flexWARE Newsletter

Issue #3
August 2010

flexible Wireless Automation in Real-Time Environments - www.flexware.at

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Welcome to the flexWARE Newsletter!

Welcome to the third newsletter of the flexWARE project. The team has been working on the project for almost two years now and is on course to achieve the targets set at the beginning of the project.
This edition of the newsletter includes updates on current and past activities and information on upcoming events.
Hopefully you will enjoy this issue of the flexWARE newsletter!

flexWARE News:

ICM Electronics, a company from Serbia that is specialized in automation of factory processes and machines, has joined the consortium. The new member will act as an integrator of the flexWARE system and will provide testing facilities for demonstration of the system.
For more information about the project, please visit our website at www.flexware.at.

Project Status

Figure 1 shows the milestones of the project in terms of project phases. As shown, the project is grouped into four different phases. Phase 1, where the user needs are identified, is already finished. Phase 2 deals with the system concept definition, followed by Phase 3 which is about system implementation. Finally, the project ends with the system verification. The project is currently at the beginning of Phase 3 as indicated by the red arrow in the Figure 1.

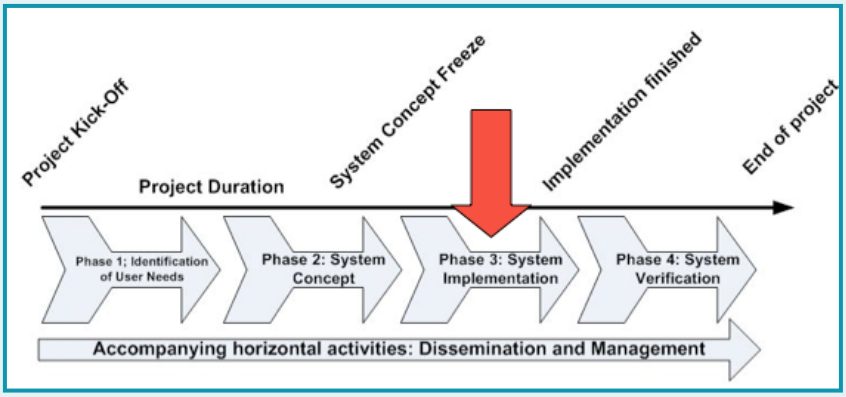

Figure 1: Project phases

Future Events

September 2010
-ETFA Special Session
-ISPCS: AI
October 2010
-"Jahres" colloquium

For more information, contact:
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flexWARE Event News

Preparations for the Second Review Meeting in Brussels

The members of the flexWARE consortium had met in Brussels to prepare for the EU Review Meeting from 29th of June until 1st of July, 2010. During the meeting, the consortium had been discussing upcoming work packages and upcoming challenges that the project would be facing. The consortium discussed progress of work packages two through six. Furthermore, the consortium dedicated some time to the management issues and organizing future events and plans of action. For the first time, ICM Electronics was formally introduced to the entire project consortium.

Second Review Meeting in Brussels

On July 2nd 2010, the flexWARE consortium presented the status of the project to the European Commission (EC) in front of assigned reviewers. Objectives of the meeting included presenting the progress made in-between the two review meetings on work packages, presenting progress of the system simulation that has been made since the workshop in Austrian Academy of Sciences, achieved milestones, as well as all work packages assigned to different consortium members. Each topic was followed by a discussion.

In the report that followed the review meeting, European Commission expressed its satisfaction with the progress of the project and with completion of main objectives that were set after the first review meeting, which included finalization of the system design and architecture and the concept development for underlying system components along with their specification.

Figure 2: Review Meeting in Brussels

Publications

Since the beginning of the project, the members of the consortium had a very significant contribution in various conferences around Europe dedicated to emerging technologies, and wireless factory automation in real-time environments, wireless networks in their protocols and security. flexWARE participants published eleven articles relating to the topics mentioned above.

In addition to eleven publications, there were also two articles published in international ISI journals and an entire book chapter in International Handbook on Industrial Automation.

To view these publications, please visit web page of the project: www.flexware.at.

