EasyWay

Annual Forum 2010

Shortcut to the future.

Lisbon • November 16th–18th

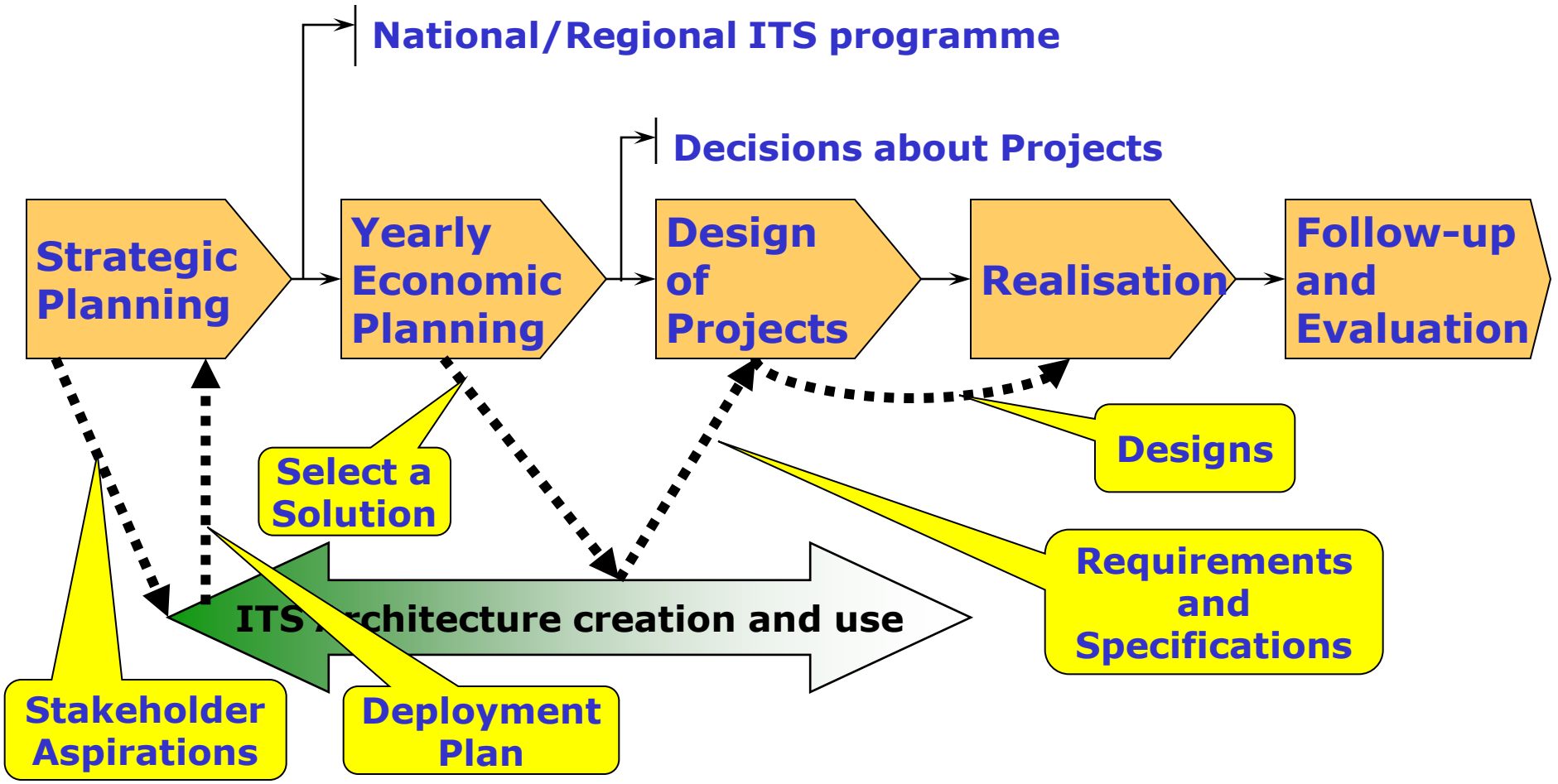
The FRAME Architecture for Cooperative Systems

