Project Health Indicator (PHI)

Introduction

The Project Health Indicator (PHI) is an assessment tool used by project teams to assist in early identification of potential problems during the Execute phase of project delivery**.** Project Managers are expected to monitor project health and provide accurate predictions of expected project outcomes. However, identifying potential issues using traditional cost and schedule controls can be challenging.

The PHI assessment uses 39 leading indicators, proven through Construction Industry Institute (CII) research, to effectively identify issues and risks early. Scores are collected for each leading indicator and aggregated, thus summarizing the project outcomes that will be most impacted. Recommended project practices for corrective action are provided.

Project Outcomes
that may be most impacted

Cost
Schedule
Quality
Safety
Satisfaction

Project Practices
for corrective action

Alignment
Change Management
Constructability
Contracting
Quality Management
Safety Practice
Project Controls
Team Building

What is a Leading Indicator?

A leading indicator is a fundamental project characteristic or event that reflects or predicts project health. Revealed in a timely manner, these indicators help teams focus on achieving desired behaviors and improving project outcomes. Examples of PHI leading indicators include:

Project Controls	Project milestones are being met and are not affecting the project's critical path.
Construction	The project has sufficient skilled craft with minimal turnover.
Quality	The project follows the documented quality management plan for construction.

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Project Health Indicator (PHI)

The Process

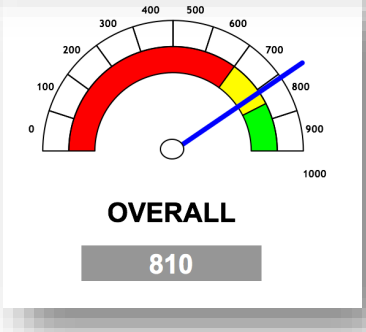
Your entire project team participates in a PHI assessment. It is led by a neutral facilitator who helps the project team reach a consensus on the most appropriate score for each leading indicator, and captures comments and action items for follow-up.

The Results

PHI assessment results are designed to provide immediate, actionable feedback to the project team. There are two components:

1. Project Health Scores

Project Health scores are provided using gauges that indicate high, medium and low risk results.



Project Health	Score Guidance
Overall Project	An overall project score of less than 700 is considered **High Risk**
Project Outcome	Any project outcome scoring less than 700 is considered **High Risk**
Project Practices	Give **immediate attention** to any practice scoring less than 700

2. Leading Indicator Comments

All leading indicators with comments captured during the PHI assessment are included in summary format, as shown in the example below:

Leading Indicator	Level	Comments
The project has sufficient skilled craft with minimal turnover.	3 - Neutral	Instrumentation & Control – high turnover in last 3 months

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Carve for Project Health

Introduction

Early identification of project issues and risks has a significant impact on capital projects outcome in terms of schedule and cost performance and project effectiveness. Traditional lagging indicators that rely only on cost and schedule performance does not identify potential issues early enough for project managers to take corrective actions.

Using leading indicators as a supplement to lagging indicators is a widely used practice in industry. Gartner indicates that "companies that use leading indicators earn almost 3% higher return on assets and more than 5% higher return on equity".

Leading indicators of project health, validated by CII, are proven measures of identifying project issues and risks during detailed design and construction phases in capital projects, where 80% or more of project budget is normally spent.

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Quality
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Project Practices
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The Solution

Carve for Project Health is an innovative assessment tool that uses the latest technology, improves the assessment process, and identifies top leading indicators for taking immediate corrective actions.

This tool eliminates the barriers for wide adoption of project health assessments by dramatically reducing the time required to perform assessments. In addition, assessments provide a team building opportunity and increased team alignment, which are strongly correlated to reducing cost and schedule growth during the detailed design and construction phases.

Examples of PHI leading indicators include:

Project Controls	Project milestones are being met and are not affecting the project's critical path.
Construction	The project has sufficient skilled craft with minimal turnover.

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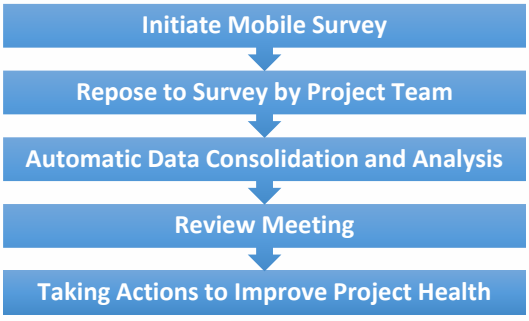
Carve for Project Health

The Process

A automatic survey customized based on the current phase of the project is sent to project members. They respond in the their convenience. The data is automatically consolidated and analyzed. The results are reviewed in an alignment meeting and action items are identified to improve project health.



