emmon Newsletter

Simple rules are applied to each cell in a raster GIS map, interacting with neighbouring cells, so that the system model emerges from the component models and their interaction.

Forest Fire Modelling Research

By Dr Lubo Jankovic, InteSys Ltd

InteSys Ltd and Aristotle University of Thessaloniki have collaborated on research into fire propagation modeling within Workpackage 3 of EMMON. As result of the collaboration, they submitted a joint paper to Forest Fires 2010 conference, to be held at Kos, Greece, from 23rd to 25th June 2010.

In this report, two alternative wildfire models are presented based on the CA (InteSys) and Cell-DEVS (CD-AUTH) approximations that have attracted the most interest due to their accurate results and low CPU demands. The InteSys model is based on Cellular Automata. Simple rules are applied to each cell in a raster GIS map, interacting with neighbouring cells, so that the system model emerges from the component models and their interaction. The cells have geographic connotation and correspond to a raster grid of predefined size. The cell based structure reflects the object oriented nature of the model, as each cell is a working copy of a cell class – a blueprint that enables easy expansion, taking into account undergrowth, tree spacing, moisture content, air temperature, solar radiation, wind velocity, terrain gradient, tree flammability, and other parameters. The working copies of the cell class are instantiated at the start of the simulation, taking inputs from GIS data or from a command file. The AUTh model is based on the Cell-DEVS technique operating also on a domain discretized to interacting cells, incorporating the same as above physical properties, variable in time and coupled to a low level surface wind module. The model applies the Rothermel approach w.r.t. the fire propagation.

The IntEvPro software represents a fully working event propagation model developed by InteSys Ltd, and a framework for future expansion of signal propagation modelling requirements of the EMMON project. The software will be under continuous development in response to ongoing requirements of the project. The model developed by CD-AUTH is standalone but can be combined into IntEvPro in the future, to give the user a choice of different event propagation engines. Both models can integrate with the C&C system through using information on live wind velocity and direction and conducting fast forward simulations to predict fire and/or pollution spread.

For further information, please consult the following web address: www.artemis-emmon.eu

EMMON Forum

By Dr Lubo Jankovic, InteSys Ltd

EMMON has established three forums on artemisemmon.freeforum.org. The purpose of the forums is to initiate a debate that will inform the work in the project.

EMMON End User Interest Group

In order to achieve its objectives, EMMON encourages the participation of end users in this End User Interest Group, who will have the opportunity to define the end user needs and be the ultimate beneficiaries of the project. The end-user main benefits are:

-Contribute with inputs (feedback, new features, suggestions, etc) to technology for solving the End User own problems and concerns;

-Stay updated with most recent and latest state of the art research and

-Foster future partnerships and collaboration with EMMON partners (field tests, pilot projects, joint ventures)

EMMON EUC - End User Committee

This is a consultative body responsible for assuring that EU objectives are identified, considered and achieved by the technical and research committees.

EUC is an active project body that collaborates in the definition of EMMON requirements.

EMMON SAC - Scientific Advisory Committee

The SAC is formed by recognised and prestigious invited experts from academia and research institutions participating in EMMON project and also contains members that are external to consortium, consisting of representatives from universities that stated their interest in project research results.

At present, the SAC is composed of 3 members: Prof. Vinny Cahill from TCD, Prof. Tarek Abdelzahir from University of Illinois and Pedro Braga (the SAC chairman).

The first SAC meeting was held on the 14th of January 2010, where the official members, governance, work methodology and other issues were discussed and agreed. The second meeting is already scheduled for the 26th of March 2010 in CSW headquarters in Coimbra, Portugal.

The purpose of the forums is to initiate a debate that will inform the work in the project.

EMMON Project Review (1st Year)

By Délio Almeida, Project Coordinator

Coinciding with the end of the project first year, it is also time for planning for the upcoming Project Review.

The Project Review is a formal meeting which involves all partner representatives and the JU Project Officer in order to evaluate, receive recommendations and approval of project deliverables released during the last reporting period.

The Project Review is scheduled for the 23rd of April 2010, in Brussels at the ARTEMIS JU offices. Prior to the Review itself, an Internal Project Review meeting occurs to prepare for the official Review in the following day.

