



การประชุมเชิงปฏิบัติการ เรื่อง “เกณฑ์คุณภาพการศึกษาเพื่อการดำเนินการที่เป็นเลิศ (EdPEX)”

ผ่านสื่ออิเล็กทรอนิกส์ ครั้งที่ 3 วันที่ 5 พฤศจิกายน 2564

การวัด การวิเคราะห์ และการจัดการความรู้ Measurement, Analysis, and Knowledge Management

โดย นพ.ธนกฤต จินตวร

สถาบันส่งเสริมการวิเคราะห์และบริหารข้อมูลขนาดใหญ่ภาครัฐ

กระทรวงดิจิทัลเพื่อเศรษฐกิจและสังคม





นพ.ธนกฤต จินตวร

การศึกษา

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บริหารธุรกิจ มหบัณฑิตจุฬาลงกรณ์มหาวิทยาลัย

Cert. Healthcare Management, SMU

การทำงาน

อดีตอาจารย์คณะแพทยศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ

อดีตผู้บริหาร รพ.นนทเวช และ รพ.บำรุงราษฎร์

ผู้ตรวจประเมินรางวัลคุณภาพแห่งชาติและเกณฑ์คุณภาพการศึกษาเพื่อการดำเนินการที่เป็นเลิศ (TQA & EdPEX)

รองผู้อำนวยการ สถาบันส่งเสริมการวิเคราะห์และบริหารข้อมูลขนาดใหญ่ภาครัฐ

อุปนายก ด้านวิชาการ Thailand Business Angel Network (TBAN)

น้อมคารวะคุณครู



นพ.สิทธิศักดิ์ พงษ์ปิติกุล



ศ.คลินิก.นพ.อภิชาติ ศิวยาธร

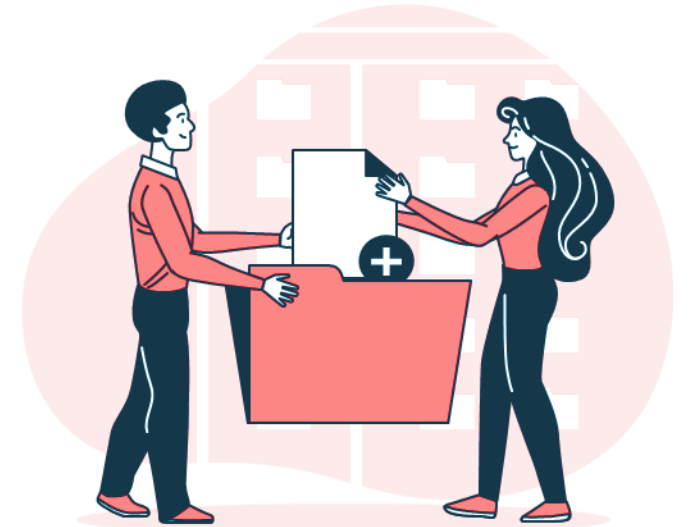


นพ.อนุวัฒน์ ศุภชุติกุล

การวัด การวิเคราะห์ และการจัดการความรู้ (Measurement, Analysis, and Knowledge Management)



สถาบันมีวิธีการเลือก รวบรวม วิเคราะห์ จัดการ และปรับปรุงข้อมูล
สารสนเทศ และสินทรัพย์ ทางความรู้ (KNOWLEDGE ASSETS) อย่างไร
สถาบันใช้ผลการทบทวนเพื่อปรับปรุงผลการดำเนินการและสร้างการ
เรียนรู้ในระดับสถาบันอย่างไร





Credit: Baldrige Performance Excellence Program. 2019. 2019–2020 Baldrige Excellence Framework.

Core Values and Concepts



Management by fact

Organizational Learning and Agility

Learning

Organization level

Individual level

Aligning and Integrating your performance Management System

Information analytics

Big data management

Comparative data

Selecting and Using comparative data

Use of Comparative data in reviews

Reviewing performance

Analyzing performance

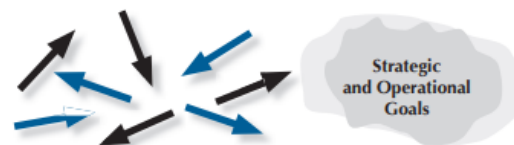
Aligning Analysis, Performance Reviews and Planning

Understanding Causality

Steps toward Mature Processes

An Aid for Assessing and Scoring Process Items

Reacting to Problems (0–25%)



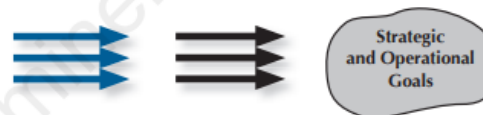
Operations are characterized by activities rather than by processes, and they are largely responsive to immediate needs or problems. Goals are poorly defined.

Early Systematic Approaches (30–45%)



The organization is beginning to carry out operations with repeatable processes, evaluation, and improvement, and there is some early coordination among organizational units. Strategy and quantitative goals are being defined.

Aligned Approaches (50–65%)



Operations are characterized by repeatable processes that are regularly evaluated for improvement. Learnings are shared, and there is coordination among organizational units. Processes address key strategies and goals.

Integrated Approaches (70–100%)



Operations are characterized by repeatable processes that are regularly evaluated for change and improvement in collaboration with other affected units. The organization seeks and achieves efficiencies across units through analysis, innovation, and the sharing of information and knowledge. It defines and measures that progress in key strategic and operational goals.

การวัด การวิเคราะห์ และการจัดการความรู้



(Measurement, Analysis, and Knowledge Management) (90 คะแนน)

4.1 การวัด วิเคราะห์ และปรับปรุง
ผลการดำเนินการของสถาบัน
(Measurement, Analysis, and
Improvement of Organizational
Performance) (45 คะแนน)

- ก. การวัดผลการดำเนินการ (PERFORMANCE Measurement)
- ข. การวิเคราะห์และทบทวนผลการดำเนินการ
(PERFORMANCE ANALYSIS and Review)
- ค. การปรับปรุงผลการดำเนินการ
(PERFORMANCE Improvement)

4.2 การจัดการสารสนเทศ
และการจัดการความรู้
(Information, and Knowledge
Management) (45 คะแนน)

- ก. ข้อมูลและสารสนเทศ
(Data and Information)
- ข. ความรู้ของสถาบัน
(Organizational Knowledge)

4 Measurement, Analysis, and Knowledge Management (90 pts.)

The **Measurement, ANALYSIS, and Knowledge Management** category asks HOW your organization selects, gathers, analyzes, manages, and improves its data, information, and KNOWLEDGE ASSETS; HOW it uses review findings to improve its PERFORMANCE; and HOW it learns.



4.1 Measurement, Analysis, and Improvement of Organizational Performance: How do you measure, analyze, and then improve organizational performance? (45 pts.)

a. PERFORMANCE Measurement

- (1) **PERFORMANCE MEASURES** HOW do you track data and information on daily operations and overall organizational PERFORMANCE? HOW do you
- select, collect, align, and integrate data and information to use in tracking daily operations and overall organizational PERFORMANCE; and
 - track progress on achieving STRATEGIC OBJECTIVES and ACTION PLANS?

What are your KEY organizational PERFORMANCE MEASURES, including KEY short- and longer-term financial MEASURES? How frequently do you track these MEASURES?

- (2) **Comparative Data** HOW do you select comparative data and information to support fact-based decision making?
- (3) **Measurement Agility** HOW do you ensure that your PERFORMANCE measurement system can respond to rapid or unexpected organizational or external changes and provide timely data?

b. PERFORMANCE ANALYSIS and Review

HOW do you review your organization's PERFORMANCE and capabilities? HOW do you use your KEY organizational PERFORMANCE MEASURES, as well as comparative data, in these reviews? What ANALYSES do you perform to support these reviews and ensure that conclusions are valid? HOW do your organization and its SENIOR LEADERS use these reviews to

- assess organizational success, competitive PERFORMANCE, financial health, and progress on achieving your STRATEGIC OBJECTIVES and ACTION PLANS; and
- respond rapidly to changing organizational needs and challenges in your operating environment?

HOW does your GOVERNANCE board review the organization's PERFORMANCE and its progress on STRATEGIC OBJECTIVES and ACTION PLANS, if appropriate?

c. PERFORMANCE Improvement

- (1) **Future PERFORMANCE** HOW do you project your organization's future PERFORMANCE? HOW do you use findings from PERFORMANCE reviews and KEY comparative and competitive data in your PROJECTIONS?
- (2) **Continuous Improvement and INNOVATION** HOW do you use findings from PERFORMANCE reviews to develop priorities for continuous improvement and opportunities for INNOVATION? HOW do you DEPLOY these priorities and opportunities
- to work group and functional-level operations; and
 - when appropriate, to your suppliers, PARTNERS, and COLLABORATORS to ensure organizational ALIGNMENT?

PROCESS

การวัด การวิเคราะห์ และการจัดการความรู้ (Measurement, Analysis, and Knowledge Management)



4.1 การวัด วิเคราะห์ และปรับปรุงผลการดำเนินการของสถาบัน (Measurement, Analysis, and Improvement of Organizational Performance) : สถาบันมีวิธีการอย่างไรในการวัด วิเคราะห์ และเพื่อนำมาปรับปรุงผลการดำเนินการของสถาบัน (45 คะแนน)

ก. การวัดผลการดำเนินการ (PERFORMANCE Measurement)

(1) ตัววัดผลการดำเนินการ (PERFORMANCE MEASURES)

สถาบันมีวิธีการติดตามข้อมูล และสารสนเทศของการปฏิบัติงานประจำวัน (Organizational PERFORMANCE) และการดำเนินการโดยรวมของสถาบันอย่างไร

สถาบันมีวิธีการอย่างไรในการ

- เลือก รวบรวม ปรับให้สอดคล้องและบูรณาการข้อมูลสารสนเทศ เพื่อติดตามการปฏิบัติการประจำวัน และผลการดำเนินการโดยรวมของสถาบัน
- ติดตามความก้าวหน้าของการบรรลุผลตามวัตถุประสงค์เชิงกลยุทธ์และแผนปฏิบัติการ สถาบันมีตัววัดผลการดำเนินการที่สำคัญอะไรบ้าง รวมทั้งตัววัดด้านการเงินและงบประมาณที่สำคัญทั้งระยะสั้นและระยะยาว สถาบันมีการติดตามตัววัดเหล่านี้บ่อยเพียงใด

Figure 4.1-1 Performance Measurement System (PMES)

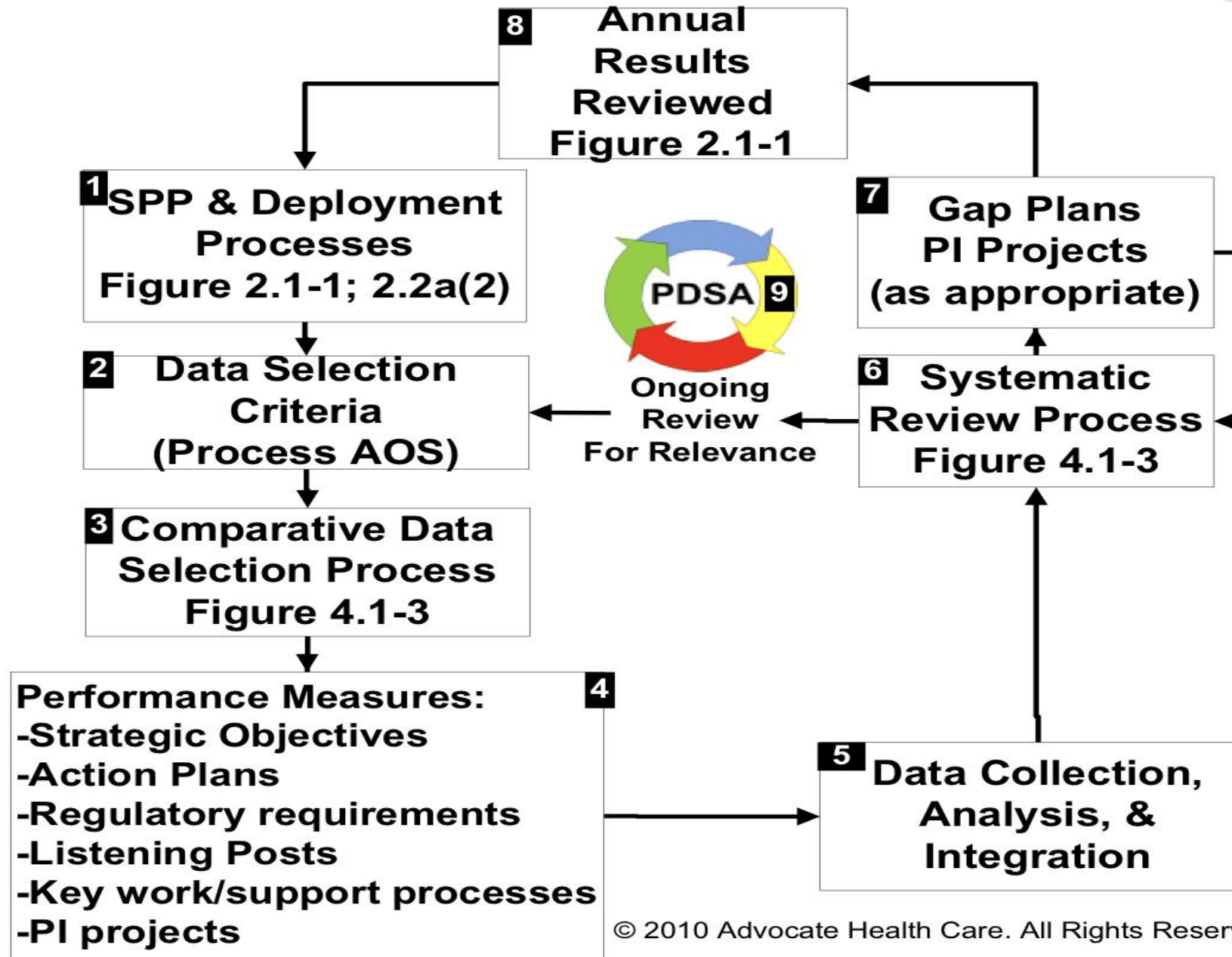
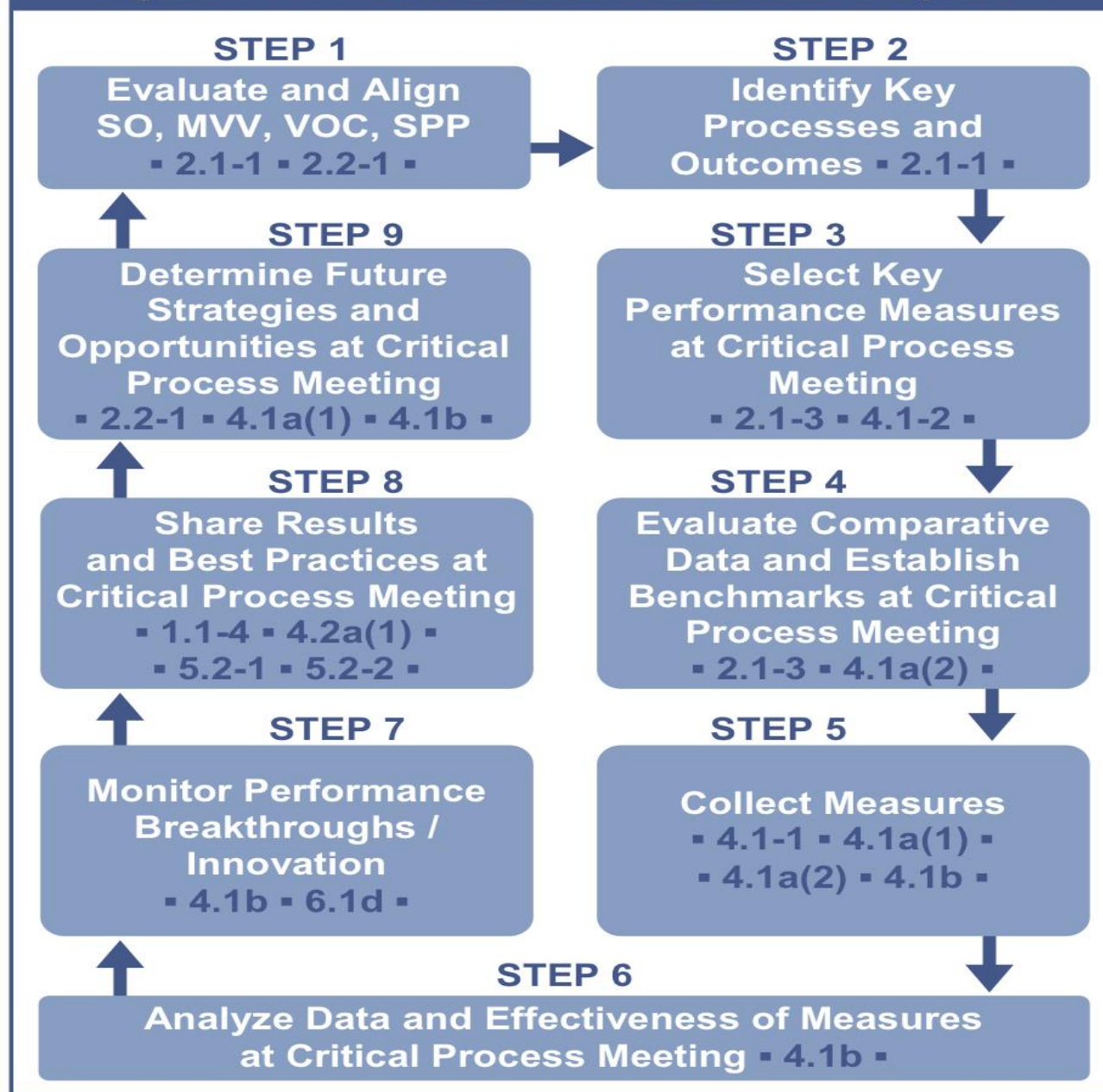




Figure 4.1-1 Performance Measurement System



Guiding Principles

SMART metrics should be defined, gathered, and analyzed for each process to gauge the success of process implementation and provide a basis for continual service improvement. *Leading indicators* are metrics that refer to future events (often in comparison to a present state) and help avoid a negative situation before it happens. *Lagging indicators* refer to past events and measure performance.

