

TSP History & general principles

First TSP Workshop – 27th of March 2007

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All the space you need



TSP Presentation Plan



**Brief
History**

**General
Principle**

History

Principle

TSP : Why Changing things ?

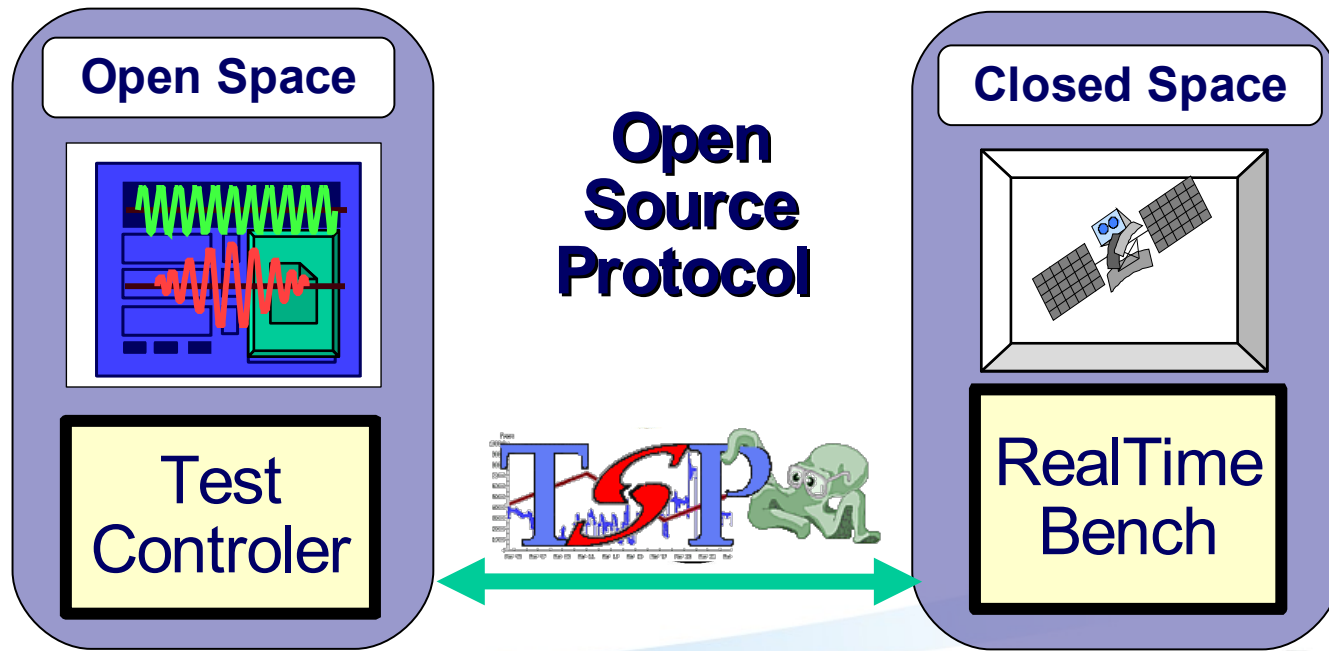


➤ Open Source Power

- Offer free development from community
- No specification for external works
- Improve software quality

➤ Control on Close part

- Keep you business corps
- Allow choice in COTS/make
- Enhance transversal cooperation

