Industry Day – O3neida Session

IEC 61499 Evolution and Adoption

Opening remarks

Speaker: Antonio Valentini

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ETFA'2011 Conference

Industry Day – O3neida Session

Place: Toulouse/ France

Date: 2011-09-05

Morning schedule

- 11:30 – 11:40 *Opening Remarks*
  Antonio Valentini, O3neida
- 11:40 – 12:10 *IEC 61499 current status and near future developments*
  Alois Zoitl, University of Technology – Vienna, Austria.
- 12:10 – 12:40 *CANopen in decentralized and distributed control systems*
  Holger Zeltwanger, CAN CiA (CAN in Automation) – Germany
- 12:40 – 14:00 *Lunch Break*

Afternoon schedule

- 14:00 – 14:30 *Evolution of IEC 61499 implementation in ISaGRAF v6*
  Nicolas Jouvray, ISAGRAF-Canada

- 14:40 – 15:10 *IEC 61499 in the Context of Smart Grids Applications*
  Thomas Strasser, Austrian Institute of Technology – Vienna, Austria

- 15:20 – 15:50 *Applications of the IEC 61499 standard to the development of advanced manufacturing and HVAC control solutions*
  Mauro Mazzolini, ITIA CNR – Italy

- 16:00 – 16:30 *Coffee Break*

- 16:30 – 17:00 *Argument in favour of IEC 61499: System level design of automation systems. Examples from SmartGrid, Logistics and Manufacturing*
  Valeriy Vyatkin, University of Auckland – New Zealand, Antonio Valentini, O3neida Europe – Belgium
- 17:00 –18:00 *Panel discussion*.

Session Goals

- Current state of the IEC 61499 standard:
  - Present to the research community the activities and the achievements of WG15,
  - New activities around compliance profiles
  - Facilitate and solicit contributions and suggestions for the working group members,
  - Invite to actively participate in the WG, through the related national committee nomination process;
- Adoption in mature automation markets;
- Penetration in new developing markets;
- IEC 61499 vs IEC 61131, migration paths etc..

O3neida not-for-profit org

- Established in 2004 (Ottawa-Canada) and 2007 (Brussels-Belgium) as independent not-for-profit organizations in both country;
- Acting as a "network of networks" which supports the development of *Open and Standard Compliant Products and Services* in the automation domain;
- Universities, Research Institutes and Industries as supporting members;
- Partnerships and collaborations with various international bodies as: ISA (International Society of Automation), OMAC, AA (Automation Alliance), IMS (Intelligent Manufacturing System), IEEE, IEC;
- Involvement as partner in MEDEIA, an EU funded project, and IADP;

