

Potential benefits of an architecture approach in ITS

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TAIEX



TAIEX Your Institution-Building Guide to EU Legislation

ITS Workshop
The Ministry of Transport of Israel
Jerusalem, 12 June 2007

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- Background
- Need for a framework architecture
- The European context
- National level approach
- Expected benefits
- Outlook

European ITS Framework Architecture

Why

- Until '95 great deal of ITS research in EC Framework Programmes; ambitious results promised
- But implementations lacking, great concern generated within EC and MS
- High Level Group set up; recommended creation of a 'European Reference framework' (Architecture), idea endorsed in Council resolution ('97)

European ITS Framework Architecture

Development and Deployment

- 1998–2000: EC KAREN project developed EITSFA
- 2001–4: FRAME-S and FRAME-NET projects: evolution, maintenance and deployment through user support, training, and networking
- Since 2005: FRAME FORUM is keeper of EITSFA (AT, FR, IT, NL, SE, UK)
- FRAME FORUM decides on evolution and funds a workplan carried out by FRAME Team

Need for Architecture

Technology opportunities -> offer new functionalities

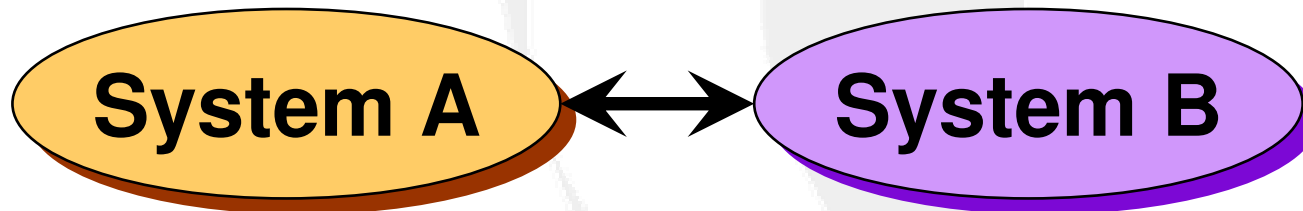
Key requirements:

- Interoperability among systems and platforms
- Use of standard open interfaces
- Quality of services
- Organisational issues
- Roles and responsibilities
- Integration of systems
-

EC and Transport Ministries have been supporting a structured approach for ITS deployment

Consistent System Integration

Assumptions

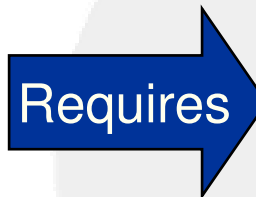


- Agreed communications **AND** common assumptions produce inter-operability
- Achieved with a System Architecture

“INTEGRATION” is the keyword at all levels

System Level

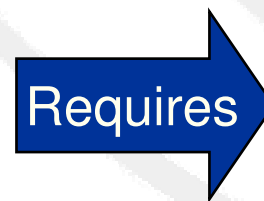
- Co-operating subsystems
- Interconnections
- Shared data & components
- ...



**System
Architectures**

National/Local & Service Specific Levels

- Open solutions
- Co-operative environment
- Interoperability
- Organisational issues
- ...

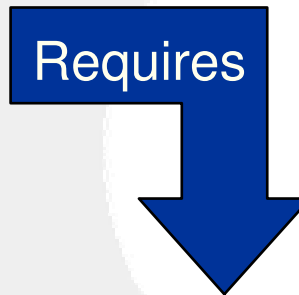


**National/Local
& Service
Architectures**

... including international level

European Level

- Seamless Services
- Homogeneous approaches
- Interoperability
- Reusability of systems & components
- ...



European ITS Framework Architecture

A stable reference for all architectures

A Framework Architecture Provides

- **Reference FRAMEWORK**
Architecture elements, identified “integration” opportunities, modelling and methodologies, ...
- **Common TERMINOLOGY**
Definitions, High-Level Check Lists, Representations, Basic Elements, ...
- **Set of RECOMMENDATIONS**
Practical guidance, review of existing experiences, suggestions for deployment, ...