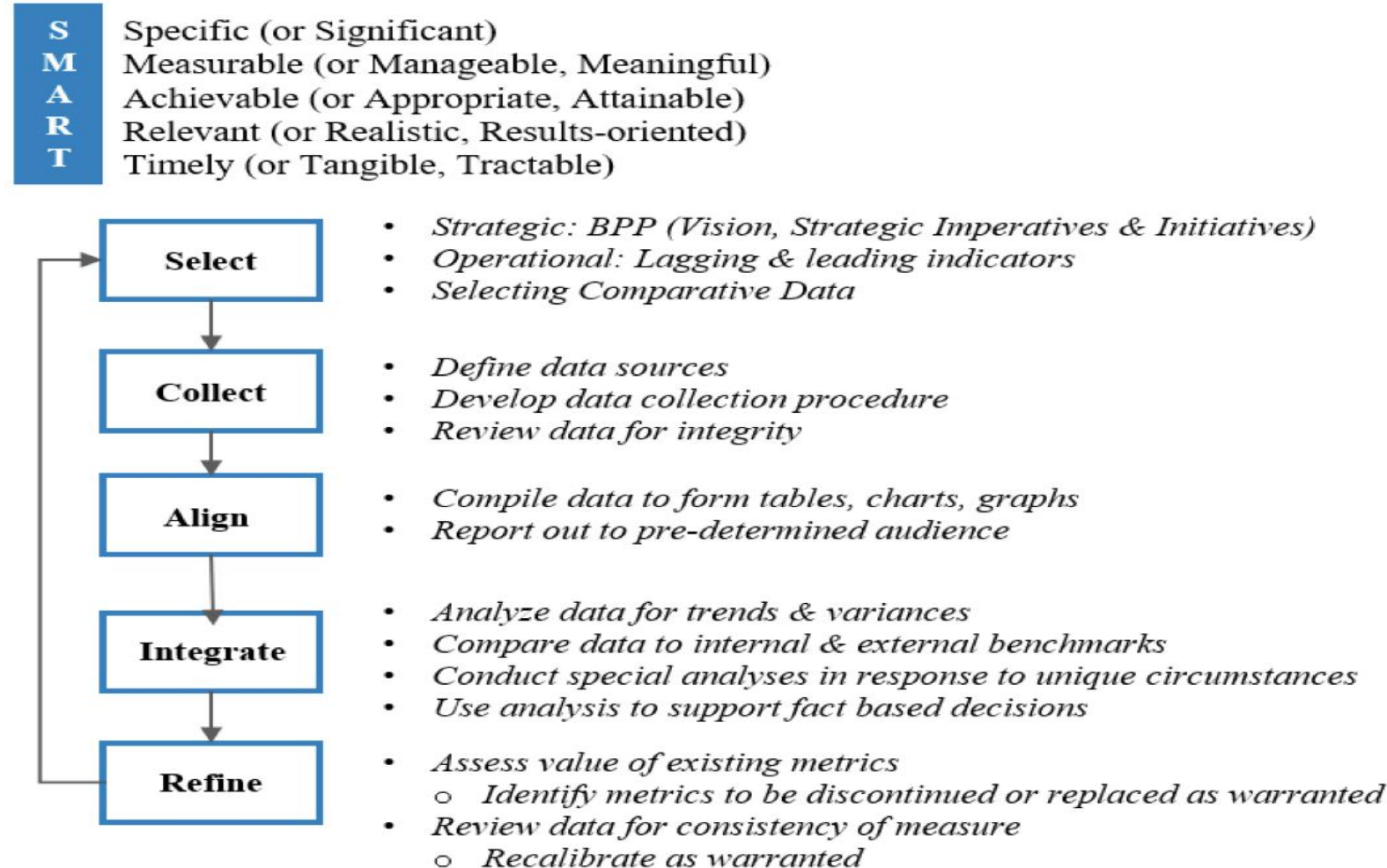
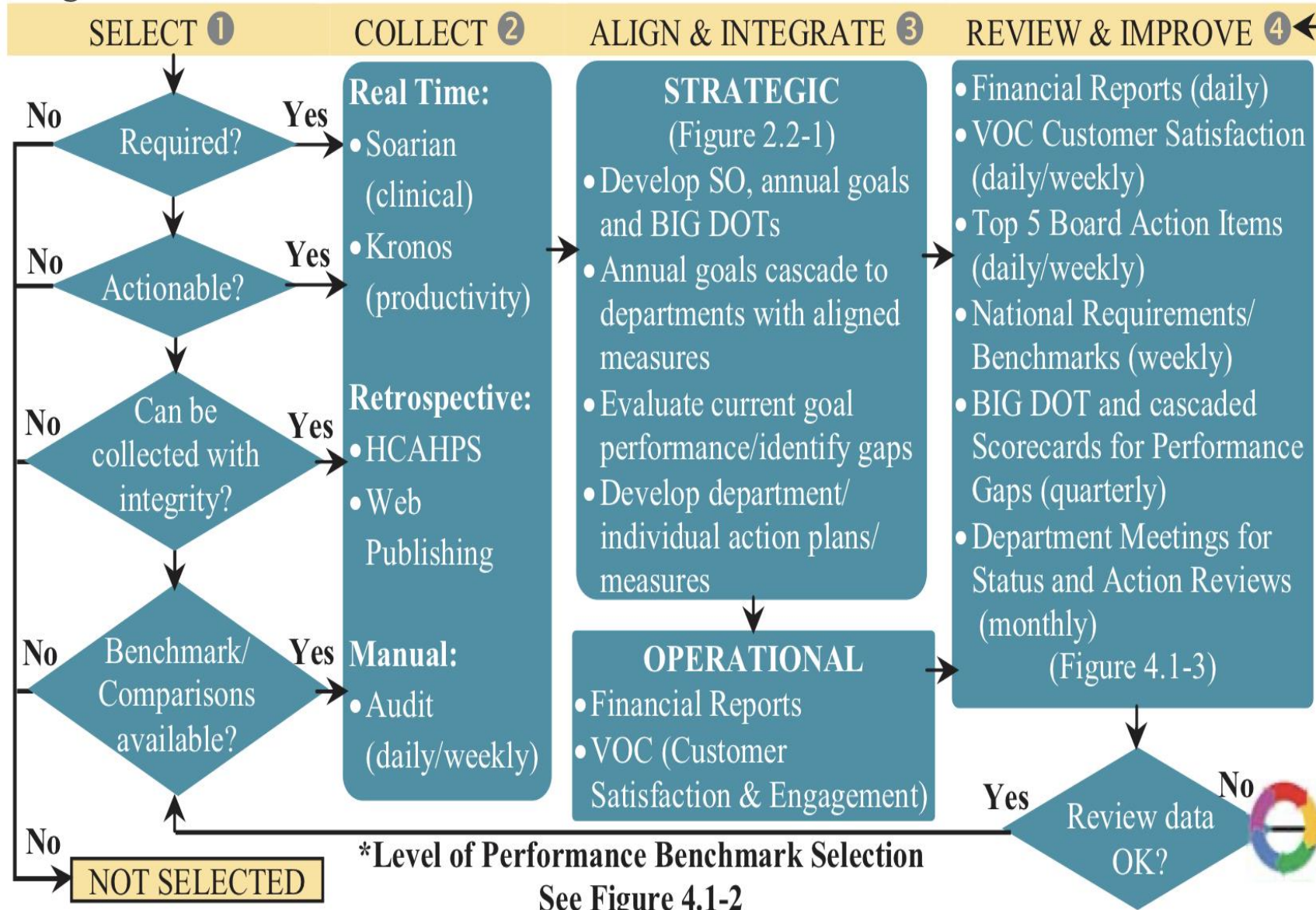


Figure 4.1-1 Performance Measurement Selection Process



Memorial Hospital and Health Care Center



Malcolm Baldrige National Quality Award 2018 Award Recipient, Health Care

Performance Measurement Process

- Driven by SPP
- Integrated PDCAE



MEMORIAL HOSPITAL AND HEALTH CARE CENTER

Sponsored by the Little Company of Mary Sisters - USA



Alignment Board



MEMORIAL HOSPITAL AND HEALTH CARE CENTER

Sponsored by the Little Company of Mary Sisters - USA



Category	Measures	Results/Figure
Strategy	Strategic Goal Progress	2.1-3 (Redacted) 7.4-23 (Redacted)
Customer	PPE (Overall Recommend) Net Promoter Score	7.2-8 7.2-9
Operations	PPE Perform to Expectations PPE Leadership, Schedule, & Scope PPE Solutions, Risk, & Commitments	7.2-1 7.2-2 7.2-3
Workforce	Candidate Pipeline FTE Bench & Resource Constraint Consultant Turnover GPTW Survey Client Retention	7.3-6 AOS 7.3-18 7.3-13
Finance	Revenue Growth per Industry Company Revenue Growth Profit Margin Super Liquid 3-month Hours Forecast BD Backlog	7.2-10 7.5-12-15 7.5-6 7.5-5 7.5-9 AOS 7.3-7

Blue = benchmarking available

Note: GPTW (reviewed on annual basis), Strategic Goal Progress (reviewed on quarterly basis)

Figure 4.1-2 Executive Dashboard (Key)

Figure 4.1-2 Key Organizational Performance Measures				
Strategic Objective (SO)	Key Performance Measure	Trend Analysis and Data Collection Tools	Frequency	Results
Deliver High Impact for Current Customers SO1	Satisfaction of Customer Critical Needs	Customer Survey	Annual	7.1-1
	Provide Timely Technical Services to Customers	Customer Survey	Annual	7.1-2
Deliver High Impact for New Customers (Innovation) SO2	Provide Innovative Solutions to Customers	Customer Survey	Annual	7.1-4
	Provide Unique Knowledge to Customers	Customer Survey	Annual	7.1-6
Build Customer Intimacy / Situational Awareness SO3	Provide Flexible Team Players to Customers	Customer Survey	Annual	7.1-3
	Identify Emerging Customer Requirements	Customer Survey	Annual	7.1-5
Increase Workforce Engagement SO4	SLT Monthly Employee Visits	Reported by SLT monthly for Convergence	Monthly	7.3-10
	Employees feel appreciated for good work and effort	Employee Survey	Annual	7.3-11
	Employees feel their suggestions and ideas are listened to	Employee Survey	Annual	7.4-4
	Employee Satisfaction	Employee Survey	Annual	7.3-12
	Employees would recommend Stellar to others	Employee Survey	Annual	7.3-13
	Employees are in or working toward their Dream Job	Employee Survey	Annual	7.3-15
	Attrition	Tracked by BOT (HR) and reported on monthly for Convergence	Monthly	7.3-14
Figure 4.1-2 Continued on next page...				



Figure 4.1-2 Key Organizational Performance Measures *Continued...*

Strategic Objective (SO)	Key Performance Measure	Trend Analysis and Data Collection Tools	Frequency	Results
Pursue Organizational Excellence SO5	Revenue Growth	Actuals tracked in Accounting System, Projections modeled in Forecasting Tool	Monthly	7.5-1, -2
	Number of Billable Employees	Tracked by BOT (HR) in ADP Workforce System	Monthly	7.5-3, -4
	Utilization Rate	Actuals tracked in Accounting System, Projections modeled in Forecasting Tool	Monthly	7.1-7, -8
	Gross Margin	Actuals tracked in Accounting System, Projections modeled in Forecasting Tool	Monthly	AOS
	Profitability	Actuals tracked in Accounting System, Projections modeled in Forecasting Tool	Monthly	7.5-3
Enhance Community Service SO6	% Participation in Foundation	Tracked in AP System	Annual	7.4-10
	Foundation \$ Contributed to Community	Tracked in AP System	Annual	7.4-11
	Investment in Aerospace	Tracked in AP System	Annual	7.4-11
	Investment in QuakeFinder	Actuals tracked in Accounting System, Projections modeled in Forecasting Tool	Annual	7.4-11
	Employees feel good about the way Stellar contributes to the Community	Employee Survey	Annual	7.4-12

Figure 4.1-2: Key Organizational Performance Measures

OUTCOME	MEASURE	ST TARGET
NEIGHBORHOOD LIVABILITY & SOCIAL HEALTH	Cumulative number noise complaints (7.1-16)	482
	Voluntary Code Compliance (7.1-17)	95% (90% Snow Season)
	Graffiti Abatement (7.1-15)	2 days
CULTURE & RECREATION	Recreation Programs - Total Participation (7.2-22)	1,500,000
	Golf Courses - Total Participation (7.2-22)	82,966
	Lincoln Center - Total Participation (7.2-22)	140,000
	FCMOD - Total Participation (7.2-22)	100,500
	Natural Areas Programs - Cumulative Participation per Capita (7.2-22)	8.0%
	Paved Trails - Number of Visits (7.1-8)	1,748,366
	Gardens on Spring Creek - Total Participation (7.2-22)	72,770
ECONOMIC HEALTH	Electric System Average Interruption Duration Index (SAIDI) in Minutes (7.1-1)	26:15
ENVIRONMENTAL HEALTH	Wastewater Treatment Effectiveness Rate (7.4-10)	100%
HIGH PERFORMING GOVERNMENT	Accuracy of Budgeted Expenses (7.5-2)	\$493.35 (millions)
	Actual Revenue Compared to Budget (7.5-1)	\$434.04 (millions)
	Average Response Time of Cases Submitted to Access Fort Collins (7.4-3)	3.0 days
	City Employee Safety – Days Away Restricted or Transferred (DART) (7.3-5)	3.7 Days
	City Employee Safety – Total Recordable Injury Rate (TRIR) YTD (7.3-5)	5.40 recordable accidents/200k
	City Employee Turnover Rate (7.3-1)	8%
SAFE COMMUNITY	Drinking Water Compliance Rate (7.4-11)	100%
	Police Response (7.1-27)	5 minutes
TRANSPORTATION	Transfort Fixed Route Passengers per Revenue Hour (7.1-3)	29.7
	Cumulative boardings per capita - % increase (7.1-3)	3,502 (thousands)
	Cumulative Lane Miles of Roadway Pavement Improved (7.1-4)	110 miles
	Average Travel Speeds (7.1-6)	3 minutes/mile



