

openETCS Competence Matrix Record Template

Personnel		Company					
Areas of expertise			Participant_1	Participant_2		Participant_n	
Application of CENELEC Standards							
EN 50126							
EN 50129							
EN 50128							
...							
Application of railway regulations							
French national regulations							
German national regulations							
Experience in Application Domain ERTMS/ETCS							
Train Development							
Track Development							
Control and Signalling System Development							
Operations							
Experience in Application Domain safety attributes of ERTMS/ETCS							
Hazard and risk analysis of safety-related railway systems							
FTA							
FMEA							
FMECA							
HAZOP							
...							

Requirements engineering						
System requirement techniques						
Software requirement techniques						
Formal methods						
Structured methodology						
Requirements Modelling						
Tool: Doors						
Tool: ProR						
Development of safety-related systems						
System architecture techniques						
System design approach: V - Modell Development						
System design approach: Agile Development						
System safety design principles						
Model based system design: SysML						
Model based system design: Event-B						
Model based system design: Petri nets						
Development of software for safety-related systems						
Software Configuration Management						
Software architecture techniques						
Open Source Software Development principles						
Software design techniques: V-Model Software Development						
Software design techniques: Agile Software Development						
Model based software design: UML						

Model based software design: VDM						
Model based software design: z-, B-Method						
Model based software design: System C						
Model based software design: other formal methods						
Language ADA and coding standards						
Language C, C+ and coding standards						
Tool: Papyrus						
Testing, verification and validation of safety-related systems ERTMS/ETCS Test Specifications						
Safety related system test techniques (verification & validation)						
Model based system test techniques						
Formal verification techniques						
Formal validation techniques						
Testing, verification and validation of software for safety-critical systems Functional Software verification and validation techniques						
Software performance verification and validation techniques						
Safety related software verification and validation techniques						
Model based software test techniques						
Interface testing						
Implementation testing						
Assessment of safety-related railway systems and software						

ERTMS/ETCS system context assessment							
Safety related system assessment techniques							
Safety related software assessment techniques							
Process assessment							
Tool assessment							
Acceptance/licence from recognised safety authority							