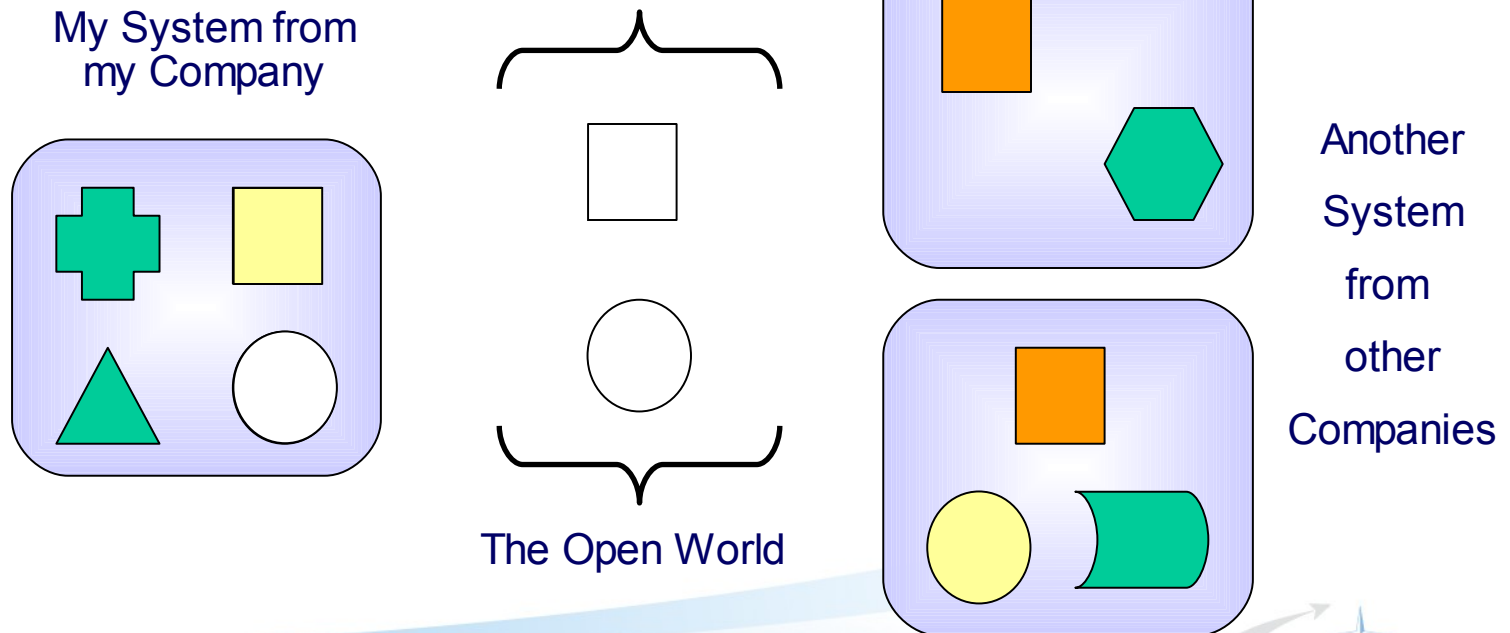


How To Open Source Software ?



- Apply Open Source model to the industry
 - Decide on your business model
 - Open some non critical parts
 - Benefits from outside testing and reuse

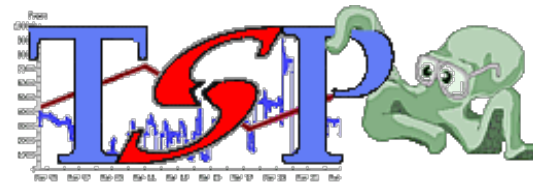
Make+Test
Make
Test
Reuse



TSP: an OSS industrial experience



- Correspond to practical needs
 - Recurrent software needs: Realtime testbeds monitoring
 - Relatively wide applications domains
- Win/Win Industrial partnership (12/2002)
 - EADS-Astrium
 - BT C&SI
- Others industrial using TSP (2003-2006)
 - CNES,
 - Alcatel
 - Others...



