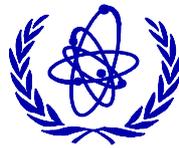




621-I2-TM-27262

TECHNICAL MEETING



INTERNATIONAL ATOMIC ENERGY AGENCY

**IMPLEMENTING AND LICENSING DIGITAL I&C
SYSTEMS AND EQUIPMENT IN NPPS**

Date and Location

**Tuesday, November 22 through Thursday, November 24, 2005
at the
Technical Research Centre of Finland
VTT Industrial Systems
Tekniikantie 12
Espoo, Finland**

1. BACKGROUND

The development in instrumentation and control (I&C) has been very rapid over the past few decades. Digital equipment with improved performance has been introduced to the market at high speed. The new digital equipment has had an influence on the I&C systems of all major industries, including transportation, the chemical industry, and the conventional power plants. The digital systems take an advantage of technological achievements to accommodate sophisticated and efficient handling of measurements and controls for high speed and reliability, as well as for flexibility and versatility.

The adoption of the new technology has, for various reasons, been slower in nuclear power plants. The most important reason is that only a few new plants have been ordered worldwide during the last fifteen years. A second reason is connected to the efforts needed in providing adequate evidence that the digital I&C systems can be used in safety-critical and safety-related applications. This issue is connected to the effort needed in obtaining adequate assurance that a specific digital I&C system can, and will, fulfil its intended functions, and does not display incorrect behaviour in any of the possible operational states of a plant during its life cycle.

In nuclear industry an interest in implementing digital I&C systems for nuclear power plants has grown rapidly during the last few years. The technical and economical obsolescence of the current I&C systems with the increasing number of approved digital I&C system platforms in the market have motivated several I&C modernisation projects in the world. On the other hand, the growing consumption of electricity has increased interest on building new nuclear capacity and implementing digital I&C systems for the new plants. The growing interest on investing on new nuclear capacity can be seen for example in Finland where the building of a fifth power reactor has ended a pause of nearly twenty years in the building of new nuclear power plant in Western Europe.

The issues of implementing and licensing digital I&C systems in nuclear power plants are presented and discussed in the meeting. The implementation of modern digital I&C systems is a delicate matter, in which new methods and tools are used to ensure the function of the systems. The licensing, which is closely connected to the implementation, has in earlier I&C projects shown to be difficult if it is not approached in a prudent and proactive way. The technical meeting will address both new and modernisation I&C projects.

2. OBJECTIVE OF THE MEETING

The purpose of the meeting is to provide an international forum for presentation and discussion of experience in implementing and licensing digital I&C systems and equipment in nuclear power plants. The meeting is intended for I&C experts from power utilities, vendor companies, licensing bodies, research organisations and academic institutions. The meeting will provide both experience from earlier projects and descriptions of new and planned I&C projects.

3. PROPOSED TOPICS AND SESSIONS FOR THE MEETING

Participants in the meeting are invited to present paper on topics outlined below. Papers on the same topic are presented and discussed in a same session. The papers presented will be collected and published in a proceeding. The proceeding will be delivered to the participants after the meeting. Further information and instructions about submissions of a paper can be found below.

3.1 State of the art in implementing and licensing digital I&C

In the session an overview of the present state of the art in the implementing and licensing of digital I&C is given. Papers presenting experiences from different licensing processes as well as plans and suggestions for streamlining the licensing process are solicited. The session should give answers to questions such as:

- Where do we stand today?
- What are the present plans within the industry?
- What are the methods and tools for licensing we foresee for tomorrow?

3.2 Standards and requirements

The session will cover existing and planned standards to be applied in the implementing and licensing of digital I&C systems. It is expected that the session should give an overview of the following topics:

- National regulatory approaches
- Present development activities within IEC, ISO, IEEE
- Guidance provided by IAEA

3.3 The project, its parts and its management

The I&C project, its parts and its management is the crucial step in obtaining both safe and cost effective I&C solutions. It is expected that the session will provide experiences on how to divide the project into parts and phases; and how to manage and coordinate the parts and phases. The experience can be gathered from earlier projects as well as from new projects under development. The session will address special considerations on:

