

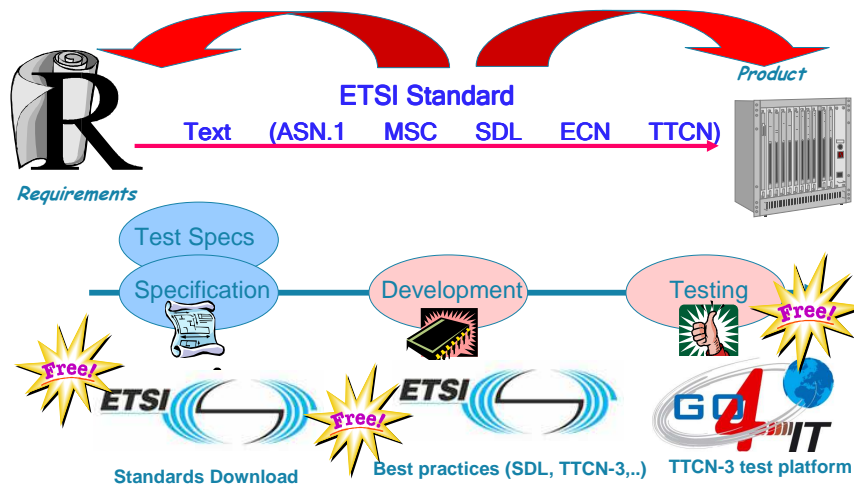
# From standards to market

ETSI and EC GO4IT project  
to provide together a combined  
time-to-market efficient package

Philippe Cousin  
ETSI Services Sales Director  
EC GO4IT Project Director  
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# From product to market



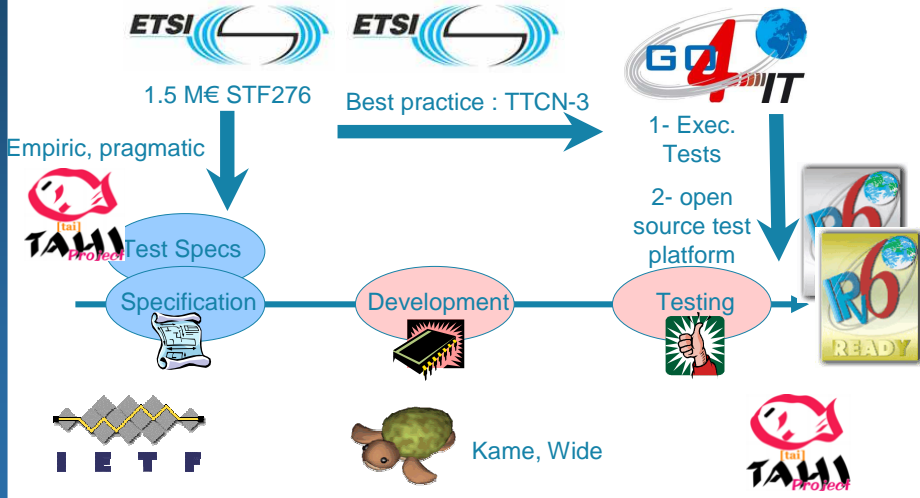
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World Class Standards

### Status for IPv6 in Europe



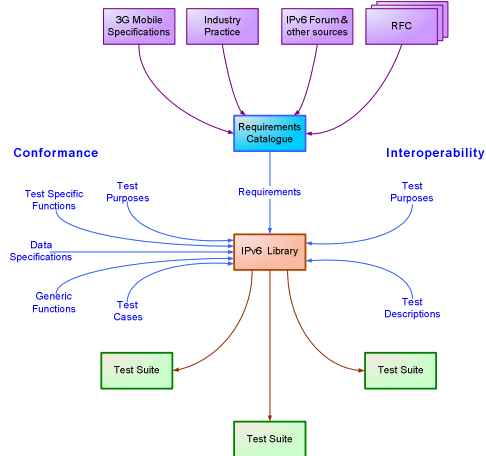
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World Class Standards