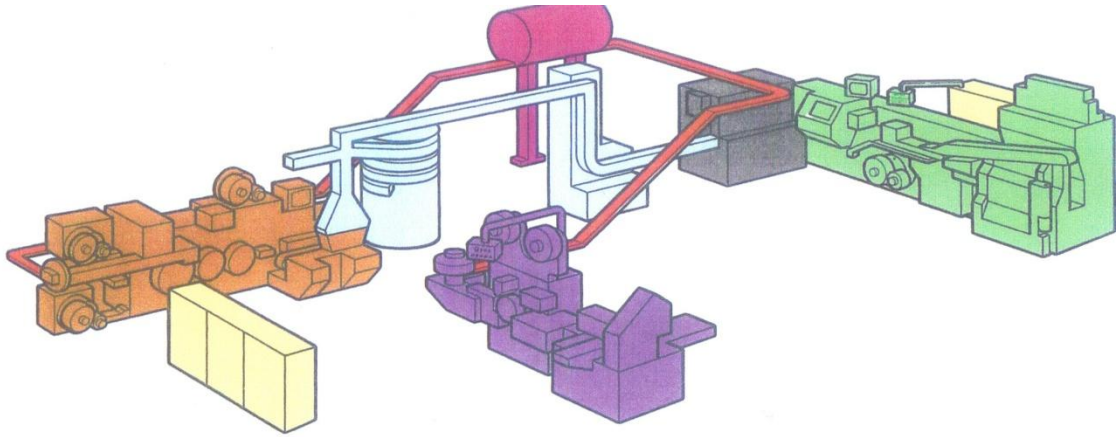
O3neida vs IEC 61499

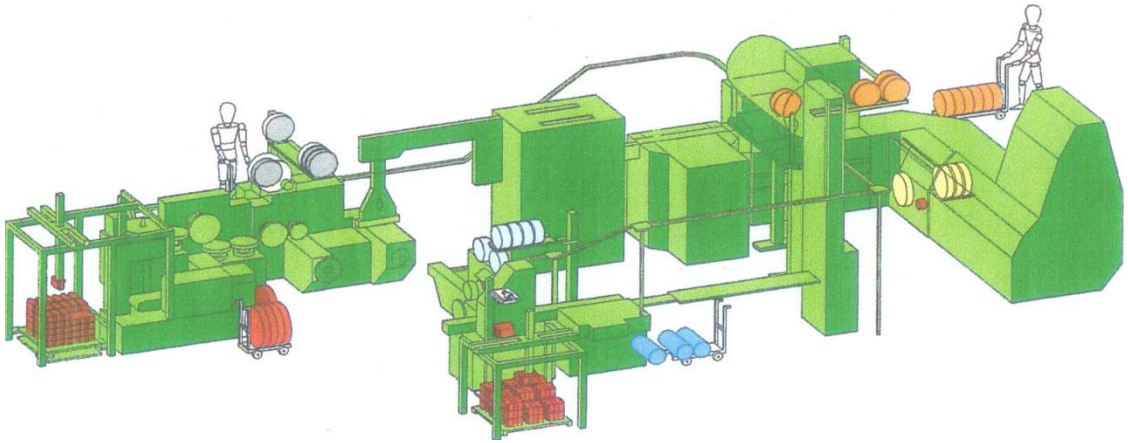
- Identify the standard as a means to allow a formal design of distributed control systems and/or complex systems where equipment from different suppliers needs to be integrated:
  - Open architecture
  - Modularity
  - Reuse
- Sustain the diffusion and penetration of the standard;
- Support technology providers providing IEC 61499 compliant products;
- Initiative as 4DIAC, an open source initiative www.fordiac.org .

Open Architectures

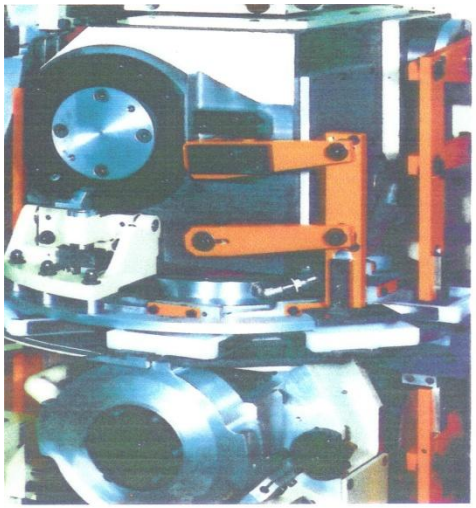
- **architecture**: The structure and relationship among *functional units* in a *system*.
- **functional unit**: An entity of hardware or software, or both, capable of accomplishing a specified purpose.
- **open architecture**: An *architecture* whose *functional units* are capable of exhibiting *portability, interoperability* and *configurability*:
  - **portability**: Software tools can accept and correctly interpret *library elements* produced by other software tools.
  - **interoperability**: Devices can operate together to perform the functions specified by one or more *distributed applications*.
  - **configurability**: *Devices* and their *software components* can be configured (selected, assigned locations, interconnected and parameterized) by multiple software tools.

