



ComplyPro

Rail Progressive Assurance Software

ComplyPro simplifies the delivery of progressive assurance on complex rail projects, reducing the cost and time typically associated with poor design visibility and lack of compliance during the build phase. Progressive assurance is an advanced methodology supported by fundamental systems engineering and assurance concepts and principles that provides a structured project-wide framework to deliver systems, technical, and safety assurance across infrastructure projects.

Manage Assurance of the Design and Delivery Process

The application deciphers the governance of assurance processes, allowing your teams to manage assurance of the design and delivery process collaboratively. This reduces the need for costly parallel assurance processes and increases the integrity, efficiency, and quality of design and delivery.

ComplyPro enables rail users to adopt a unified approach to compliance and assurance, providing greater visibility into project health and flagging issues much earlier than traditional methods allow. You can trace high-level project requirements and their decomposition through design and delivery to ensure compliance. As requirements and their inter-dependencies are fully traceable, this enables the rapid assessment of the impact and cost of change as it occurs across the project.

Railways Use ComplyPro to:

- Support a systems engineering approach and best practice for rail projects
- Deliver a progressive assurance capability for improved visibility of project progress and health
- Centralize assurance expertise, reduce silo engineering, and improve engineering efficiency
- Demonstrate compliance with recognized safety standards
- Mitigate risks associated with project lifecycle processes to achieve fully assured and compliant projects
- Improve delivery performance by ensuring the project meets reliability and maintainability objectives
- Reduce costly delays and overruns by continuously assuring the project throughout the lifecycle
- Speed up the entire project by ensuring a readily available flow of information

ComplyPro Capabilities

Rail Project Requirement Management

Ensuring that you have a robust requirements management process is the foundation of any large infrastructure program. With ComplyPro you can clearly



Manage rail project requirements.

define, document, and manage project requirements. The application enables your teams to raise, log, track, and resolve issues throughout the project lifecycle and maintain them in a register so they are recognized and dealt with efficiently.

Smarter Rail Project Specification Development

ComplyPro enables you to advance project specifications from the earliest conceptual stage to ensure that cross-discipline expertise and knowledge are merged to deliver smarter, better-engineered solutions.

Collaborate with Multi-discipline Design Teams

Streamline your design workflows with global worksharing and collaboration across your distributed design teams. ComplyPro allows you to remove geographic and technology boundaries so that each project team member can find, track, share, and reuse project information, engineering data, and communications for active team participation.

Effectively Manage Complexity

ComplyPro ensures that inter-related information is clearly documented, visible and traceable across the project team ensuring nothing is missed and teams can assess the impact of unforeseen changes, top down or bottom up. This allows the project team to make informed decisions and react before critical milestones.

Manage Project Requirements

Define, document, prioritize, and trace the fulfillment of multiple types of requirements. Requirements management is a continuous process that links design specifications to mandated requirements and ensures operational and regulatory compliance. Information is updated in real time, automatically propagated, and made accessible to stakeholders when and where it is needed.

System Requirements

Requires the use of an up-to-date Internet browser, including:

- Microsoft Internet Explorer
- Microsoft Edge
- Google Chrome
- Mozilla Firefox
- Apple Safari

Requires the installation of an up-to-date version of Citrix Receiver (requiring a minimum of 500MB free disk space and 1GB RAM)

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Reduce Risk and Manage Safety Hazards

ComplyPro provides stakeholders and management teams with unprecedented and progressive visibility of the true health and progress of a project. You can identify, record, analyze, and implement measures to mitigate and control

ComplyPro At-A-Glance

- Support a system's engineering approach and best practice for rail infrastructure projects
- Centralize expertise, reduce silo engineering, and improve engineering efficiency
- Promote collective understanding through access to a single project-wide assurance database
- Elicit, document, and manage project requirements and track stakeholder requirements throughout the entire project lifecycle
- Create traceability links between verification and validation evidence and project functional requirements as a basis of progressive assurance approach
- Collaboratively develop rail project specifications
- Raise, log, track, and resolve design issues and assumptions
- Identify, manage, control, and mitigate project-wide safety hazards
- Set benchmarks to enable effective project and budget management
- Systematically manage systems interfaces across the project and contractual boundaries
- Stay on top of changes in standards and regulations
- Use "management by exception" to identify assurance "hot spots" and improve engineering management efficiency
- Assess the impact of unforeseen changes to make informed decisions and react before critical milestones
- Engage collaboratively around a single view of the evolving project specification
- Remove error-prone and fragmented practices and improve project design and delivery efficiency
- Reduce rework costs by identifying issues earlier
- Immediately highlight inconsistencies between specification, design, and deliverables
- Quickly see the impact of change and more accurately assess the cost of change

the effects of safety hazards. State-of-the-art real-time dashboards aggregate project assurance information to allow management to manage by exception – dramatically reducing the opportunity for corporate risk.

