

openETCS WP 3

openETCS Abstraction Layer + API

openETCS FPP

What the FPP says:

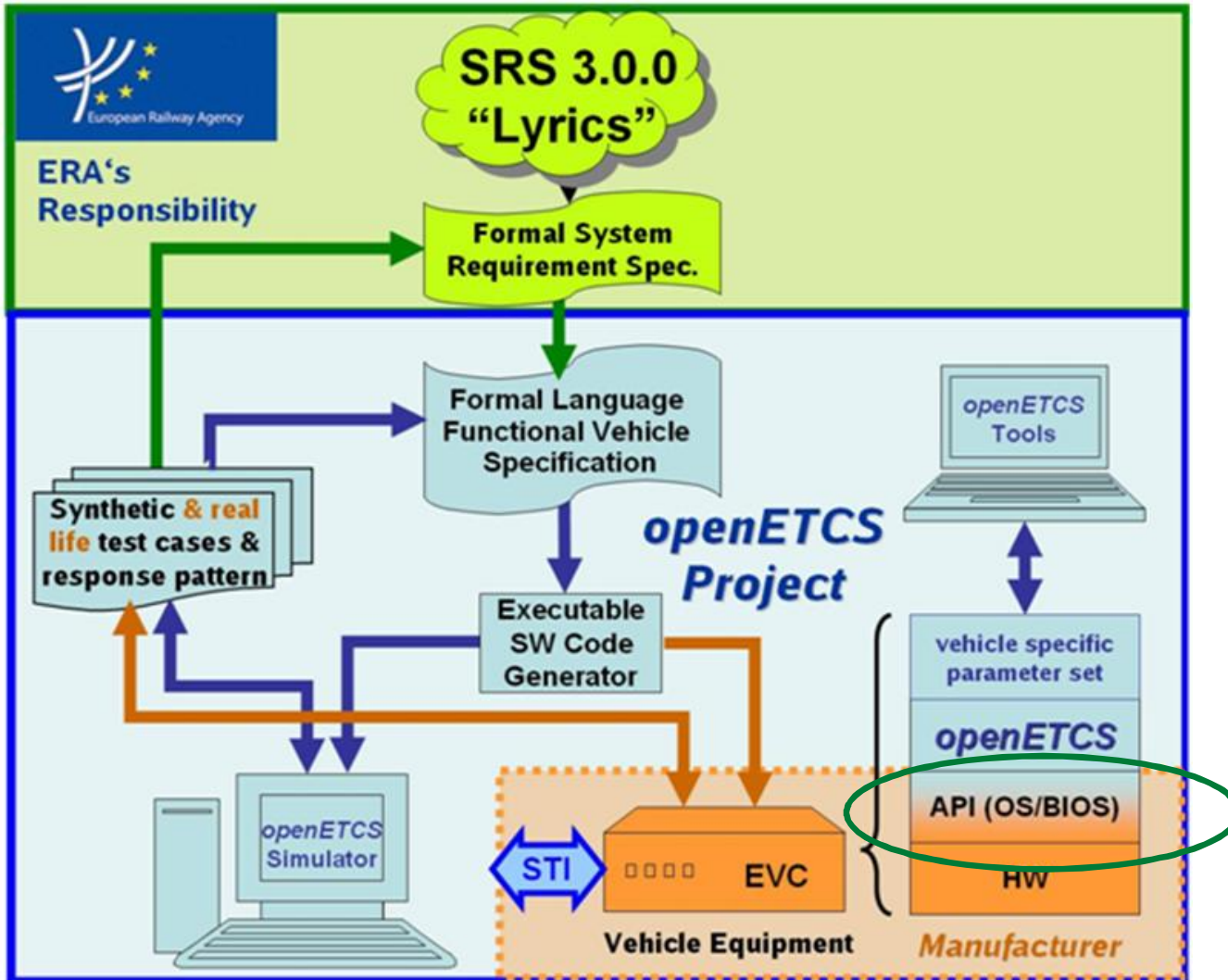
openETCS – kernel and abstraction layer:

“The openETCS platform will be supported by

- an openETCS kernel and
- an openETCS abstraction layer

necessary to support future ETCS hardware platform and virtual systems during long lifecycle.”