Team	Review Areas/Actions	Freq
Board	CPU KPI performance; modify KPIs; set targets	Annually
ACD and College Leadership	Data Days – Action Plans and KPIs	Semi-Annually
PVC	WIG and CPU KPIs and comparisons; SP progress; updates on MVV; budget matters; financial performance	Weekly
VC/VP	Action plan progress; updates on KPIs; coordination and issue resolution	Monthly
College Leadership Teams	WIG, CPU, KPI performance; KPIs and comparisons as data changes occur; SP progress; budget development and status; financial performance; staff initiatives, proposals and actions	Weekly
Budget Teams	Review, evaluate, prioritize, and allocate financial resources	Annual
Program Review Teams	Program Review Process and Outcomes	Annual

Figure 4.1-2 AC Performance Review Structure

[illegible]

Figure 4.1-3 IPM Measurement Inventory

Figure 4.1-3 Key Performance Measures, Comparative Data, Review Forums

Key Measures: Performance Analysis and Review

<u>Workforce Engagement</u> Engagement Scores (>64%)*; Workforce Productivity Measures Volunteer Time	<u>Member Health</u> Satmetrix Net Promoter Score (> 54%)*; Likelihood to Recommend Overall Satisfaction Member and Loan Growth & Market Share	<u>Financial Sustainability</u> Return on Equity (5-15%)* Efficiency Ratio (< 74%)* Enterprise Risk (Moderate)* Capital (8-10%)*
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Comparative Data Source
Selection Hierarchy: (1) in-market competitors; (2) similar business model;
(3) best practice

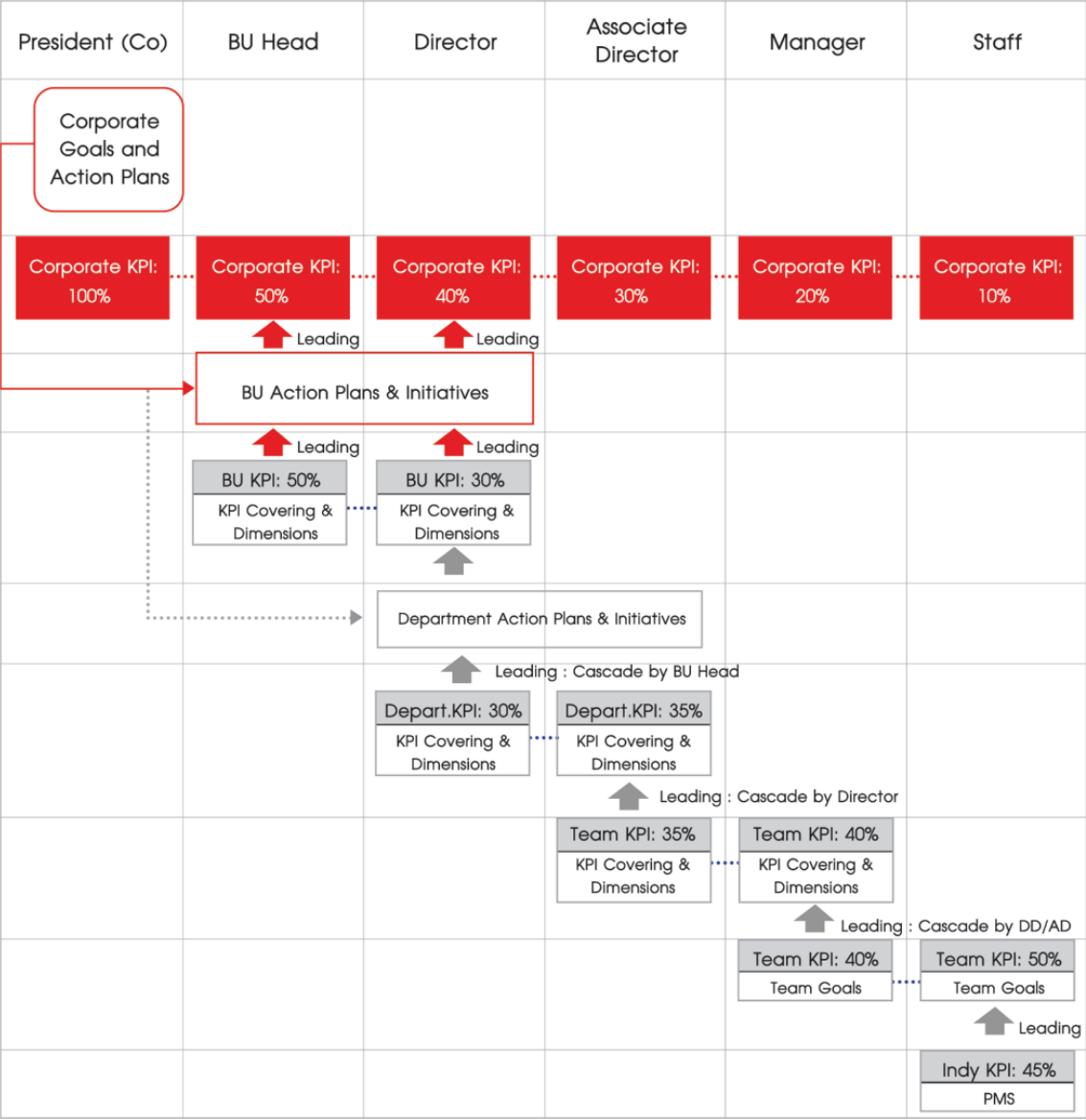
ModernThink Best of Colorado Employers; Mountain States Employers Council; Society of Human Resource Management; Baldrige Winners	Member Loyalty Group; Raddon Financial Group; Cornerstone; Bancography	SNL; Raddon Financial Group; Cornerstone
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Forum	Participants	Analysis (Measures)	Outputs
Run the Business	All Process Category Owners	Key Work (Value Stream) and Support (Enabling) In-Process Metrics	Variance analysis; Forecasts; Recommendations
Production Meeting	SVP Lending; Value Stream Process Category Owners	Value Stream Outcomes and Key Product and Work Process Metrics; outputs from RTB and Production forums	Variance analysis; Forecasts; Recommendations
Decide, Plan, & Align Meeting	SL	Outputs from RTB and Production Forums	Confirmation of analysis and forecasts; Adjusted targets; Approved & prioritized recommendations; Aligned resources
IT Steering Committee	SL	Significant Key Work and Support In-Process Measure	Confirmation of Analysis; Approved Recommendations
Board of Directors	Board and SL	Aggregated analysis and performance forecast	Forward looking confirmation of planned strategic activity
Connect the Business	Leaders	All Staff pre-view and Deep Dive Learning; Leadership Development	Learning; Preparation to cascade information
All Staff	All Staff; Membership and Partners as appropriate	Value Proposition Performance Executive Report; Transparent drill-down capability to any dashboard and supporting analysis	Communication of decisions; clarity of action; Meaningful performance results

*** Key Performance Guidelines**

College Performance Update KPIs	Frequency
Student Demographic Profile	Each Semester
Total Credit Student Headcount	Each Semester
Student Contact Hours and FTE	Each Semester
Course Completion Rate	Each Semester
Productive Grade Rate	Each Semester
Fall to Fall Persistence	Annually
CCSSE Student Engagement	Bi-Annually
Noel Levitz Student Satisfaction	Bi-Annually
Degrees and Certificates	Annually
Graduation Rate	Annually
FT FTIC Transfer Rate to 4-Year Schools	Annual
Academic and Technical Student Employment 6 Months After Graduation	Annually
PACE Workforce Engagement Results	Annually
High Risk Courses	Each Semester
Licensure Rates	Annually
Financial Viability KPIs	Frequency
Revenues and Budget Performance	Monthly
Bond Ratings	Annually
Foundation Assets and Gift Income	Monthly
Figure 4.1-1 ACD Key Performance Indicators	

Action Plan & Goals Cascade Process: APGC



การวัด การวิเคราะห์ และการจัดการความรู้ (Measurement, Analysis, and Knowledge Management)



4.1 การวัด วิเคราะห์ และปรับปรุงผลการดำเนินการของสถาบัน (Measurement, Analysis, and Improvement of Organizational Performance) : สถาบันมีวิธีการอย่างไรในการวัด วิเคราะห์ และเพื่อนำมาปรับปรุงผลการดำเนินการของสถาบัน (45 คะแนน)

ก. การวัดผลการดำเนินการ (PERFORMANCE Measurement)

(1) ตัววัดผลการดำเนินการ (PERFORMANCE MEASURES)

สถาบันมีวิธีการติดตามข้อมูล และสารสนเทศของการปฏิบัติงานประจำวัน (Organizational PERFORMANCE) และการดำเนินการโดยรวมของสถาบันอย่างไร

(2) ข้อมูลเชิงเปรียบเทียบ (Comparative Data)

สถาบันมีวิธีการเลือกและใช้ข้อมูล สารสนเทศเชิงเปรียบเทียบอย่างไร เพื่อสนับสนุนการตัดสินใจ โดยใช้ข้อมูลจริง

(3) ความคล่องตัวของการวัดผล (Measurement Agility)

สถาบันมั่นใจได้อย่างไรว่าระบบการวัดผลการดำเนินการของสถาบันสามารถตอบสนองต่อการเปลี่ยนแปลงทั้งภายในหรือภายนอกสถาบันที่เกิดขึ้นอย่างรวดเร็วหรือที่ไม่ได้คาดคิด และให้ข้อมูลที่ทันเวลา

F4.1-2 Data Selection and Comparison Sliding Scale Criteria

7 Step Selection Criteria

1) Align with Strategies/ADVANCE, 2) Meaningful & Actionable, 3) Sound Comparison/Benchmarks (F4.1-2), 4) Collectible & Accessible, 5) Reportable & Segmentable, 6) Clear & Easy to Understand, & 7) Have Owners with *Accountability*

Comparison Criteria

Available + Accessible + Relevant + Affordable = Adopted

Sliding Scale (Can include other industries)

