

ERTMS Deployment

or

“You do not have to be mad to start an ERTMS project, but it helps.”

A user's view by Wim Coenraad

The logo for Movares, featuring a stylized orange and blue graphic above the word "Movares" in white.

vormgeven
aan
bereikbaarheid

What are the similarities between

- ? The Airbus A380,
- ? The Boeing Dreamliner
- ? and ERTMS/ETCS?
- ! Great ideas at the time
- ! However, they all were

.....

Not really on-time / on budget!



Transportation Industry

Comments
ADD YOUR OPINION

ERTMS reaches deployment phase: after a nightmarish start of ETCS Level 2 operations on the Olten-Lucerne line in Switzerland, the latest figures show 99.8% availability and 1.2 minutes total delays in 2007.
national Railway Journal, Dec. 2007

PRINT SHARE RECOMMEND VOTES

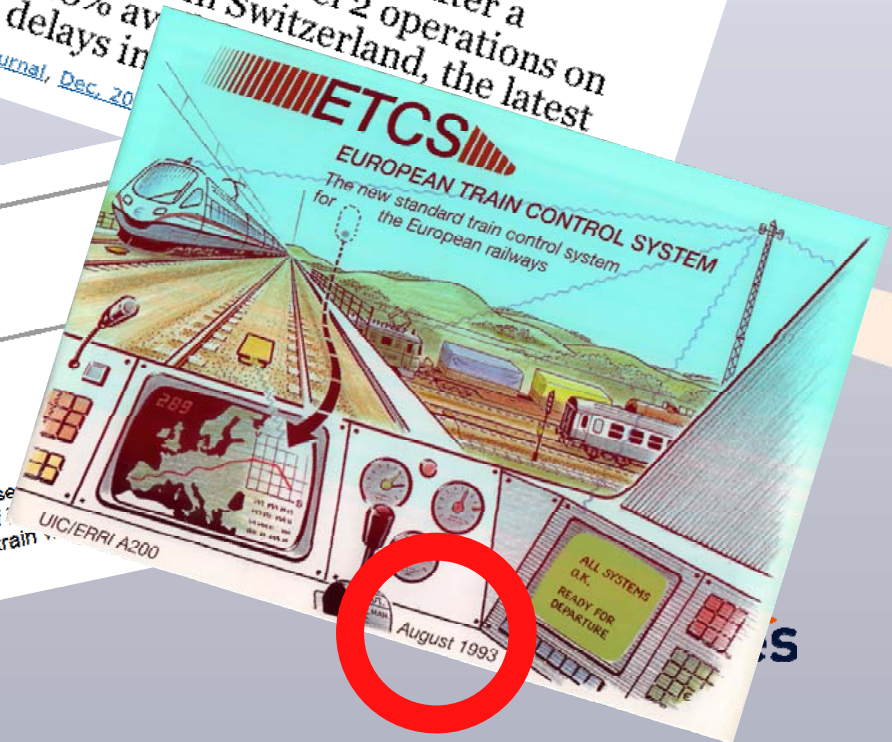


WORLD

Unified system slows high-speed railways

By Robert Wright
Published: January 4 2008 00:54 | Last updated: January 4 2008 00:54

For much of the section of their journey between Antwerp and Rotterdam, passengers on Amsterdam Thalys trains can see the elegant viaducts of the new HSL-Zuid. If they use this dedicated "high-speed line south" from Antwerp to Amsterdam, their train will be able to reach 300kph, cutting an hour off the journey.



Perception is everything!

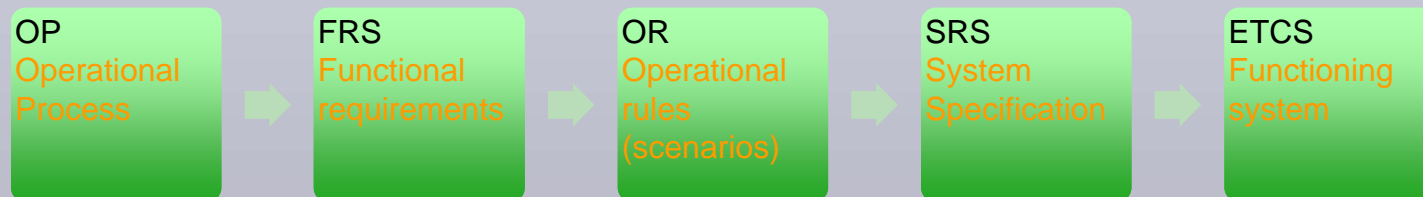


Development time-line

- EU Control Command Initiative 1990
- FRS UIC 1993
- SRS 1996 - 97
- Systems 1999 -
- Project issues / Country specific 1999 -
- Approval issues 2000 –
- Some observations:
 - No formal / single path identifiable:
SRS finished first, FRS was adapted much later
 - Operational Rules not standardized
 - Projects (both customers and suppliers) (understandably) made their own interpretations (Spain, Corridor 2007, NL, Switzerland)
 - Etc, etc.

