

Method to ensure and to maintain consistency of systemic levels & Validation report

MBSE/MBSA consistency

DATE: 28/10/2022

Summary

This document aims at providing an overview of the different methods that are designed within the framework of WP2 “Methods and means to implement and maintain system/safety consistency at a single systemic level (integrated or system)”, part of the S2C project.

This document factorizes the common elements of each designed methods that are refined into dedicated documents. It deals also with independence, interaction, and predictable facts regarding the designed methods.




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Table 1: S2C reference documents

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Table 2: External reference documents

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Table 3: Captured user needs

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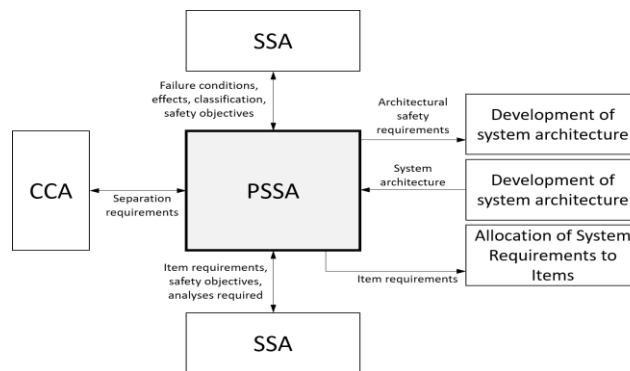


Figure 1: PSSA safety activity scope from ARP4754A (extract of Figure 7, page 30)

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Table 4: User's needs against considered constraints

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Table 5: Considered and discarded combinations of tuple (Part, Perimeter and Mean)

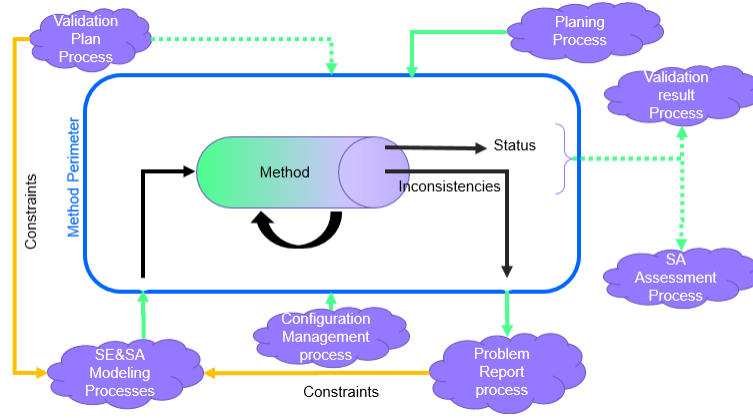


Figure 2: Illustration of the method against company's environment

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Table 6: Traceability with common Needs and Foreseeable implications

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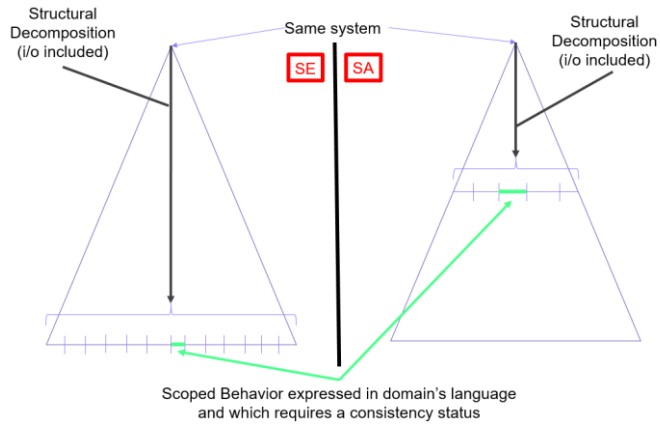


Figure 3: Illustration of starting situation

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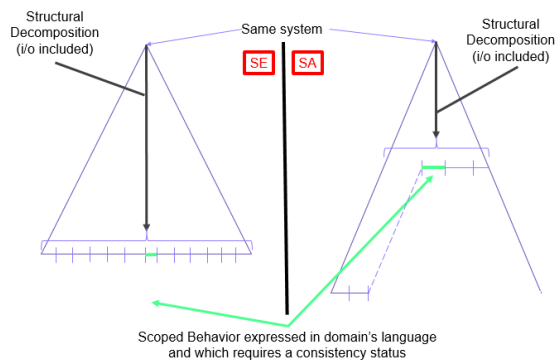