History

Principle





TSP in industrial projects

➔ TSP Currents Use

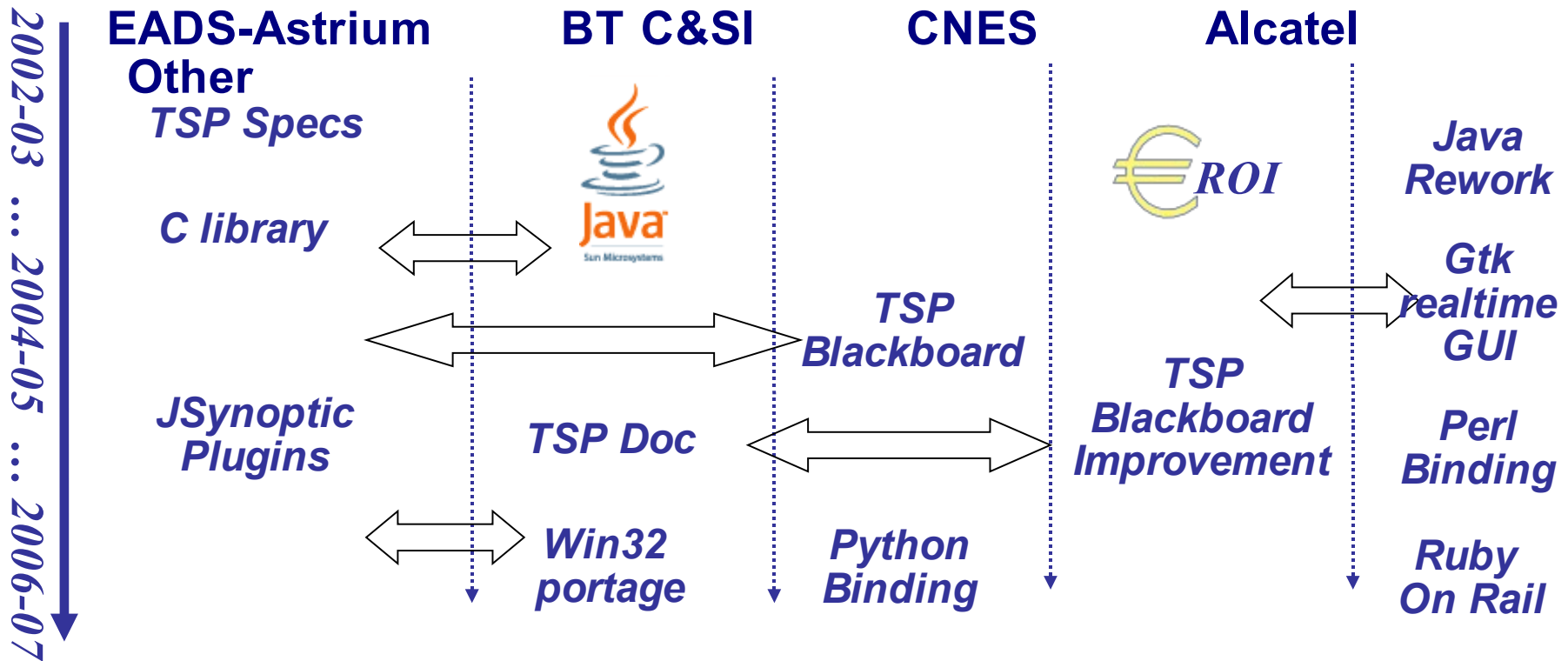
2002
...
2003-2004
...
2005

- **EADS-Astrium** : use TSP for recording/distributing Onboard flight software values (last ex. Pleiades).
- **External Link** : jSynoptic, a generic open solution for monitoring of satellite simulators and validation test beds.
- **CNES** : use in Bach Avionics Simulator Bench for sampling S/C variables and in BASILE forthcoming simulation framework
- **Alcatel** : use in ADSL Satellite Product & Integration Tools, for distributing & monitoring values (> 1 million of data per providers)