National →

Regional/Local →

MHHS →

Historical

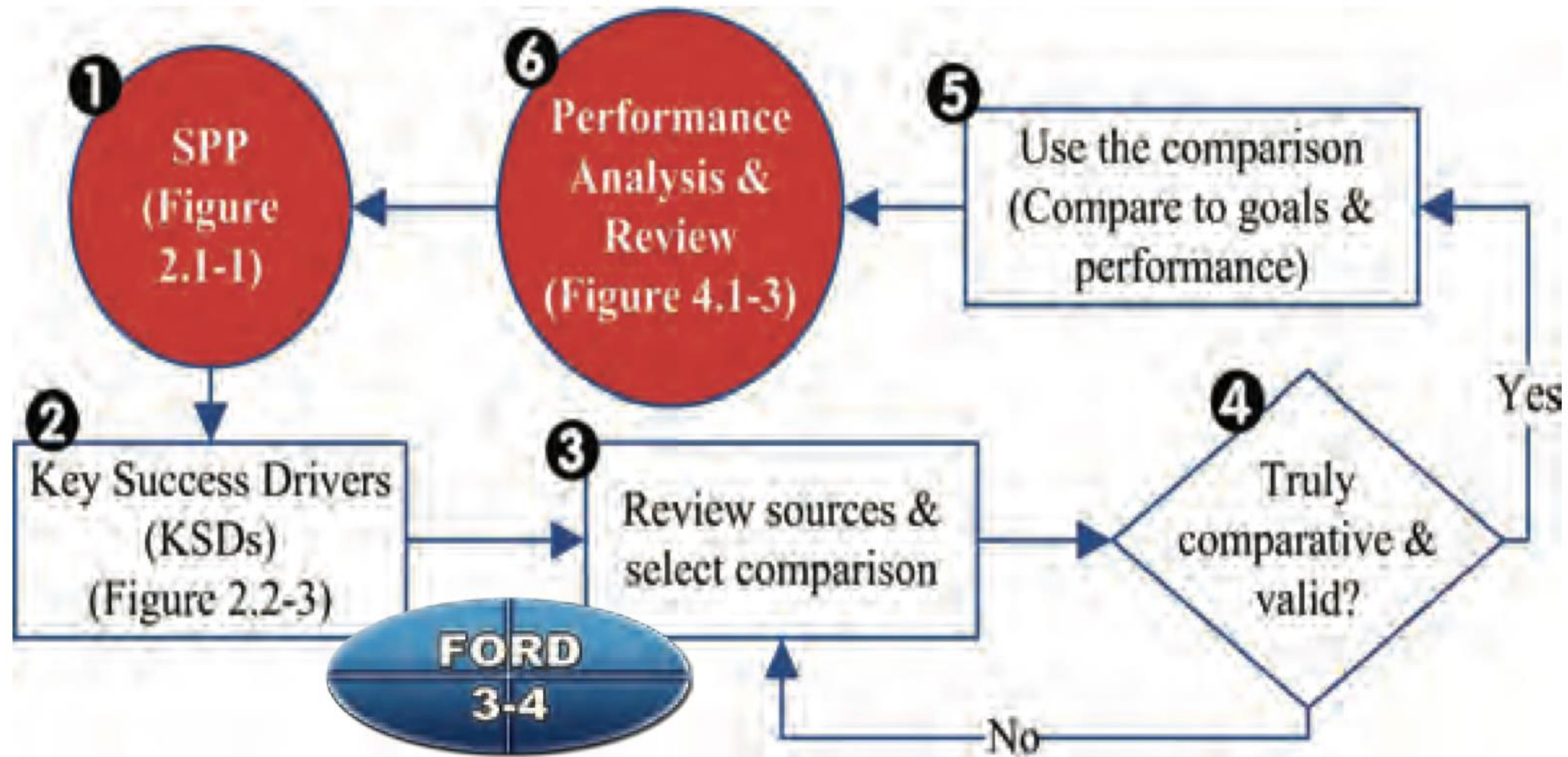


Figure 4.1-2 *Comparative Data Selection System*

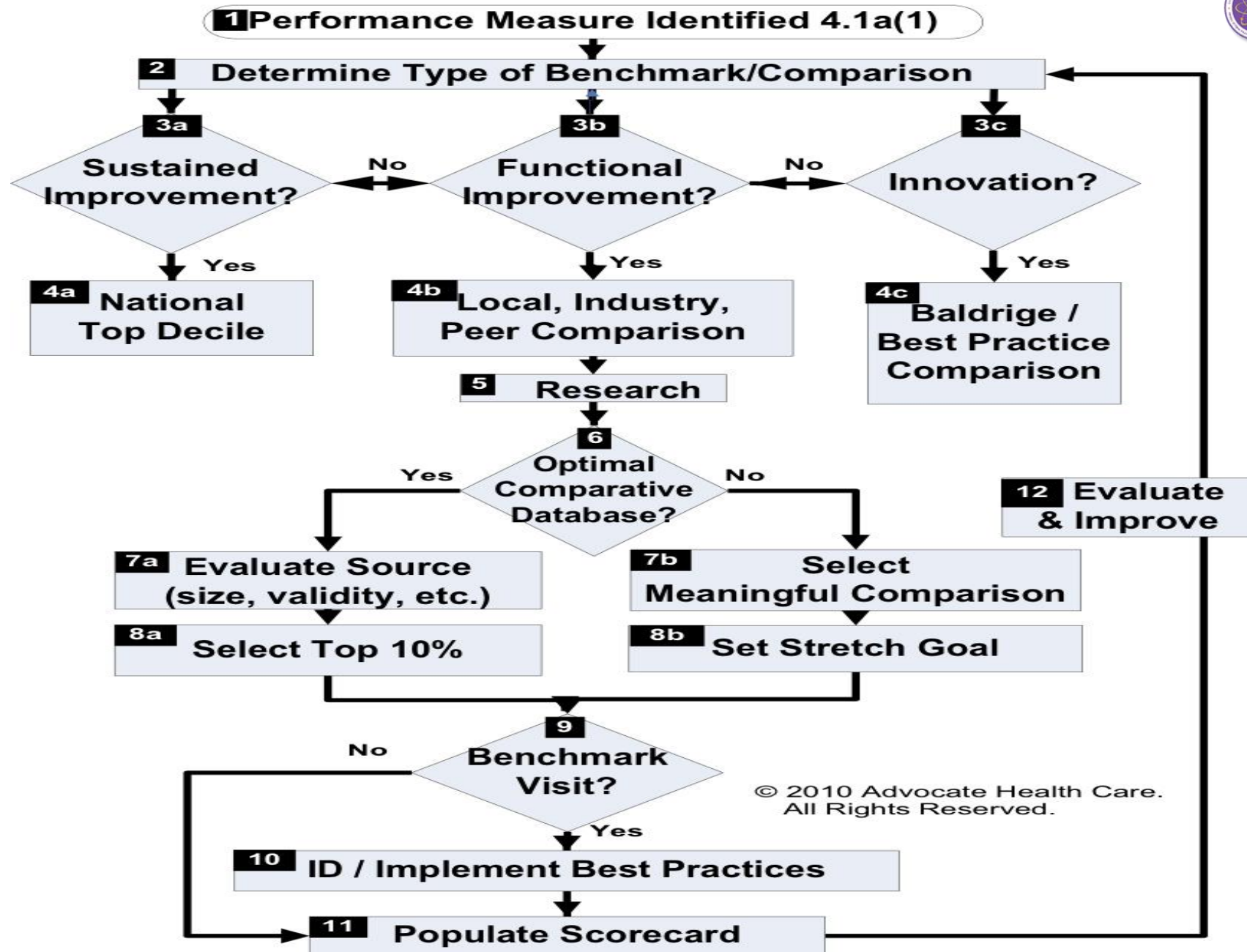
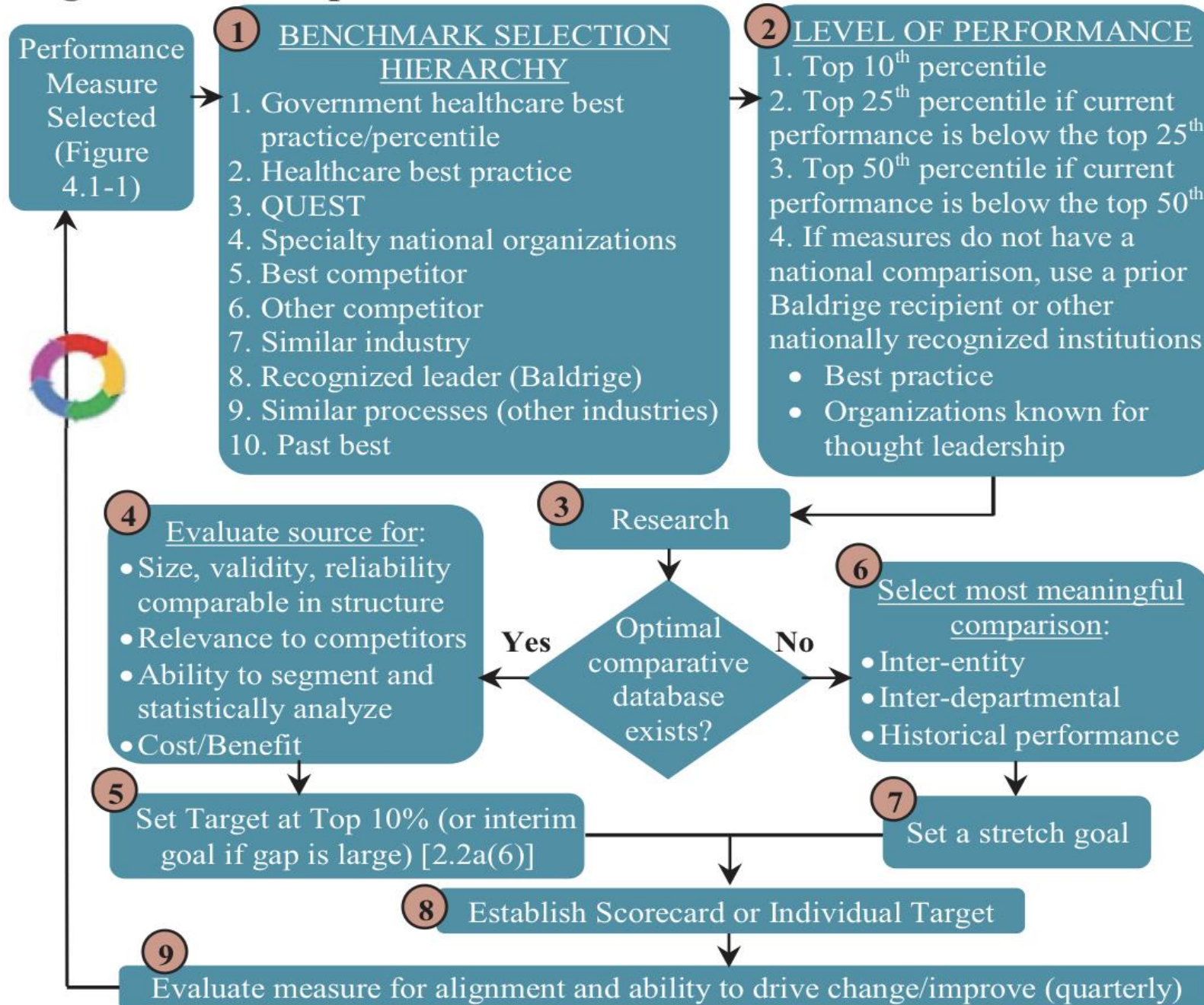


Figure 4.1-2 Comparative Data Selection Process



Center for Organ Recovery & Education

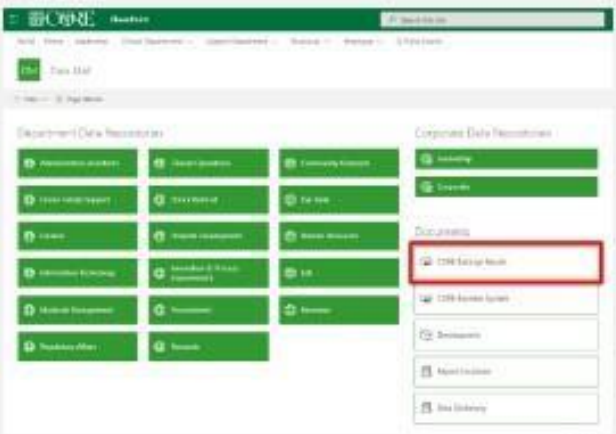
Malcolm Baldrige National Quality Award 2019 Award Recipient, Nonprofit



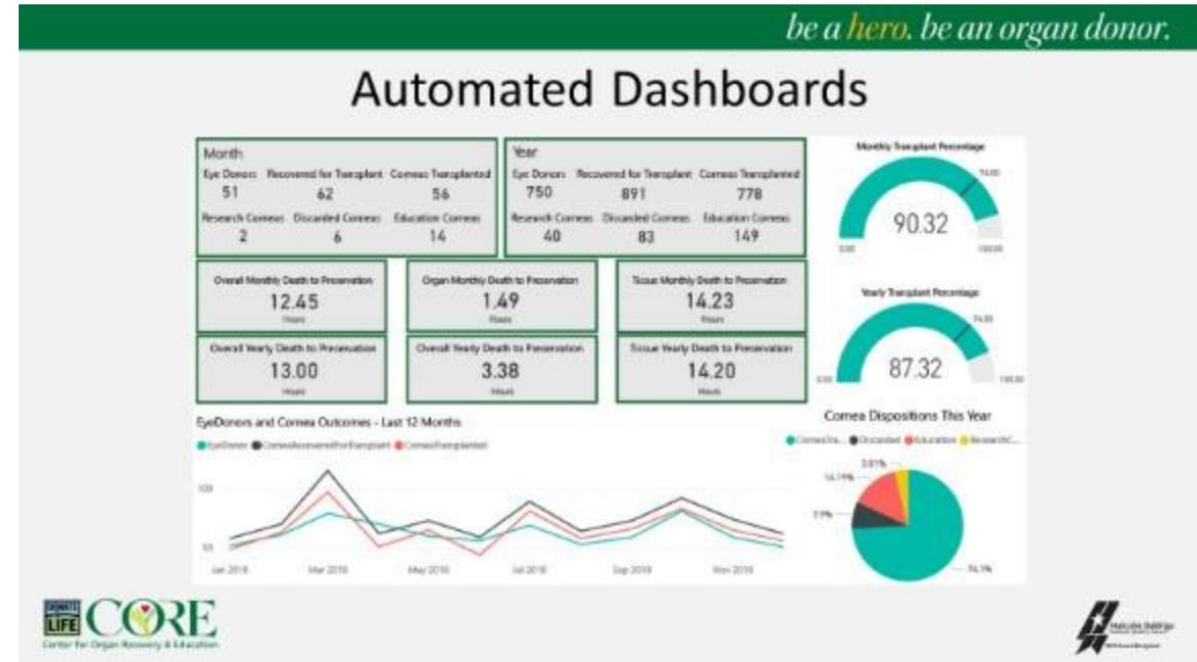
be a *hero*. be an organ donor.

Comparative Data

- **AOPO** – Association of Organ Procurement Organizations
- **CMS** – Centers for Medicare & Medicaid Services
- **LINC** – Leadership and Innovation National Collaborative



CORE
Center for Organ Recovery & Education



Core Processes	Company	Process Benchmarked	Affected Process Measures	Result
Product Development		Color work process		
Sales		Approach for product presentations to high-end A&D		
Inside Sales		Automation of the cutting for approval process		
Sample Management		Sample fulfillment process for greater efficiency		
Order Filling		Product storage for greater efficiency		
Inventory Management		Efficient method for receiving piece dye fabrics		
Support Processes				
Human Resources		Talent Management from interview to performance communication		
Marketing		Website ease of use and design		
IT		IT support and help desk		
Credit		Collection work flow analysis		
Accounting		Expense reporting approval process efficiency gain		

Figure 4.1-3 Examples of Process Best Practices learned from Momentum's strong focus on benchmarking both results and processes.

การวัด การวิเคราะห์ และการจัดการความรู้ (Measurement, Analysis, and Knowledge Management)



4.1 การวัด วิเคราะห์ และปรับปรุงผลการดำเนินการของสถาบัน (Measurement, Analysis, and Improvement of Organizational Performance) : สถาบันมีวิธีการอย่างไรในการวัด วิเคราะห์ และเพื่อนำมาปรับปรุงผลการดำเนินการของสถาบัน (45 คะแนน)

ก. การวัดผลการดำเนินการ (PERFORMANCE Measurement)

(2) ข้อมูลเชิงเปรียบเทียบ (Comparative Data)

สถาบันมีวิธีการเลือกและใช้ข้อมูล สารสนเทศเชิงเปรียบเทียบอย่างไร เพื่อสนับสนุนการตัดสินใจ โดยใช้ข้อมูลจริง

(3) ความคล่องตัวของการวัดผล (Measurement Agility)

สถาบันมั่นใจได้อย่างไรว่าระบบการวัดผลการดำเนินการของสถาบันสามารถตอบสนองต่อการเปลี่ยนแปลงทั้งภายในหรือภายนอกสถาบันที่เกิดขึ้นอย่างรวดเร็วหรือที่ ไม่ได้คาดคิด และให้ข้อมูลที่ทันเวลา

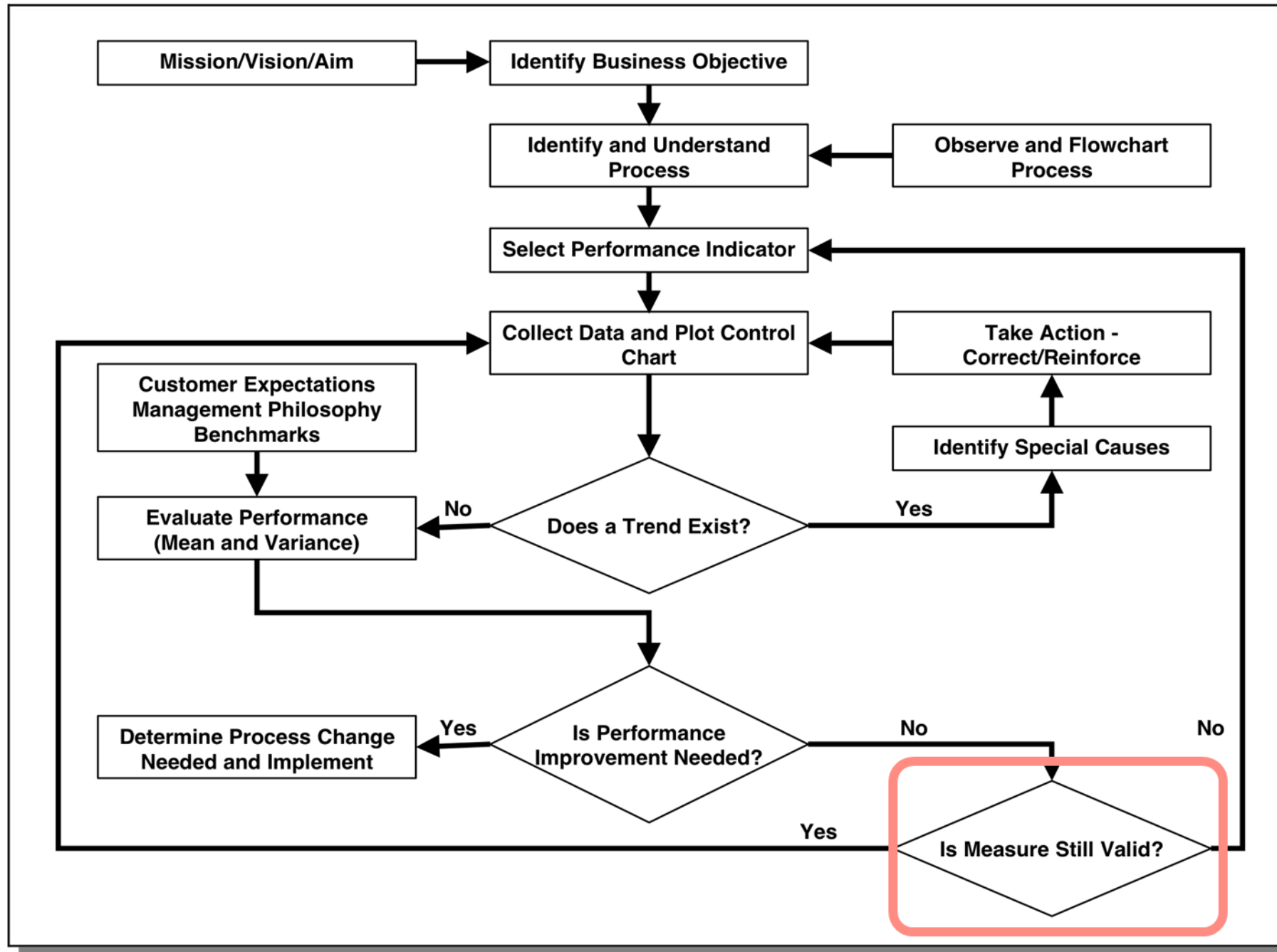


Figure 4.1-1 Steps for Review by Leadership Team

Step 1	List Strategic Priority
Step 2	List State Goal
Step 3	List aligned I-SS Objective
Step 4 – Analysis	<p>Did we meet our goal/objective?</p> <p>How are we doing over time? (trend)</p> <p>How are we doing compared to state, peer, and region? (comparison)</p> <p>How are we doing compared to Top Ten? (competitive)</p>
Step 5	What do the data tell us? (including indicator data from action plans and Governor's report card data)
Step 6	What do the data not tell us?
Step 7	Good news?
Step 8	Opportunities for improvement?
Step 9 – mid-year only	Recommendations for mid-course corrections?
Step 10	Recommendations for changes to strategic indicators?
Step 11	Recommendations for process redesign, development, or improvement?