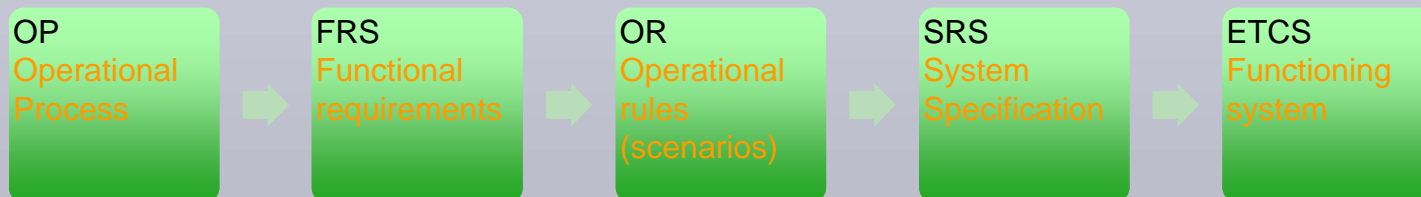
Perspective / System Engineering

- In an ideal world the existing way of operating (OP) is captured in:
 - a functional requirement specification (FRS) and
 - a set of operational rules (OR)
- This is then transformed in a System Requirement Specification (SRS) which is the basis for
- Implementing a physical system to be used



But, the world is not ideal

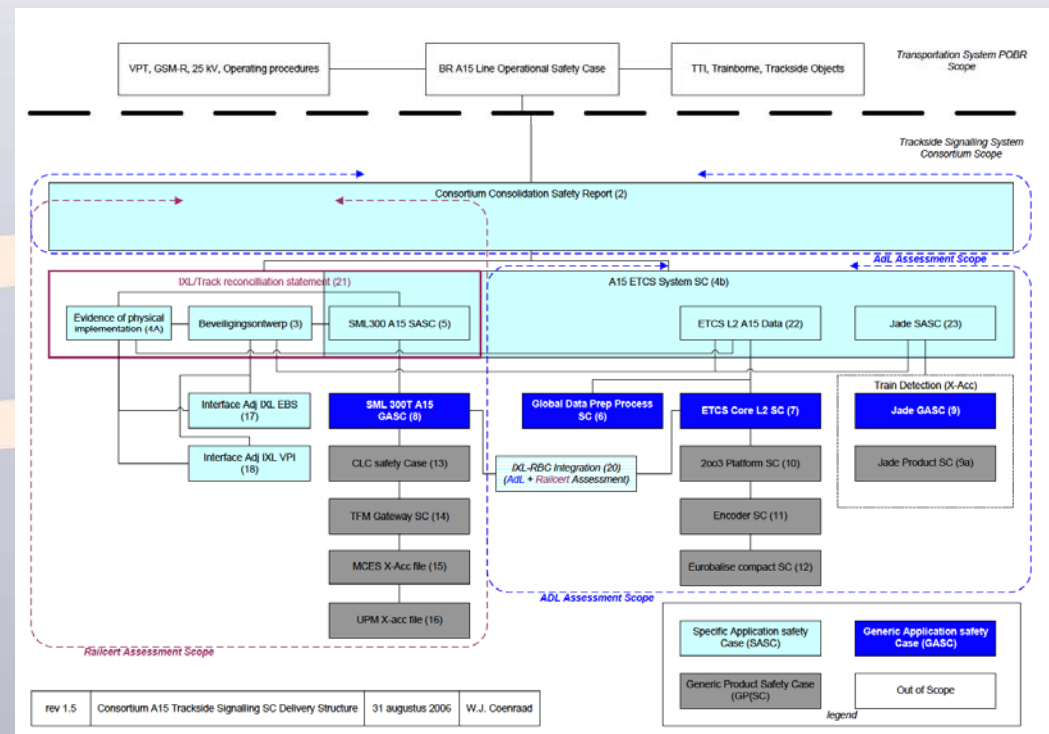
- Operational rules are neither standardised nor clear
- FRS and OR are in many cases ambiguous
- SRS is a translation – needs to be validated
- Systems are based on interpretations, variety is an inevitable, as is an outcome of ambiguity and cultural differences
- Projects and suppliers make their own interpretations
- Conclusion is that **** happens: good intentions do not always provide the intended outcome





ERTMS interfaces

- Technical
- Commercial
- Project
 - Infra Operator
 - Supplier
 - Railway Operator
 - Regulator
 - Isa/NoBo
 - ERA/EU
- and





The forgotten Interface

Vendor Interoperability

- We have TSI's, FFFIS, NoBo's, but:
- No mechanism to enforce vendor interoperability
- By end-2009, ERTMS/ETCS worked pretty well
 - In level 1
 - In single supplier / single operator environments
- but
 - Supplier interoperability in level 2 still is a minefield
 - Do not attempt a cross-border international high speed line!



The Results

- Huge project delays
- Huge cost overruns
- The users have had to take the lead
- A plethora of SRS versions
- Expensive workarounds;
Dual Signalling





The Track Record to Date

- Luzern-Olten
- Bern-Olten
- Lötschberg
- HSL-Zuid
- Betuweroute /
Havenspoorlijn





Reasons are not excuses!

- **Complexity of multi user, multi nation, multi supplier development**
- **Never tested or done before on this scale?**
- **Lack of harmonised operational rules**
- **Despite EMSET, Mp-Lw-Mt-HI**
- **Despite SRS updates**
- **Why is it always the other guy's fault and problem?**



Mitigating the Interface Risk

- **SRS 2.3.0d: Show me! The evidence has not been delivered yet**
- **Do not use my railway/project/business as a test bed**
- **A new Interoperability Demonstrator**
- **A real multi everything and everybody test bed**
- **Reliability growth modelling**

HSL-Zuid nog steeds last van haperingen