Operating Mode	Hazard Description	Hazard Cause	Effect/Consequence	Exposed Design	Linked Safeguard ID	Linked Safeguard Owner	Linked Safeguard Description	Linked Safeguard Status	Linked Safeguard Evidence Reports	IS	IF	Link	Link
Normal	Collision between trains	Non-communicating train enters reserved route	Collision with VTO train. Multiple fatalities and/or injuries to passengers.	Passengers	CH-350	SATC	All metro trains and self-propelled vehicles to be fitted with VTO equipment.	Proposed		51	F4	R2	CH-1
Degraded	Collision between trains	Driver or Control Room error	Injuries to passengers and/or Train Operator.	Passengers Staff	CH-356	Maintenance Vehicle	Speed restricted to 20 mph to allow safe line of sight driving.	Open		52	F4	R2	CH-28
					CH-357	ET	Dashworthiness specification.	New					
Normal	Collision with power cables	Power cables fall on track	Damage to train. Possible injuries to passengers. Possible death.	Passengers	CH-175	VGG1	Detailed design to empower line to achieve the required clearance.	Open	*** Evidence Not Accepted (DCP Agreement Status = Draft)	52	F5	R3	
Normal	External fire	None specifically identified	Smoke inhalation injures to passengers.	Passengers	CH-375		Design protective framework.	New		51	F5	R3	CH-19
					CH-388		Tunnel ventilation.						
					CH-389		Station and tunnel fire alarm monitoring by Signaling. Prevent train from entering the zone.						
Emergency	Toxic fumes and smoke	Fire in station	Fatalities and Smoke inhalation injures to passengers.	Passengers	CH-721		USOH cables used.	Proposed		52	F4	R3	
					CH-732		Design free-standing machines in stainless steel cases to reduce risk of spread of fire, internal fire contained by lack of oxygen within case.	Open					
Emergency	Toxic fumes and smoke	Fire on train in tunnel	Train evacuation leads to Smoke inhalation injures to passengers.	Passengers	CH-689		Option to close fare gates, stop escalators.			51	F5	R3	CH-18
Normal	Overcrowding in stations / ruffing into track	Crushing passenger flow, peak hours or major festival.	Fatalities and possible injuries to passengers (pushing, fall down stairs / escalator, fall from platform)	Passengers	CH-650	CMRP	Passenger flow simulations addressed in architectural design.	Open	*** Evidence Not Accepted (DCP Agreement Status = Draft)	53	F5	R3	CH-15
					CH-269		ICTV surveillance						
					CH-681	APG	Control of lifts and escalators from Station Control Room.	Linked	*** Evidence Not Accepted (DCP Agreement Status = Draft)	52	F4	R3	
Normal	Unauthorized access to track	Access via platform end door or PSD	Person hit by train. Death/injury injures to passengers from Conductor Rail.	Passengers	CH-277		Platform Screen Doors installed on above ground stations.			52	F4	R3	
					CH-280		Echo magnetic locks.						
					CH-240		SAC control on Platform Screen Door.						
Normal	Collision with walkway during clearance	Walkway intrudes into structure gauge if swept envelope of derailed train	Damage to train and walkway. Possible injuries to passengers.	Passengers System	CH-236		Removable walkway edge.			51	F5	R3	
Normal	Collision with platform edge	Platform edge intrudes into structure gauge	Damage to train. Possible injuries to passengers.	Passengers System	CH-271		Rubber curb platform gap fill.			52	F5	R3	
					CH-272	LDC STN	Tipped end to platform to "bed up" derailed train on approach to platform.		*** Evidence Not Accepted (DCP Agreement Status = Draft)				
					CH-173		Speed restriction for above-ground platforms to reduce HE (wind effects)						
Degraded	Pressure pulse damage to PSDs	High speed train through underground platform	Damage to PSDs. Possible injuries to passengers on platform.	Passengers System	CH-174		Assess maximum pressure pulse, and if necessary, apply permanent speed restriction through platform.			53	F4	R3	
Normal	Death	Objects on track - in station trackway or at tunnel portal	Death/injury. Fatalities and/or injuries to passengers.	Passengers	CH-277		Platform Screen Doors installed on above ground stations.			51	F4	R3	CH-8
					CH-176		ICTV coverage at tunnel portal. Check tunnel portal.						
					CH-179		Obstruction detector.						
					CH-280		Trackside cables to be clear of swept envelope of derailed train.						

Manage project-wide safety hazards.