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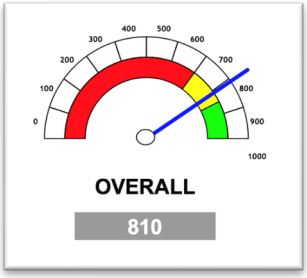

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2. Leading Indicator Comments and Response Distributions

All leading indicators with comments captured during the PHI assessment are included in summary format, as shown in the example below:

Leading Indicator	Comments	Level	Score Dist.
The project has sufficient skilled craft with minimal turnover.	Instrumentation & Control – high turnover in last 3 months	3 - Neutral	

3. List of Action Items

Action Item	Assigned to	Date	Status
Investigate all quality issues including rework with cost impact	Project Manager	Jan 4, 2018	Open

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List of Leading Indicators

1	The project team is lacking in the necessary expertise, experience, breadth, and depth to successfully execute the project.
2	The project team is experiencing a high turnover rate and instability in team membership.
3	The project team's response to Requests for Information, questions, and changing events that can significantly impact the project results is slow, inadequate, or incomplete.
4	The project team is losing confidence in the accuracy and validity of the schedule.
5	Project milestones are not being met and are consequently jeopardizing future project milestones.
6	Construction is awarded before adequate completion of project design, including discipline design packages, resulting in an incomplete scope definition at time of award/start of construction.
7	Business goals, project objectives and priorities, and critical success factors are not being consistently used by project team members and key stakeholders to guide decisions.
8	Owner and/or contractor are requesting an excessive number of contract changes and/or scope changes during project execution (detailed design, procurement, construction, and start up).
9	Significant project scope items are inadvertently omitted from bid packages.
10	Some project participant companies become financially unstable.
11	The project is experiencing a high level of engineering/design/specification errors and scope changes.
12	A project specific quality plan is not consistent with the contract documents (plans and specifications).
13	The project fails to follow the quality plan for construction in relation to the roles and requirements of those who are responsible for that plan.
14	The project is experiencing a high level of safety incidents.
15	Design reviews fail to include qualified personnel who can analyze safety ergonomics, and/or loss prevention features of plans and specifications.
16	The project team personnel lack involvement in safety inspections, awareness of safety issues, and education in safety practices.
17	Potential safety related problems are not being resolved in a timely manner.
18	The project is experiencing an increasing level of worker non compliance in safety practices.
19	The project is not following the requirements of a project specific safety plan during construction.
20	Owner and contractor project personnel are not properly aligned.
21	The project lacks sufficient skilled craft and is experiencing high craft turnover due to competition from other projects, low wages, and/or undesirable work schedules.
22	The project lacks sufficient staff, bulk materials, small tools, and construction equipment to adequately support planned construction activities.

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List of Leading Indicators

23	The level of maintenance and reliability personnel involvement in detailed design is low and the personnel lack alignment with other project team personnel with respect to maintenance issues for the facility.
24	The project is using new technology or construction practices that are unproven in commercial or industrial use.
25	The project team is failing to identify and/or address missing requirements during detail design reviews.
26	The level of detail and the scope covered in the funding authorization estimate are not per estimating guidelines.
27	The project manager (or team leader) is lacking in the required level of experience and skills.
28	Project changes are not being processed in a timely manner for decision making (includes defining cost and mark-up rates, evaluating schedule impact, obtaining appropriate approval authority, and initiating dispute resolution procedures).
29	Key project stakeholder(s) is (are) exhibiting poor relationships and pursuing private agenda.
30	Commitments are increasingly made with the intention of not being met and are almost always not met.
31	The project is experiencing difficulties in integrating schedules between project participants.
32	The project is frequently asking vendors, suppliers, service providers, and contractors to perform functions outside their areas of expertise and experience.
33	Process Hazard Analysis (PHA) is late and/or is experiencing an excessive number of operational/support items that are not complete during the design phase.
34	The project team is not being realistic and truthful when project circumstances are unfavorable.
35	Actual installed bulk material quantities are greater than estimated or forecasted total bulk material quantities (e.g., steel, concrete, straight run pipe, electrical wire and cable).
36	Float for project activities is being used up at an increasingly high rate.
37	Actual schedule activities are lagging behind planned scheduled activities over several reporting periods.
38	Forecasts-to-complete based on actual project experience, actual commitments, and actual expenditures are projecting overruns.
39	The project is experiencing an above normal level of construction rework hours and costs when compared to target levels of rework included in the total budget or schedule.
40	Project quality control results are reflecting high rejection rates for equipment and materials under fabrication in the factory and/or materials in place through testing in the field.
41	The project is experiencing difficulties due to the lack of understanding cultural differences.
42	Material and/or equipment prices are increasing rapidly for certain types of materials/ equipment that represent a high percent of the project cost.
43	The client and/or upper management is frequently making unreasonable requests (includes setting unrealistic goals).

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