Richard Bossom & Peter Jesty – E-FRAME Project

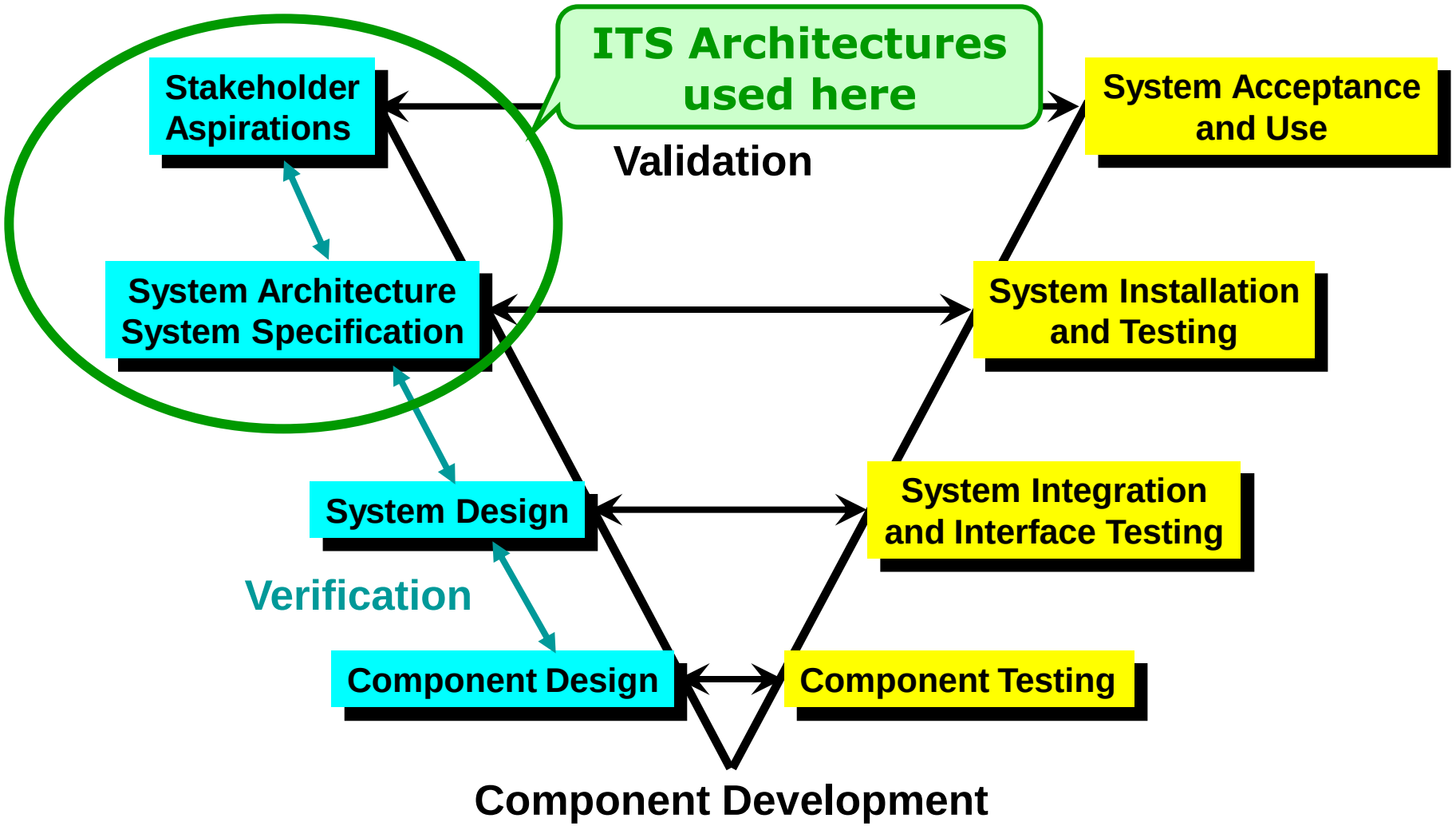
Overview

- When do you use an ITS Architecture?
- What is in the FRAME Architecture?
- How do you use the FRAME Architecture?
- Why use the FRAME Architecture?

