

VERIFICATION
VALIDATION
METHODS

Final Event 21 / 22 November 2023

Building Blocks of the Argumentation: Behavior Specification

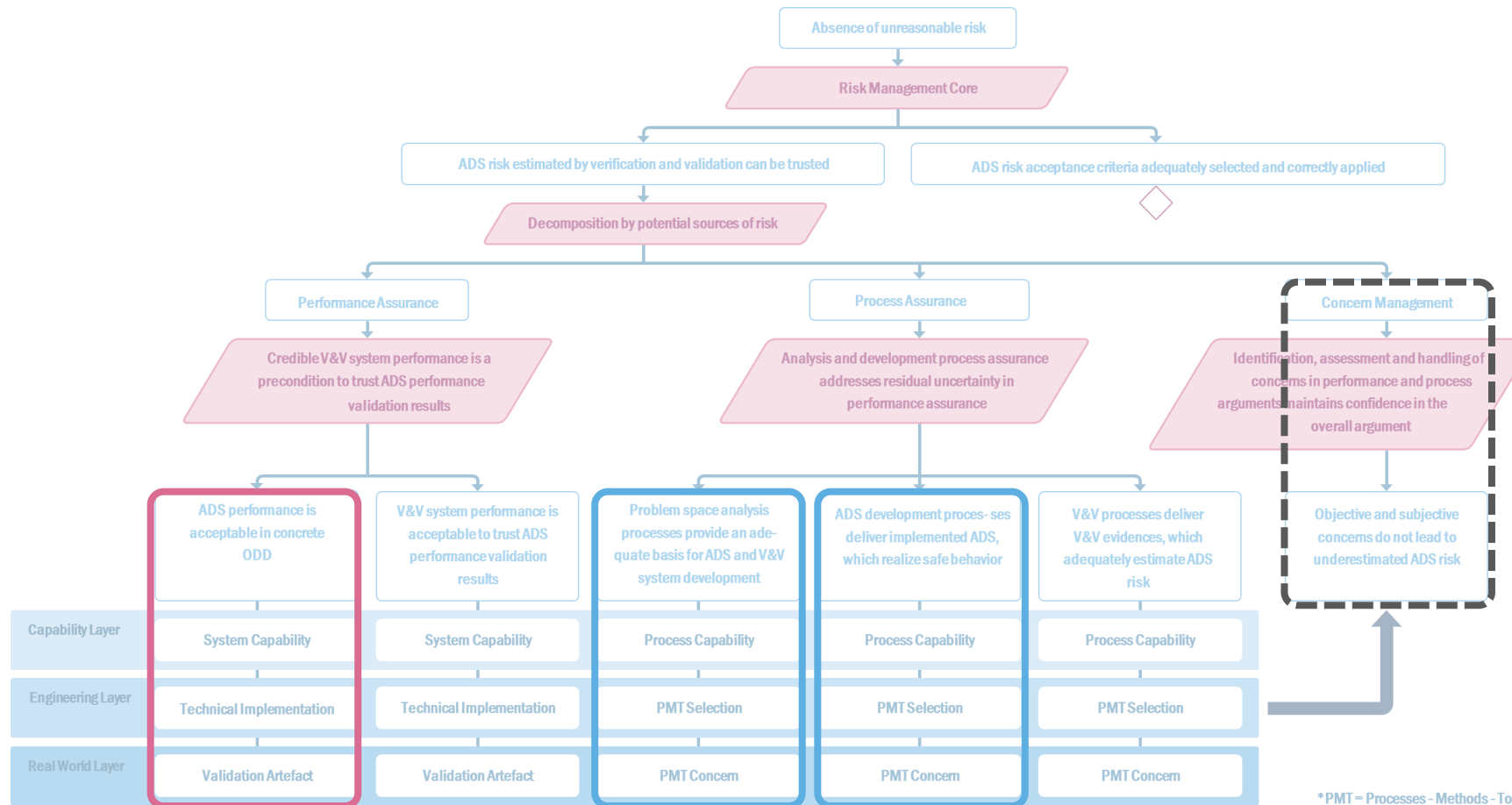
Nayel Fabian Salem, TU Braunschweig (Institute of Control Engineering)

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on the basis of a decision
by the German Bundestag

How do Approaches Regarding Behavior Specification Support the Safety Argumentation?



