

RISSB product for prioritisation

Primary information			
Type of product being suggested:		<i>Guideline document</i>	
Title of product being suggested:		Human System Integration Framework	
Date of suggestion:		14 February 2018	
Reason for suggestion:		RSNL (2012) stipulates Human Factors as a consideration for rail operations, but specific guidance is not available for Human System's Integration programs. This gap was identified during the RISSB "Human Factors in Engineering Design" Guidance working group on the 9 th Feb 2018.	
Railway discipline area:		Optimised design and safe operation of railway rolling stock, infrastructure, procedures and training.	
Scope:			
<p>Humans are critical to the safe and efficient operation of the railways, hence lack of consideration of Human Factors in the introduction of new systems and ways of working can introduce risks and inefficiencies. This is recognised by ONRSR and detailed in the RSNL (2012). Human Systems Integration is a Systems Engineering discipline for integrating Human Factors into procurement programs, with structured processes for identifying, tracking and ameliorating Human Factors risks. Human Systems Integration has been an established part of Defence, Air Traffic, Shipping and Oil and Gas for decades. This guideline will apply to both operators and managers of rail networks and infrastructure.</p>			
Objective:			
<p>What? A guidance document to specify activities to be undertaken as part of a Human Systems Integration approach for Australian Rail.</p> <p>For whom? For Human Factors professionals and engineers working on programs where there is an obligation to consider Human Factors.</p> <p>Why? There is currently a great deal of inconsistency in the approaches being undertaken across industry and best practice from more mature HSI programs in areas such as Defence and Air Traffic Management is not being incorporated.</p>			
Hazard identification: (<i>what safety hazards would the proposed document seek to address</i>)			
1	Lack of consistency/quality in HSI products across different organisations.	6	
2	Human Factors risks not identified in programs, leading to potential safety hazards.	7	
3		8	
4		9	
5		10	
Benefits:			
<u>Safety</u>			
<ul style="list-style-type: none"> • HSI incorporates users into system design, verification and validation. Leveraging end user operational knowledge will realise safety dividends from knowledge of how systems are actually operated. 			

<ul style="list-style-type: none"> • Designing for human capabilities and limitations will optimise total systems safety and performance.
<p><u>Interoperabilityⁱ / harmonisationⁱⁱ</u></p>
<ul style="list-style-type: none"> • It is anticipated that all States are carrying out HSI differently, hence harmonisation would aid in aggregation of data at a national level and comparison of programs.
<p><u>Financial</u></p>
<ul style="list-style-type: none"> • HSI considers issues early in the design cycle where changes are less costly than when they become apparent later on once mock-ups are built or operation commenced. • UK Ministry of Defence studies and modelling have confirmed that tailored use of Human Systems Integration has resulted in cost savings across several complex procurement programs.
<p><u>Environmental</u></p>
<p>N/A</p>
<p>Impacts:</p>
<ol style="list-style-type: none"> 1. The guidance will need to be high level because all states will have slightly different system lifecycles, decision points and interfaces with other disciplines. 2. Knowledge of Human Systems Integration is usually considered a specialist area that few have practical experience and knowledge of. 3. The Australian Rail industry has had no dedicated guidance in this area and Rail worldwide is not a leader either.

i Interoperability - the ability of a process, system or a product to work with other process, systems or products (aka compatible systems through managed interfaces).

ii Harmonisation - the act of bringing into agreement so as to work effectively together (aka uniformity of systems).