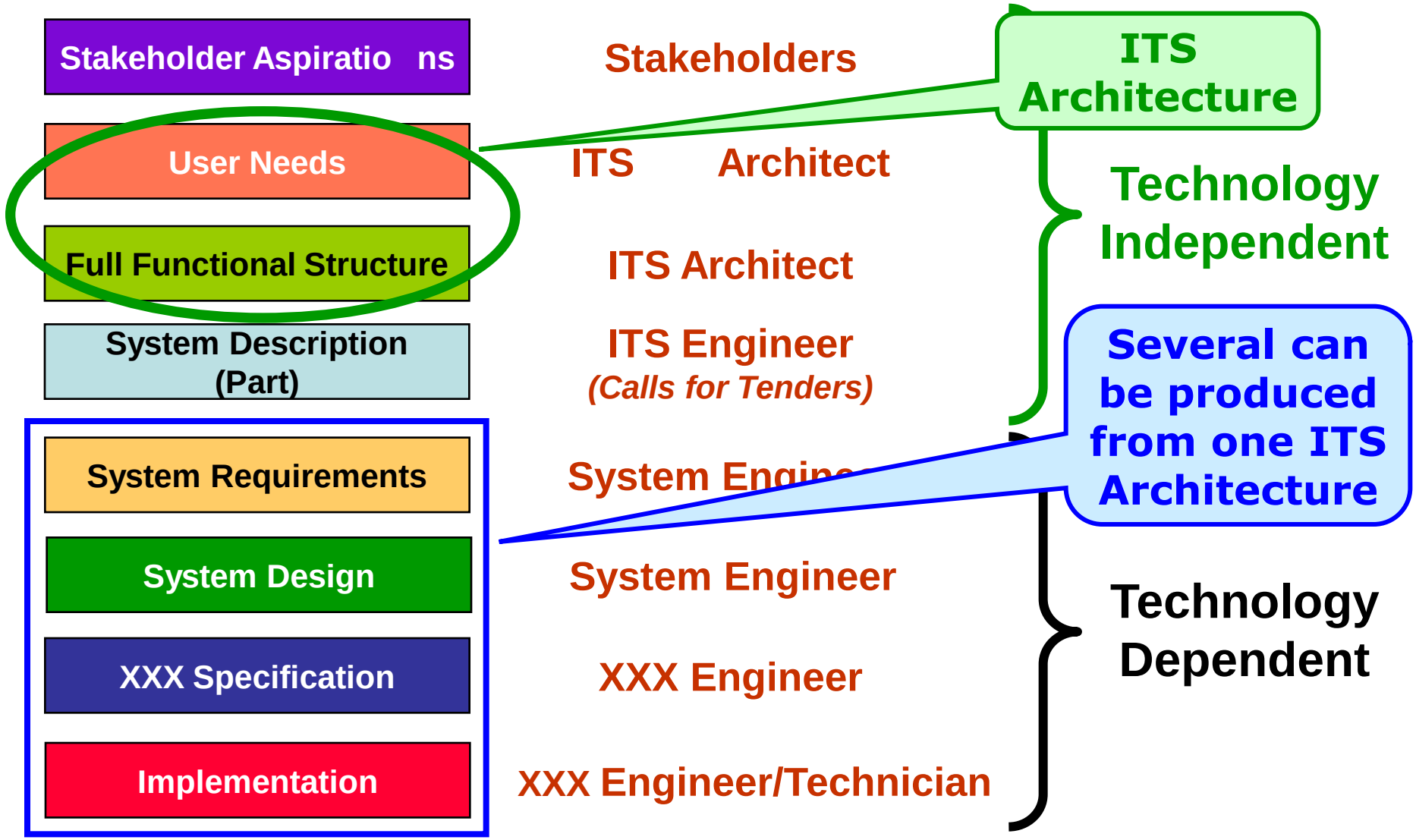
Planning and Deployment



Systems Engineering "V" Model

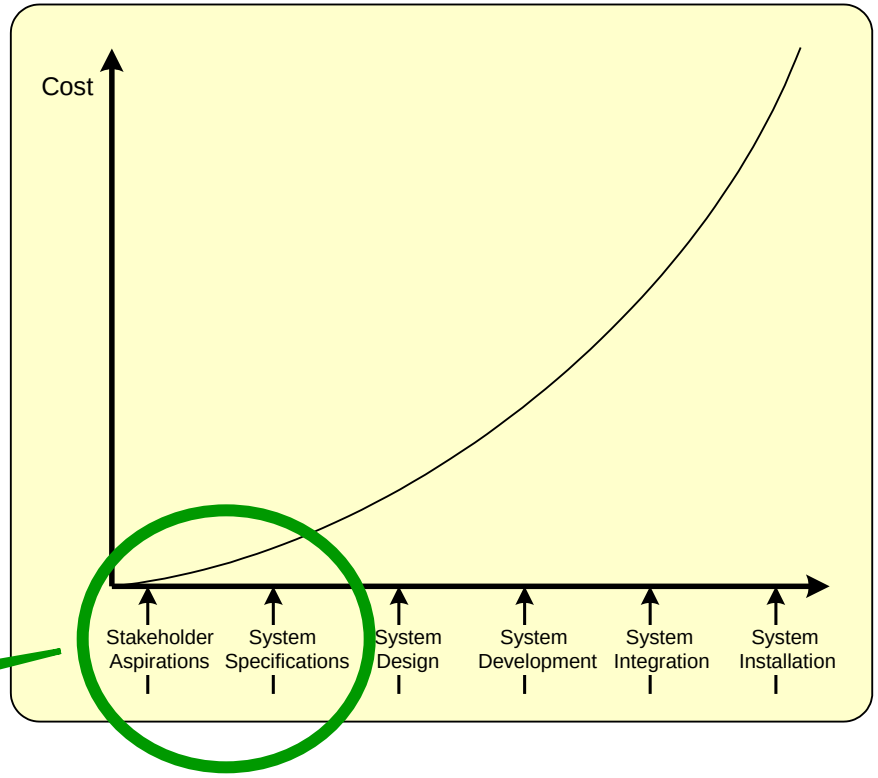


Large ITS Implementation



Impact on Development Costs (10:100:1000 Rule)

- **Cost of fixing problems in System development increases exponentially with time**
- **ITS Architectures can expose these problems early in the development cycle**
- **Early fixing costs less**



Principal Components of an ITS Architecture

- **User Needs** — **Provided by FRAME**
  - Formal statements of what is required
- **Functional Viewpoint**
  - Functions (and data flows) to satisfy the User Needs

- **Physical Viewpoint** — **Different for each ITS Architecture**
  - Location of the functions
- **Communications Viewpoint**
  - Links between locations
- **Organisational Viewpoint**
  - Who owns/manages what

Services in the FRAME Architecture

- **Provide coverage of following areas of ITS:**
  - **Electronic Fee Collection**
  - **Emergency Notification and Response: includes roadside and in-vehicle notification**
  - **Traffic Management: includes Urban, Inter-urban, Parking, Tunnels and Bridges, plus Maintenance**
  - **Public Transport Management: includes Schedules, Fares, and On-demand services**
  - **In-vehicle Systems: includes cooperative systems**
  - **Traveller Assistance: includes pre-journey and on-journey trip planning, plus travel information**
  - **Law Enforcement**
  - **Freight and Fleet Management**