Selected Building Blocks of the Argumentation

Performance Assurance

C_Prod_1: The ADS exhibits required capabilities so that it does not pose unreasonable risk in its ODD.

Process Assurance

C_Proc_1: Problem space analysis processes provide an adequate basis for ADS and V&V system development.

C_Proc_2: ADS development processes deliver an implemented ADS, which realizes safe behavior.

Concern Management

C_Conf_1: Objective and subjective doubts on the real-world application of the methods are adressed.

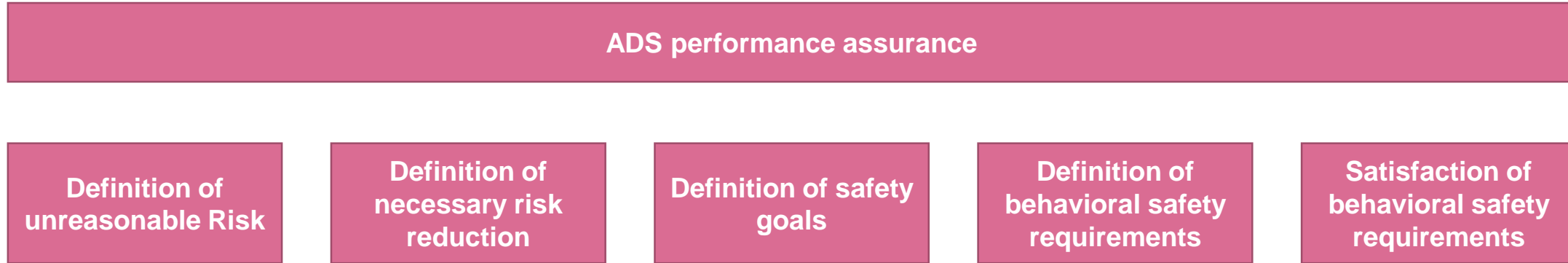
Selected Building Blocks of the Argumentation

Is the ADS capable enough?

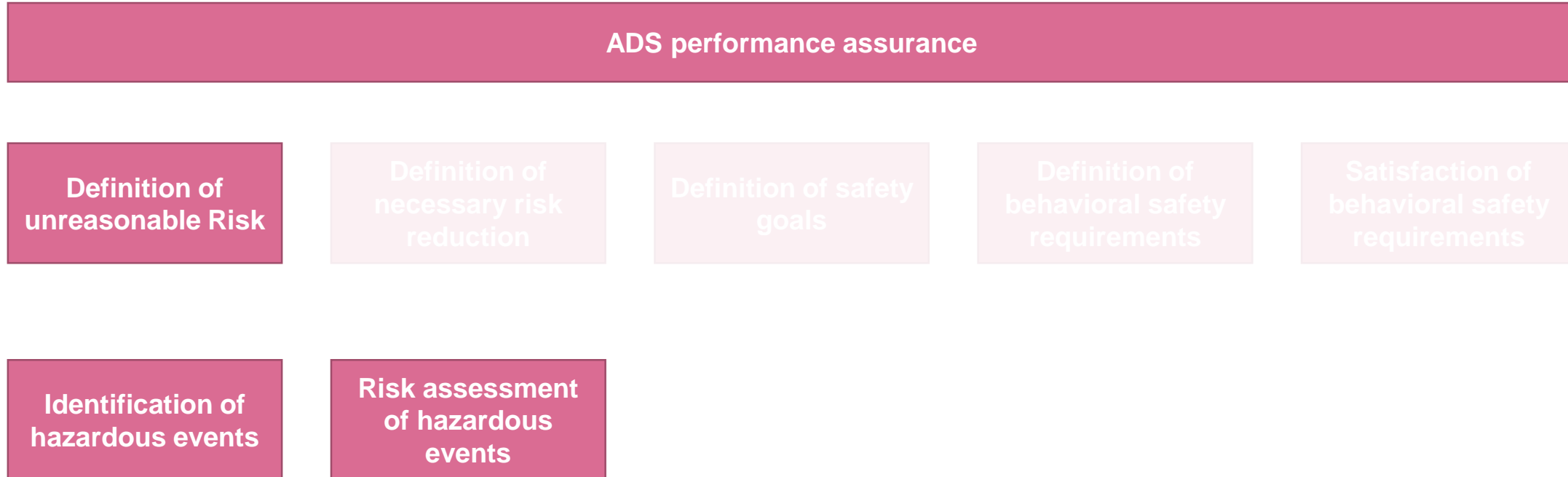


What could we have missed?