4.1a(4) Measurement Agility: We recognize there is inherent unpredictability in health care that can arise from national policy changes, competitive positioning, and modifications in the practice of medicine. Accordingly, the MHHS and MHSL performance measurement systems are designed to not only rapidly respond to unexpected changes but to anticipate them, through continuous scanning and dissemination of information. Specifically, the approach to agility includes: **1)** frequency of PRA, **2)** use of electronic data systems, **3)** *Collaboration* with thought-leading health care groups, **4)** regular external environment scans (i.e. CDC, WHO), and **5)** rapid deployment of key processes to WF. In addition, changes to measures are made if plans are modified, a gap in performance is observed, or if a metric is no longer providing valuable information. For example, the SC review their key measures monthly, looking at performance, key action plans and PI initiatives, new system or regulatory mandates, or the need to utilize a more meaningful metric. In addition, whether it through MHHS or our external scanning of industry regulatory bodies such as TJC, CMS, and through partnerships with groups like the Institute of Healthcare Improvement (IHI) and ABC, the measurement system is monitored and refined to reflect current and future industry expectations. Lastly, changes are systematically deployed via MHHS and our communication methods (F1.1-5), updates to scorecards, and realignment of reward and recognition.

การวัด การวิเคราะห์ และการจัดการความรู้ (Measurement, Analysis, and Knowledge Management)



4.1 การวัด วิเคราะห์ และปรับปรุงผลการดำเนินการของสถาบัน (Measurement, Analysis, and Improvement of Organizational Performance) : สถาบันมีวิธีการอย่างไรในการวัด วิเคราะห์ และเพื่อนำมาปรับปรุงผลการดำเนินการของสถาบัน (45 คะแนน)

ข. การวิเคราะห์และทบทวนผลการดำเนินการ (PERFORMANCE ANALYSIS and Review)

สถาบันมีวิธีการทบทวนผลการดำเนินการและขีดความสามารถของสถาบันอย่างไร

สถาบันมีวิธีการใช้ตัววัดผลการดำเนินการที่สำคัญของสถาบันอย่างไร รวมทั้งการใช้ข้อมูลเชิงเปรียบเทียบในการทบทวนเหล่านี้ สถาบันวิเคราะห์อะไรบ้างเพื่อสนับสนุนการทบทวนและทำให้มั่นใจว่าผลสรุปนั้นใช้ได้ สถาบันและผู้นำระดับสูงใช้ผลการทบทวนในเรื่องต่อไปนี้อย่างไร

- ประเมินความสำเร็จของสถาบัน ผลการดำเนินการในเชิงแข่งขัน ความมั่นคงทางการเงิน (financial health) และความก้าวหน้าของการบรรลุผลตามวัตถุประสงค์เชิงกลยุทธ์และแผนปฏิบัติการ
- ตอบสนองอย่างรวดเร็วต่อความเปลี่ยนแปลงในด้านความต้องการของสถาบันและความท้าทายในสภาพแวดล้อมที่สถาบันดำเนินงานอยู่คณะกรรมการกำกับดูแลสถาบัน มีวิธีการอย่างไรในการทบทวนผลการดำเนินการของสถาบันและความก้าวหน้าของการบรรลุผลตามวัตถุประสงค์เชิงกลยุทธ์ และแผนปฏิบัติการ (*)

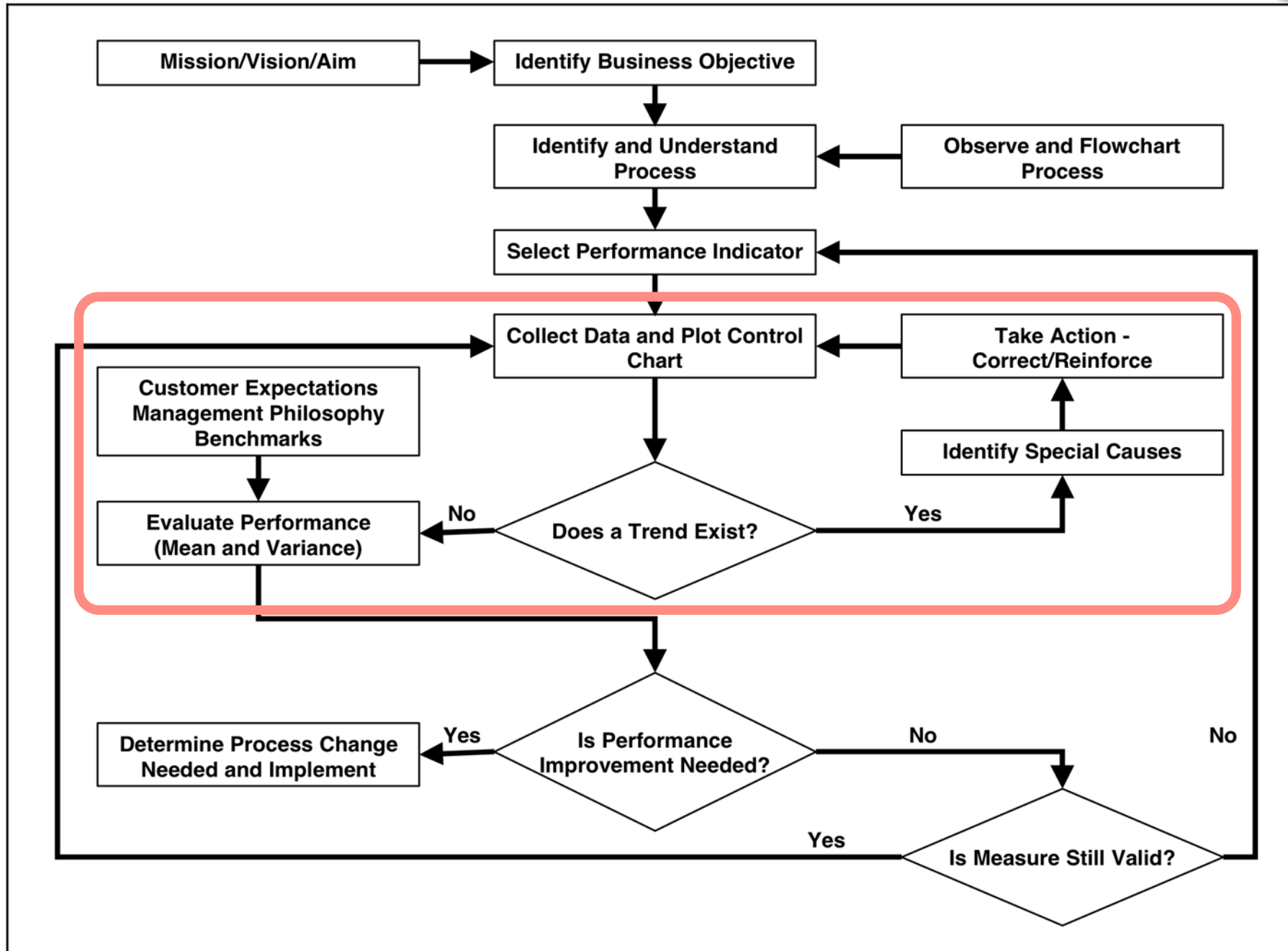


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Figure 4.1-1 Key Organizational and Work Group Measures Tracked, Collection Methods, & Frequency of Tracking

Measure	Analysis Method	Collection Means	Frequency	Results
Student Success Measures	Examine Historical Trends, Compare to ODCTE and Nationally, Analyze by Program and Student Characteristics	Google Sites and ODCTE Online Student Completion/Follow-Up Report	Continuous	7.1-1 – 7.1-12
FT Student Satisfaction / Dissatisfaction / Engagement	Examine Historical Trends, Compare to Baldrige Winners, Analyze by Program and Student Characteristics	Google Forms	Semi-Annually	7.2-1 – 7.2-7
Internal Customer Satisfaction / Dissatisfaction	Examine Historical Trends, Compare Nationally, Analyze by Work Group	Get Feedback	Annually	7.2-8 – 7.2-10
Other Customer Satisfaction / Engagement	Examine Historical Trends, Compare to Baldrige Winners, Analyze by Customer Segment, Instructor and Class Characteristics	Get Feedback	Continuous	7.2-13
Engagement Through Social Media	Examine Historical Trends	Google Analytics, Woo Commerce	Continuous	7.2-14
Workforce Satisfaction / Engagement	Examine Historical Trends, Compare to Other Organizations, Analyze by Workforce Characteristics	Great Place to Work Survey	Annually	7.3-11-7.3-19
Graduate Licensure/ Certification	Examine TCT Performance Trends against KPM, Compare Segmented Program Performance	Google Sites and Achademix	Continuous	7.4-18
Workforce Community Service	Examine TCT Performance Trends against KPM, Compare to GPTW	Google Sites and Halogen	Continuous	7.4-15
Budget Spent on Classroom Support	Examine TCT Performance Trends against KPM	Trends Accounting System	Daily	7.4-18
Total Customers	Examine TCT Performance Trends against KPM	Google Sites and Achademix	Continuous	7.5-9
Fund Balance	Examine Amount Required to Have Sufficient Cash Flow	Trends Accounting Software System and Google Sites	Continuous	7.5-3
WF Retention Rate	Examine TCT Performance Trends against KPM, Compare to Top 5 GPTW 2015 Small Company Performance	Google Sites	Continuous	7.4-18
Workforce PD	Examine TCT Performance Trends against KPM	Google Sites	Continuous	7.4-18
WF National Licensure / Certification	Examine TCT Performance Trends against KPM and Vision 2020 Goal	Google Sites and Halogen	Continuous	7.4-18
WF Bachelor's Degree or Higher	Examine TCT Performance Trends against KPM and Vision 2020 Goal	Google Sites	Continuous	7.3-1
Financial Data	Microsoft Excel	Trends		7.5-1 – 7.5-8

Figure 4.1-3: Organizational Performance Review



MEASURES	FREQUENCY*	REVIEWED BY	ANALYSES	USE
QSAR	M	ELT, SA Leaders	Performance relative to target & benchmark, trending	Action plan modification, resource reallocation, performance improvement
Strategy MAPs	M	ELT, SA Leaders	Performance relative to targets	Action plan modification, resource reallocation, performance improvement
Financial MOR	M	ELT	Variance to budget, drill down by service area & department	Action plan modification, resource reallocation, performance improvement
Access Fort Collins	D, Q	Designee, SIT	Aggregation, trending	Service recovery, service design & improvement
Productivity	D	Managers	Variance to budget, trending	Staffing adjustments, capability & capacity planning
Staffing	D	Managers	Variance to budget, trending	Staffing adjustments, capability & capacity planning
Revenue	D	ELT	Variance to budget, trending, drill down by service area & department	Resource reallocation, financial planning, performance improvement
Budget	M	ELT	Variance to budget, trending, drill down by service area & department	Resource reallocation, financial planning, performance improvement
Customer Satisfaction	M	ELT, Managers, staff	Trending, gap analysis	Action plan development, service design & improvement
Employee Engagement	B	ELT, Managers, staff	Trending, drill down by department, correlation analysis, gap analysis	Action plan development
Community Satisfaction	A	ELT, Council	Performance relative to benchmark, correlation analysis, gap analysis	Action plan development, service design & improvement, strategic planning
Business Satisfaction	A	ELT, COT, EH	Trending, gap analysis	Action plan development, service recovery, service design & improvement, strategic planning

*Frequency: Daily (D), Weekly (W), Monthly (M), Quarterly (Q), Biannually (B), Annually (A)

Figure 4.1-3 Examples: Organizational Performance Review / Fact-based Decision-Making

	Daily 1	Weekly 2	Monthly 3	Quarterly 4	Annual, Bi-Annual 5
	What (Who)	What (Who)	What (Who)	What (Who)	What (Who)
A Pillar Performance Data	<ul style="list-style-type: none"> ▪ Clinical State of the Unit Report (M,F) ▪ Volumes (ET, D) ▪ Revenues (ET, D, M) ▪ Unit hourly rounding (M) 	<ul style="list-style-type: none"> ▪ Revenues (ET, D, M) ▪ Cash Collections (RCT, ET) ▪ Productivity (ET, D, M) ▪ Financial (GC, MEC, ET, D, M) ▪ Patient Satisfaction (ET, D, M, F) 	Weekly data, plus: <ul style="list-style-type: none"> ▪ Clinical Outcomes (GC, P, ET, D, M) ▪ Mortality/Complication (GC,P,ET, D) ▪ Patient Safety Dashboard (GC,ET,D) ▪ Growth Dashboard (ET, D) ▪ Org Report Card (GC, P, ET, D, M) 	<ul style="list-style-type: none"> ▪ Monthly data, plus: ▪ Patient Satisfaction (ET, D, M, F) ▪ Leadership action plans (ET, D, M) 	<ul style="list-style-type: none"> ▪ Associate Satisfaction – (GC, ET, D, M, F) ▪ Physician Loyalty Survey (GC, P, ET, D,M)
B Analysis	<ul style="list-style-type: none"> ▪ Variances (e.g. daily activity vs. planned) ▪ Trending 	<ul style="list-style-type: none"> ▪ Gap analysis ▪ Trending ▪ Variances ▪ Results from PI tools 	<ul style="list-style-type: none"> ▪ Budget to Actual ▪ Statistical / Comparative ▪ Action plan evaluation 	<ul style="list-style-type: none"> ▪ Same as monthly, plus ▪ Value Stream Analysis ▪ Rapid Improvement Events (Innovation) 	<ul style="list-style-type: none"> ▪ Statistical ▪ Gap Analysis ▪ Regression
C Decisions Made / Use	<ul style="list-style-type: none"> ▪ Operational ▪ Business Development ▪ Service Recovery ▪ Safety /Regulatory 	<ul style="list-style-type: none"> ▪ Reinforce action plans and associated behaviors ▪ Staffing ▪ Recognition 	<ul style="list-style-type: none"> ▪ Modify action plans ▪ Charter new teams ▪ Gap plans ▪ Resource allocation ▪ Recognition 	<ul style="list-style-type: none"> ▪ Modify action plans ▪ Charter new teams ▪ Gap plans ▪ Resource allocation ▪ New growth strategies ▪ Opportunities for innovation 	<ul style="list-style-type: none"> ▪ Unit/hospital interventions / action plans ▪ Recognition ▪ Opportunities for innovation
GC=Governing Council ET=Executive Team P=Physicians D=Director M=Manager F=Frontline Staff					

Figure 4.1-3 Organizational Performance and Capabilities Review (Sample - Full Table AOS)

WHEN	WHO						ANALYSIS TO ENSURE VALID CONCLUSIONS	DECISIONS MADE	Information Flow
DAILY	CA	N/MS	SS	SL	P	BOT	<ul style="list-style-type: none">•Variance (Daily vs. Budget)•Trending•Review of Quantros•Social Media monitored by Marketing and issues communicated•Patient compliments and complaints•Work process in process measures•Support process requirements	<ul style="list-style-type: none">•Daily operational changes•Service recovery•Safety/Regulatory•Resource Pool/Call-offs•Physician notification•Patient flow•Performance Improvement	Information Flow ↓ FOCUS ON ACTION BASED ON SIZE OF VARIANCE, TREND, RISK ↓ 6 Figure 2.1-2 ↑
Safety (Patient/WF)	x	x	x		x				
Census/Volume/Staffing	x	x	x	x	x				
Admissions/Referrals	x	x	x		x				
Productivity	x	x	x		x				
Social Media	x	x	x	x	x				
Satisfaction/Quality	x	x							
Top 5 Board	x	x	x		x				
WEEKLY							<ul style="list-style-type: none">•Trending/Variances•Patient complaint themes reviewed•Process change•Root cause analysis	<ul style="list-style-type: none">•Safety/Regulatory•Staffing/Recruitment•Recognition•Reinforce Action Plans•Service recovery•Operational changes	
Rounding	x	x		x	x				
Productivity/Financials	x	x	x	x	x				
Patient Satisfaction	x	x	x	x	x				
PI Projects (SPL, A3)	x	x	x	x	x				
MONTHLY							<ul style="list-style-type: none">•Social media campaigns•Budget Target vs. Actual•Statistical comparison•Action Plan evaluation•All Top 5 boards and scorecards	<ul style="list-style-type: none">•Modify social media campaigns•Modify Action Plans for Top 5 Boards•Resource allocation/New teams•Budget changes•Business development	
Clinical Outcomes	x	x		x					
Rounding	x	x	x	x	x				
Scorecards	x	x	x	x	x				
Financial Performance	x	x	x	x	x				
TCT Project Status				x					
QUARTERLY							<ul style="list-style-type: none">•Budget Target vs. Actual•Statistical comparison•Work/support process in-process & outcomes•Action Plan evaluation•Aggregation of patient experience data•Identification of current performance gaps and gaps for projected year end performance	Address performance gaps: <ul style="list-style-type: none">•Safety/Regulatory•Resource allocation/changes•Operational changes•Modify Action Plans•Opportunities for PI/Innovation	
Patient Satisfaction	x	x	x	x	x	x			
BIG DOTs/Goals/Action Plans/Cascaded Measures/Financials	x	x	x	x	x	x			
Social Media Trending		x		x					
Work Process	x	x	x	x	x				
ANNUAL/BIANNUAL							<ul style="list-style-type: none">•Social media campaigns•Budget Target vs. Actual•Gaps in performance•Action Plan evaluation and Scorecard review•Year end results compared to annual projected performance compared to benchmarks	<ul style="list-style-type: none">•Messaging approaches for social media tailored to key customer requirements•Safety/Regulatory•Recognition•Action Plan modification/New Plans•Opportunities for PI/ innovation	
Workforce Performance Reviews	x	x	x	x	x	x			
Employee Satisfaction	x	x	x	x	x	x			
Physician Satisfaction	x	x		x	x	x			
Patient Safety Culture	x	x	x	x	x	x			
Strategic Plan achievement of: <ul style="list-style-type: none">•BIG DOTs•Annual Goals•Action Plans•Cascaded Measures	x	x	x	x	x	x	<ul style="list-style-type: none">•Impact of year end results on SPP accomplishment•Gap analysis: current performance versus year end actual; differences between projections of our future performance and BIG DOT performance targets	<ul style="list-style-type: none">•Organizational success and success compared to competitor performance•Strategic Opportunity and Innovation•Changes in structure, KWS, KWP, support processes (Figure 6.1-1)•SPP and Organizational Review Processes	
CONTINUOUS									<ul style="list-style-type: none">•Shifts in technology, market, services, competition, economy, regulatory environment
Environmental Analysis				x	x	x			