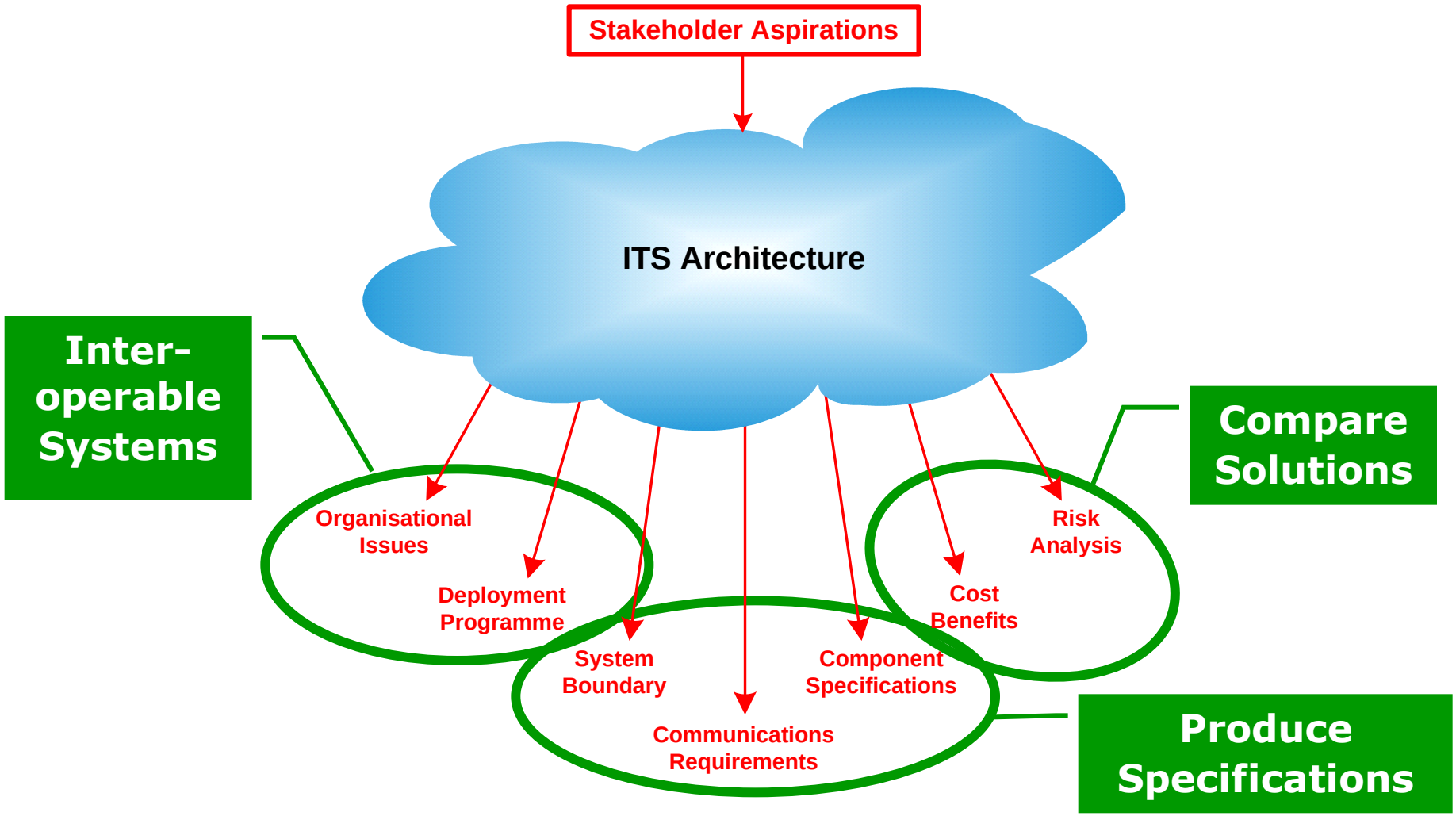
Cooperative Systems Services in the FRAME Architecture

Traffic Safety – Road Hazard Warning
Traffic Safety – Ghost Driver Management
Traffic Safety – Lane Utilisation
Traffic Safety – Speed Management
Traffic Safety – Headway Management
Traffic Safety – Collision Warning
Traffic Safety – Vehicle Breakdown Warning
Traffic Safety – Vulnerable Road User Warning
Traffic Safety – Emergency Vehicle Warning
Traffic Efficiency – Traffic Flow Optimisation
Traffic Efficiency – Adaptive Traffic Signals
Traffic Efficiency – Flexible Lane Allocation
Freight and Fleet Applications – Fleet Management
Freight and Fleet Applications – Hazardous Goods Management
Freight and Fleet Applications – Loading Zone Management
Value-added Services – Enhanced Route Guidance and Navigation
Supporting Services – Service Continuity