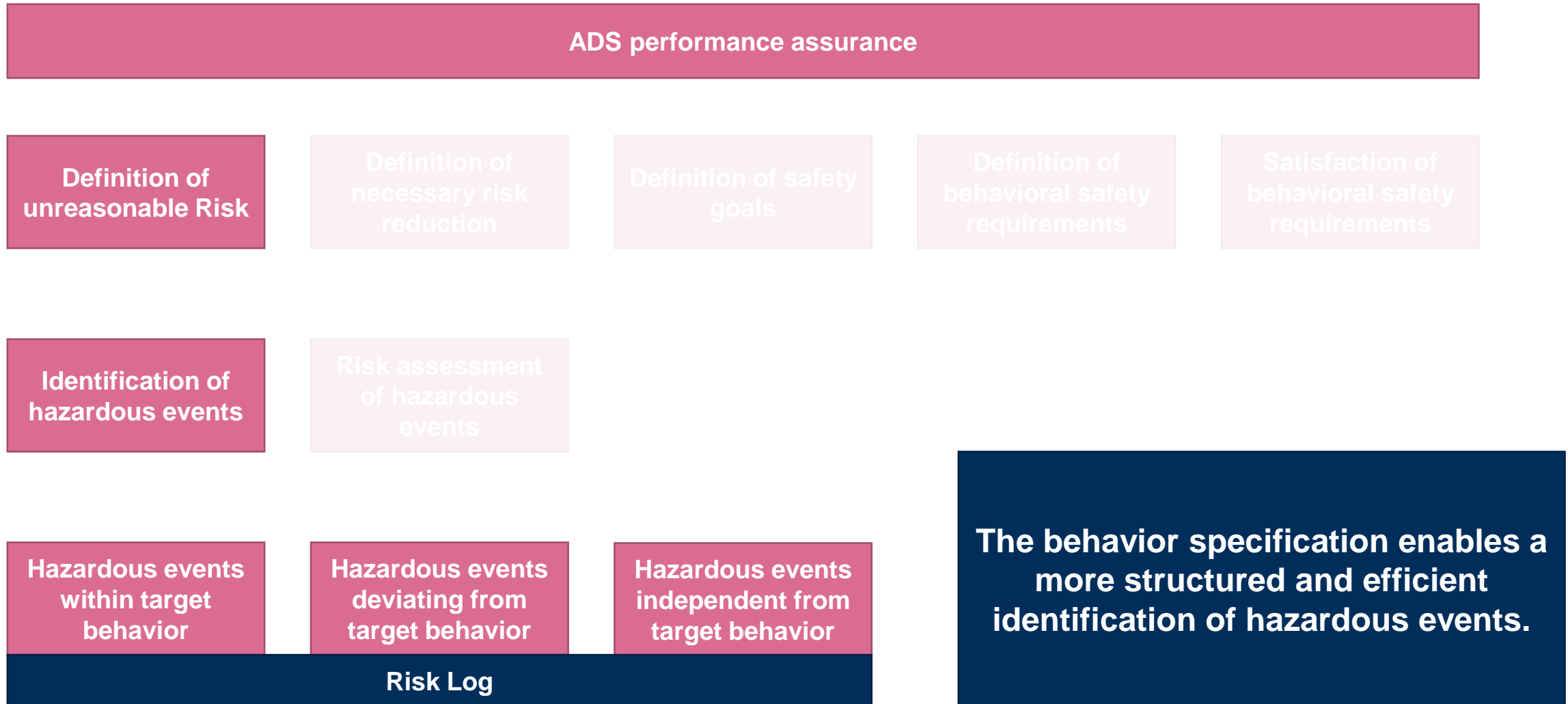
Building Blocks of the Safety Argumentation – ADS Performance Assurance



