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Adaptive decision support for shop-floor operators in automotive industry

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Abstract

Today's operators on factory shop-floors are often not stationed, dealing with a single or few tasks but have increasing responsibilities demanding enhanced skills and knowledge in a production environment where any disturbance must be settled with adequate actions without delay to keep optimum output. To be able to respond to these demands, the operators need dynamic, distributed and adaptive decision support in real-time, helping them to distinguish decision options and maximizing productivity despite incoming stochastic events. The minimum of time and option for operators to consider appropriate action both during normal production and when facing unexpected or unscheduled events point out the need of adaptive decision support for operators. When initiating this research project the question from the industry partner was the following: *In what ways is it possible to support operators in making decisions for optimal productivity?* By targeting this problem this paper introduces a novel framework for an adaptive decision-support system enabled by event-driven function blocks and based on decision logics. The proposed decision support systems' ability to adapt to the actual conditions on the shop-floor is validated through a case study, and its capability is compared to the voice message system installed on-site.

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