TSP : Return on Investissement



⇒ TSP Shared Benefits



⇒ TSP Potential Use

Anyone interested : it's free to use and contribute

<http://savannah.nongnu.org/projects/tsp>



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TSP : Octopus targets

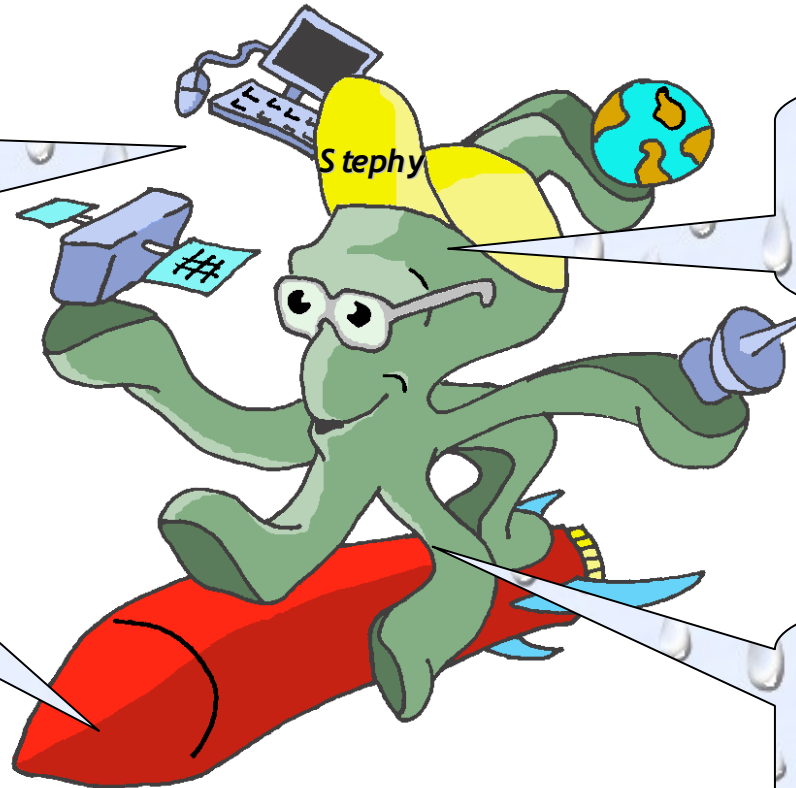


**Dynamic
behaviour**

**Clever inside,
simple outside**

**Built for
speed**

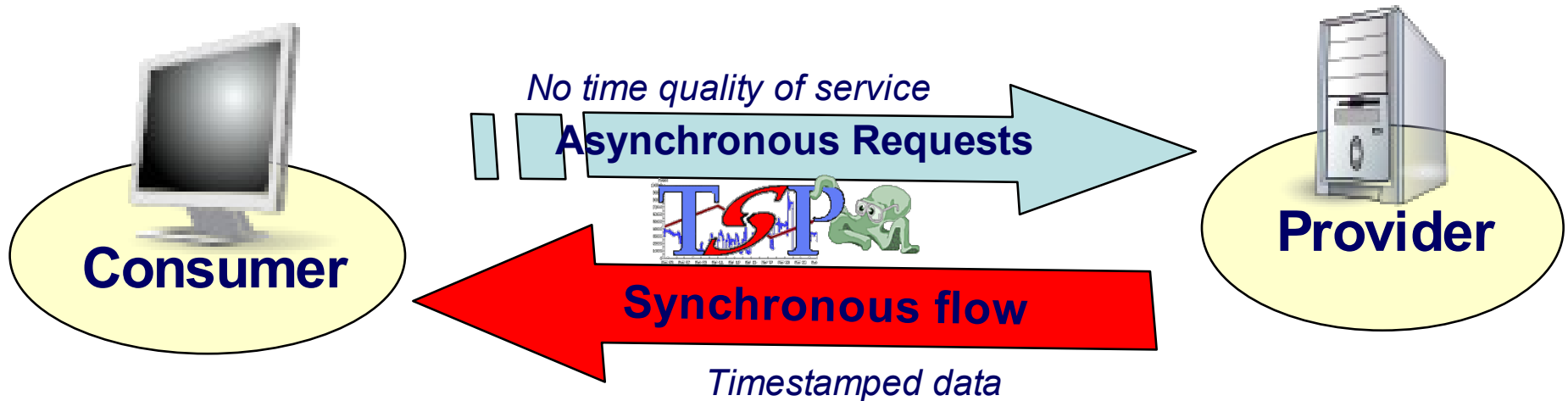
**Free to use
it or not**



TSP Overview



- **OpenSource**,
 - => based on standards (POSIX, TCP/IP, Ansi C, Java...),
 - => allows non proprietary & efficient transport of data
 - => 10000 symbols at 100Hz on a simple Workstation



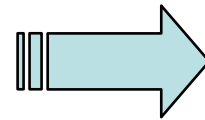
- **Many platforms**, multi-clients/multi-servers, **dynamic** connections => Can be used everywhere, with free & versatile architecture design

