

# SQUORE, an actionable dashboard based on SE leading indicators to manage System Engineering Effectiveness

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**Abstract.** From basic measurement collection to Governance via Key Performance Indicators, the SQUORE actionable dashboard offers steering and dashboarding capabilities for:

- Software work products quality and standard compliance (MISRA, HIS, ISO9126, SQUARE 25010 ...)
- System Engineering Effectiveness by collecting and publishing the trends of SE “Leading indicators” as defined by the INCOSE,
- Business process performance and support for compliance with International Standards such as Automotive Spice, CMMI, Six Sigma, ...

Used in Systems Engineering context, SQUORE becomes the essential dashboard for SE Effectiveness monitoring by combining the following strategic capabilities:

- Aggregation of heterogeneous engineering data to get a comprehensive overview of products and processes: requirements, design models, test cases and results, documentation...
- Analysis models including a set of KPI specified in the INCOSE SE Leading Indicators Guide, allowing to follow the work progress and/or compliance all along the life cycle, periodically or at all key milestones (as in DoD 5000 or ISO/IEC 15288), and to compare products or projects performance.
- Reporting via a role-based dashboard with intuitive charts. The double data drill-down allows end users to explore either the hierarchy of work products generated all along the product life cycle to identify all non-compliant / under regression artefacts (e.g.: an ambiguous requirement, a complex design diagram, a unclosed change request,, a failed test case), or to drill down into the breakdown of Key Performance Indicators to assess "how a specific project activity is likely to affect system performance objective" (e.g.: how requirements volatility may affect functional suitability).
- Generating action plans according to predefined objectives and priorities using a user customizable trigger mechanism.
- Capitalization of data from past projects to correlate attributes (e.g. Test completeness) with external performance characteristics (e.g. Reliability) and provide predictive trend analysis to improve monitoring.

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