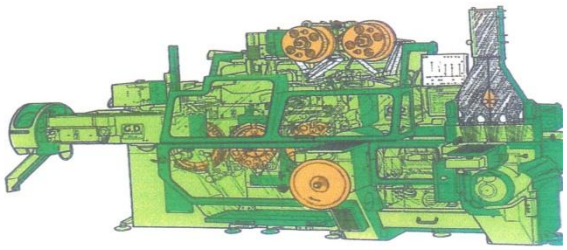
Open Architectures

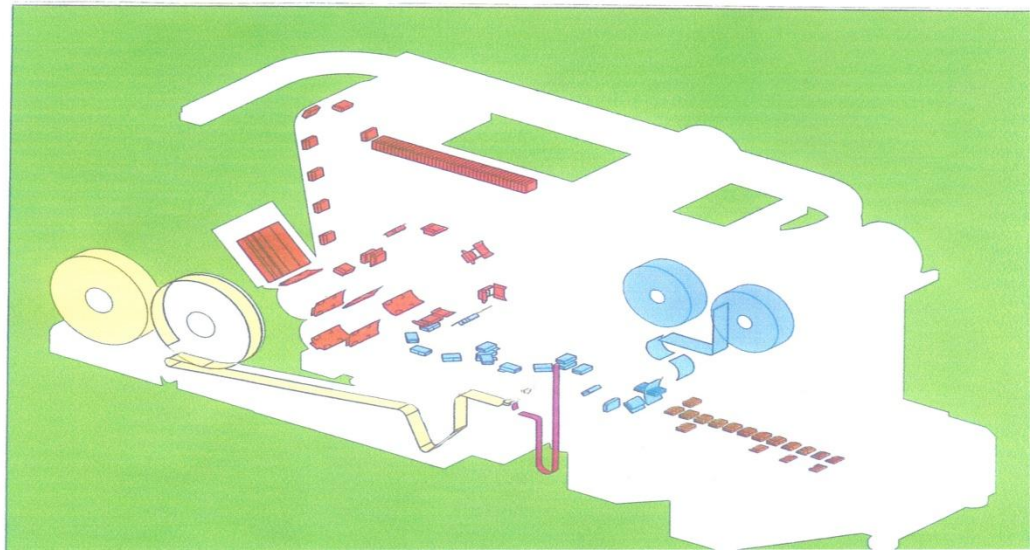




Modularity and Reuse







New paradigms: Service orientation

- Machine as a Product;
  - machine,
  - spare-parts,
  - Raw materials,
  - documentation;

- Machine to Services;
  - maintenance services (refurnishing, rebulding),
  - machine adaptation for new products,
  - design of new suitable products;

- Services to Machine;
  - Design of a new product package,
  - Validation of the new product package,
  - Design of a new suitable machine.

O3neida – ISA Book Series

- Part of the collaboration with ISA;
- 8 books covering various themes in the automation domain;
- 2 of them addressing IEC 61499:
  - IEC 61499 Function Blocks for Embedded and Distributed Control Systems Design – Dr. Valeriy Vyatkin;
  - Real-Time Execution for IEC 61499 – Dr. Alois Zoitl.

Soon a second edition of the Vyatkin's one will be published in the series.

IEEE-IES TC on Standards

- Technical committee acting as an horizontal committee among the other IES TCs;
- Sub-committee on automation items has been proposed and accepted;
- Sub-committee objectives:
  - to support other IES TC in standardization activities related to Automation,
  - to mirror and to contribute to activities of other international standardization bodies as IEC,
  - to propose new standardization activities.

Encyclopedia

Encyclopedia of Embedded Computing Systems
Call for Articles
Proposal Acceptance: June 27, 2011 -- December 31, 2011
To be published by
IGI Global – http://www.igi-global.com/

General Editors

Mohamed Khalgui, Xidian University, China
Olfa Mosbahi, Xidian University, China
Antonio Valentini, O3neida, Belgium

Conference in Tunisia

International Congress of Embedded Control Systems (ICIECS 2012)

Cartago (Tunis), October 23rd, 24th, 25th 2012

Conference Co-chairs:
Kamel Barkaoui
Mohamed Khalgui
Antonio Valentini
Richard Zurawski

IEC 61499 maintenance team

- In 2009 the IEC has decided to establish a new working group in order to conduct the maintenance of the 4 years old standard:

TC65 – SC65B – WG15

Thanks and enjoy the session!

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