Workshop team "Architecture / API"
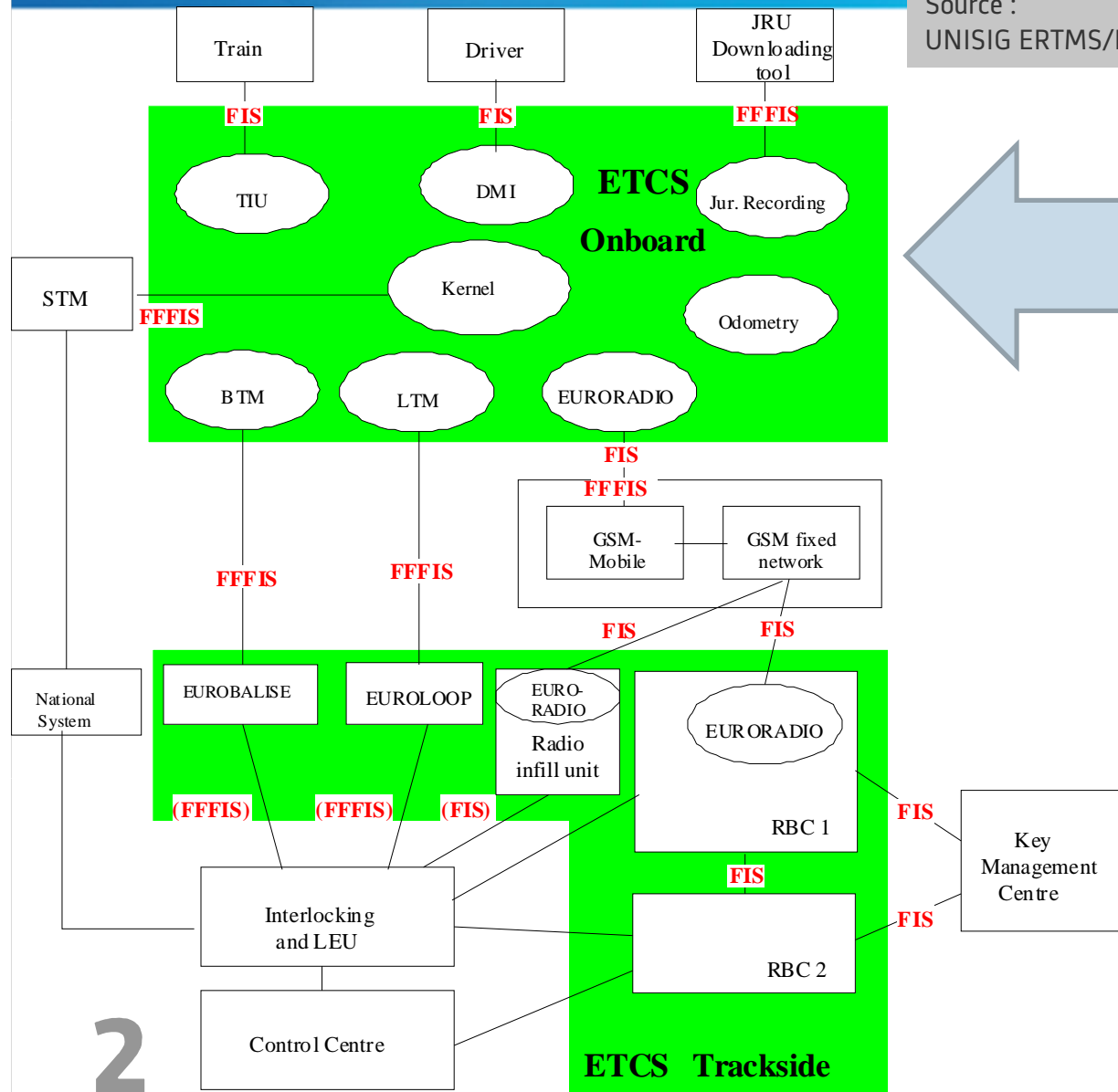
WP 2 meeting Paris 23/11/2012

notes collected by F. Cochetti

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Object of Architecture (OBU):

Source :
UNISIG ERTMS/ETCS reference architecture (SRS subset 26 BL3)

Train

Driver

JRU Downloading tool

FIS   **FIS**   **FFFIS**

ETCS

TIU   DMI   Jur. Recording

Onboard

Kernel

Odometry

STM

FFFIS

BTM   LTM   EURORADIO

FIS
FFFIS

GSM-Mobile   GSM fixed network

FFFIS   **FFFIS**

National System

FIS   **FIS**

EUROBALISE   EUROLOOP   EURO-RADIO

Radio infill unit

EURORADIO

RBC 1

(FFFIS)   **(FFFIS)**   **(FIS)**

FIS

Interlocking and LEU

FIS

Key Management Centre

RBC 2

FIS

Control Centre

ETCS Trackside

2

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Object of Architecture:

Architecture of Software model :

- API + Runtime model (similar as in ARINC / AUTOSAR **environments**)
- Standardization of (communication) **interfaces and API**
- Separation of **safety and non safety relevant software components**
- **Suitable Abstraction level**, to avoid bit level and implementation issues maintaining focus on a logical level
- Avoid the **Hardware interfaces**

Architecture of tools is not in the scope of this team

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Object of Architecture:

Application	YES
API	ADOPT STANDARD
HAL	NO
HW	NO

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Definition of Architecture:

- **Identify independent (separable) functions**.
- **Identify Kernel function** that are needed in order to get a minimal set (core function set) to start with.
- Select a limited subset of function in order to reduce complexity and **facilitate the entry** of new participants,
- Find an **universal method of adding functions (software modularity)**
- Classify separable functions for a possible **processor separation** (processor architecture not included)

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Definition of Architecture:

- **Identify a hierarchy of functions**
- **Identify operating modes** to be considered at beginning

taking cue from real field application as e.g. Betuwe-route (looking for a possibly simple implementation of L2 ETCS)...

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Definition of Architecture (standard API):

existing Architectures / new definitions
Reuse of existing:

- There are 3 companies delivering OBU today, what is the degree of equivalence of different systems ?
- how to reuse existing experience on e.g. how to pass speed ,location data etc. to software ?
- Is it possible to consolidate an API from existing systems ?
- **What degree of HAL was realized** (mixing API with HW) by different suppliers ?

new definitions (defining common standards) :

On the other side breaking system in subcomponents will **help to make design choices regarding the API** and allow to set up a shared standard.

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- What are the **non functional, performance and real time related aspects** to be addressed and where should they be addressed ? They may have impact on safety !

- Which parts will depend on the (WP2 meeting Hardware ?

- How to manage the **tracing of the consequences following any modification on software** (new releases)

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