- I&C project strategies
- New projects
- Modernisation of existing I&C systems

3.4 I&C technologies and design

This session is intended to give an overview of different design concepts and available I&C technologies. There are two development trends that can be identified, i.e. a larger integration of the functions on a systems level and an increasing intelligence at the equipment level. The session will concentrate on the following topics:

- Design concepts
- System platforms
- Intelligent equipment

3.5 V&V methods and tools

The verification and validation (V&V) process is very important in all stages of the implementation and licensing of digital I&C systems. Many methods and tools have been proposed by the research and academic communities and some experience has also been obtained. In the session it is intended to report experiences from these exercises together with possible new developments in the software V&V methods and tools. Subject areas to be discussed are for example:

- Experiences on the V&V processes of digital I&C systems
- Experiences from different V&V methods and tools
- Computer assisted tools and use of simulation

3.6 Other issues

In addition to the topics indicated above, there are also other topics with a close bearing on implementation and licensing of digital I&C. The final session will address these topics together with a more general outlook for future development in the area. Some of these general topics that may be discussed are:

- Harmonisation of licensing requirements
- Life-cycle considerations (ageing, obsolescence)
- Maintenance of digital I&C systems
- Training and documentation

4. ORGANIZATION

Meeting Chairman:

Mr. Björn Wahlström
VTT Industrial Systems
POB 1301, Tekniikantie 12
FIN-02044 VTT (Espoo), Finland
Tel: +358 20 7226400
Fax: +358 20 7226752
bjorn.wahlstrom@vtt.fi

Technical Secretary of Meeting:

Mr. Atte Helminen
VTT Industrial Systems
POB 1301, Tekniikantie 12
FIN-02044 VTT (Espoo), Finland
Tel: +358 20 7226447
Fax: +358 20 7226752
atte.helminen@vtt.fi

Member of Program Committee:

Mr. Olli Hoikkala
Teollisuuden Voima Oy
FIN-27160 Olkiluoto, Finland
Tel: +358 2 83813450
Fax: +358 2 83813409
olli.hoikkala@tvo.fi

Member of Program Committee:

Mr. Juhani Hyvärinen
Radiation and Nuclear Safety
Authority
Laippatie 4
FIN-00880 Helsinki, Finland
Tel: +358 9 75988334
Fax: +358 9 75988382
juhani.hyvarinen@stuk.fi

Member of Program Committee:
Mr. Martti Välisuo
Fortum Nuclear Services Ltd
POB 100, Keilaniementie 1
FIN-00048 FORTUM, Finland
Tel. +358 10 4534747
Fax. +358 10 4532525
martti.valisuo@fortum.com

Administration Secretary
from VTT Industrial Systems:
Mrs. Ulla Lano
VTT Industrial Systems
POB 1301, Tekniikantie 12
FIN-02044 VTT (Espoo), Finland
Tel: +358 20 7226408
Fax: +358 20 7226752
ulla.lano@vtt.fi

IAEA Scientific Secretary:
Mr. Oszvald Glöckler
International Atomic Energy Agency
P.O. Box 100, Wagramerstrasse 5
A-1400 Vienna, Austria
Tel: +43 1 2600 22791
Fax: +43 1 2600 29598
O.Glockler@iaea.org

5. PARTICIPATION

All persons wishing to participate in the meeting are requested to complete the attached Participation Form and to send it to the competent national authority (e.g. Ministry of Foreign Affairs or National Atomic Energy Authority) of the applicant's country for obtaining an official national nomination. The subsequent transmission from the national authority to the IAEA must reach the Agency not later than **10th October, 2005**. At the same time the original is sent to the national authority, please send a copy of the form directly to:

- Mr. Björn Wahlström, VTT Industrial Systems, fax: +358 20 7226752, e-mail: bjorn.wahlstrom@vtt.fi
- Mr. Oszvald Glöckler, International Atomic Energy Agency, fax: +43 1 2600 29598, e-mail: O.Glockler@iaea.org

6. MEETING SCHEDULE AND LOCATION

The meeting will begin on Tuesday, 22th November 2005 at 09:00 hours at the offices of VTT Industrial Systems at Innopoli, Tekniikantie 12, in the Otaniemi campus area and will end on Thursday, 24th November 2005 at 16:00 hours. Innopoli and the Otaniemi campus area are located about 25 kilometres from the Helsinki/Vantaa international airport. More detailed information on the schedule and location can be found from the official web pages of the meeting at <http://iaea-nppci-espoo2005.vtt.fi>.