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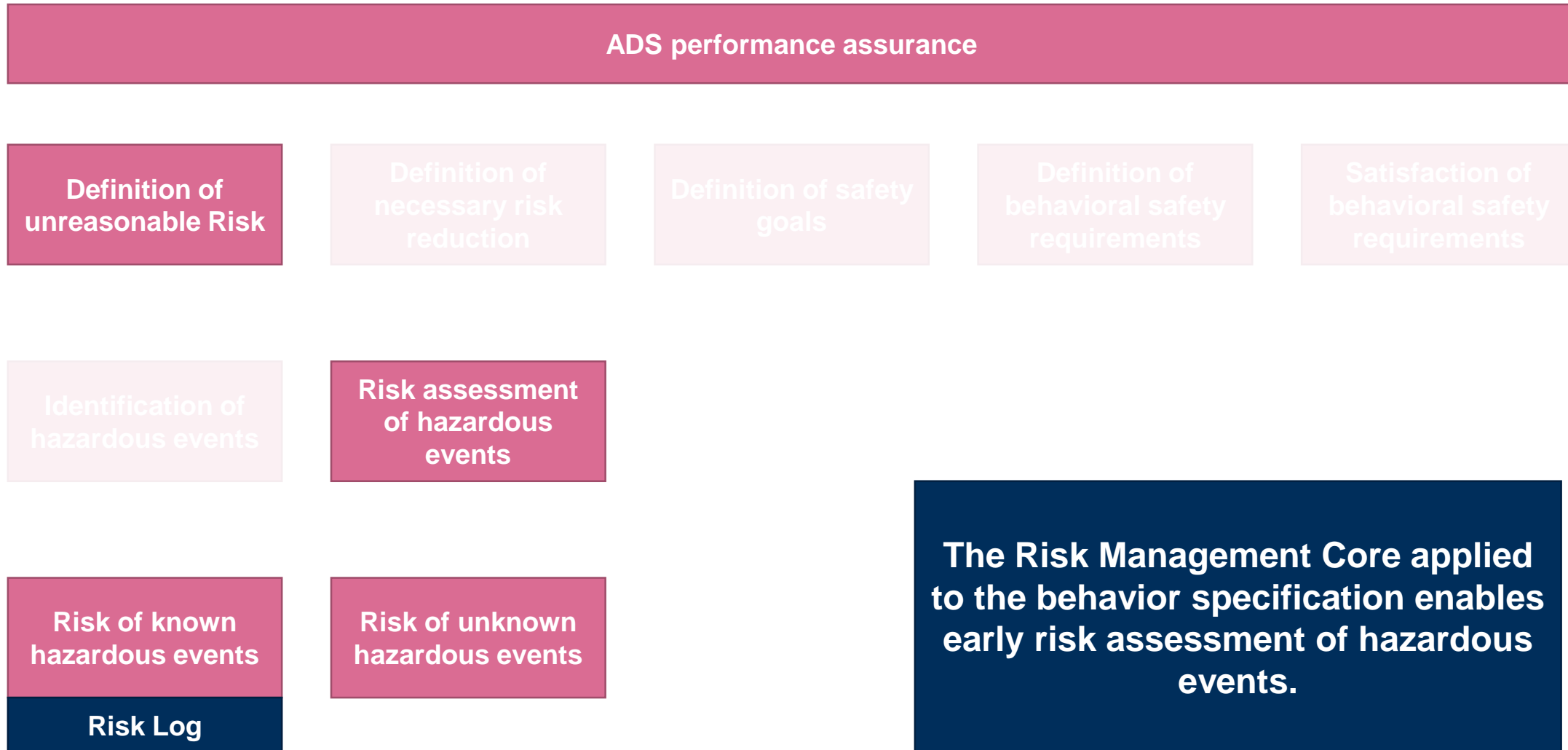


