http://www.agentlink.org/activities/al3-tf/tf3/submission.html
Proposals for holding a TFG in the Third AgentLink III Technical Forum should be sent to the Forum Chairs through the AL3 Web site, providing:

Title of the Proposed TFG

Self-organisation in MAS

Specification of the Proposed TFG

The proposed TFG has been accepted as TFG in the first call in Rome and in the second call in Ljubljana. This third session in Budapest is intended to complete and coherently finalise the work already undertaken during the previous two meetings.

Scope and Aims of the TFG Activity

Short description of less than 200 words

Scope

The general scope of this TFG is to establish the notions, mechanisms, and software engineering principles governing distributed decentralised systems such as large-scale decentralised MAS. The point of focus of the proposed TFG will be on approaches to incorporate self-organisation mechanisms in the design of Multi-agent Systems. In particular, the efforts will concentrate on attempting to conclude answers, elaborated in previous TFGs, to questions of major interest including:

- Could we establish an operational definition of the term 'emergence'?
- How could self-organisation mechanisms already applied in other disciplines be reused in the design of MAS?
- How could we derive appropriate self-organisation mechanisms for MAS starting from a set of application requirements?
- Could we define a set of criteria suitable for characterisation of self-organisation and emergence in MAS?
- How can we group together the computing science research community working on self-organisation and emergent behaviour such as multi-agent systems, autonomic computing, pervasive computing?
- How can we strengthen the links with other disciplines such as biology, systemic, sociology and physics? Due to the diversity of the issues involved with self-organisation, participation of people from different disciplines such as biology, systemic, sociology, physics and software engineering will be strongly encouraged so that the problem of self-organisation will be highlighted from different perspectives. In particular emphasis should be given in establishing and enhancing links with other disciplines through contacts with networks such as EXYSTENCE, or researchers involved in the new EU NEST-PATHFINDER initiative (Tackling Complexity of Science).

During the first two meetings preliminary work lead to the following results: Assessment of definitions of the term 'self-organisation', preliminary discussion on the notion of 'emergent phenomenon', identification of several case studies and presentation of different solutions for realising them and proposition of measures and criteria for assessing self-organisation. The

third TFG meeting is intended to complete and finalise the work undertaken during the first two meetings.

Aims

More precisely, the aim of this third TFG is threefold:

1. To continue and complete the work on **definitions** initiated during the previous TFG meetings in Rome and in Ljubljana and in particular to establish the definition of emergence in complex distributed systems such as MAS.
2. To focus on lessons learned from applying various self-organisation mechanisms to different **case studies**, and to discuss how to generalise the insight gained about these mechanisms.
3. To discuss **hot topics** and **open issues**, and to concentrate on preparing a **book** reporting on the results of the collaborative work done in the context of the Self-Org TFG meetings so far.

The proposed TFG meeting will include three half-day sessions, each focusing to one of the above points. Lessons learned from previous meetings indicate that not all participants are interested in all points and therefore a modular meeting structure would facilitate selective participation and would improve productivity. Furthermore, our previous experience shows that there is a crucial need for dedicating more time to informal discussions.

TFG Category

application-area / research-area / inter-network

Research area and inter-network

TFG Chairs

Name, affiliation and mail/Web address of the proposed TFG Chairperson

- Giovanna Di Marzo Serugendo

Centre Universitaire d'Informatique, University of Geneva, Geneva, Switzerland - Giovanna.Dimarzo@cui.unige.ch - http://cui.unige.ch/~dimarzo

- Marie-Pierre Gleizes

Institut de Recherche en Informatique de Toulouse, University Paul Sabatier, Toulouse, France - gleizes@irit.fr - http://www.irit.fr/SMAC.