Versatile Architecture

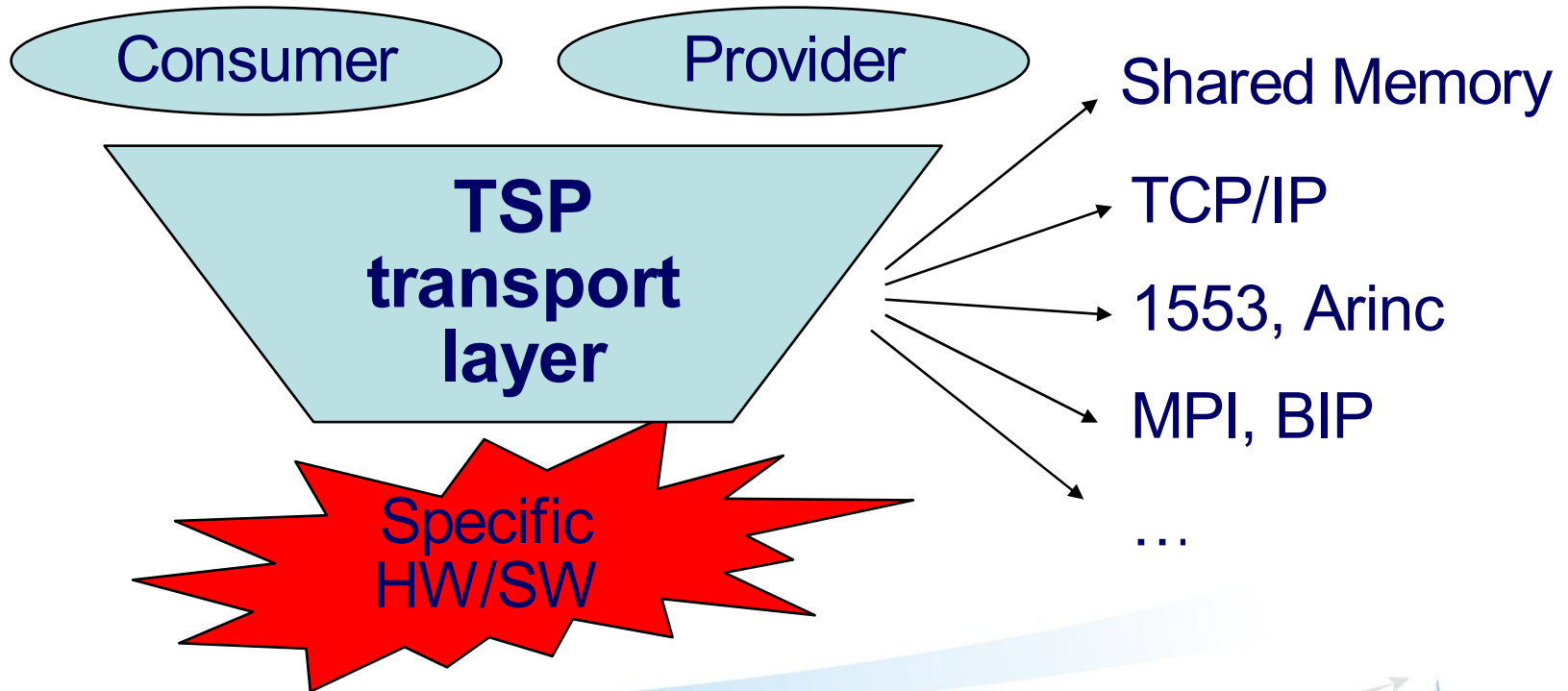


- GUI/Grapher
- File writers
- TSP proxy
- TSP multiplexor
- Proprietary Tools

- HW observer
- SW observer
- File readers
- ...