Legend: **CA** Clinical Areas, **N/MS** Clinical Nursing and Medical Staff, **SS** Support Services, **SL** Senior Leaders, **P** Partners, **BOT** Board

When/What		Who				Analysis to Ensure Valid Conclusions	Decisions Made
		SLT	Sales	Service	Supt.		
DAILY	Safety		X	X	X	<ul style="list-style-type: none">• Trends/Variance to KSDs• Review of Financial Performance• Market Performance• Customer Compliments & Complaints• Work Process in process measures• Social Media Posts	<ul style="list-style-type: none">• Daily Operating Changes• Retraining needed• Social Media Responses• Vehicle Pricing• Customers for follow-up• Performance Improvement
	DOC	X	X	X	X		
	Sales in ABQ	X	X				
	Forecast	X	X	X	X		
	CVP/CEI	X	X	X	X		
	MotoFuze	X	X	X	X		
	Social Media	X	X	X	X		
WEEKLY	Safety	X	X	X	X	<ul style="list-style-type: none">• Trends/Variance to KSDs• Work Process in-process measures• FordStar Certification• Regulatory changes• Current staff levels versus the need• CEI score• What’s Important Now (WIN)	<ul style="list-style-type: none">• Operating Changes• Re• training needed• Staffing/Recruitment• Regulatory compliance• Performance Improvement
	DOC	X	X	X	X		
	Staffing	X	X	X	X		
	Regulatory	X					
	CVP/VOC	X	X	X	X		
MONTHLY	Safety	X	X	X	X	<ul style="list-style-type: none">• Trends/Variance to KSDs goals & Comparisons & Benchmarks• Status of back page improvements• Status to SPP action plans• Status to CEM Bonus• Employee retention• Capability and Capacity• Baldrige Systems	<ul style="list-style-type: none">• Reinforce safety & Regulatory compliance• Customer Engmt & Sat Levels• Reinforce / modify action plans• Performance Improvement/Innovations• Back Page Improvements Completed• Operating & Budget Changes• Business Development• Baldrige Systems Maturity
	BPR (KSDs)	X	X	X	X		
	20 Group	X					
	Back page	X	X	X	X		
	Expense	X					
	Strategy	X	X				
1/4 LY	Loyalty	X	X	X	X	<ul style="list-style-type: none">• Sales & Service Customer Loyalty vs. ABQ Competition• Safety committee trend analysis	<ul style="list-style-type: none">• Loyalty Program Adjustments• Adjustments to safety program• Performance Improvements
	Safety	X	X	X	X		
ANNUALLY	Annual Plan Meeting	X	X	X	X	<ul style="list-style-type: none">• Evaluation of performance of entire year vs. plan & previous year• Strengths & gaps in performance• CEM and President’s Award status• Improvements Implemented• Employee Retention	<ul style="list-style-type: none">• Reinforce safety & Regulatory compliance• Overall annual plan successes & opportunities• Validity of Next Year’s Plan• President’s Award Bonus
	Employee Engagement Surveys	X	X	X	X		

FORD
5+

↑ FOCUS ON ACTION BASED ON THE SIZE OF THE VARIANCE, TREND, RISK

Figure 4 1-3 *Organizational Performance & Capabilities Review*

การวัด การวิเคราะห์ และการจัดการความรู้ (Measurement, Analysis, and Knowledge Management)



4.1 การวัด วิเคราะห์ และปรับปรุงผลการดำเนินการของสถาบัน (Measurement, Analysis, and Improvement of Organizational Performance) : สถาบันมีวิธีการอย่างไรในการวัด วิเคราะห์ และเพื่อนำมาปรับปรุงผลการดำเนินการของสถาบัน (45 คะแนน)

ค. การปรับปรุงผลการดำเนินการ (PERFORMANCE Improvement)

(1) ผลการดำเนินการในอนาคต (Future PERFORMANCE)

สถาบันคาดการณ์ผลการดำเนินการในอนาคตอย่างไร

สถาบันใช้ผลการทบทวนผลการดำเนินการ ข้อมูลเชิงเปรียบเทียบและเชิงแข่งขันที่สำคัญ เพื่อคาดการณ์ผลการดำเนินการของสถาบันอย่างไร

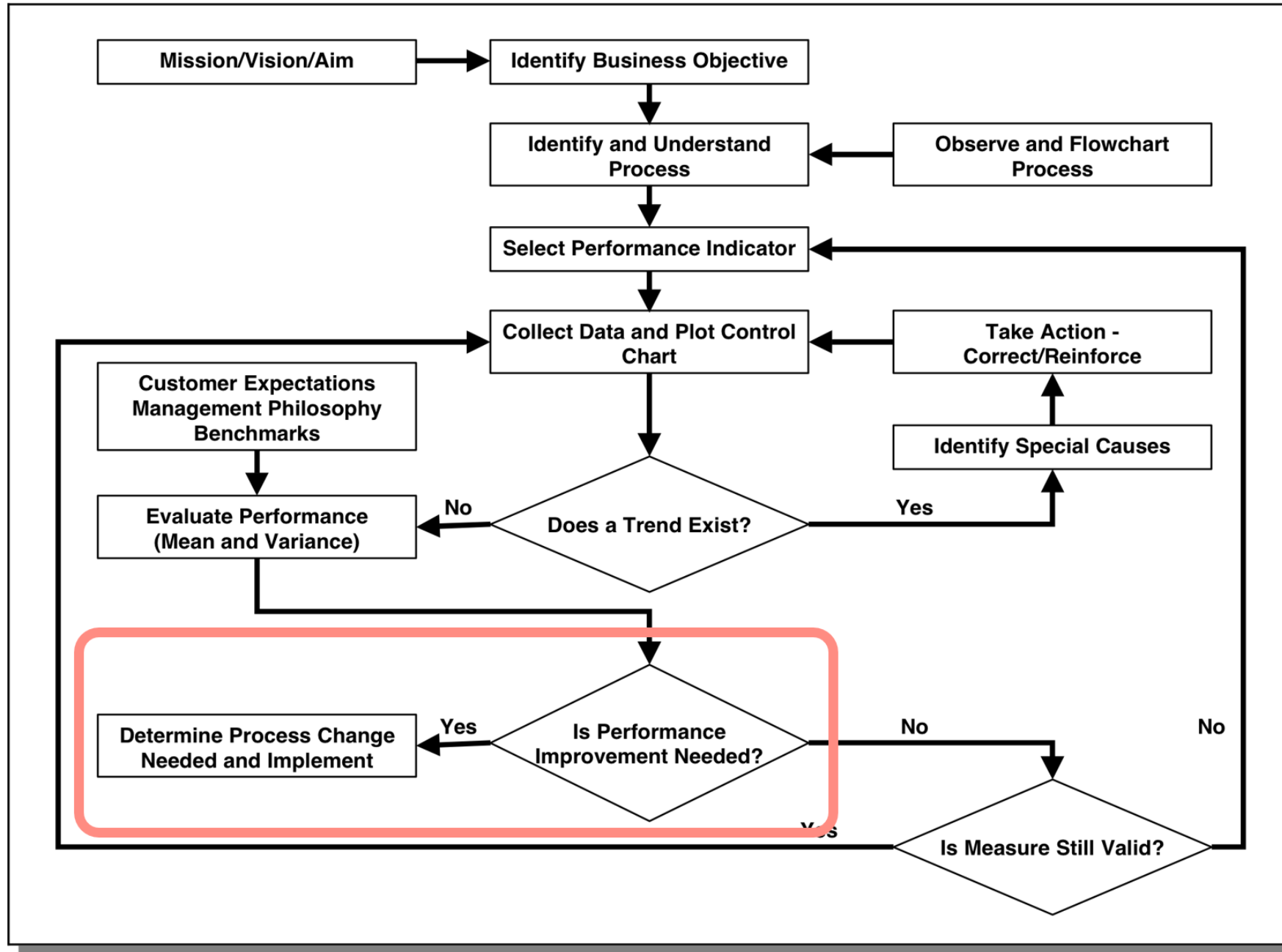
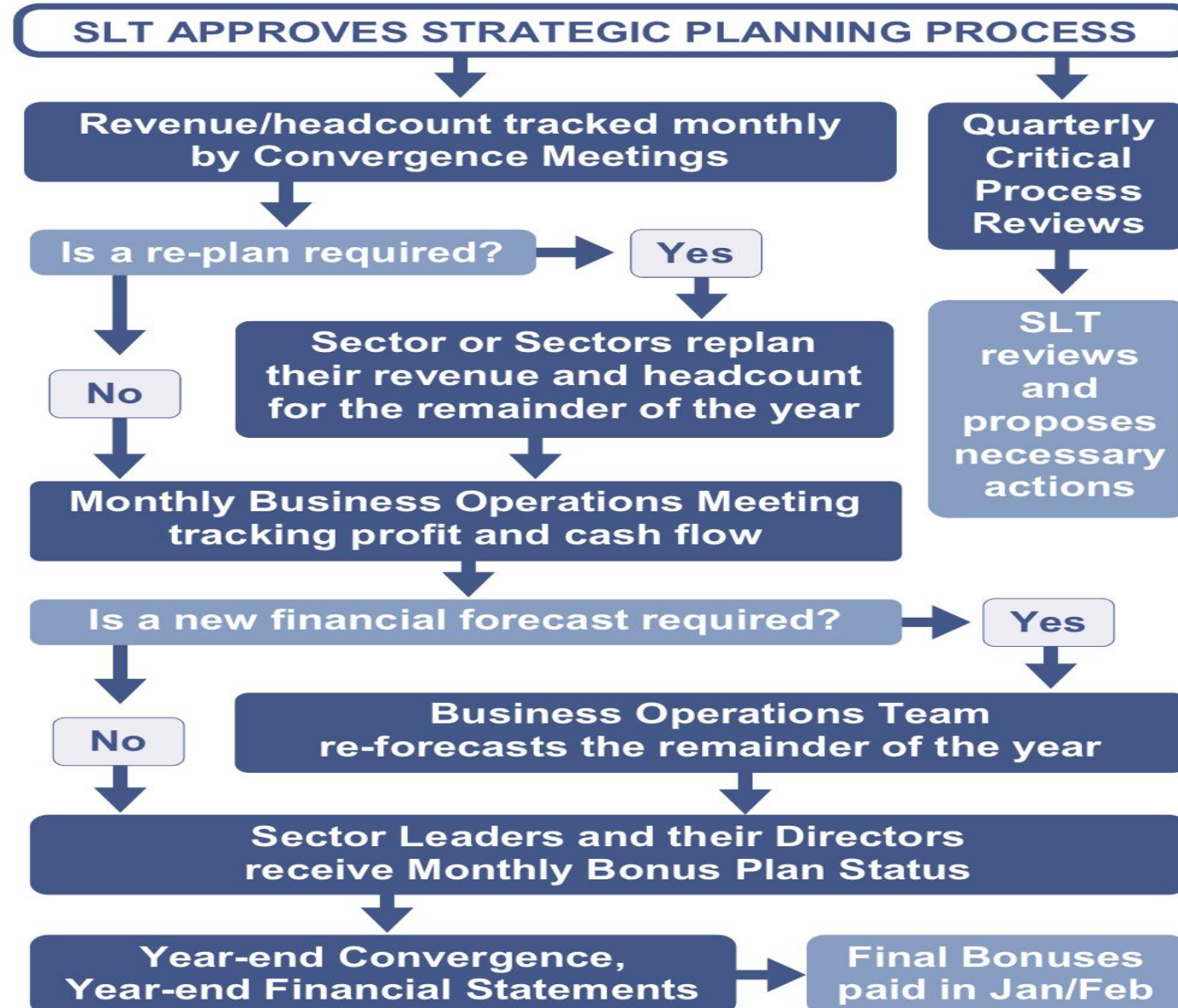


Figure 2.2-2 Integrated Convergence and Financial System



Mechanism/Type of Review	Participants	Focus of Review & Analysis
DAILY		
Referral pass-off	Clinical teams, LT	Management of caseloads and staffing
Morning call	Clinical teams, AOCs	Management of caseloads and staffing
WEEKLY		
Organ case review	Clinical teams, Medical Director	Donation outcomes, root cause analysis
BI-MONTHLY		
Communication & Collaboration (CNC)	Clinical teams, LT	Case review, improvement strategies
MONTHLY		
Rounding	Employee, Leader	Identify improvements & innovations, recognition
Rounding for Outcomes	Employee, ELT	Identify improvements & innovations, recognition
Scouting Report	ELT, LT	Identify improvements & innovations, recognition
1:1 Meetings	Employee, Leader	Individual performance, competency, & development
BSC Measures	ELT, LT, BOD	Performance to projections
Strategic Goals and Action Plans	ELT, LT	Performance to goal Progress of action plans
Personal Goals	Employees	Performance to goal
Financial performance	ELT, LT, BOD, Finance Committee	Performance to budget Financial position
Organ and Tissue Monthly Report	ELT, LT, Employees	Organ and tissue donor/referral trends Performance to goal
Medical Record Review	Director PE, HD, COO, CEO	Organ donor gap trends, conversion rates, evaluate missed opportunities
EVERY TWO MONTHS		
CAPA, NCR, Complaint	QIC	Review of trends, root causes
PDSA projects	QIC	Review status of improvements Achievement of expected outcomes
QUARTERLY		
Strategic Goals	COO, CFO	Analysis of action plan progress in relation to achievement of strategic goals
Process Measures	ELT, LT	Performance to target, improvement strategies
BI-ANNUALLY		
Strategic Objectives	Clinical teams, LT	Performance to target
ANNUALLY		
Quality Plan Outcomes	ELT, LT, BOD	Trends, outcomes

การวัด การวิเคราะห์ และการจัดการความรู้

(Measurement, Analysis, and Knowledge Management)



4.1 การวัด วิเคราะห์ และปรับปรุงผลการดำเนินการของสถาบัน (Measurement, Analysis, and Improvement of Organizational Performance) : สถาบันมีวิธีการอย่างไรในการวัด วิเคราะห์ และเพื่อนำมาปรับปรุงผลการดำเนินการของสถาบัน (45 คะแนน)

ค. การปรับปรุงผลการดำเนินการ (PERFORMANCE Improvement)

(2) การปรับปรุงอย่างต่อเนื่องและการสร้างนวัตกรรม (Continuous Improvement and INNOVATION)

สถาบันใช้ผลการทบทวนผลการดำเนินการ นำไปจัดลำดับความสำคัญของเรื่องที่ต้องปรับปรุงอย่างต่อเนื่องและโอกาสในการสร้างนวัตกรรมอย่างไร

สถาบันมีวิธีการอย่างไรในการถ่ายทอดในเรื่องที่จัดลำดับความสำคัญและโอกาสดังกล่าวสู่การปฏิบัติ ไปยัง

- คณาจารย์ บุคลากร คณะทำงานและระดับปฏิบัติ
- สถาบันอื่นที่ส่งผู้เรียนเข้ามาศึกษาหรือรับผู้เรียนของสถาบันเข้าศึกษาต่อ ผู้ส่งมอบและคู่ความร่วมมือ ทั้งที่เป็นทางการและไม่เป็นทางการ เพื่อให้มั่นใจว่ามีการดำเนินการที่สอดคล้องในแนวทางเดียวกันกับสถาบัน (*)

Quality Process Improvement System

Steps #1-4 of SPP described in 2.1a(1) where the strategic plan is developed in alignment with the Five Categories of Focus.

