

Designing the Lean Enterprise Performance Measurement System

The Motivation

Role of Performance Measurement

Monitoring*: Measuring and recording actual performance

Control*: Identifying and attempt to close the gap between expected performance and actual performance

Improvement: Identify critical improvement opportunities

Coordination: Provide information for decision making and enable internal communication across processes as well as external communication with stakeholders

Motivation: Encourage transformation

* Current Practice

Gaps in Performance Measurement Systems

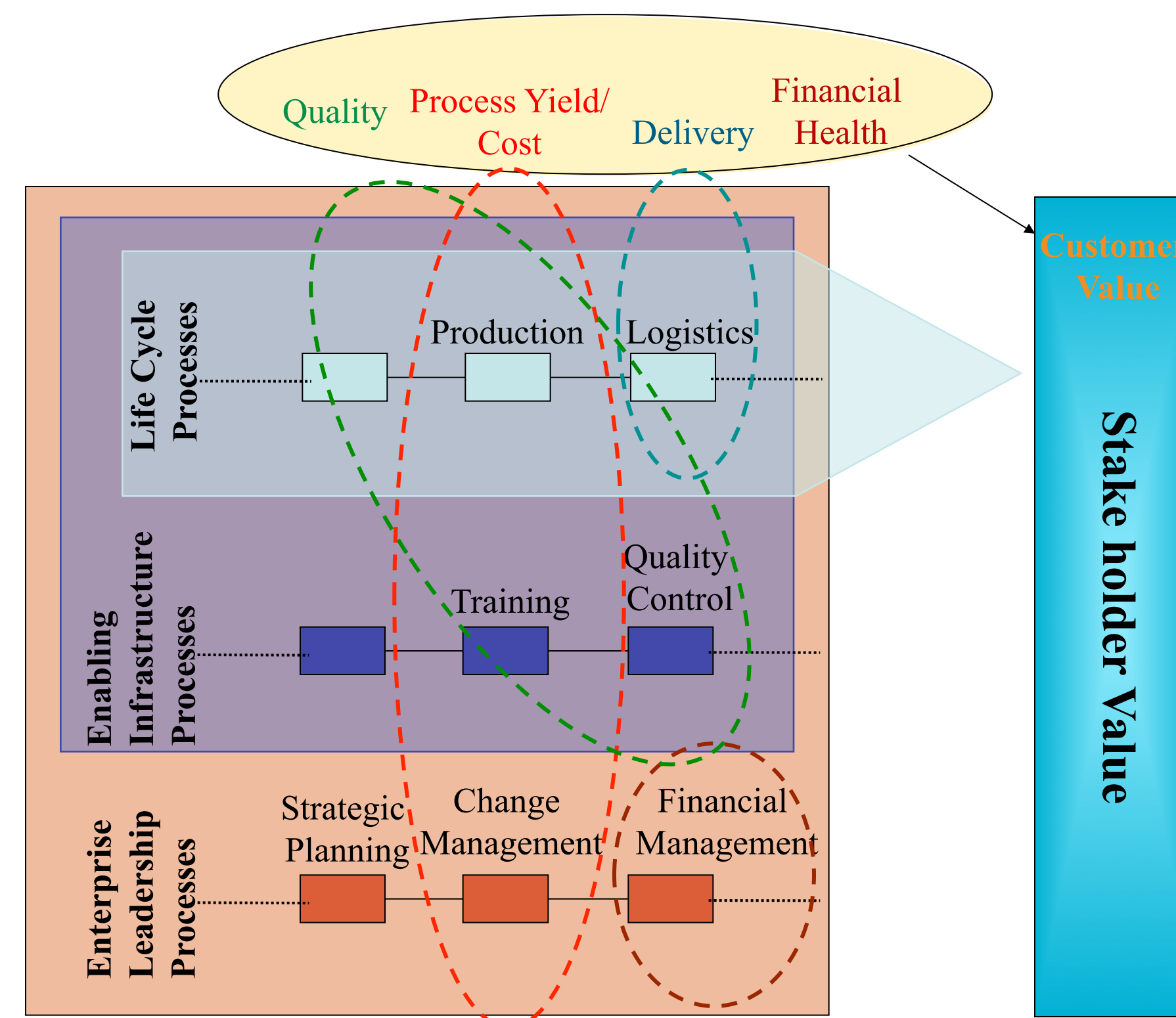
- Does not address value delivery for all the stakeholders.
- Causal relationship between the metrics and actions is not understood.
- Time lag between the actions and outcomes is not captured.
- Bottom-up reporting structure does not always translate to actionable feedback loop.
- Fosters local optimization instead of system level optimization
- The systems are static and therefore cannot adapt to changing critical areas of success and do not incorporate measurements for adapting to a changing environment.