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flexWARE Technology News

flexWARE Controller (FC)

flexWARE Controller is a central manager of the system. The FC is the source which communicates with all the FAPs in the system to provide real time communication guarantees. With the help of high-precision clock synchronization and device management, it ensures real-time communication between the FNs and FC itself and also provides location information to all the FAPs. The FC is responsible for providing the interface between the flexWARE system and the real time backbone, as well as handover of a node from one AP to another and power control by the FAPs.

Other very important tasks of the FC are: application interface, centralized switching network management and monitoring with respect to quality service, localization, clock synchronization, and transition power management.

Application Interface: Supports transparent communication which is prrefered in simpler environments. However, for more complex environments there are gateway solutions at the interfaces of FC/BB and FN/application device.

Centralized switching: Many flexWARE Access Points (FAPs) can be connected to one FC, which means there must be several network interfaces and a switching module. Modularity of the FC allows attaching as many switching modules as necessary as well as a parallel backup controller which increases reliability of the system as well as increased traffic flow.

Network management and monitoring: The FC is the highest point of control in the network, it has some of the MAC functionalities, performs the configuration of the FAPs, and is in charge of distributing messages between FNs via the FAPs and also to forward messages from a device connected to a FN to a device on the backbone.
Also, analysis tool performs device monitoring and performance analysis for the whole system. This performance analysis part of this tool will be implemented inside the FC which monitors the traffic of the whole system. Hence, it is part of FC to extract monitoring information out of traffic coming from underlying protocol layers. FC thus can identify potential bottlenecks for traffic flows, highlight sections of the system where the environment is not conducive for radio communication, identify malfunctioning devices, point out asymmetric delays on wired channels etc. Furthermore, the FAP and the FN will provide related data to the FC such as RSS, link quality (LQ), user data loss, update time breaches etc.

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Meet the Partners…

Interview with Svilen Ivanov (rt-solutions.de)

Figure 3: M.Sc. Svilen Ivanov

rt-solutions.de is an expert in security, wireless communication standards, real-time wireless networks, and network simulations. How do these experiences and know-how from the industry help and contribute to the flexWARE project?

rt-solutions.de has industrial experience and strong academic background in these fields. It has been our pleasure to contribute to the use-case scenarios for the flexWARE system, the system requirements, the system architecture, the real-time concept, the system simulation, and the dissemination of the flexWARE results at renowned national and international automation events. rt-solutions.de will contribute to the implementation and evaluation phase of the project as well. The unique combination of industrial experience and strong academic background makes us possible to address complex problems, develop scientific concepts, find practical solutions, and communicate the results to end-users in a simple and effective way.

rt-solutions.de has one of the major roles in Work Package 1, system architecture. What will be the biggest challenge in this work package for rt-solutions.de, as well as for the entire consortium?

The main challenge has been to develop a standard-based wireless communication system combining real-time, mobility and scalability, which has not been done in the automation domain so far. Additional challenges for the overall system acceptance have been localization, clock synchronization and security, which have been addressed in the system design from the beginning of the project.

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Meet the Partners…

Interview with Svilen Ivanov (rt-solutions.de)

You are developing and evaluating customers' solutions in the areas of enterprise and industrial wired and wireless networking. How do you see the factory of tomorrow from the angle of an industrial partner who is an expert in wireless networking?

The enterprise and industrial domains, traditionally evolved as isolated, are continuously interconnecting, which eases for instance the supervision and the adaptability of the production process. We expect that the factory of tomorrow will continue this trend. This opens organisational and technical issues, which need to be addressed. Wireless networks will play a significant role in this evolution, collecting information anytime and anywhere.

You are meeting with a lot of different networking systems in your daily work. What is the main advantage of flexWARE system in comparison to other, already existing systems on the market?

An important advantage of the flexWARE system is its transparent integration in the WLAN standard and the ability to serve multiple network applications with different real-time requirements at the same time. Traditionally in the automation domain one network infrastructure is used for one application, which sometimes opens to coexistence problems due to the limited spectrum. When the flexWARE products appear on the market it will be possible to use one network infrastructure for multiple applications.

About rt-solutions.de

rt-solutions.de is an internationally operating high-tech consulting company, established in 2000 by successful scientists and businessmen with the objective to provide efficient networks and secure IT infrastructures as a basis for corporate processes. We offer leading-edge expertise and experience in security consulting, advanced wireless, and application performance engineering to our customers.

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