Building Blocks of the Safety Argumentation – ADS Performance Assurance

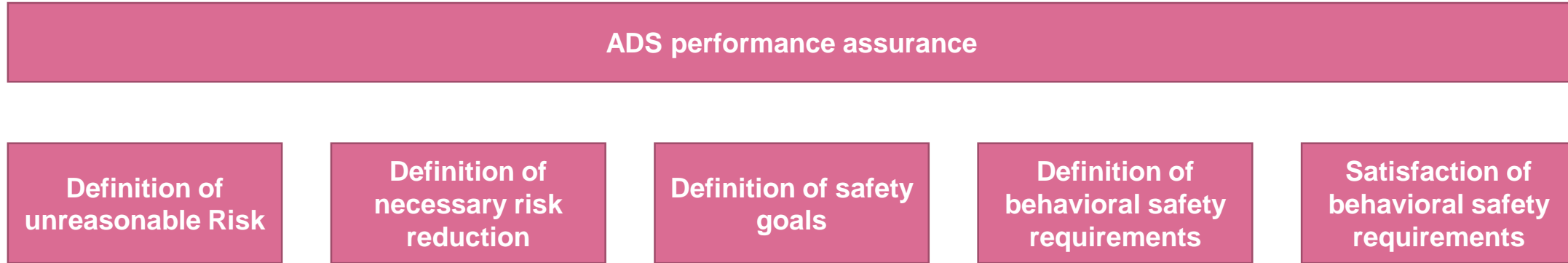


cf. R. Graubohm, T. Stolte, G. Bagschik, and M. Maurer, „Towards Efficient Hazard Identification in the Concept Phase of Driverless Vehicle Development“, 2020 IEEE Intelligent Vehicles Symposium (IV), pp. 1297–1304, Okt. 2020, doi: [10.1109/IV47402.2020.9304780](https://doi.org/10.1109/IV47402.2020.9304780).

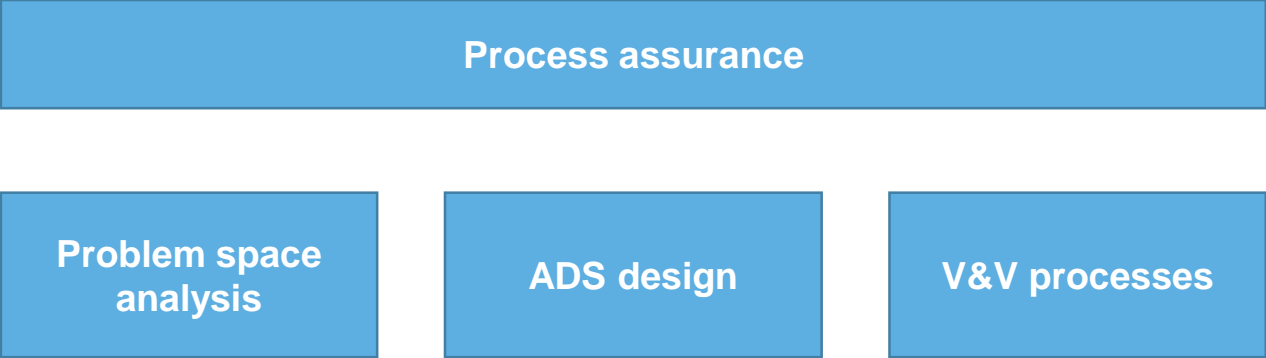
Building Blocks of the Safety Argumentation – ADS Performance Assurance



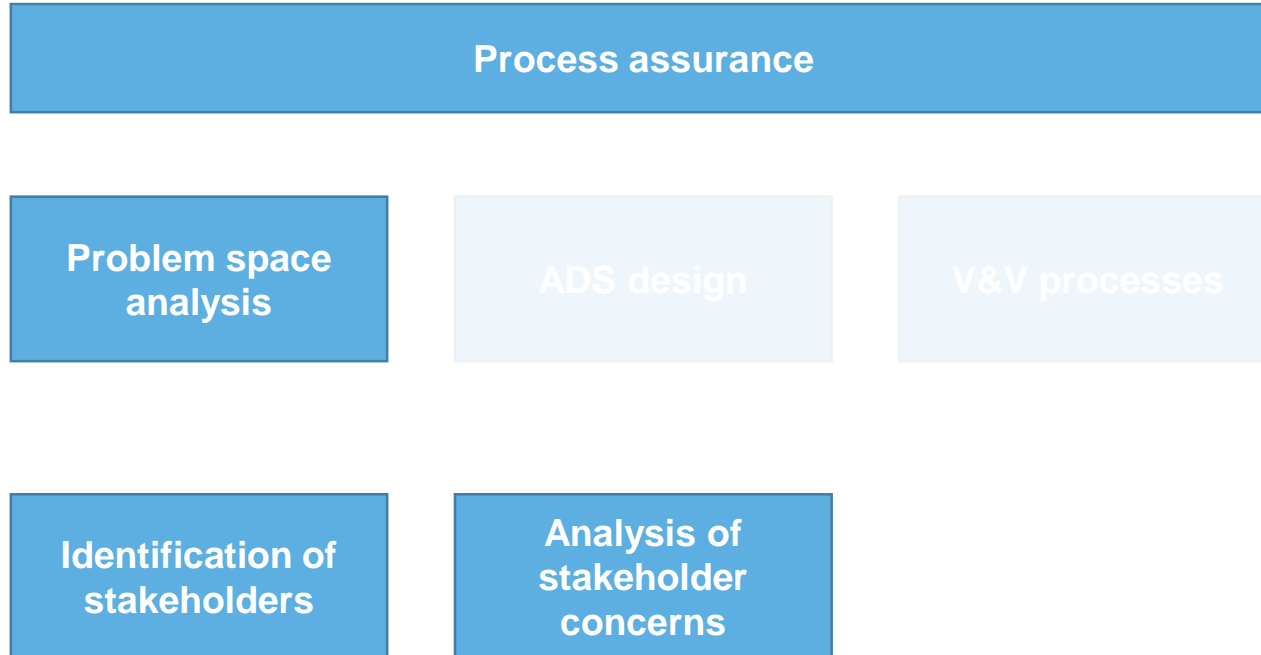
Building Blocks of the Safety Argumentation – ADS Performance Assurance