Research Objective

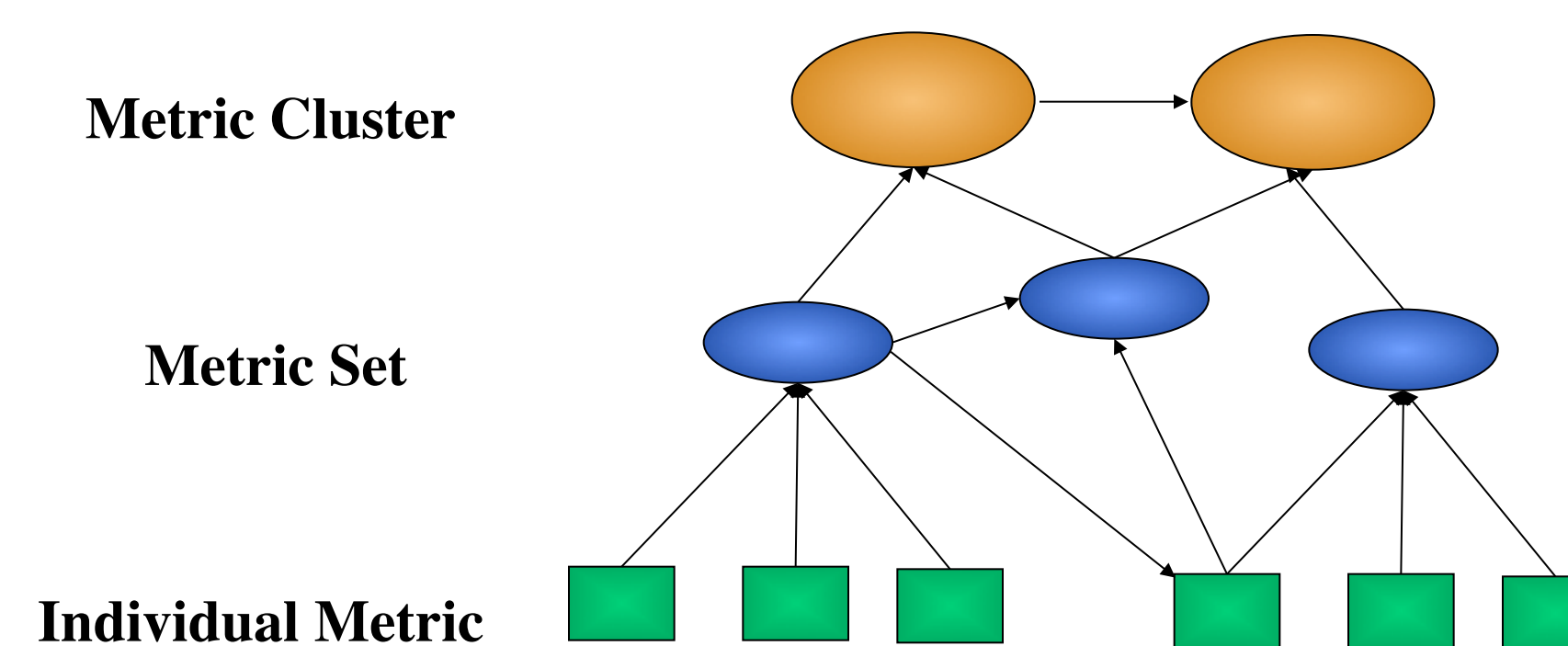
- Identify and empirically test the relationship among business, financial, operational, organizational and leadership metrics that correlate with and predict lean improvement and change at an enterprise level.
- Validate the relationships among various metrics of business process and lean improvement to develop better performance measurement system for lean enterprises.