### ETSI TTCN-3 IPv6 Test Library



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World Class Standards

## The Requirements Catalogue Online

**Open IP Testing Library**

**IPv6 Requirements Catalogue**

**Requirement: RQ\_COR\_1462**  
**Applicability:** Node  
**Context:** The implementation receives an Echo Request.  
**Requirement:** The implementation sends an Echo Reply in response to the request.  
**Requirement Type:** MUST  
**RFC Reference:** RFC 2463, 84.1.10  
**Conformance Test Purpose:**  
**Interop Test Purpose:**

**Requirement: RQ\_COR\_1463**  
**Applicability:** Node  
**Context:** The implementation receives an ICMPv6 Echo Request Message.  
**Requirement:** The implementation passes the Echo Request message to [upper-layer] processes receiving ICMP messages.  
**Requirement Type:** MAY  
**RFC Reference:** RFC 2463, 84.1.12  
**Conformance Test Purpose:**  
**Interop Test Purpose:**

**Requirement: RQ\_COR\_1463**  
**Applicability:** Node  
**Context:** The implementation has received an Echo Request message and generates an ICMPv6 Echo Reply Message.  
**Requirement:** The implementation includes the following information in the Echo Reply IPv6 Fields: (a) Destination Address - Copied from the Source Address field of the invoking Echo Request packet. In ICMPv6 Fields: (b) Type Field set to 129. (c) Code Field set to 0. (d) Checksum Field set to the calculated checksum. (e) Identifier Field - The identifier from the invoking Echo Request message. (f) Sequence Number Field - The sequence number from the invoking Echo Request message. (g) Data Field - The data from the invoking Echo Request message.  
**Requirement Type:** MUST  
**RFC Reference:** RFC 2463, 84.2.1.8  
**Conformance Test Purpose:** TP\_ICOR\_1463\_01  
**Interop Test Purpose:**

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**GO4IT**

European Commission  
Information Society and Media

ADVANCED TOOLS AND SERVICES FOR **IPv6** TESTING

[www.go4-it.eu](http://www.go4-it.eu)

**Go4IT project**

Advanced tools and services for  
(IPv6) testing

ETSI

## Project identity card

- **Integrated Infrastructure Initiative**
  - Started in Nov 2005
  - 30 month FP6 project
- **Partners:**
  - France (jTest, INRIA)
  - Europe (ETSI)
  - Germany (inno, Fokus)
  - Spain (Cetecom)
  - China (BII, CATR, BUPT)
  - Russia (Ispras)
  - Brazil (IPT)
- **Go4IT project intends to provide Research Infrastructure users with free TTCN-3 based IPv6 testing environment including test tools, test suites and the related services.**

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## The DG INFSO/ Research Infrastructures Unit


- Go4IT: a project of the DG INFSO – Research infrastructures unit (F3)
- F3 Unit Work programme
  - **GÉANT** - provision of a high-capacity and high-speed communications network
  - **Grids** - deployment of advanced Grids-empowered infrastructures.
  - **Research networking test-beds** - deployment of advanced, user-driven large scale test-beds with the goal to integrate and validate the state-of-the-art technology.

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## Go4IT activities and services

*The GO4IT project intends to provide Research Infrastructure users, the IPv6 development and user communities with IPv6 oriented test tools, test suites and the related services based upon the standardised TTCN-3 methods*

- **Provide a roadmap to a free, open & generic test environment.**
- **Develop open & generic test tools for IPv6 protocols.**
- **Offer free test tools, test services such as plugtest events and related support.**
- **Raise user communities awareness of testing and validation methodologies.**
- **Disseminate worldwide.**




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## Different participation levels

- **For academic people**
  - Education and training
  - Possible creation, debugging and update of ATS
  - Low cost solutions
  - Capability to implement and test new potential TTCN functionalities (access to the test platform source)
  - Possible re-use of efforts made by the community (share developed components)
- **For test users**
  - Confidence in the test environment
  - Validated test suites
  - Friendly interfaces
- **For industrial users**
  - Get time-efficient validation/certification solution at no or limited costs