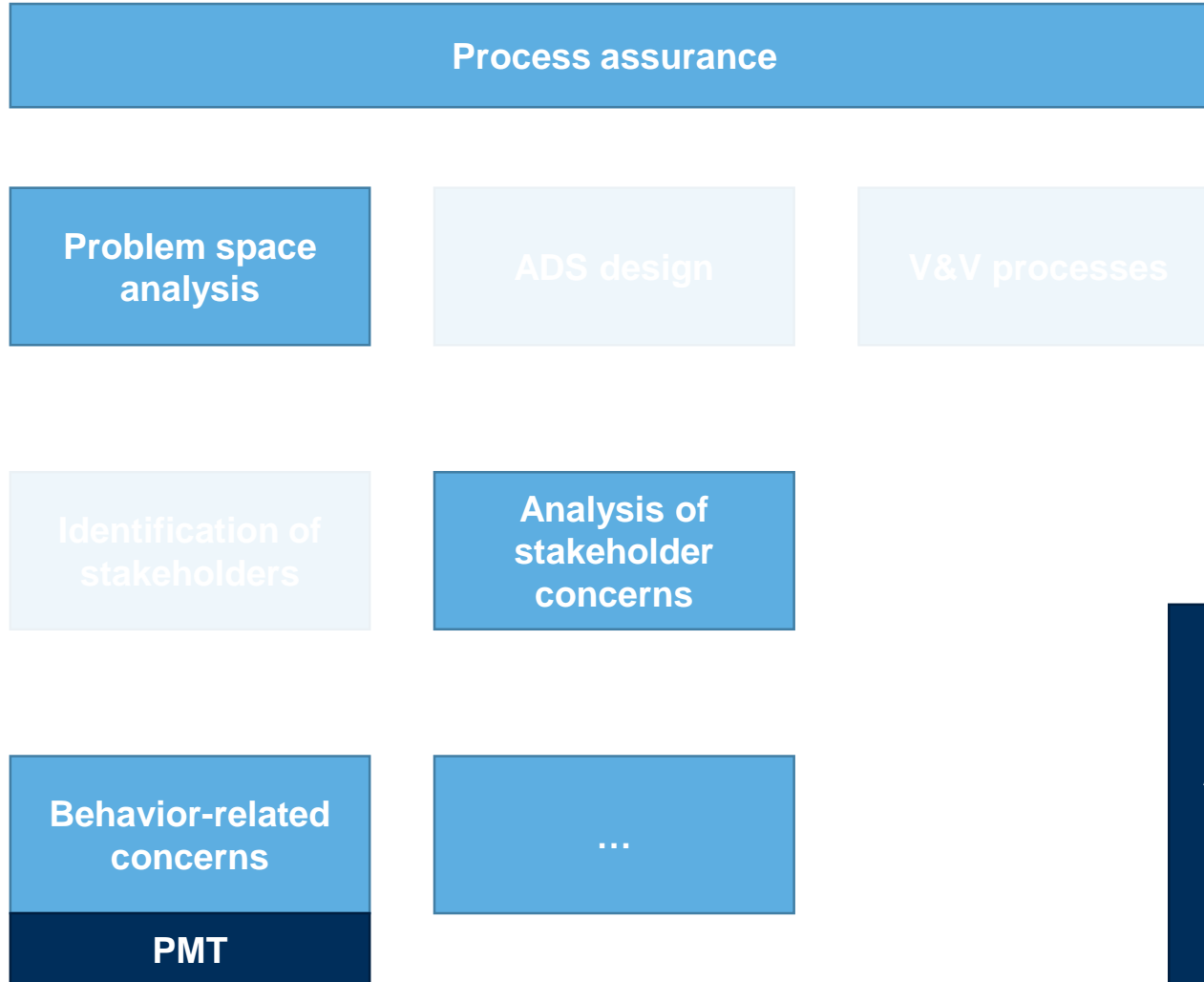
Building Blocks of the Safety Argumentation – Process Assurance