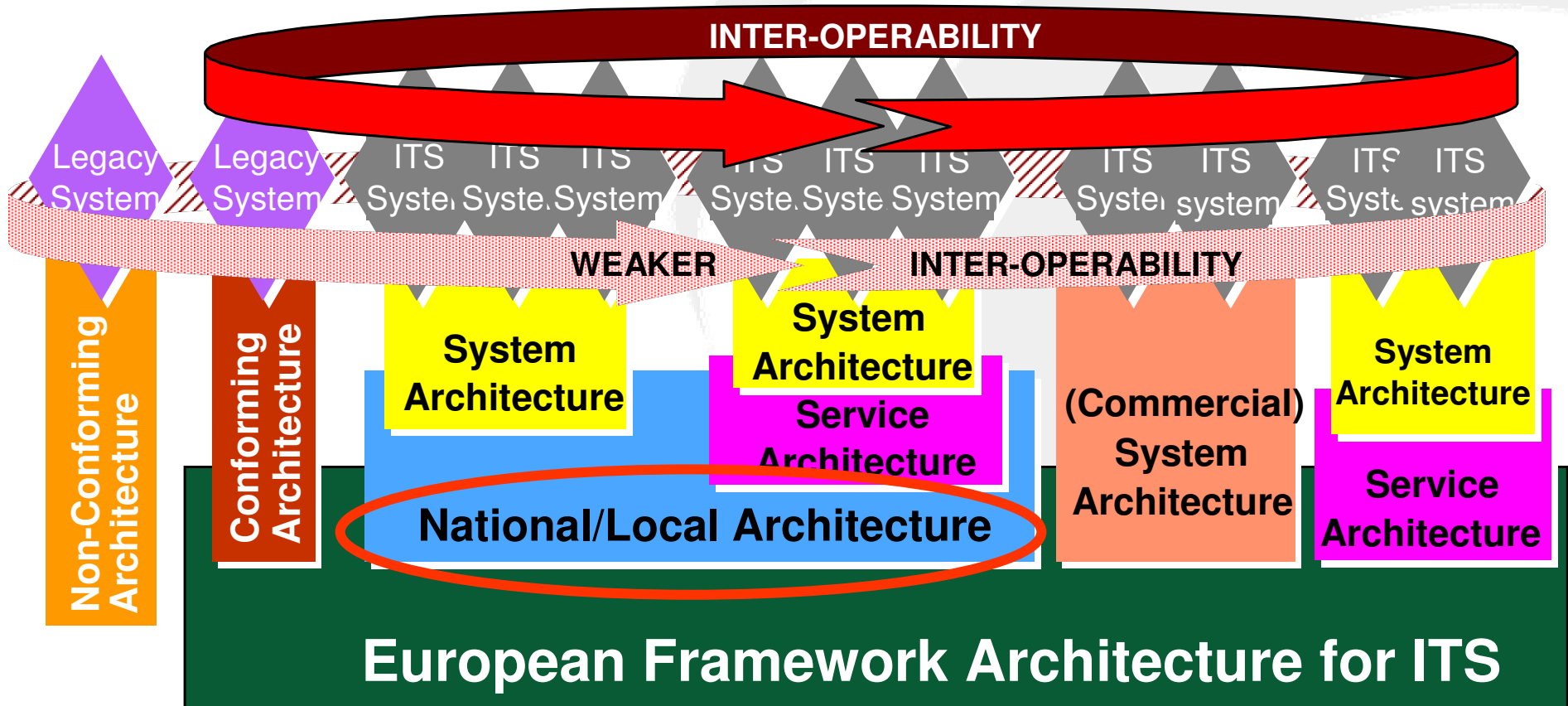
Architecture main documents

	User Needs	Architectures	Standard. & Deployment
Framework	High Level requirements	Functional, Physical, Communication	DB of Existing Standard
Terminology	Type of users, Groups	Basic elements, Terminators	Basic steps for deployment
Recommend.	Methodology for specific lists	Key issues C/B Analysis	Needed standards, Deploy. process

Framework Architecture Scope

- The EU Framework Architecture is focused on the **ROAD** Transport mode
- Interfaces to other modes of transport are considered