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## Go4IT organisation

- **Networking**
  - Manage and coordinate the project
  - Communicate and disseminate project results
  - Organize Interoperability events
  
- **Joint Research**
  - Identify users needs
  - Define the roadmap toward an open and generic TTCN-3 based test environment
  - Develop new Abstract Test Suites (ATS)
  - Develop and implement the test environment
  
- **Service**
  - Provide Executable Test Suites available for free for download
  - Provide support to Go4IT tools users



**FP6  
Research  
Infrastructures**


Integrated  
Infrastructure  
Initiative (I3)  
project



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## Project's activities


NA 1  
Management  
And  
coordination

**JRA 1**  
Infrastructure roadmap

**JRA 2**  
Service development & integration

**SA 1**  
Service deployment

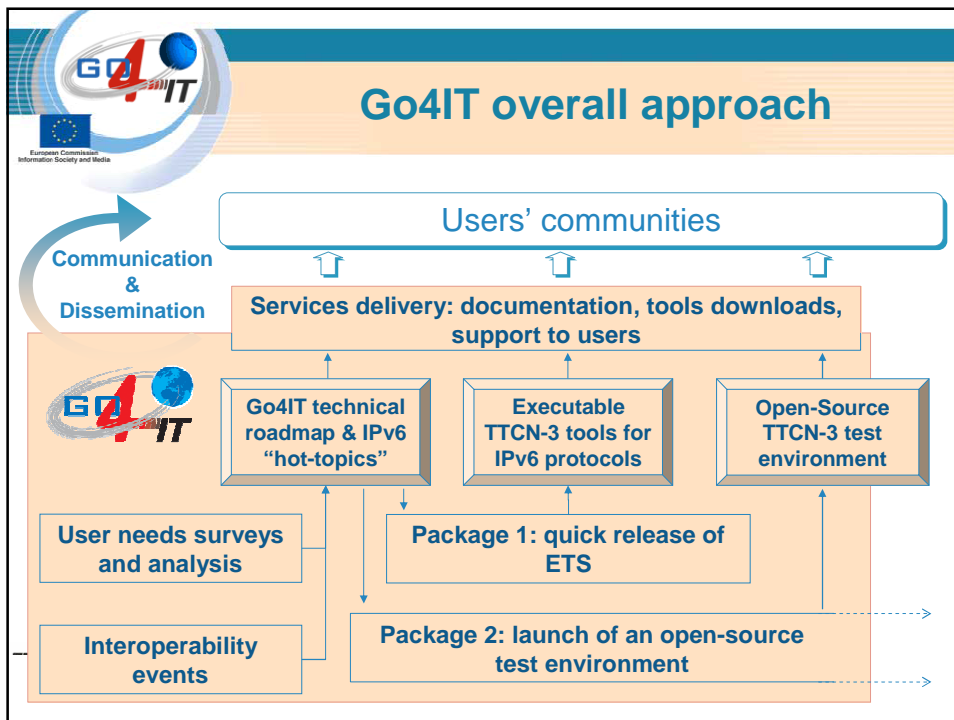
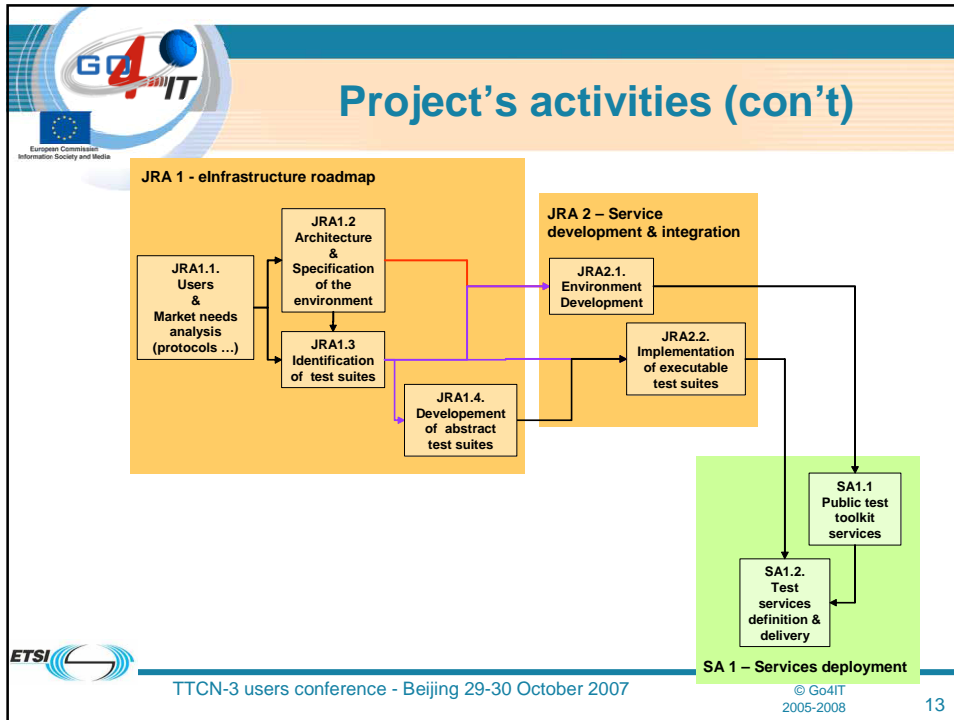
NA 2  
Users  
Community  
Engagement