7. TECHNICAL TOUR

A technical tour to the Olkiluoto site will be organized on Friday 25th November 2005. Olkiluoto site houses 2 BWRs operated by TVO and it is also the site for the construction of the fifth nuclear power plant in Finland. Participants in the technical visit will leave for the city of Rauma during the Thursday evening by bus and they will return to Helsinki by 16:00 hours on Friday.

8. ADDITIONAL INFORMATION

More detailed information on the meeting and the local arrangements in Finland will be published at the web pages of the meeting at <http://iaea-nppci-espoo2005.vtt.fi>. Notification to participants will be sent when the completed participation forms have been received. Inquiries regarding the meeting and other arrangements in Finland can be addressed to the administration secretary of VTT Industrial Systems Mrs. Ulla Lano, or to the technical secretary of the meeting Mr. Atte Helminen.

9. WHERE TO SEND YOUR SUMMARIES AND PAPERS

Each designated participant wishing to present a paper on the topics outlined above should send an extended summary of approximately 300 words to the following reviewers:

Björn Wahlström
VTT Industrial Systems
POB 1301, Tekniikantie 12
FIN-02044 VTT (Espoo), Finland
Tel: +358 20 7226400
Fax: +358 20 7226752
bjorn.wahlstrom@vtt.fi

Mr. Oszvald Glöckler
International Atomic Energy Agency
P.O. Box 100, Wagramerstrasse 5
A-1400 Vienna, Austria
Tel: +43 1 2600 22791
Fax: +43 1 2600 29598
O.Glockler@iaea.org

The abstracts should be received no later than **10th October, 2005**. Abstracts will be used to select the papers for the meeting and to establish the final programme.

Authors will be notified about the acceptance of their papers no later than **21st October, 2005**.

Please note that you do not have to submit a formal paper to be able to participate in the meeting. All participants will be provided an opportunity to make informal presentations if time allows. However, those who submit a paper are guaranteed presentation time provided that their paper is accepted.

Full papers should be prepared in MS Word 2002, or older, format and not exceed 10 pages in length (including illustrations and references). Detailed information and a template on the format of the paper are presented at the web pages of the meeting. Authors will be requested to bring 60 copies of their paper to the meeting for distribution, and the master copy of their paper and presentation on a CD/diskette for the production of the proceedings.

Time for the presentation of the papers will be limited to 20 minutes in order to have sufficient time for discussion. PC based projection and overhead projector will be provided.

10. WORKING LANGUAGE

The official working language of the meeting will be English and no interpretation will be provided.

11. VISAS

Designated participants who require a Visa to enter Finland should submit the necessary application to the nearest Finnish diplomatic or consular representative within the appropriate timeframe. A formal letter of invitation from VTT Industrial Systems can be obtained upon request.

12. ACCOMMODATIONS

Two possibilities are offered with special room rates. Hotel Tapiola Garden is located on walk distance from the meeting place. Hotel Cumulus Seurahuone is located downtown Helsinki and the meeting place can be reached by public transportation in half an hour. Participants are asked to make their accommodation arrangements through Mrs. Ulla Lano before **20th October, 2005.**

Hotel room rates:

Hotel	Items	Sub Items	Price
Tapiola Garden	Accommodation	Standard room for 1 person, breakfast incl.	~ 131 EUR per night
		Standard room for 2 persons, breakfast incl.	~ 170 EUR per night
Sokos Hotel Tapiola Garden Tapionaukio 3, FIN 02100 Espoo, Tel. +358 20 1234 616 Fax. +358 9 462 332			

Hotel	Items	Sub Items	Price
Cumulus Seurahuone	Accommodation	Standard room for 1 person, breakfast incl.	~ 115 EUR per night
		Standard room for 2 persons, breakfast incl.	~ 140 EUR per night
	Cumulus Seurahuone Kaivokatu 12, FIN 00100 Helsinki, Tel. +358 9 691 4019 Fax. +358 9 691 4010		

The participants of the technical tour to the Olkiluoto site will stay the Thursday (November, 24th) -Friday (November, 25th) overnight at Rauma. The special room rates of Hotel Raumanlinna are following:

Hotel	Items	Sub Items	Price
Best Western Hotel Raumanlinna	Accommodation	Standard room for 1 person, breakfast incl.	~ 79 EUR per night
		Standard room for 2 persons, breakfast incl.	~ 104 EUR per night
	Best Western Hotel Raumanlinna Valtakatu 5, FIN 26100 Rauma, Tel. +358 2 83221 Fax. +358 2 8322 2110		

13. EXPENDITURES

The organizational cost of the meeting in Finland is borne by the host organization. Travel and all subsistence expenses are to be covered by the participants.