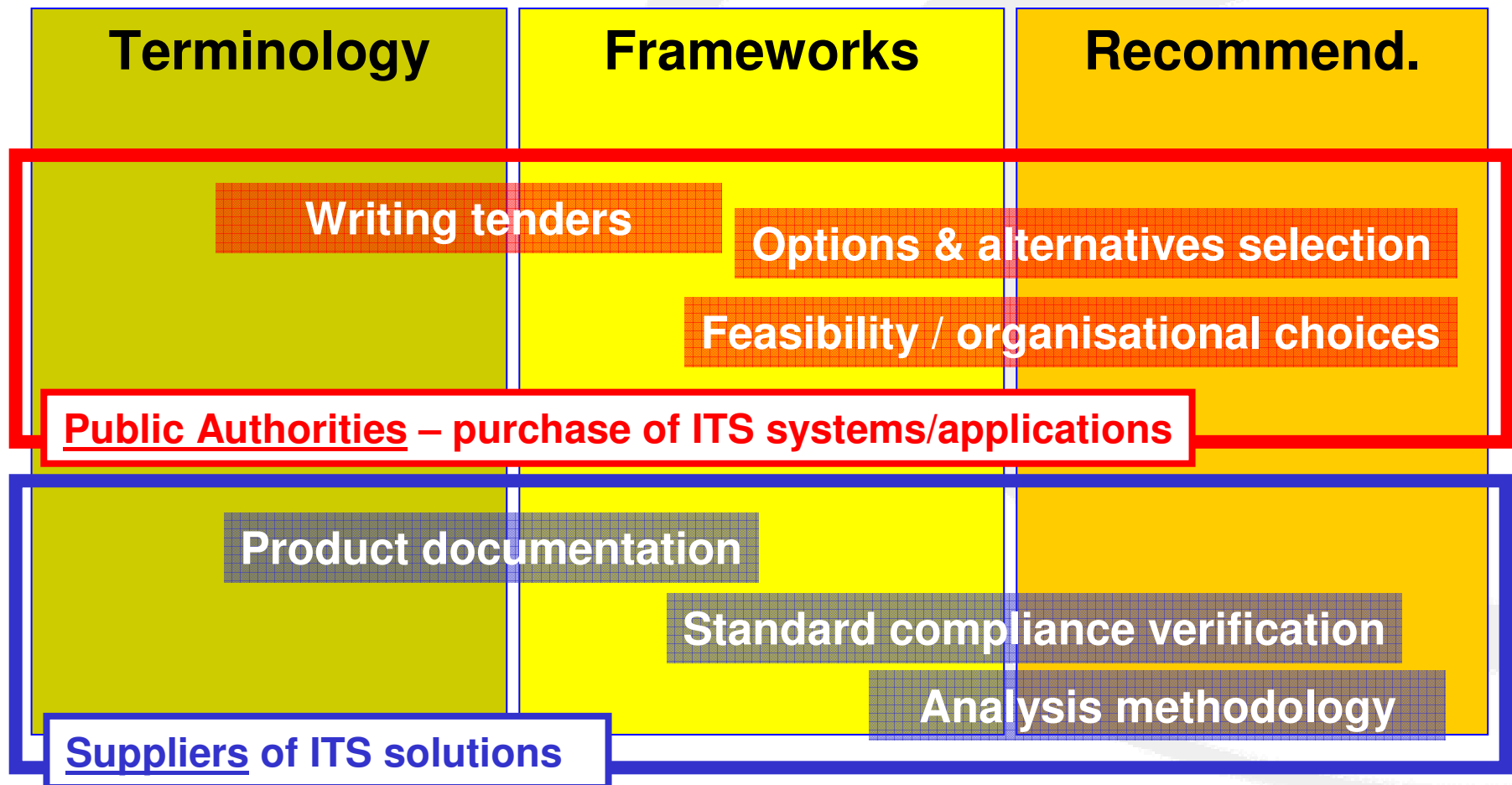
Integration is needed at all levels



EC 5FP – www.frame-online.net

National Architecture for key users

A reference framework for all stakeholders:
(operators, suppliers, public authorities, ...)



Expected benefits

- **Clear communications between ITS offer & demand**
- **Check-list for tenders**
- **Support to ensure national and international compatibility of solutions**

Ex-1: ITS application specifications

AS IS Ref.

- Review of existing solutions

User needs

- Identification of functional areas
- Selection of basic requirements
- Detailed requirements description

Func. Arch.

- Selection of basic functionalities
- Definition of special functions

Phys. Arch.

- Selection of main modules location
- Check of relevant standards and norms
- Editing of calls for tender

Org. Arch.

- Appoint actors, roles and responsibilities
- Check criticalities, feasibility, opportunities
- Operational framework for the application

Ex.2: Supplier of ITS solutions

AS IS Ref.

User
needs

Func.
Arch.

Phys.
Arch.

Org.
Arch.