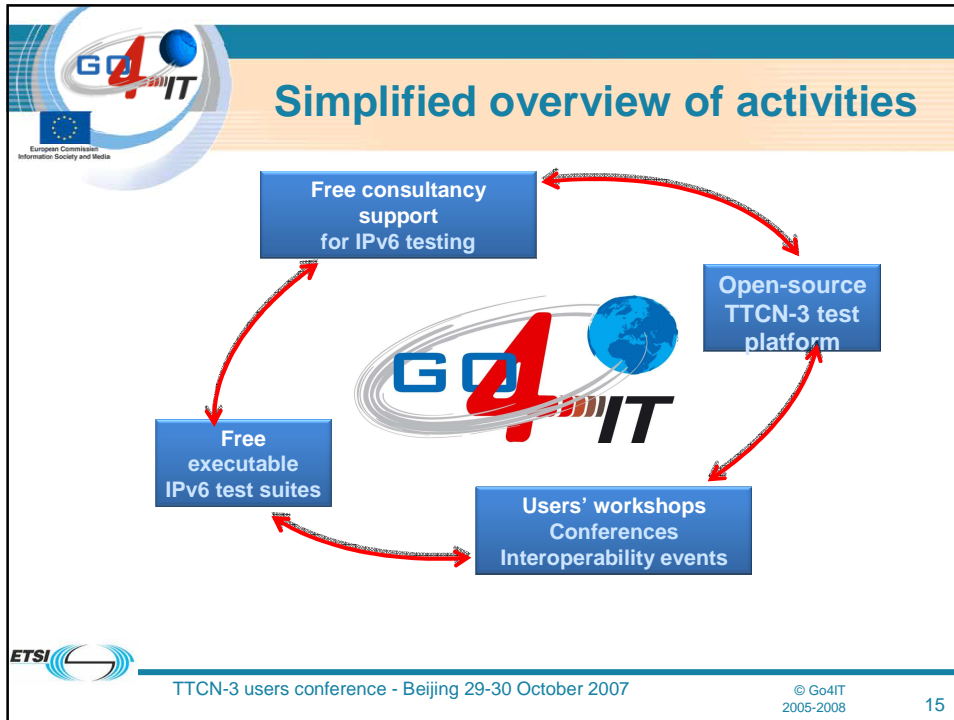


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**Go4IT package 1 (JRA2.2)**


- Package 1 will permit quick offer and quick supply of test services to IPv6 community
- It will propose
  - An Executable TTCN-3 test Suite based on the ETSI IPv6 STF276 test cases
  - An Executable Test Suite for DHCPv6
- As a minimum, all the runtimes required to run the ETS will be provided

The diagram shows a stack of components for testing an IPv6 system. At the bottom is the **IPv6 SYSTEM UNDER TEST**. Above it are **Interfaces**, the **Go4IT test platform**, a **TTCN compiler**, and a **Code generator**. To the right, there are icons for **Standards** and **TTCN test suites**. A large yellow starburst with the word **Free!** is positioned above the main components.