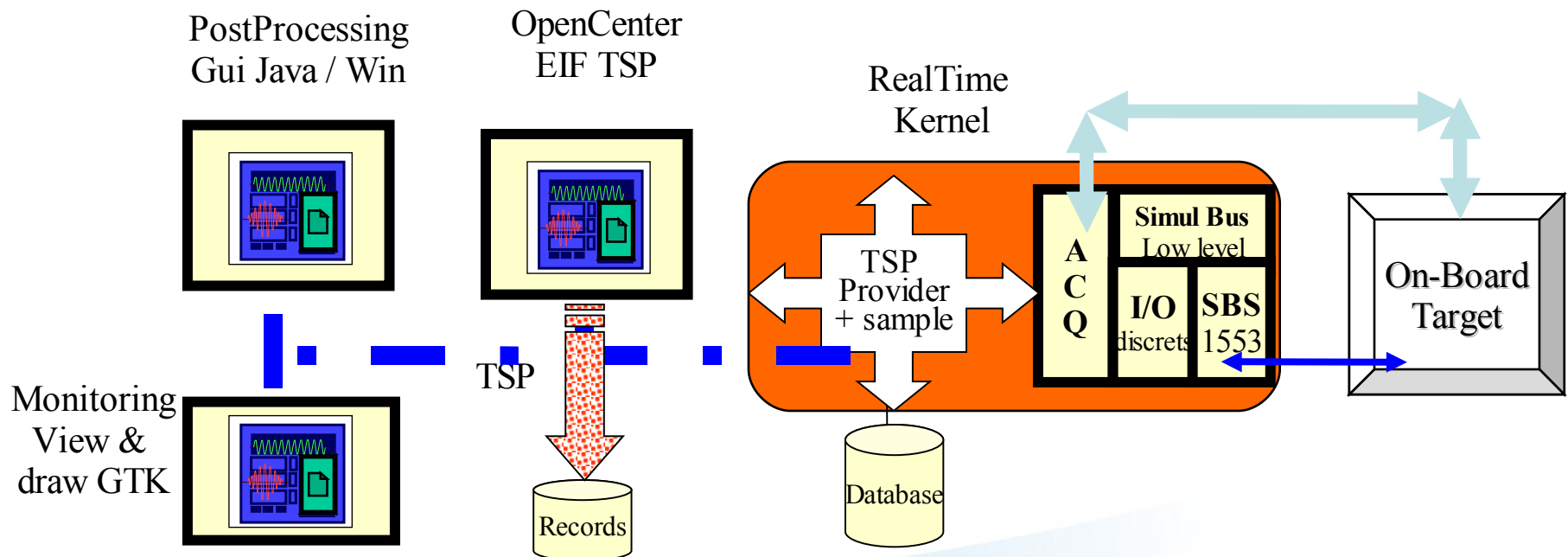
**Wonderfull
Combinatory**



TSP in Astrium



- OpenCenter for test control, Synoptics filtered by EIF TSP
- Java Graphic User Interface for post processing,
- Simple View & Draw for monitoring
- TSP Provider inside real-time Kernel.