- **Solution/product description with sound terminology**
- **Check-list of covered requirements**
- **Description of specific features in the architecture framework**

Support:

- **Identification of applicable standards**
- **Comparisons with alternative solutions**

- **Evaluation of scenarios (actors, roles, responsibilities)**
- **Verify feasibility, opportunities, critical issues & strength factors**

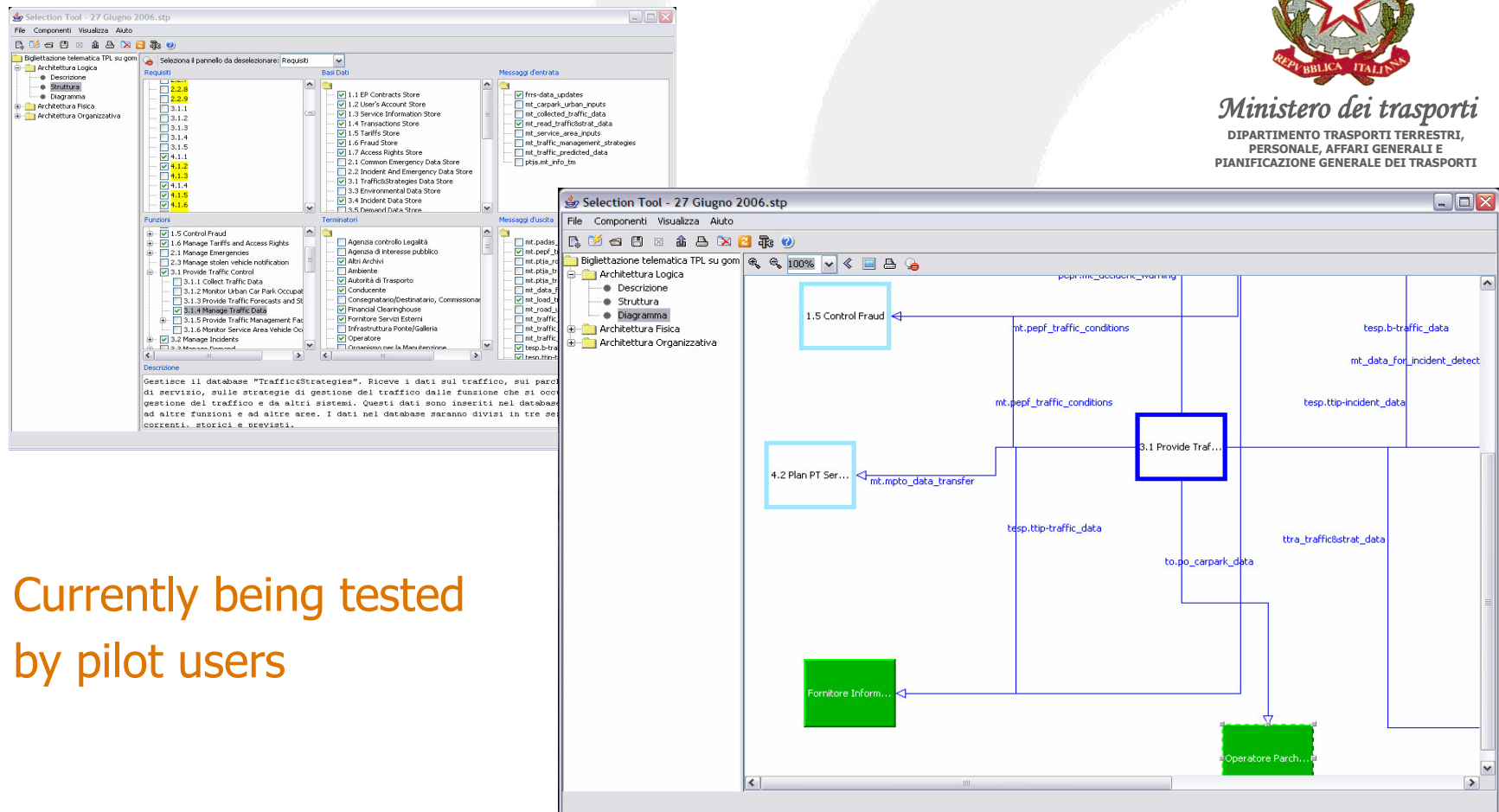


ARTIST – Italian ITS Architecture approach

Open source, graphic selection tool to support use and interaction with the national Architecture