Employees are rewarded for performance improvement and C&S process accomplishments. Employees are recognized at the individual and C&S process level as described in 5.2a(4) and Figure 5.2-1 and company level through company profit sharing Figure 7.3-9

Criteria for C&S process annual evaluation for the IBA application is benchmarking, learning and innovation as described in 2.1a(2); 4.1c; 4.2a(2); 6.1b(3) and 6.1c. Examples demonstrated in Figure P.2-1 and 4.1-3



Step #5 of SPP with integration of strategic plan with the company Dashboard and each objective and action plan is assigned an owner with measures and goals. Company operational measures cascade to the C&S processes and individual measures as described in Figure 2.2-1

Conducted through the Organizational Performance review process demonstrated in Figure 2.2-1 and detailed in performance review meetings in Figure 4.1-4.

Most specifically:

- Quarterly Dashboard meetings
- Monthly C&S process meetings
- Semi-annual individual performance evaluations
- Annual national Baldrige examiner evaluation through IBA process (Figure 1.1-3)

Process improvements are conducted through C&S processes or cross functional action teams as described in 6.1b(3) and Plan Do Check Act Model in Figure 6.1-2

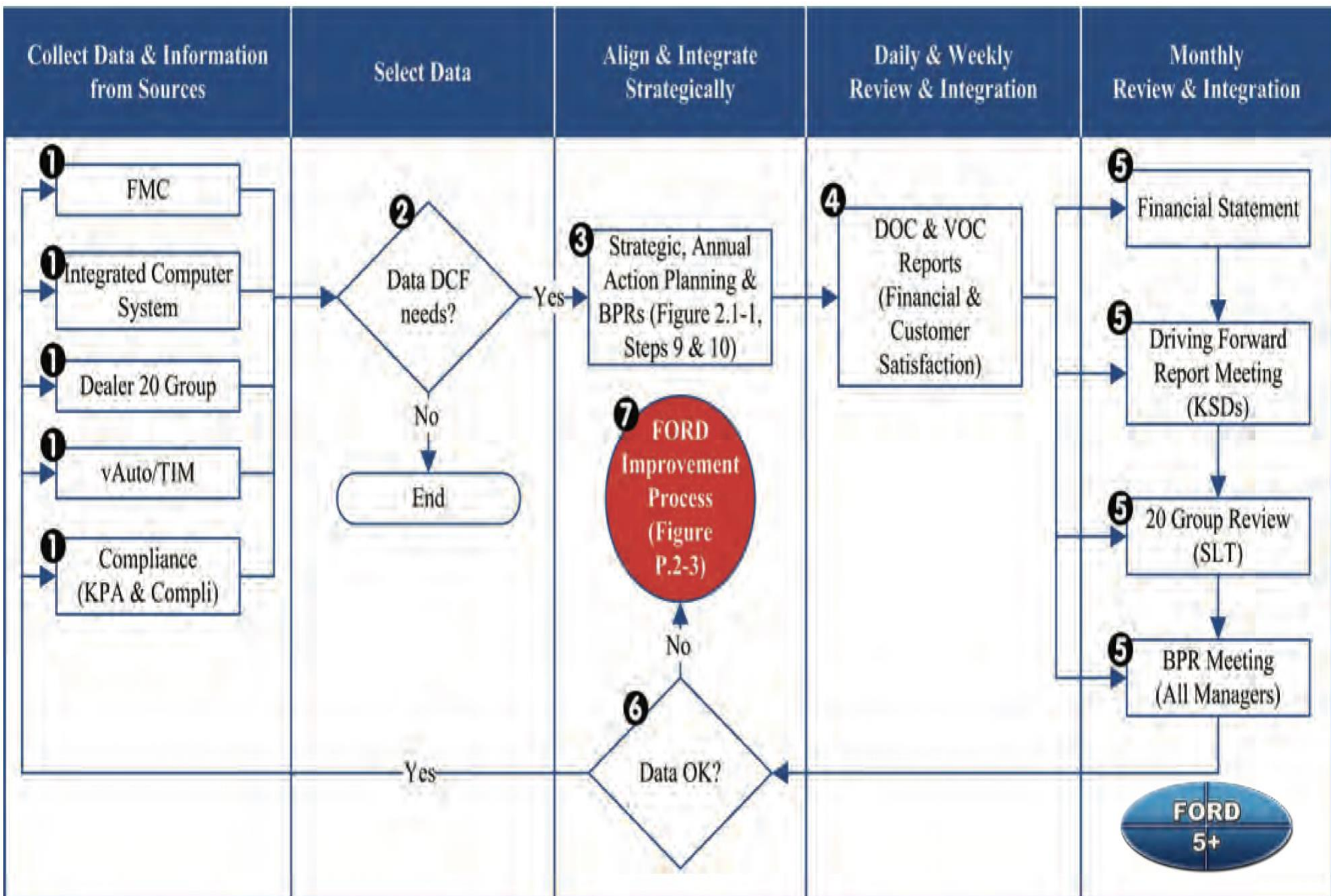


Figure 4.1-1 Data Selection, Collection, Alignment & Integration System

Figure P.2-3 Performance Improvement Process

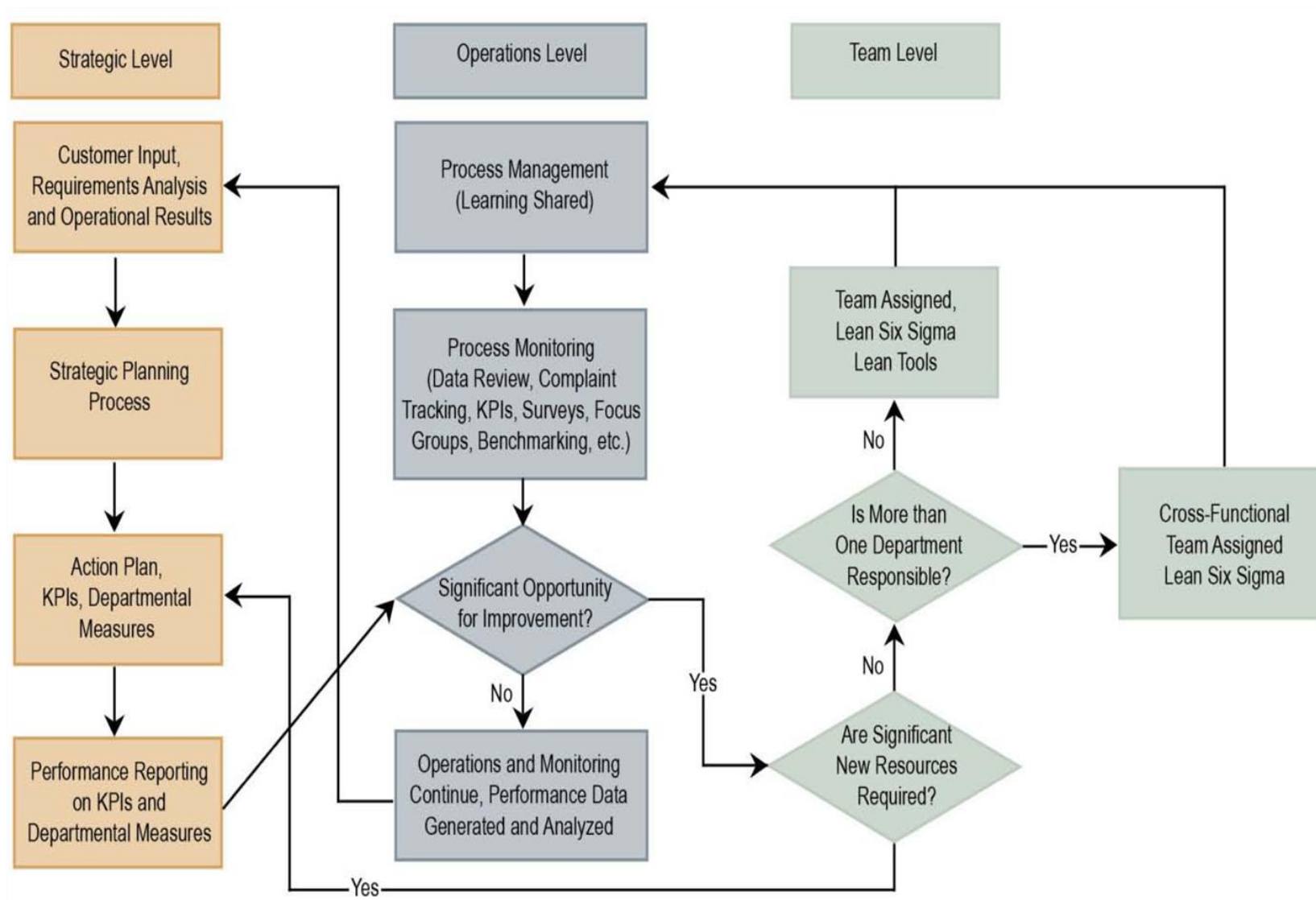
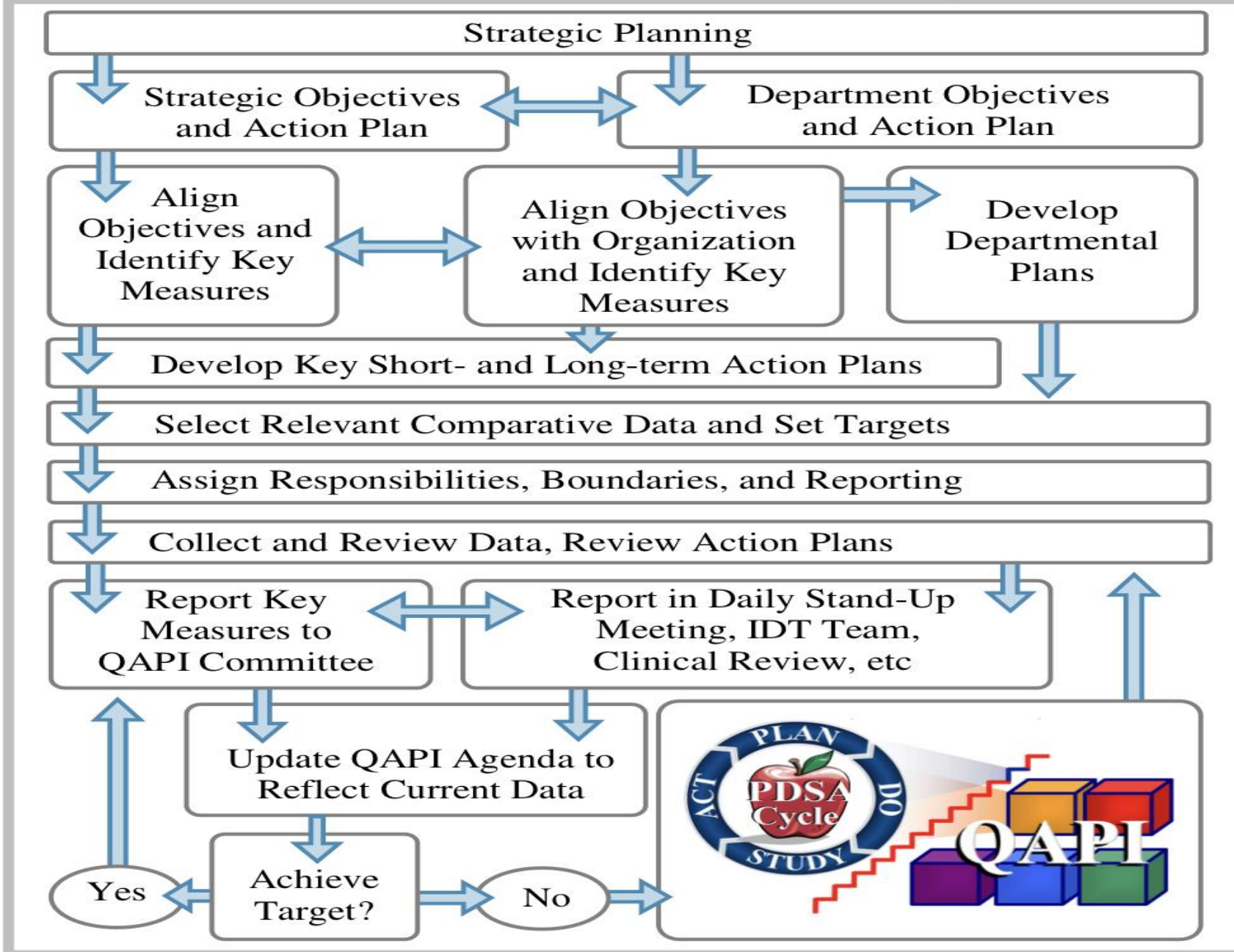
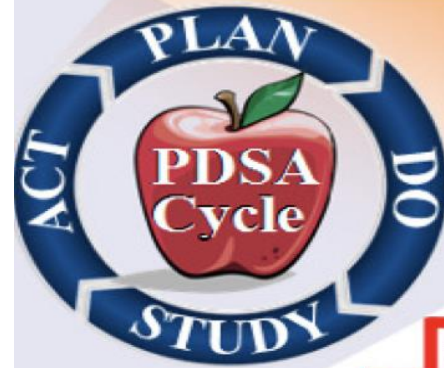