Inside TSP 1/2



• Architecture


- Commands through RPC
- Data flow through TCP link

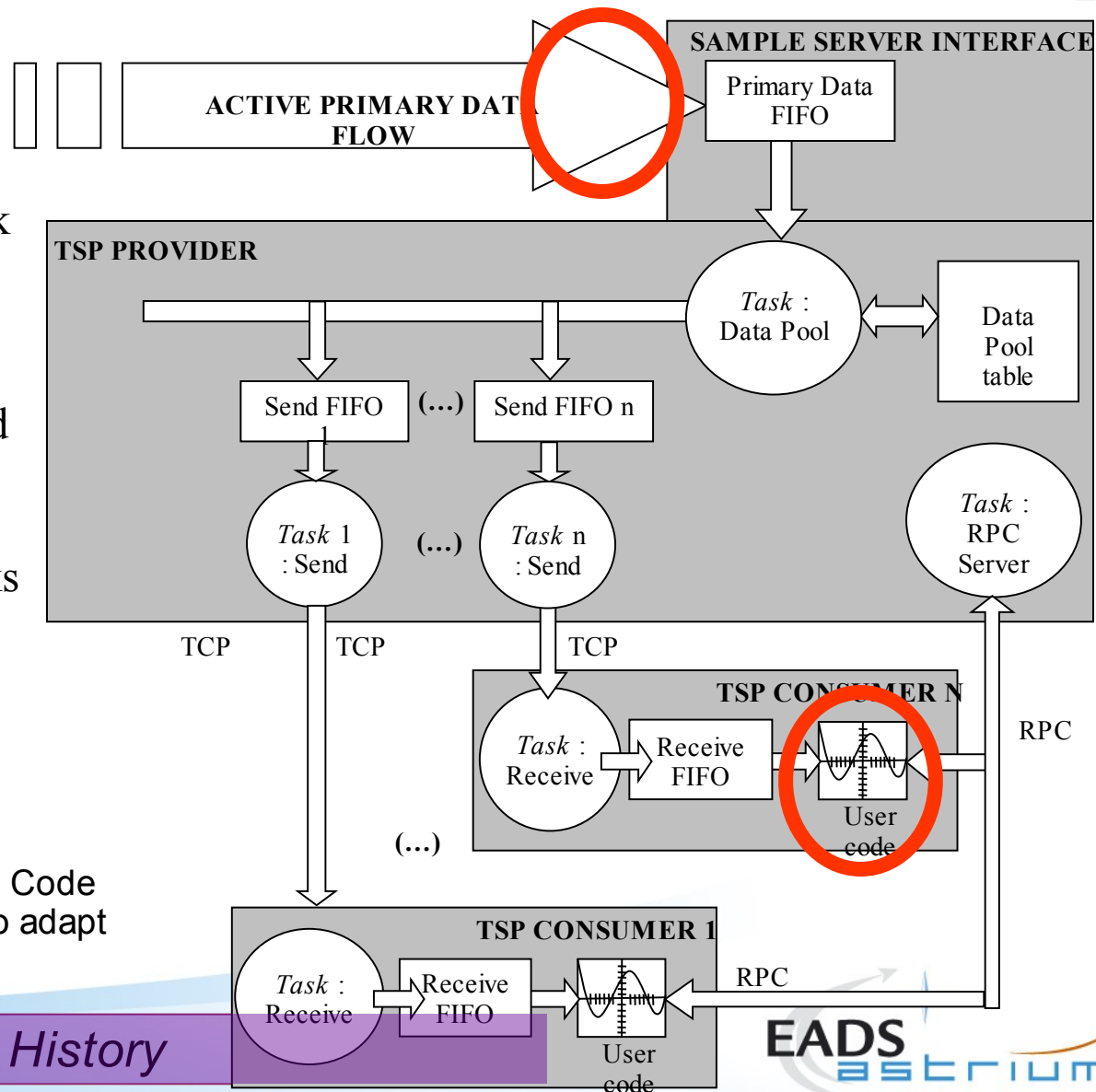
• Constraints

- Amount of data exchanged on the network minimized
- No buffer overflow in case of temporary network breaks