14. ENTERTAINMENT

The conference will include an official dinner on Wednesday evening. The dinner is hosted by Fortum and TVO.

16. REGISTRATION FEE

There is *no* registration fee to participate in this conference.

17. DAILY SCHEDULE OF MEETING

A daily schedule of the meeting will be provided to all participants.

INTERNATIONAL ATOMIC ENERGY AGENCY

“Implementing and Licensing Digital I&C Systems and Equipment in Nuclear Power Plants”

22 to 24 November 2005

Espoo, Finland

PARTICIPATION FORM

Please complete the attached Participation Form and send it to the competent national authority (e.g. Ministry of Foreign Affairs or National Atomic Energy Authority) of the applicant's country for obtaining an official national nomination. The subsequent transmission from the national authority to the IAEA must reach the Agency not later than **10th October, 2005**. At the same time the original is sent to the national authority, please send a copy of the form (and the abstract, if applicable) directly to

- Mr. Björn Wahlström, VTT Industrial Systems, fax: +358 20 7226752, e-mail: bjorn.wahlstrom@vtt.fi
- Mr. Oszvald Glöckler, International Atomic Energy Agency, fax: +43 1 2600 29598, e-mail: O.Glockler@iaea.org

Surname:		Given names:	
Mr./Ms.:	Date of birth:	Place of birth:	
Nationality:	Passport #: Expire date:		
Title and position:			
Organization/Company:			
Full address:			
Tel:	E-mail:	Fax:	
I intend to present a paper and enclose a 300 word extended summary: <input type="checkbox"/> No <input type="checkbox"/> Yes, with the following title:			
Need assistance in the accommodation arrangements? <input type="checkbox"/> No, I will arrange my accommodation by myself. <input type="checkbox"/> Yes, please fill out the accommodation booking form.			
I will participate to the technical tour to the Olkiluoto site: <input type="checkbox"/> No <input type="checkbox"/> Yes, please fill out the form for technical tour.			

ACCOMMODATION BOOKING FORM

Technical Meeting on “Implementing and Licensing Digital I&C Systems and Equipment in NPPs”

22 to 24 November 2005

VTT Industrial systems, Espoo, Finland

To be sent to:

Mrs. Ulla Lano VTT Industrial Systems POB 1301, Tekniikantie 12 FIN-02044 VTT (Espoo), Finland Tel: +358 20 7226408 Fax: +358 20 7226752 E-mail: Ulla.Lano@vtt.fi

Please send this form NO LATER THAN 20th October, 2005

Name:	
Organization:	
Address:	
Tel:	
Fax:	
Arrival date/time:	Departure date/time:
Accompanying:	
Accommodation (please choose one):	Tapiola Garden: <input type="checkbox"/> Standard room for 1 person <input type="checkbox"/> Standard room for 2 persons Cumulus Seurahuone: <input type="checkbox"/> Standard room for 1 person <input type="checkbox"/> Standard room for 2 persons
Special requirements:	

FORM FOR TECHNICAL TOUR

Technical Meeting on “Implementing and Licensing Digital I&C Systems and Equipment in NPPs”

24 to 25 November 2005

VTT Industrial systems, Espoo, Finland

To be sent to:

Mrs. Ulla Lano VTT Industrial Systems POB 1301, Tekniikantie 12 FIN-02044 VTT (Espoo), Finland Tel: +358 20 7226408 Fax: +358 20 7226752 E-mail: Ulla.Lano@vtt.fi

Please send this form NO LATER THAN 20th October, 2005

Surname:		Given names:	
Mr./Ms.:	Date of birth:	Place of birth:	
Nationality:	Passport #: Expire date:		
Social security number:	Address of residence:		
Organization/Company:			
Organization/Company address:			
Tel:		Fax:	