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Identifying and constructing leading indicators for monitoring and controlling performance of engineering projects

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PMSs (Performance measurement systems)

PMSs classical models:
- Performance Measurement Matrix (1989);
- Performance Pyramid System (1991);
- Balanced Scorecard (1992, 1996);
- Integrated Performance Measurement System (1997);

Gap analysis:
1) Balanced scorecard has been used across the world, whereas many other frameworks have tended only to have regional appeal;
2) The practices in industries are not following the rapid academic rhythm.

Capabilities of Support softwares

SEM (Systems engineering measurement)

Characteristics:
- Providing visibility into expected project performance and potential future states;
- Providing predictive analysis based on trend information or significant correlation.

18 SE Leading indicators

Requirements Trends  Risk treatment trends
System Definition Change Backlog Trend  Systems engineering staffing and skills trends
Interface Trends  Process compliance trends
Requirements Validation Trends  Technical Measurement Trends
Requirements Verification Trends  Facility and equipment availability trends
Work Product Approval Trends  Defect/ error trends
Review Action Closure Trends  System affordability trends
Technology Maturity Trends  Architecture trends
Risk Exposure Trends  Schedule and cost pressure

Model input

Indicators input

Improving Project Performance Measurement

10 Knowledge areas (PMBoK)

- Requirements trends
- System definition change backlog trend
- Interface trends
- Requirements validation trends
- Requirements verification trends
- Work product approval trends
- Review action closure trends
- Technology maturity trends
- Risk exposure trends
- Risk treatment trends
- Systems engineering staffing & skills trends
- Process compliance trends
- Technical measurement trends
- Facility and equipment availability trends
- Defect/ error trends
- System affordability trends
- Architecture trends
- Schedule and cost pressure

Preliminary mapping result after reading through.

It can be concluded that it's feasible to apply some measurement methods in Systems Engineering like SE leading indicators in the general project management.