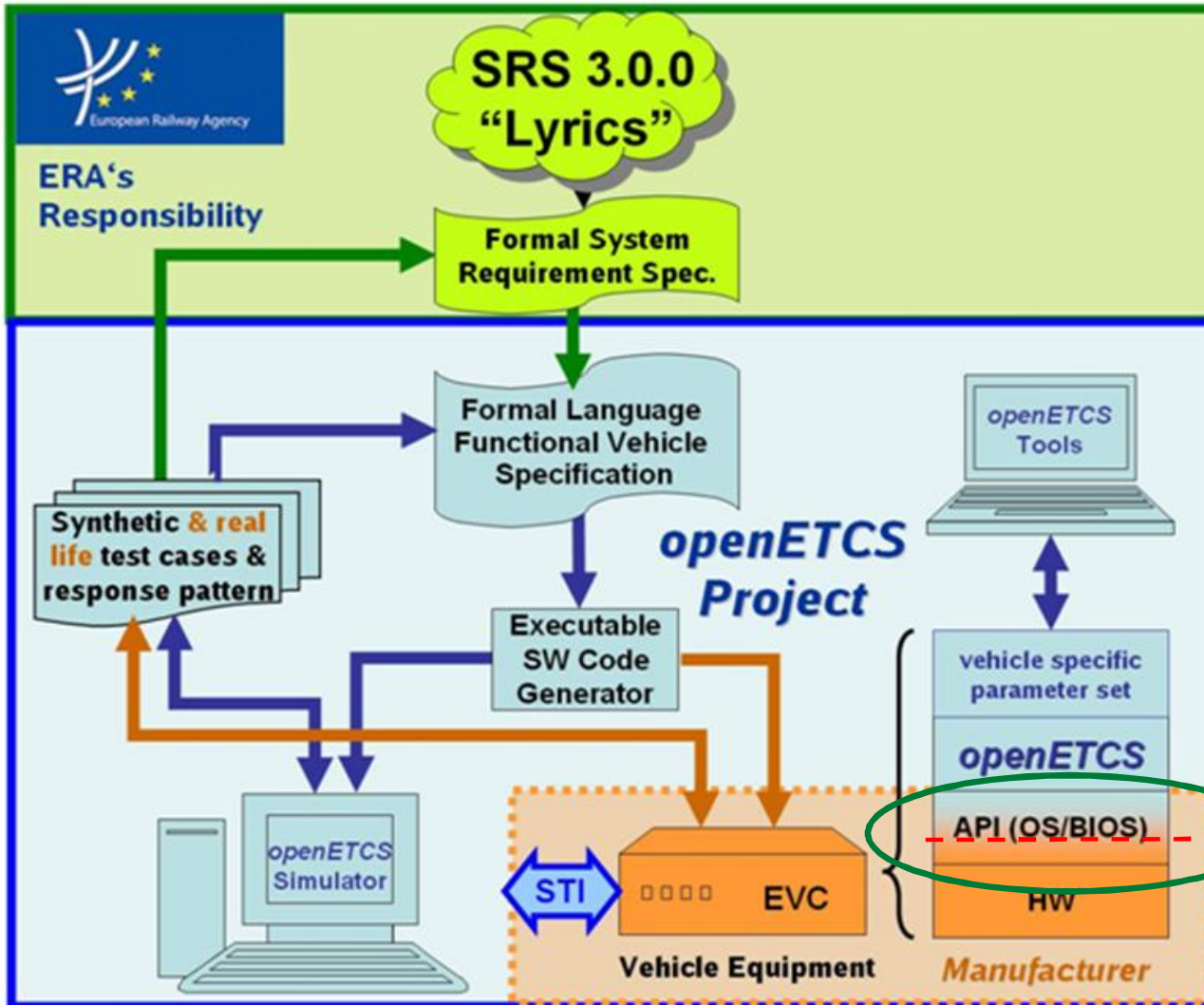
openETCS FPP



The API as seen by the FPP:

- blue: openETCS
- brown: vendor specific

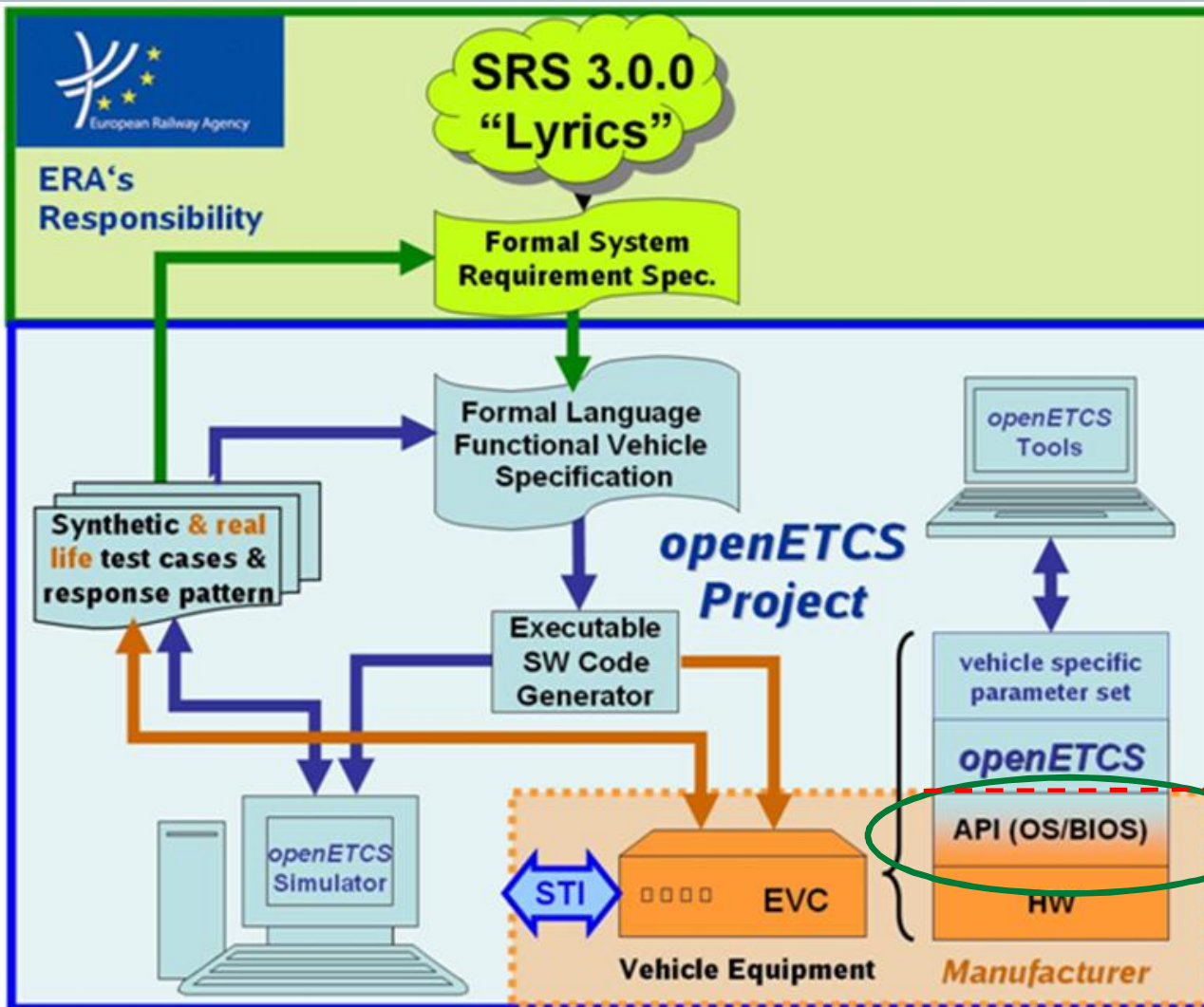
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Location of the Alstom API proposal:

- Interface to the ALSTOM hardware and runtime system
- vendor specific

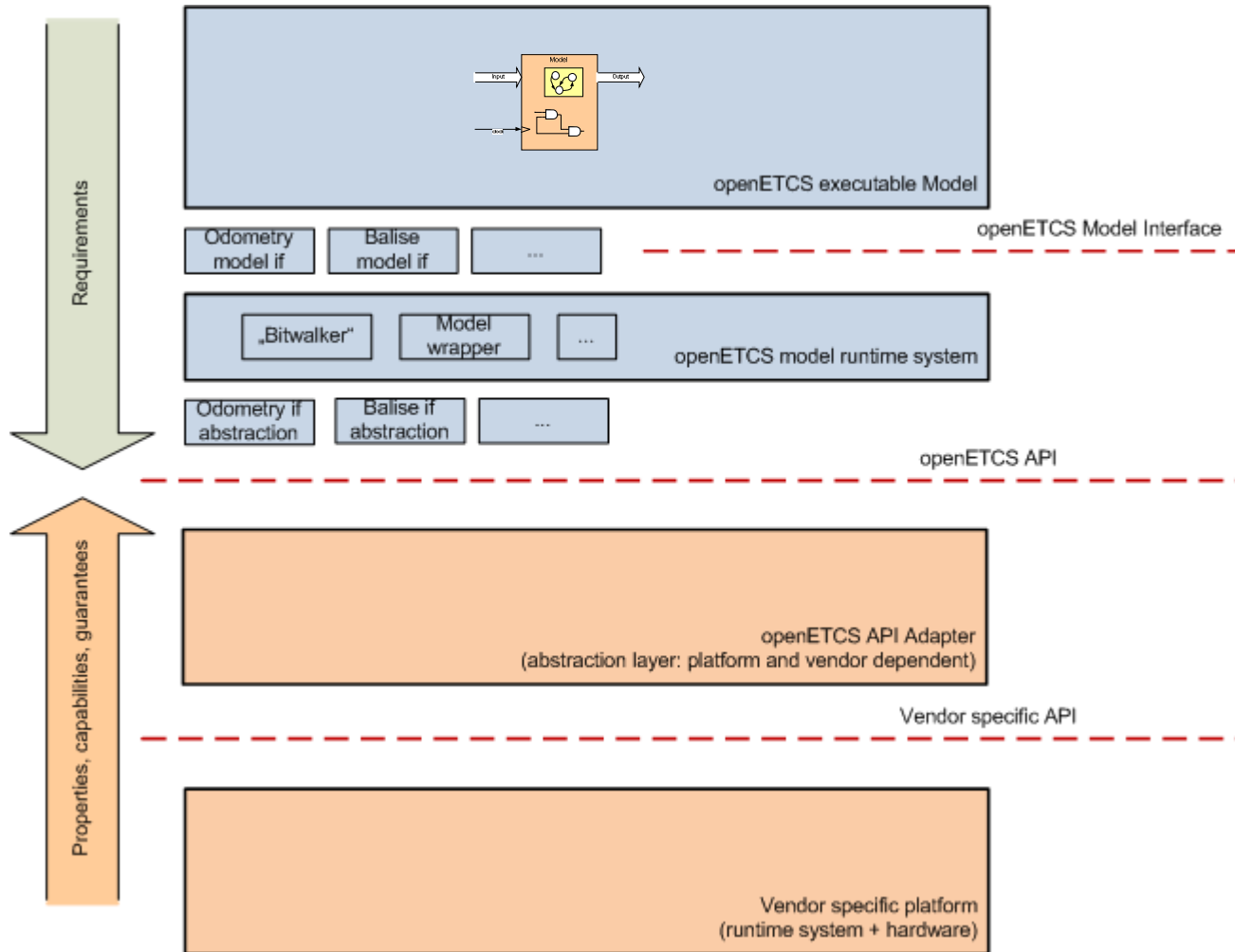
openETCS FPP



OpenETCS requires:

- A common shared platform independent API,
- abstracted from vendor specific HW + SW,
- Supporting future platforms + virtual systems
- During a long lifecycle