Figure 4: abstraction line at different levels from other side (as reference)

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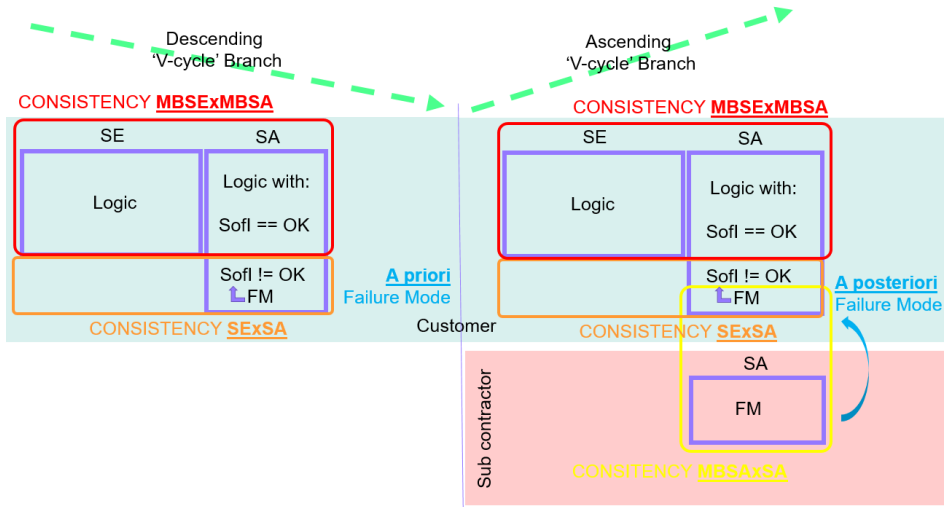


Figure 5: Overlapping contents and positioning against development cycle

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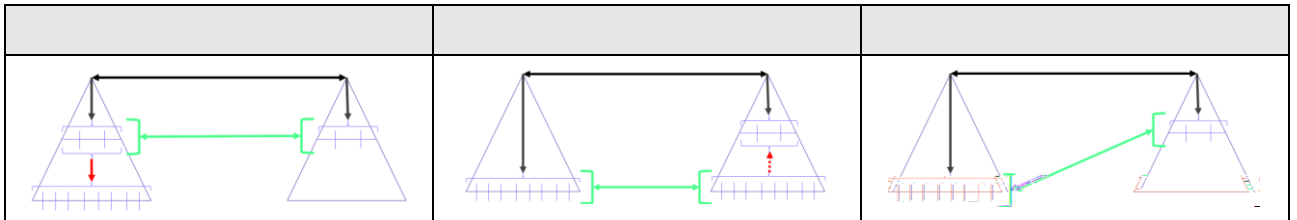


Figure 6: Different solution path for the method

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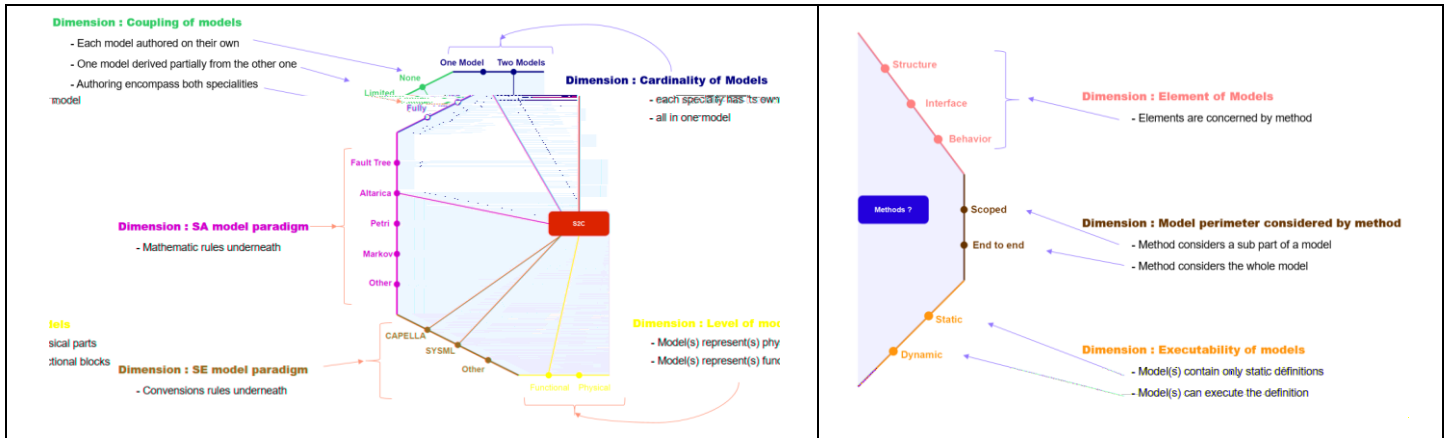