Logos for Go4IT and the European Commission (Information Society and Media) are present in the top left. The ETSI logo is in the bottom left.

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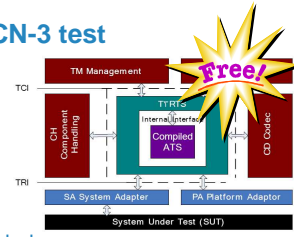



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## Go4IT package 2 (JRA2.1)

### A key strategic EU delivery

- **Package 2 roadmap targets a term longer than the project itself**
- **Package 2 focus is 'open' and 'generic' TTCN-3 test environment**
  - **Open means**
    - Conform to TTCN-3 specification (eg TRI, TCI)
    - Based on open-source principles
  - **Generic means**
    - Environment can incorporate user adaptations
    - Use of vendor-specific code into ATS will be avoided
    - Target re-usability of developed modules with other TTCN-3 test environments
- **Package 2 will propose within Go4IT**
  - The technical roadmap
  - An Open Source software forge
  - A working demonstrator of the Go4IT test environment






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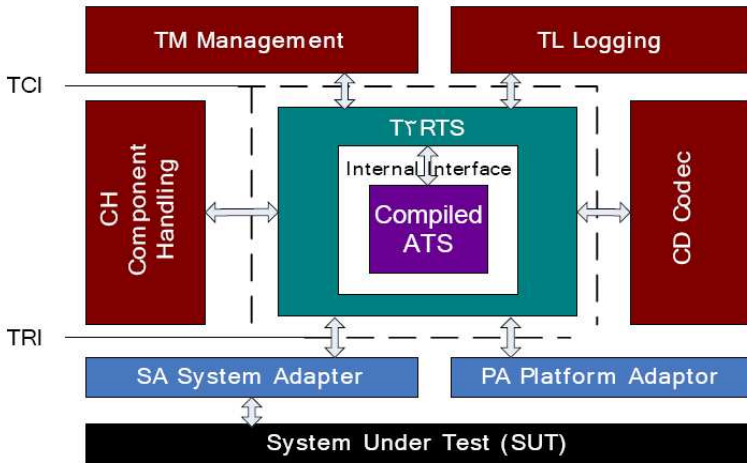
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## TTCN-3: an open test system architecture





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## Working on an “open-source compiler”




**Xiaohong Huang**  
Code Generation Task Leader

- International collaborative work
  - BUPT (Beijing University of Posts and Telecommunications), China
  - Universidad de la República (UDELAR)., Uruguay
  - Inner Mongolia University (IMU)
  - The Institute for System Programming of Russian Academy of Sciences (ISP RAS)




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## Compiler Development

- Parser - UDELAR
  - Bison/Flex (Parser/Lexer)
  - Abstract Syntactical Tree (AST)
  - Symbol Table
- Code Generator (CG) - BUPT
  - Definitions
  - Control
- Run Time System - IMU
  - Internal interface
  - Runtime services
- Validation – ISPRAS
  - syntactic and semantic aspects




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## Development Strategy


- Many steps compiler
- Different subsets (A0, A1, A2, A3) of TTCN-3 language are defined to represent different milestones
- A0 is to provide a compilation and execution environment that can complement the first examples presented in the book “Introduction to TTCN-3”
- Stepwise complexity enhancements



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## Current Status of A0 Compiler


- Status
  - Parser: ready
  - CG: ready
  - Runtime: ready soon
- Future milestones
  - Delivery of beta version of A0 compiler
  - Debug integration
  - Enhancement in programming and design
  - Final delivery of A0 compiler