openETCS layer structure



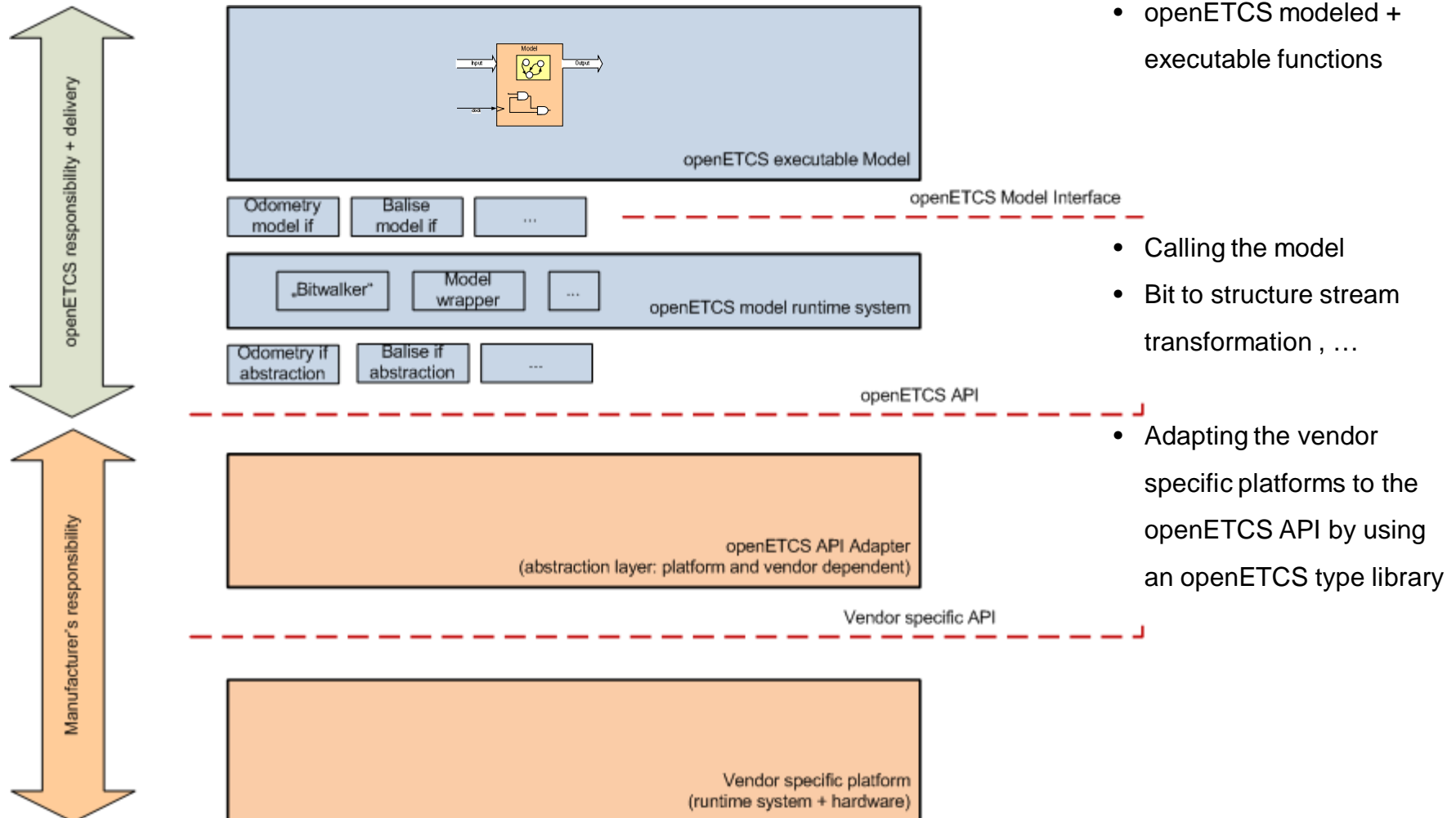
openETCS API derived from

- ETCS requirements
- WP 3 models
- openETCS runtime system

openETCS API specifies

- data model
- behavior
- timing
- restrictions + guarantees

openETCS layer structure



How to specify the openETCS API (1)

The Alstom API proposal

- is a platform dependent and vendor specific API
- is as it is; it's not clear, how it explicitly supports future ETCS platforms and virtual systems as required by the openETCS FPP

WP 3 models require a surrounding runtime system

- to wrap the models and interconnect them with a conventional imperative language driven environment
- to transform between native ETCS bitstreams and the model-friendly structured data types
- to interconnect the model interfaces with the openETCS API

How to specify the openETCS API (2)

Recommendation:

- Derive the openETCS API and openETCS runtime system directly
 - from the ERA ETCS requirements and
 - from the needs of the WP 3 models
 - as abstract as possible
- Elaborate the appropriate
 - data model
 - behavioral model
 - timing constraints and restrictions
 - indispensable capabilities and guaranties to be provided by the underlying platform

How to specify the openETCS API (3)

Recommendation:

- It's the task of an abstraction layer “below” the openETCS API to adapt vendor specific platforms to the openETCS API.
- openETCS should support the adaption of vendor platforms to the openETCS platform with an “openETCS abstraction layer SDK” with all data and function type definitions

Summary

- The Alstom API proposal is a good example for a vendor specific API.
- There are convincing TECHNICAL arguments, why it is more appropriate to derive the openETCS API from the ETCS requirements and the models instead of letting the specifics of a vendor API diffuse into the openETCS models

Last but not least: A non-technical aspect

- Making the Alstom API proposal to become the openETCS API would lead to a preference for a single vendor and a discrimination of all others, who would be the only ones forced to adapt.
- Siemens is really concerned about this.
- The preference of a single manufacturer in a public funded project is an absolute no-go and might become a legal issue.