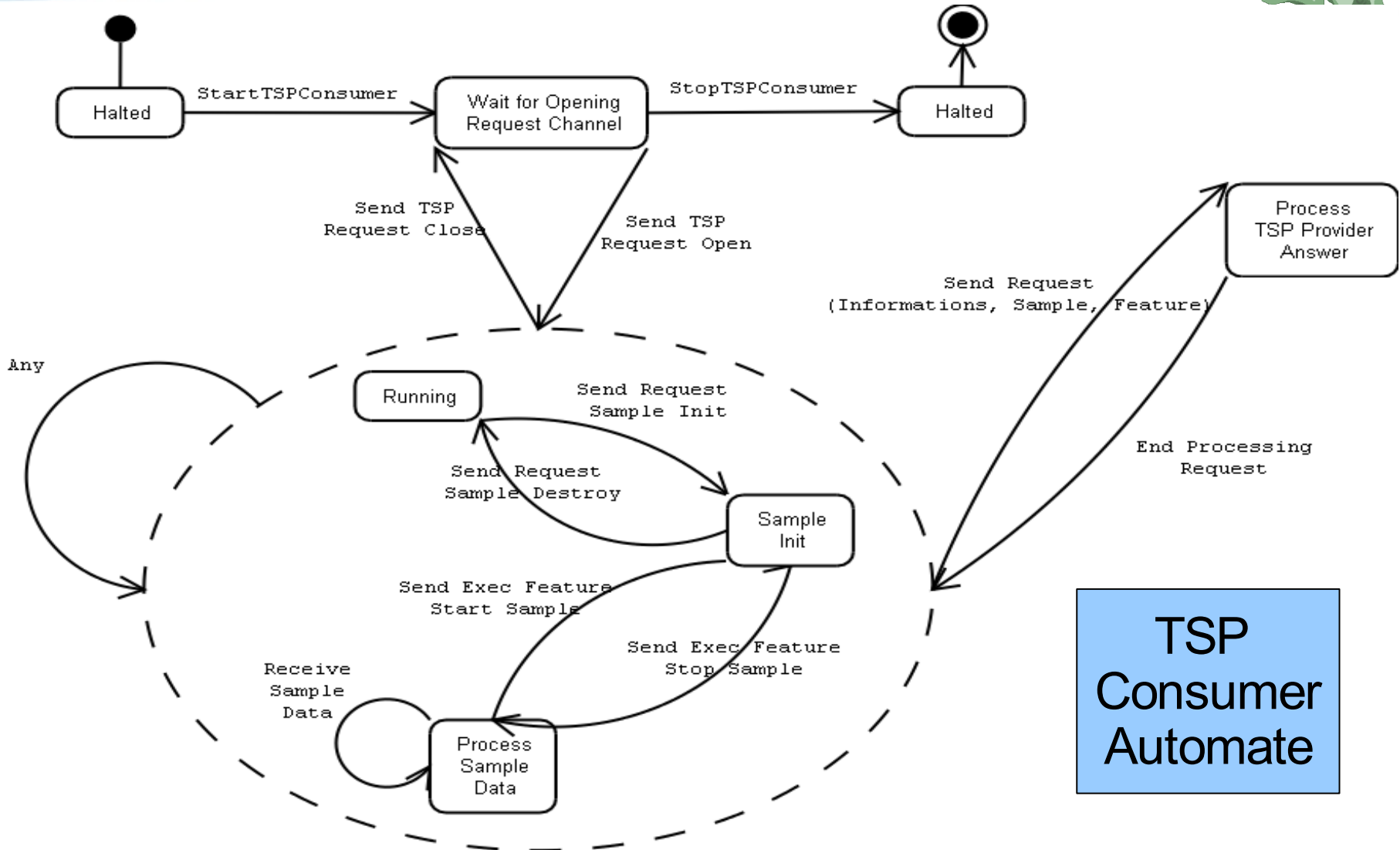
• Benefits

- Few code to implement
- Huge flexibility

 = Code to adapt



Inside TSP 2/2



**TSP
Consumer
Automate**

TSP: <http://savannah.nongnu.org>



Transport Sample Protocol - Summary

Public Areas: **Main** | [Homepage](#) | [Bugs](#) | [Support](#) | [Patches](#) | [Mailing Lists](#) | [Tasks](#) | [News](#) | [CVS](#) | [Files](#)

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This project is not part of the GNU Project.

The Transport Sample Protocol (TSP) goal is to provide a standard interface for data distribution between a provider and several consumers on different hosts, allowing both flexibility and performance aiming at the ease of sampling analysis.

The TSP protocol, which is based on TCP/IP, allows a client to register to a TSP provider for synchronous (or asynchronous) sample delivery. It permits to select a subset of bench symbols at a selected update frequency.

The protocol may be used by several TSP consumer (text, graphical, ...) which will use the obtained symbols for real-time or batch display or post-processing.

Today, this protocol implementation, based on POSIX calls, has been implemented, and tested on Linux, Solaris and Osf1. We are now working on a vxWorks implementation of the TSP provider.

The original need for this project comes from the space industry satellite Validation Benches. In the use of a Validation Bench, many parts of the running software and connected hardware should be monitored. This monitoring traces the evolution over the time of huge numbers of parameters at high frequency (example 100 up to 5000 variables at 128Hz). This is the essence of 'sampling' bench variables subsequently called bench symbols or sample symbols. The different parts of the validation bench may then send a stream of data containing the different values of the queried symbols over time.

License: GNU Lesser General Public License

Developer Info

Project Admins:
[tsp_admin](#)

Developers:
5 [[View Members](#)]

Group id:
3716

History

Principle





TSP : First synoptic

The screenshot displays a Linux desktop with a space-themed background. Several windows are open, showing data plots and a control interface. The desktop includes icons for 'My Computer', 'Scilab 2.6', 'Internet Explorer', 'My Briefcase', 'Network Neighborhood', 'Cywin', 'F-MET Neighborhood', 'Shortcut to todo.xls', 'Microsoft Outlook', 'Shortcut to infos.doc', 'Recycle Bin', 'Windows Explorer', 'BREF GALLE', 'UIE Pa d'accu', 'UIE-NT4 qui s'a', 'TimeSheet', 'protocole', 'suivi-Global...', 'compte rendu 12 septembr...', and 'Shortcut to GTPLOT.bat'. The taskbar at the bottom shows various application icons and the system clock at 14:51.

The main window, titled 'Page 2', displays a table of data points:

Symbol140 : 0,98615795	Symbol131 : 0,98074023	Symbol11 : 0,95634148	Symbol11 : 0,95634148
NiceVariable	NiceVariable	Symbol131 : 0,98074023	Symbol131 : 0,98074023
t : 96514	t : 96514	NiceVariable	t : 96514
Symbol11 : 0,95634148	Symbol11 : 0,95634148	Symbol11 : 0,95634148	Symbol11 : 0,95634148
Symbol131 : 0,98074023	Symbol131 : 0,98074023	Symbol131 : 0,98074023	Symbol131 : 0,98074023
NiceVariable	Symbol140 : 0,98615795	Symbol131 : 0,98074023	NiceVariable
t : 96514	NiceVariable	NiceVariable	t : 96514
Symbol11 : 0,95634148	t : 96514	t : 96514	t : 96514

Other windows include 'Super' and 'Page 1', which show plots of Symbol11 and Symbol110 respectively. The 'TSP gview' window is open in the foreground, showing a 'Displayed pages' section with buttons 1 through 8, a 'Current Configuration File' field set to 'aze.xml', and checkboxes for 'Status' and 'Display messages'. It also features a 'Display frequency (Hz)' dropdown set to '1' and an 'All points displayed' checkbox set to 'YES'.

Any Questions?



Thank you

All the space you need