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## Go4IT Interoperability events

- Objectives and benefits of the interoperability events organised with ETSI IPv6 Plugtests are:
  - Access in one place a wide range of tests provided by various test companies
  - Check the interoperability of products with those of international and active market players
  - Run the tests of the IPv6 Ready Logo phase-1 and Phase-2.
  - Improve and debug IPv6 implementations also by:
    - Improve and debug IPv6 implementations by running the CTI/STF 276 interoperability and conformance tests (TTCN-3)
- 1<sup>st</sup> interoperability event: 9/12 April 2006 - Beijing
- 2<sup>nd</sup> interoperability event: 13/16 November 2006 –Cannes
- 3<sup>rd</sup> interoperability event: 17-18 April 2007 - Moscow


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## Go4IT Roadmap

★ Project start										
★ Users and market needs analysis										
★ Technical roadmap										
★ Launch of web-portal										
★ Start of community enlargement										
★ New IPv6 'hot topics' ATS										
Beta version of test environment (Package 1) ★										
Final version of test environment (Package 1) ★										
Working prototype Package 2 ★										
Project end ★										
Q4-05	Q1-06	Q2-06	Q3-06	Q4-06	Q1-07	Q2-07	Q3-07	Q4-07	Q1-08	



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## World wide motivated teams....







Annie Floch  
Package 2 Leader



Anthony Baire  
Task Leader



César Viho  
IRISA Team Supervisor



Nikolay Pakulin  
Validation Task Leader



Ricardo Rezzano  
Parser Task Leader



Ariel Sabiguero  
1) UDELAR Team Supervisor  
2) Compiler Team Leader

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## With chinese teams motivated too



Xiaohong Huang  
Code Generation Task Leader



Chao Liu





Prof. Yan Ma  
BUPT Team Supervisor



Wei Hai Li



Wei Wang



Jing Chang



Xinming Ye


**BUPT:  
compiler/code  
generation**

ETS I


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## IMU: compiler/T3RTS (TTCN3 runtime libraries system)




Xianrong Wang  
T3RS Team Leader




Bing Yan







Xinning Ye  
IMU Team Supervisor




Guofang Ren




Gaixia Gao




Hua Li



Yuanyuan Wang



Junyi Wang



**New team  
on  
voluntary  
basis**

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## another strategic result: strong collaboration with China



China Academy of Telecommunications Research (CART)







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## large promotion of EU best practices and GO4IT



**PLUGTESTS**  
THE INTEROPERABLE SERVICE  
come & test  
**IPv6**  
BEIJING-CHINA  
2006 • 09-12 APRIL  
Co-located with the  
**GLOBAL IPv6 Summit**  
2006 • 13-14 APRIL

ETS I



全球IPv6高峰论坛  
Global IPv6 Summit 2006  
IPv6助力新网络 IPv6 New Internet The Future Is Now

会场 C

- 3 interop events (Beijing, Cannes, Moscow)
- Global Ipv6 summit Cannes Nov. '06
- Workshop Moscow April 07
- Workshops Sao Paulo + Montevideo Oct.'07

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## Launch invitation to join us !

Go4IT offers different levels of user participation enabling you to contribute according to your specific interests and competencies.

Involvement can be from "being aware" right up to "active contribution".

They already joined:

- IMU
- Univ Montevideo
- Univ dakar
- University Zilina and many others..

- **Be informed:** share aims and results while accessing for free the full services offered by the Go4IT project and having the opportunity to give your feedback ... **Go4IT forum**
- **Contribute:** Get privileged access to private information and tools and participate in technical and dissemination activities ... **Go4IT factory**
- **Coordinate:** ensure the project deliverables remain aligned to the overall objectives of Go4IT and the interests of individual contributors... **Go4IT consortium**

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## Feel free to visit our website

<http://www.go4-it.eu>

- Project information
- Documentation
- News
- Discussion forums
- On-line users support
- Software forge



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### Thanks for your attention



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