Coinciding with the end of the project first year, it is also time for planning for the upcoming Project Review

Kick Off - Work Package 7
By Carlos Natal, Technical Manager

Work will start on Work Package 7 in the first week of April, during which the KO meeting will take place. The WP7 main goal is to integrate all the research and implementation work performed during previous activities into a common fully-functional system prototype.

During WP7, the project will perform software requirements analysis focused on the end-users needs. User interfaces will be designed to provide sensor data analysis and allow remote command & control of the sensor networks. Innovative user centric interfaces will be realized for the visualization of sensor node and sensor group behaviour and for configuration of large scale WSN. System design activities will cover both the central and mobile device components. This WP will also study a complexity based engine to interpret the behaviour of the sensor network.

This task will perform the final implementation and integration of all developed system components and shall be complete when a stable prototype is released, ready for operational testing and validation.

As a result of the activities conducted during this WP, the project will produce the Software Requirements Specification, the User Interfaces and Architectural Design Specifications, a Complexity Engine Study, the C&C and Mobile System Prototypes as well as the Integrated System Prototype.

Implementation, system integration, operational testing and validation activities will allow assessment and proof of large scale operation with Wireless Sensor Networks.

Kick Off - Work Package 8
By Carlos Natal, Technical Manager

The KO of Work Package 8 will occur simultaneously with WP7. The main goal of this WP is to perform operational testing and validation of the developed devices, middleware, networking protocols and command & control systems in a real operational scenario. It will allow assessment and verification of large scale operation with WSN.

During WP8, the project will identify and define the scenarios and requirements that will be tested and the end-user that will support the tests. This activity will include the selection of scenarios and support the definition of the scenario designated for the full system test.

This WP will perform full system testing and validation in a wide physical area, with the large number of devices. Simulation activities will also be conducted for network testing without constraints regarding physical equipment. This will allow simulated system validation of networks with a large number of nodes.

As a result of the activities conducted during this WP, the project will produce the End-user Scenarios and Requirements Test Plan, the System Testing and Validation Reports, the Scenarios Testing Procedures and Results, the Full System Validation Test Plan, the Final Testing and Validation Report as well as the Detailed Plan for Large Scale Trial.

Upcoming Meetings and Events

By Dr Lubo Jankovic, Dissemination Manager

Some of the most important upcoming events of the EMMON project that are already planned, are listed here chronologically:

March 2010	General Meeting and TSG Meeting
April 2010	Project Review Meeting

EMMON Project Partners

Critical Software (Portugal) – founded in 1998, provides solutions for mission and business critical information systems. Its customers are drawn from several markets including telecoms, the public sector, industry, aerospace and defense.

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CISTER (Real-Time Computing Systems Research Centre) is a top-ranked Portuguese Research Unit based at the **School of Engineering (ISEP)** of the **Polytechnic Institute of Porto (IPP), Portugal.** The Unit focuses its activity in the analysis, design and implementation of real-time and dependable computing systems.

InteSys (UK) - an SME specialised in computer modelling and analysis of complex systems, using principles of emergence and complexity.

Centro de Estudios e Investigaciones Tecnicas de Gipuzkoa (Spain) - a private multidisciplinary non-profit research centre closely connected to TECNUN, the Faculty of Engineering of the University of Navarra.

Critical Software Technologies (UK) - designs, develops, tests, validates and assures software for mission and business critical information systems across Defense, Aerospace and Transportation.

Trinity College Dublin (Ireland) - the oldest university in Ireland and rated by the EU as the number one research institute in Ireland.

Aristotle University of Thessaloniki (Greece) - the largest University in Greece and is located in the city of Thessaloniki in Northern Greece. It conducts research in many areas of the Electrical, Electronic, Telecommunications and Computer Science and Engineering fields.

SESM S.c.a.r.l. (Italy) - a private research centre focused on the development of information solutions by adopting state-of-art information and communication technologies.

Akting Ingeniaritza S.L. (Spain) - a Telecommunication Engineering Company that designs, develops and deploys communication systems to optimize the production of a company or organization.