The Concept

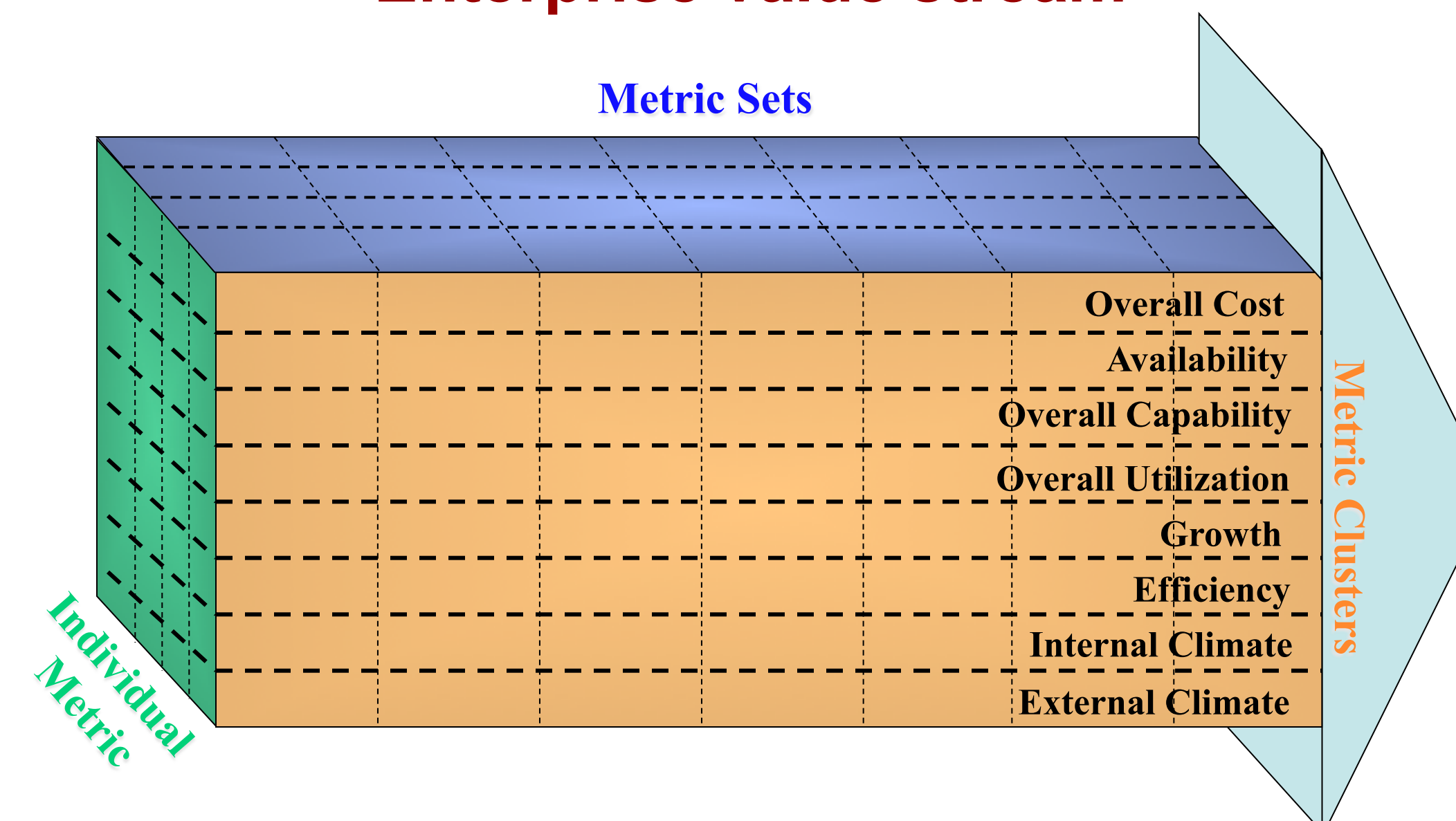
Lean Enterprise metric Interdependencies



Lean Enterprise Performance Measurement System



Performance Measurement System across the Enterprise value stream



Research Methodology

Data Collection

Quantitative data:

- Time series performance data capturing: Strategic objectives, Financial metrics, Operational metrics, Information Systems metric and Human Resources.

- Definition of metrics using metric record sheet

Qualitative Data:

- Data on Change and improvement programs
 - Time line of the planned and implemented initiatives
 - At what level?, i.e. corporate and/or facility level
 - What was/is the expected impact on the business objective?
 - How long was/is the expected time lag between deployment and impact?
 - Resource allocation to the initiative such as, number of people, number of trained people, overall budget for the initiative
 - What kind of leaders and managers were/are recruited? Such as older/younger, from the same business/functional unit, self driven or forced
 - When was/is the training provided?
 - What kind of training?
 - What kind of sustainment efforts are in place?

- Assessment of Organizational factors

Time series data on culture and leadership via a questionnaire

Analysis

- Factor analysis to empirically develop metric clusters. Further analysis will compare how these empirical metric clusters logically relate to current enterprise level objectives and measurement systems.
- System dynamic modeling to understand the cause – effect relationship among individual metrics and metric clusters, particularly seeking to understand time delays in leading factors.
- Structural equation modeling to understand the impact of current performance measures on the enterprise level goals. This will help us test qualitative factors (aka dummy metrics) that examine training, leadership, and organizational culture characteristics and their effect on enterprise level goals.