assistant in the Physics Department, NTUA. Since 1997 he has been a Researcher at the Institute of Communication and Computer Systems (ICCS), School of Electrical and Computer Engineering (SECE), NTUA, where he is holding the position of Research Associate Professor in the field of "Analysis and Simulation of Biological Systems and their Interaction with Electromagnetic Radiation". He is the Leader of the In Silico Oncology Group, ICCS-NTUA. He has given several teaching lectures in NTUA.

His research interests include multiscale cancer modelling, patient individualized cancer treatment optimization, in silico oncology (being his primary field of activity), bioinformatics, electromagnetic propagation and scattering, bioelectromagnetics, radiation safety and biooptics. G. Stamatakos has published over 80 papers in international journals, conference proceedings and books. He is a member of the Technical Chamber of Greece, the American Association for the Advancement of Science and the Center for the Development of a Virtual Tumor (CViT) supported by the US NIH-National Cancer Institute through the Integrative Cancer Biology Program (CA113004). He is the leader of the action "Technologies and Tools for In Silico Oncology" of the European Commision (EC) funded integrated project "ACGT: Advancing Clinicogenomic Trials on Cancer (FP6-2005-IST-026996) ". He is also the leader of the actions "Simulation at the cellular and higher levels of biocomplexity" and "Integration of the Simulation System" of the EC funded specific targeted research project "ContraCancrum: Clinically Oriented Translational Cancer Multilevel Modelling (FP7-ICT-2007-2- 223979)". He is participating in the EC funded Network of Excellence on the Virtual Physiological Human (FP7-ICT-2007-2 NoE VPH)) through the European Consortium for Informatics and Mathematics Digital Patient Working Group. He has been involved as researcher/ team leader in several other European Commission projects such as EUROMED/DGIII, CEPHOS/SMT etc. He has (co)organized several international conference events and has been an invited lecturer by many institutions worldwide. He is Associate Editor of Cancer Informatics. G. Stamatakos has been co-organizer of the International Advanced Research Workshops on In Silico Oncology and the 1st Transatlantic Workshop on Multiscale Cancer Modelling. The latter is co-funded by NCI and EC and will take place in Brussels, Belgium on Oct 23-24, 2008 within the framework of the European Commission ICT BIO event.

The website of his research group is:
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Anca BUCUR

Anca Bucur received her master degree in Computer Science from the Technical University of Bucharest, Romania, in 1997 and her PhD in High Performance Computing (on resource management in wide-area computer systems) from Delft University of Technology, the Netherlands, in 2004.

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Anca Bucur, Philips Medical Research

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