Ministero dei trasporti
DIPARTIMENTO TRASPORTI TERRESTRI,
PERSONALE, AFFARI GENERALI E
PIANIFICAZIONE GENERALE DEI TRASPORTI

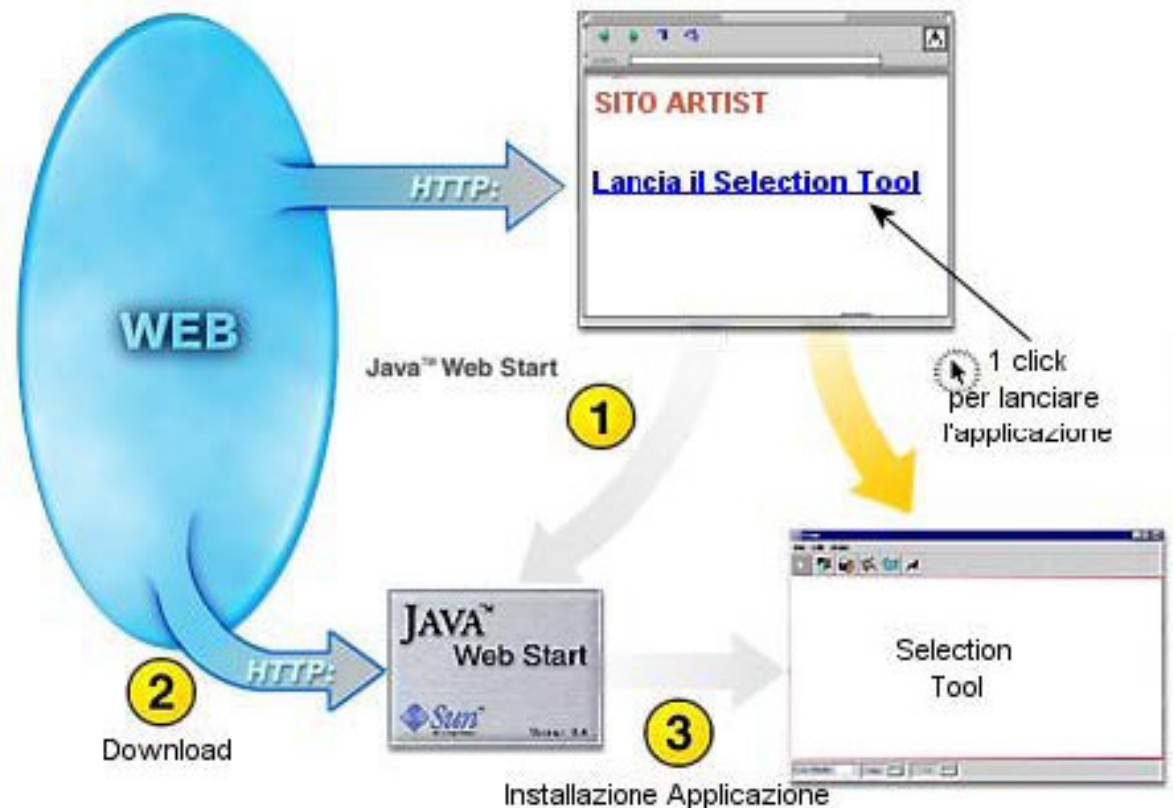


Currently being tested
by pilot users

ARTIST – a networking environment

Registered users download autonomous applications and update DB data

- Scalability and flexibility
- Delocation and installation
- Software update
- Upload onto the website
- Saving modes
- Multilingual, rapid & easy



Application life cycle being run through Java Web Start



National architecture initiatives

- **Italy** – ARTIST: intermodal focus, organisational arch., training, tools
- **France** – ACTIF: supporting tools, fleet & freight focus, use cases
- **The Netherlands** – AVB: architecture, motorways; STIS: waterborne
- **UK** - UMTS (Urban Traffic Management System)
- **Sweden** – (SRA) multi-modality, focus on major cities, handbooks
- **Finland** – TELEMAR: multi-modal architecture
- **Austria** – TTS-A: towards a national architecture
- **Romania** – NARITS: road ITS, national architecture
- **Czech Rep.** – TEAM: data registry, pilot projects
- also **Slovenia, Hungary, Spain,**

Contribute to FRAME evolution/update (FRAME Forum)

Thank you

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References:

- FRAME: www.frame-online.net
- ARTIST: www.its-artist.rupa.it
- MIZAR: www.miz.it