Building Blocks of the Safety Argumentation – Process Assurance



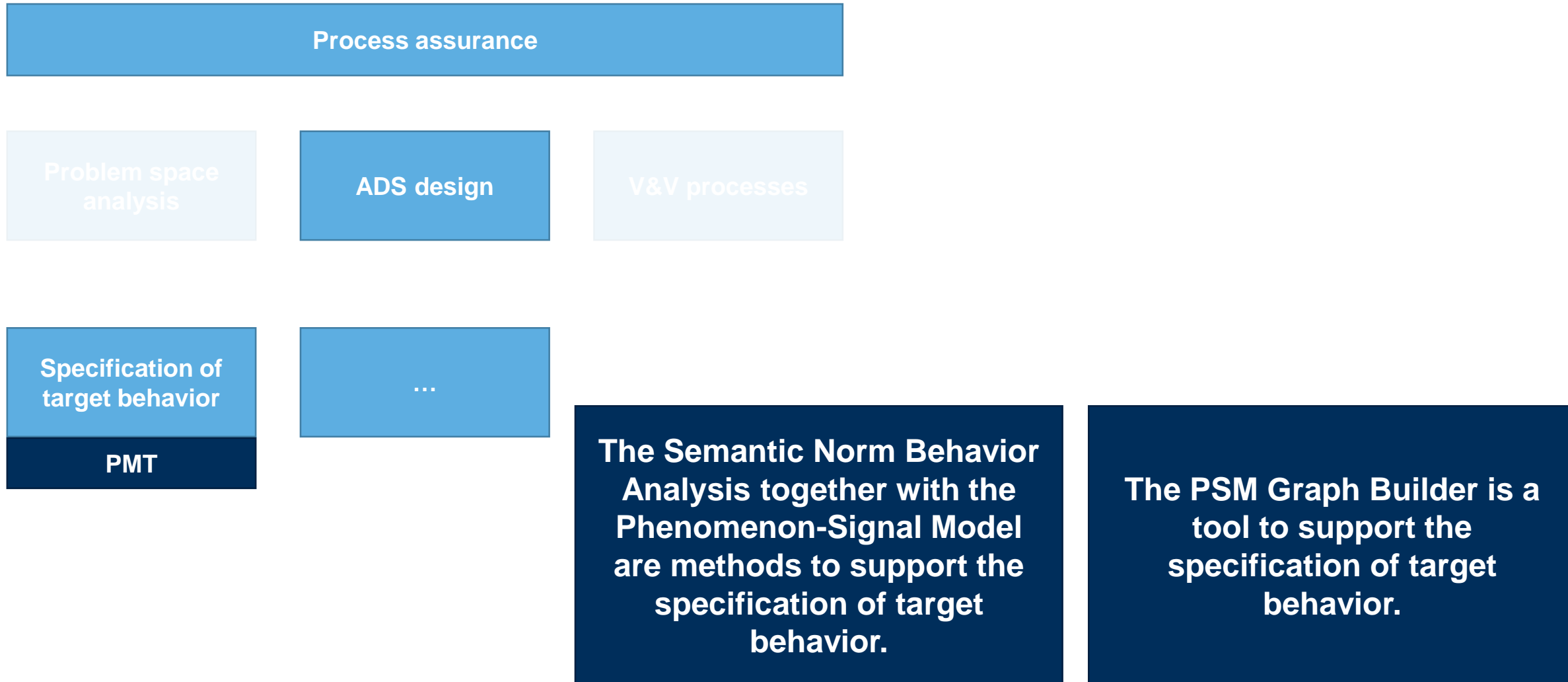
Building Blocks of the Safety Argumentation – Process Assurance



The Semantic Norm Behavior Analysis is a method to support the analysis of behavior-related stakeholder concerns.