Figure 7: Synopsis of designed methods: frozen dimension and explorative ones

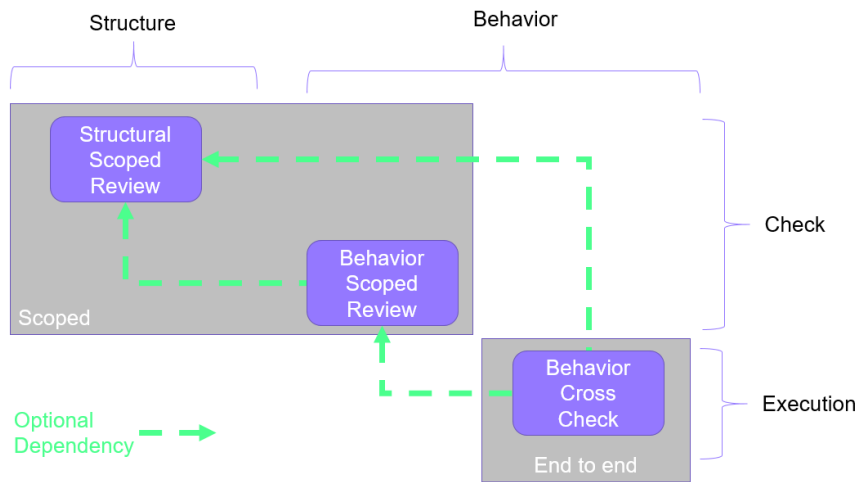


Figure 8: Synopsis of interactions between methods

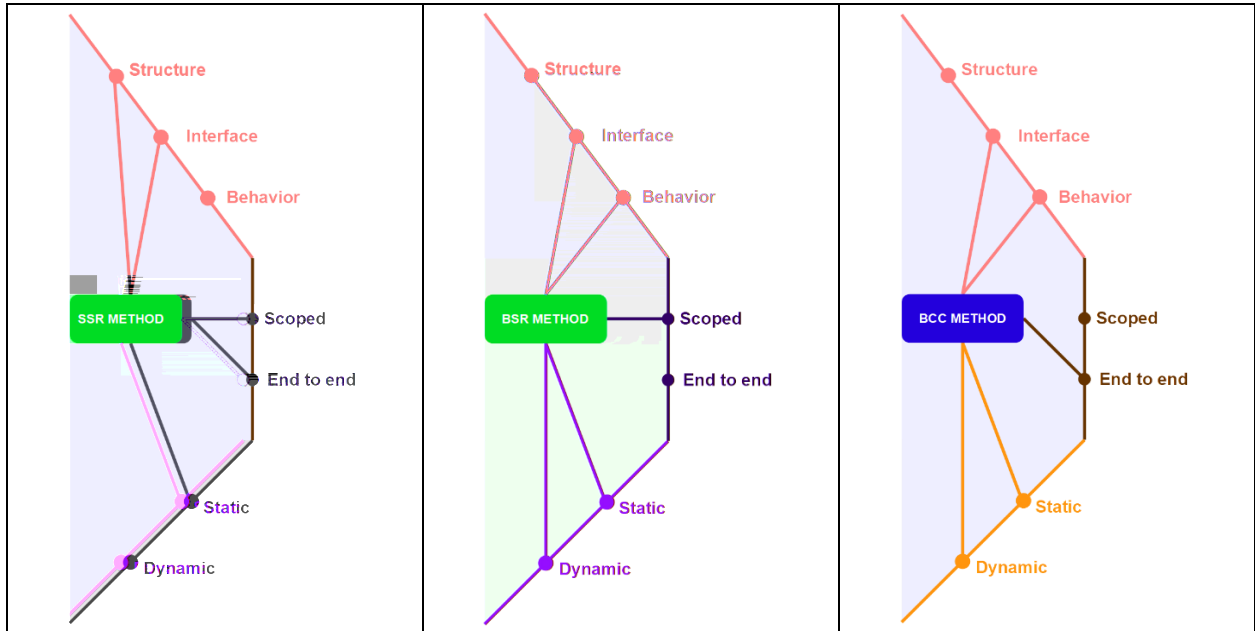


Figure 9: Designed methods against explorative dimensions (Left:SSR; Middle:BSR, Right: BCC)