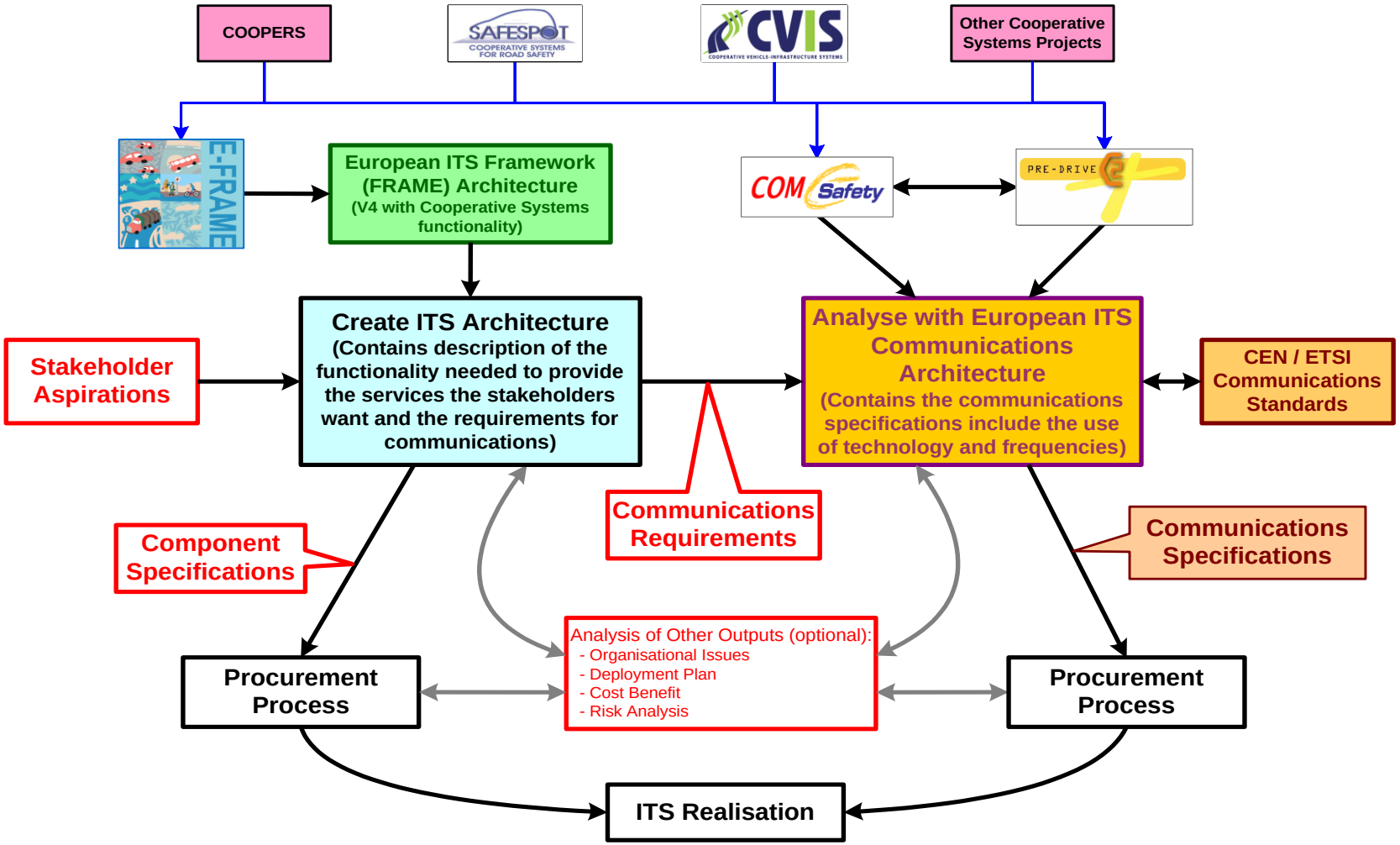
How do you use the FRAME Architecture?

- **FRAME Architecture is available through two tools:**
  - **Selection Tool provides help to create:**
    - A Functional Viewpoint showing the functionality needed to satisfy the local Stakeholder Aspirations
    - One or more Physical Viewpoints of the Functional Viewpoint to show how the functionality can be implemented
  - **Browsing Tool enables a user to see:**
    - Data Flow Diagrams of the entire User Needs and Functional Viewpoint in the FRAME Architecture
    - Descriptions of all the elements
- **Both tools are freely available from the FRAME website: http://www.frame-online.net**

Results from an ITS Architecture



Using the FRAME Architecture to implement ITS



Why use the FRAME Architecture?

- **Cost:**
  - **FRAME Architecture, and its tools are free!**
  - **FRAME Architecture contains about 80% of work that will be needed**
- **Compatibility and Communication:**
  - **A common approach across Europe**
  - **A common planning “language” for neighbours**
- **Knowledge Pool:**
  - **Increasing body of experience available**
  - **FRAME Forum provides opportunity for sharing knowledge and experience**

Thank you for listening

FRAME Architecture Tools + Help and support are available from FRAME website:

http://www.frame-online.net