- Anthony Karageorgos

University of Thessaly, Dept. of Computer & Communication Engineering, Volos, Greece- karageorgos@computer.org - http://inf-server.inf.uth.gr/~karageorgos

TFC Promoters

Names, affiliations and mail/Web addresses of at least three other researchers committing to participate to the TFG activity (from at least two different institutions, other than the TFG Chair's one)

- Cristiano Castelfranchi, Institute of Cognitive Sciences and Technologies- ISTC - National Research Council, c.castelfranchi@istc.cnr.it
- Vincent Chevrier - LORIA Laboratoire lorrain de recherche en informatique et ses applications, VANDOEUVRE-lès-NANCY, France - chevrier@loria.fr - http://www.loria.fr/~chevrier

- Pierre Glize - Institut de Recherche en Informatique de Toulouse, University Paul Sabatier, Toulouse, France - glize@irit.fr - http://www.irit.fr/SMAC.
- Zahia Guessoum – LIP6, Paris, France - Zahia.Guessoum@lip6.fr - http://www-poleia.lip6.fr/~guessoum
- Salima Hassas - LIRIS - Université Claude Bernard-Lyon 1 - hassas@bat710.univ-lyon1.fr - http://www710.univ-lyon1.fr/~hassas/
- Manolis Koubarakis - Technical University of Crete, Chania, Greece - manolis@intelligence.tuc.gr - http://www.intelligence.tuc.gr/~manolis/ (to be confirmed)
- Jean-Pierre Müller - CIRAD, France - jean-pierre.muller@cirad.fr
- Robert Tolksdorf, Institut fur Informatik, Freie Universitaet Berlin, Germany - tolk@inf.fu-berlin.de - http://www.robert-tolksdorf.de
- Paul Valckenaers, K.U.Leuven - Leuven Belgium – Paul.Valckenaers@mech.kuleuven.ac.be
- Franco Zambonelli, University of Modena and Reggio Emilia, Reggio Emilia, Italy, franco.zambonelli@unimo.it - http://www.dismi.unimo.it/Zambonelli/ (to be confirmed)

Related Activity, Connections & Perspectives of TFG Chair & Promoters

Why the proposers should be the ones that take care of such a TFG? (a couple of paragraphs and if possible a URL to a personal Web page for each proposer)

The three co-chairs are Giovanna Di Marzo Serugendo, Marie-Pierre Gleizes and Anthony Karageorgos.

Giovanna Di Marzo Serugendo chaired the Engineering Self-Organising Working Group set up in the framework of the Agentcities.net initiative. This working group built together researchers interested by techniques, and software engineering methods that help design decentralised applications. Since 2003, she organises a yearly a workshop at the AAMAS conference on the same subject. She has links with researchers from other disciplines interested by the study of complexity. She is working on human-like based interactions for realising self-organising systems. Since October 2004, she has been appointed Editor-in-chief of the new ACM Transactions on Autonomous Adaptive Systems (first issue Fall 2005).

Marie-Pierre Gleizes has worked on self-organisation in MAS since 1996. She has contributed to the definition of the AMAS theory enabling the design of MAS by using self-organisation based on cooperation. She has experimented application developments in various areas such as: e-commerce, flood forecast, mechanical synthesis… She organised the ESAW workshop (Engineering Societies in the Agents World) in 2004 and is co-chairs it in 2005. She is chair of EUMAS 2005.

Anthony Karageorgos has contributed in the foundation of the Engineering Self-Organising Working Group and co-organises of the Engineering Self-Organising Applications workshops (ESOA) which so far have taken place together with the AAMAS conferences. He has worked in methodologies for designing MAS including engineering self-organisation aspects. Furthermore, he has links with research companies and industrial partners interested in applying self-organisation principles in research and commercial MAS implementations.

The other promoters are working on self-organisation in using different approaches. Most of them are active in managing work groups or in being a co-founder of workshops on close themes.

Assessment of Potential Interest

Who is going to be interested -- individuals, groups and institutions?

Industrials:

- ILOG (Patrick Albert),
- Whitestein (Monique Calisti)
- Artal Technologies (Pierre Duverneuil)

Institutions, teams who are not promoters:

- Profactor (Alois Reitbauer),
- BT Group (Paul Marrow),
- Departamento de Engenharia Informática Instituto Superior de Engenharia do Porto, Portugal, (Paulo Gandra de Sousa)
- DECIS Lab, Delft, Netherlands, (Andre Meyer)
- Center for Complexity - University of Siena, Italy
- CESSBA consortium (Agent-Based Social Simulation for the Social Sciences), ISTC-CNR http://www.istc.cnr.it/cessba, (Rosaria Conte)
- Dept. of Information and Communication Systems Engineering, University of the Agean, Greece (George Vouros)
- LEIBNIZ Laboratory, France (Yves Demazeau)
- LIFL Villeuneuve d'Ascq – France (Philippe Mathieu)
- University of Technology of Belfort-Montbeliard - Belfort - France (Vincent Hilaire)
- University Miguel Hernandez, Alicante, Spain (Eduardo Fernandez)
- University of Girona, Spain (Gabriel Leopardo)
- EURO Working Group EU/ME the European Chapter on Metaheuristics (http://143.129.203.3/eume/welcome.htm)

"Outline plan" of TFG activities

Which sorts of actions will be pursued before, during and after the TFG meeting at AL3-TF1?