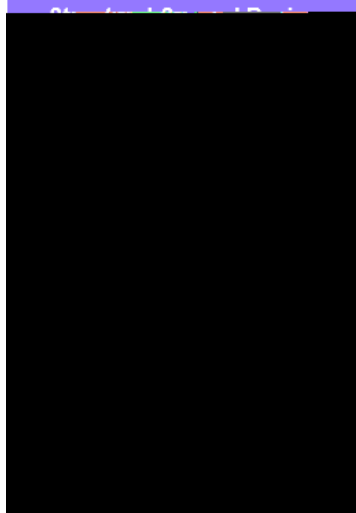


Figure 10: Synopsys of SSR method

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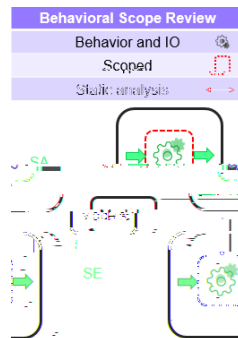


Figure 11: Synopsis of BSR method

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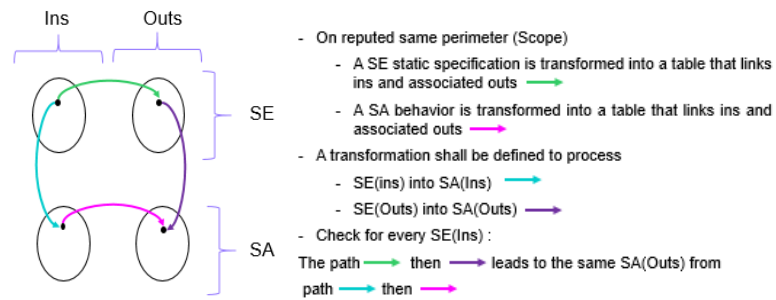


Figure 12: BSR method details

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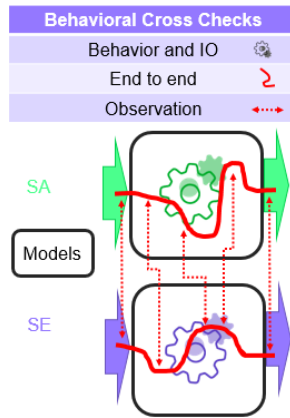


Figure 13: Synopsis of BCC method for a dedicated purpose only

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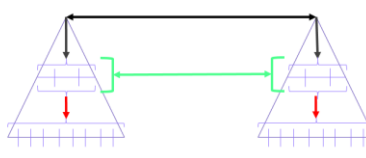
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	<p style="text-align: center;">E</p>  <p>The diagram shows a horizontal beam supported by two triangular supports. A central section of the beam is highlighted with a green double-headed arrow and brackets, indicating a cut or a specific region of interest.</p>

	<p style="text-align: center;"><u>SExSA</u> CONSISTENCY perimeter</p> <div style="border: 1px solid green; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center; color: red;"><u>MBSExMBSA</u> CONSISTENCY</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">SE</th> <th style="width: 50%; text-align: center;">SA</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: middle;">Functional Logic</td> <td style="text-align: center; vertical-align: middle;">Logic State of item (Ok)</td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"> <div style="border: 1px dashed blue; width: 100%; height: 100%;"></div> </td> <td style="text-align: center; vertical-align: middle;"> <div style="border: 1px solid blue; padding: 5px;"> State of Item (Loss Err) Failure Mode </div> </td> </tr> </tbody> </table> <p style="text-align: center; color: orange;">other CONSISTENCY methods ?</p> </div>	SE	SA	Functional Logic	Logic State of item (Ok)	<div style="border: 1px dashed blue; width: 100%; height: 100%;"></div>	<div style="border: 1px solid blue; padding: 5px;"> State of Item (Loss Err) Failure Mode </div>
SE	SA						
Functional Logic	Logic State of item (Ok)						
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