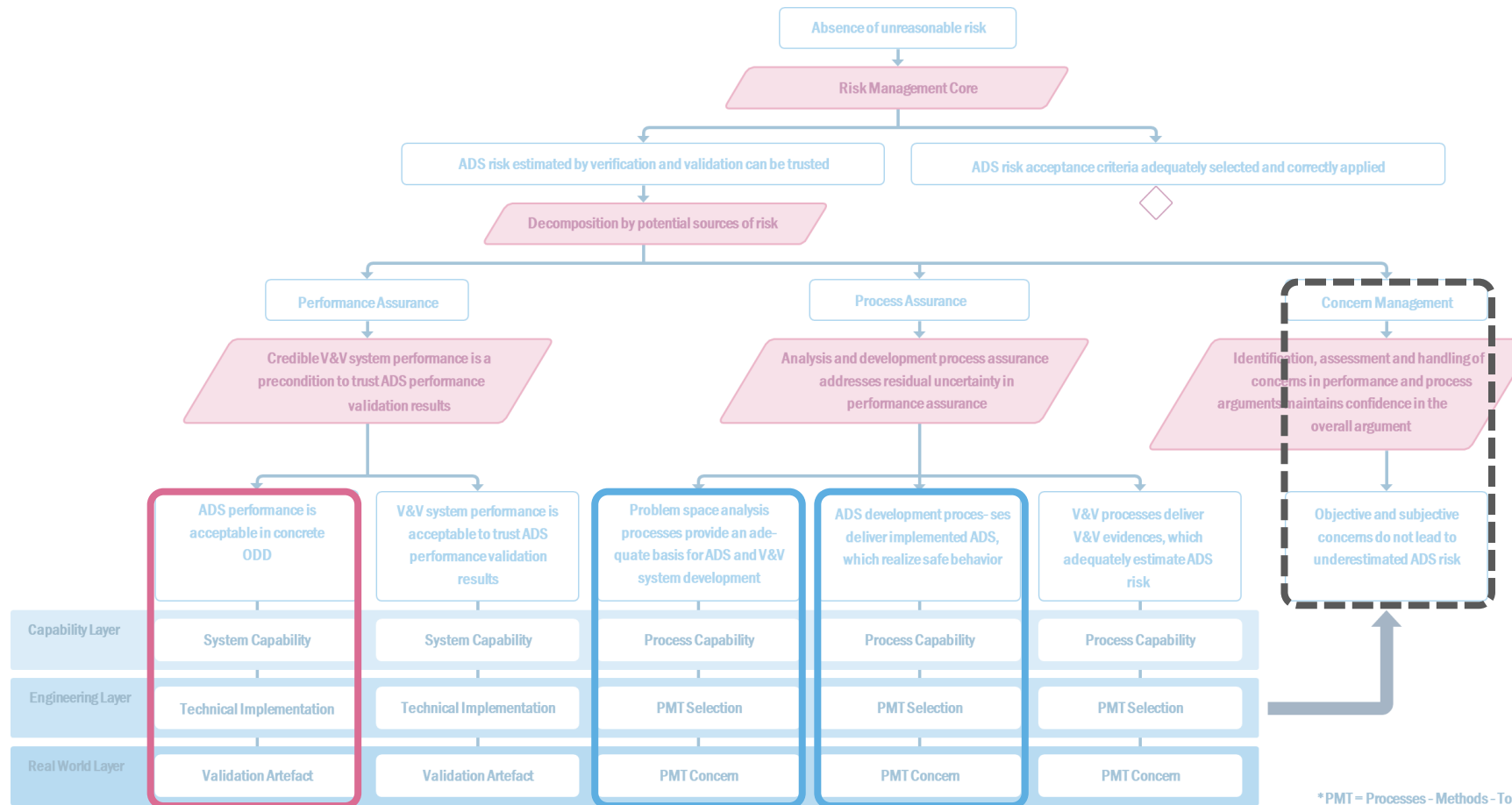
PMT: Processes, Methods, Tools

Building Blocks of the Safety Argumentation – Process Assurance



PMT: Processes, Methods, Tools

How do Approaches Regarding Behavior Specification Support the Safety Argumentation?



Thank you!

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A project developed by the VDA Leitinitiative
autonomous and connected driving

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