Before the meeting:

- Keep the TFGSO web site updated (http://www.irit.fr/TFGSO)
- Launch of an open call to inform the community about the event and attract participation
- Distribution of case studies description together with the different solutions presented in Ljubljana.
- Invite selected researchers who participated in the Ljubljana TFG SO meeting to prepare a description of the implementation and the results of the case studies they worked on.
- TFG chairs prepare and distribute a definition of the term 'Emergence' to be discussed and finalised during the meeting.
- TFG chairs prepare and distribute a first draft for the book scope description, table of contents and publication timetable to be discussed and finalised during the meeting.

During the meeting:

- Amend the TFG mailing-list to include all participants
- Results of case studies implementations will be presented by the relevant participants.

- Discuss about the emergence concept and converge towards consensual definitions (both operational and general)
- Discuss about the case studies, their solutions, the corresponding mechanisms and their relevance or potential application of the relevant techniques in autonomous software engineering projects.
- Discuss about additional topics and establish of a roadmap for producing the book summarising the activities of the TFG.

After the meeting:

- Produce a report of the meeting concerning the different themes and the discussions held.
- Apply the book roadmap established during the meeting and proceed with production and publication of the book.
- Maintain links between group members and contemplate to continue work and organise further group meetings in other occasions.

Intended Format of the TFG Meeting at AL3-TF3

Duration, activities, role of the Chair, expected outcomes, etc.

Duration:

3 parts, half-day each

Activities:

PART 1: Definitions

Session 1: Welcome 9:00 – 9:30 (30 min)

- Presentation of the group objectives and the meeting agenda by chairs (15 minutes)
- Short "position" presentation (10 minutes) by participants presenting themselves, their research and their long-term views in the area (this is useful to get people to know each other)

Session 2: Emergence 9:30 –12:00 (2.5 hours)

- Presentations by chairs of definitions of Emergent Phenomena (10 minutes)
- Discussion and collaborative work exercises
- Establishment of one or more definitions of the term “emergent phenomena”.

PART 2

Session 3: Case Studies 14:00-18:00 (4 hours)

- Presentation (summary) from chairs of the case studies and solutions
- Discussion
- Establishment of lessons learned from this experiment for software engineering.

PART 3

Session 4: Open Issues 9:00 – 10:00 (1 hour)

- Identification of open issues, hot topics, additional valuable points

Session 5: Book preparation (10:30 – 12:00) (1,5 hour)

- Scope

- Content
- Roadmap

Session 6: Wrapping up: Synthesis and conclusion 12:00-12:30 (30minutes)
- The TFG organisers will summarise the work done in the TFG meeting
- All participants will fill up a form to evaluate the meeting (5 minutes)

Role of the Chairs:

- Promotion of the work to be done before the meeting,
- Preliminary definition of the term "Emergence"
- Preparation of the programme of the meeting,
- Responsibility of the report preparation after the meeting,
- Solicitation of papers and supervision of the paper review process and editing of the book summarising the work done in the context of the TFGs

Expected outcomes:

- A glossary of the most important terms around self-organisation and emergence in the MAS field.
- A set of different mechanisms described for one or more case studies.
- A roadmap identifying links with other disciplines, and proposing ways for strengthening those links.
- A roadmap for the production of a book (as a long term result of the TFG work)

Procedures to Produce the Deliverables after AL3-TF3

The deliverables will be discussed and built by e-mail through the previous mentioned mailing-list. Communication will also take place via the TFG website http://www.irit.fr/TFGSO.
The first step after personally inviting selected individuals will be to issue an open call for participation to attract interested parties. The deliverables will be the result of the collaboration of all TFG participants before, during and after the meeting. According to this workplan, TFG chairs will produce a draft version of the framework to present the case studies treated, and a call for book chapters and distribute them to intended participants
Under the coordination of the TFG chairs, the collaboration of the participants will continue remotely after the meeting and it will result in the completion of the TFG deliverables.