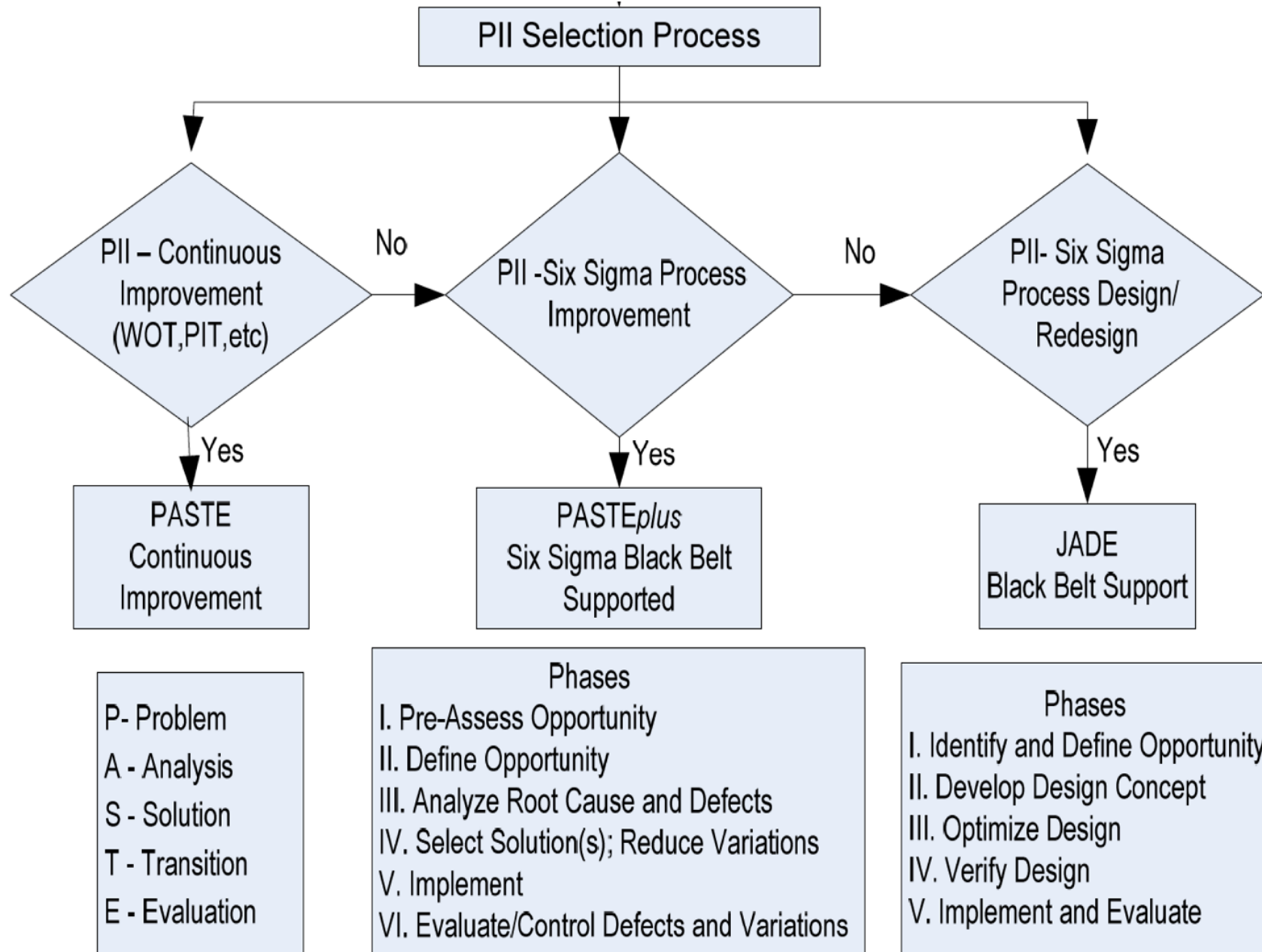
FIGURE 4.1-1 Performance Measurement System





- 12: Take Systemic Action
- 11: Getting to the “Root” of the Problem
- 10: Plan, Conduct and Document PIPs
- 9: Prioritize Quality Opportunities and Charter PIPs
- 8: Identify Your Gaps and Opportunities
- 7: Develop a Strategy for Collecting & Using QAPI Data
- 6: Conduct a QAPI Awareness Campaign
- 5: Develop Your QAPI Plan
- 4: Identify Your Organization’s Guiding Principles
- 3: Take your QAPI “Pulse” with a Self-Assessment
- 2: Develop a Deliberate Approach to Teamwork
- STEP 1: Leadership Responsibility and Accountability

**ACTION
STEPS
to
QAPI**



PERFORMANCE ANALYSIS & IMPROVEMENT SYSTEM

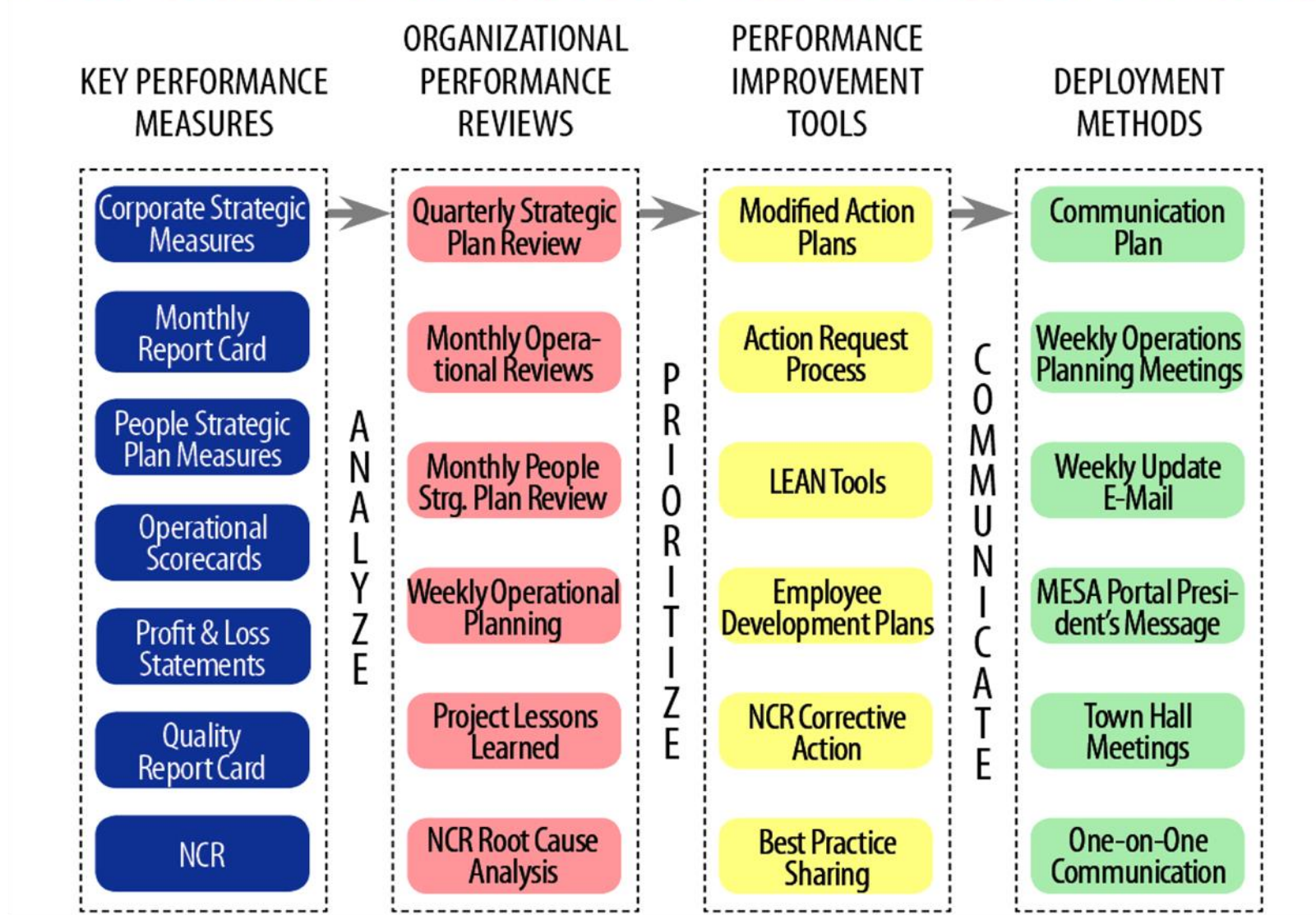


Figure 4.1-3 Performance Analysis & Improvement System

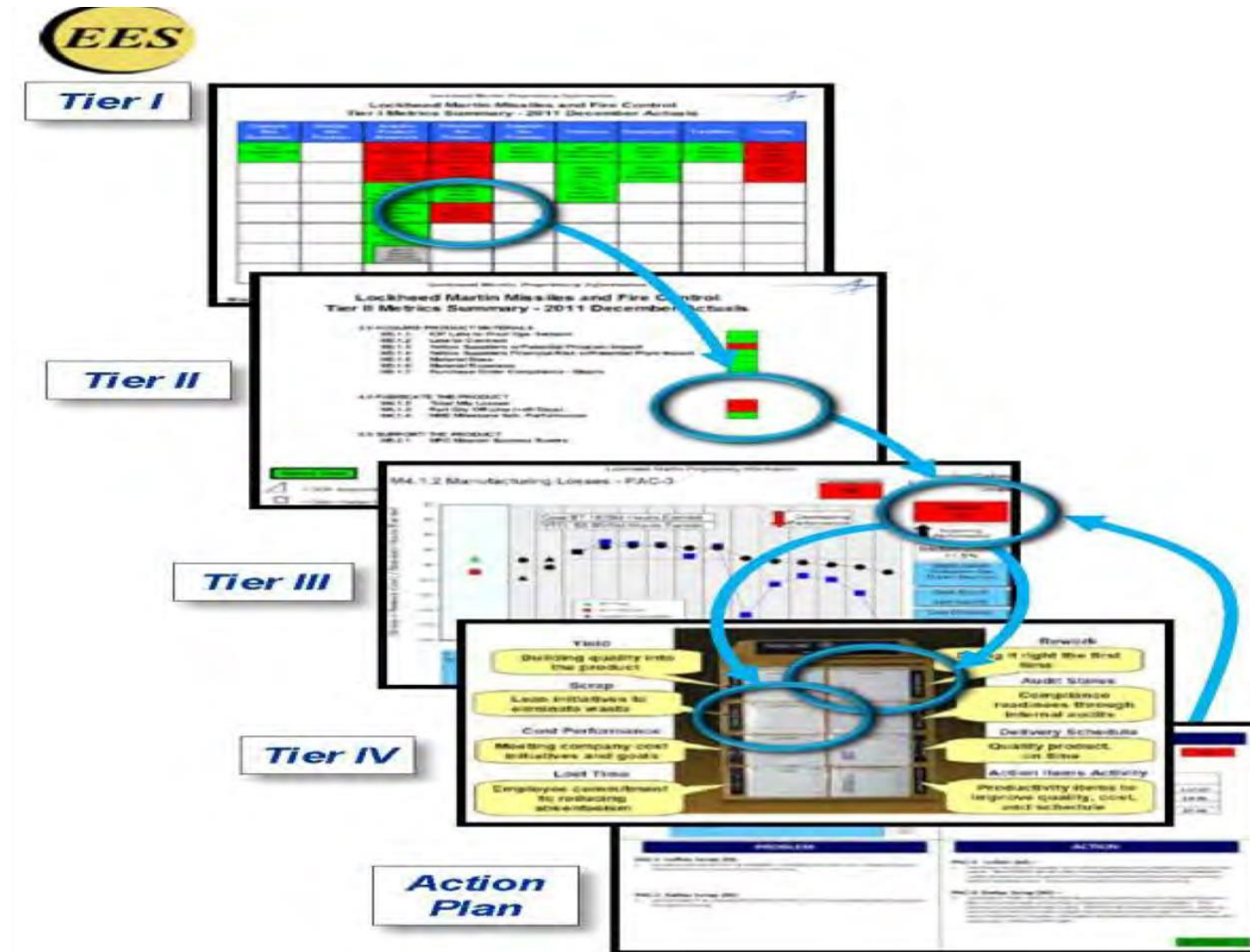


Figure 4.1-4 The MFC Metric System is Integrated Among the Tiers to Ensure High Performance

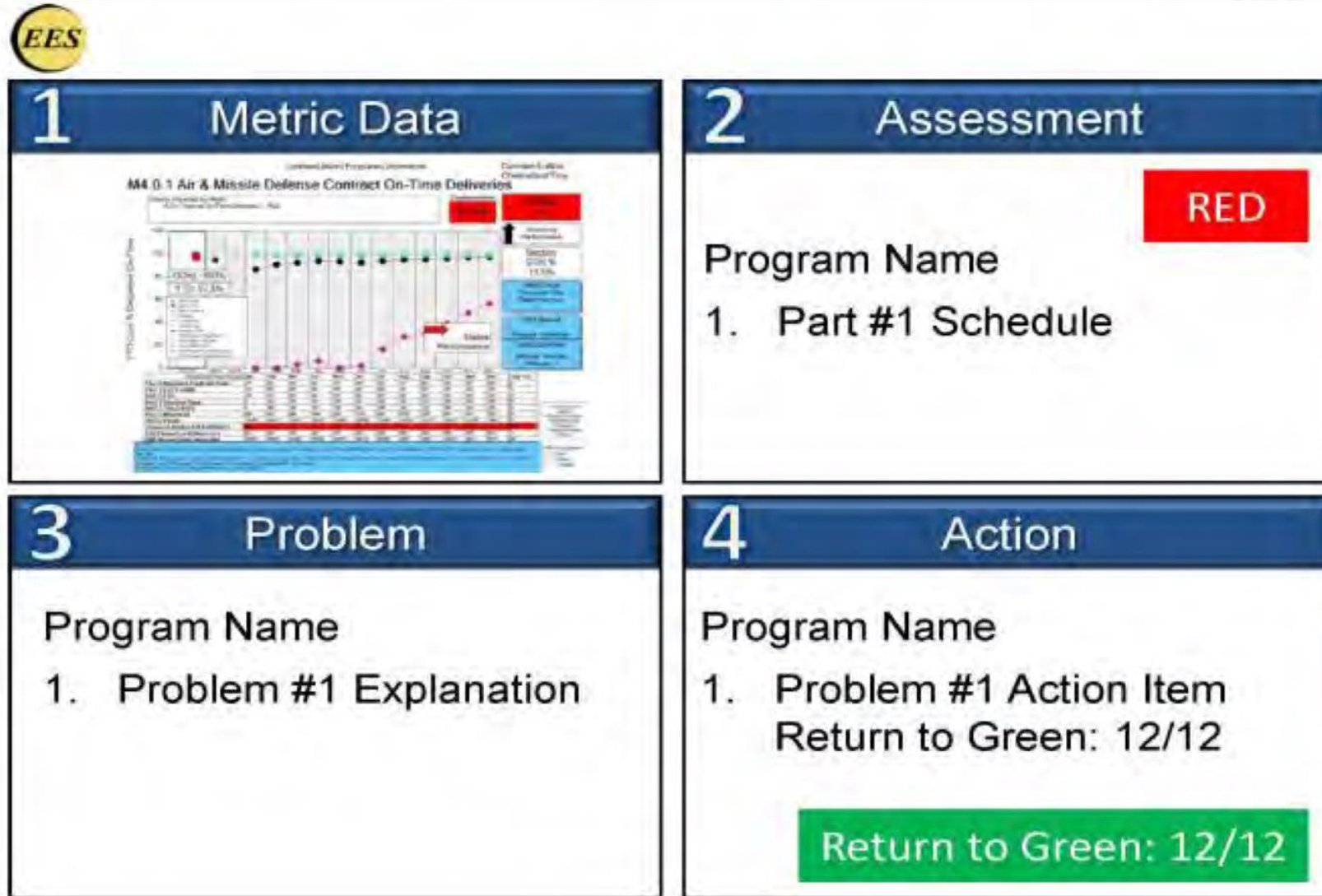


Figure 4.1-5 The 4-Blocker Format is Used Throughout MFC to Identify Issues and Develop Innovative Solutions

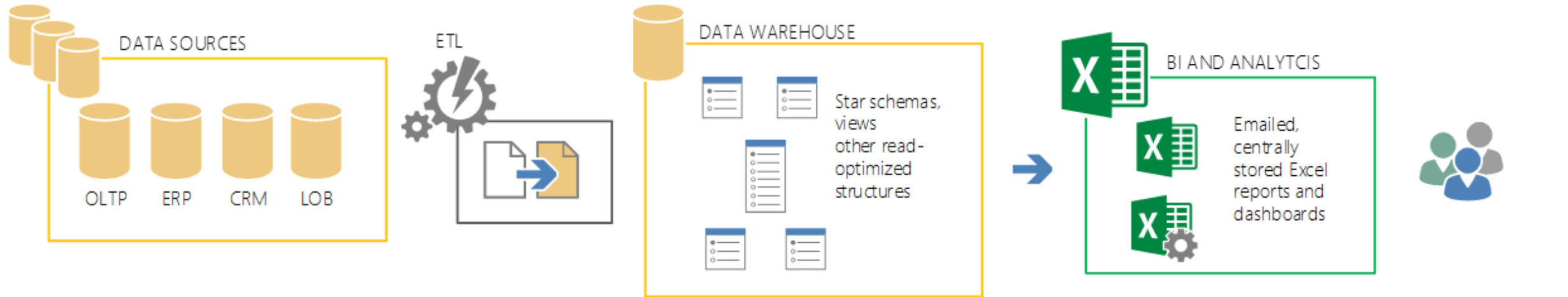


Data Driven Decision Making



Traditional Approaches

Current state of a data warehouse



Well manicured, often relational sources

Known and expected data volume and formats

Little to no change



Complex, rigid transformations

Required extensive monitoring

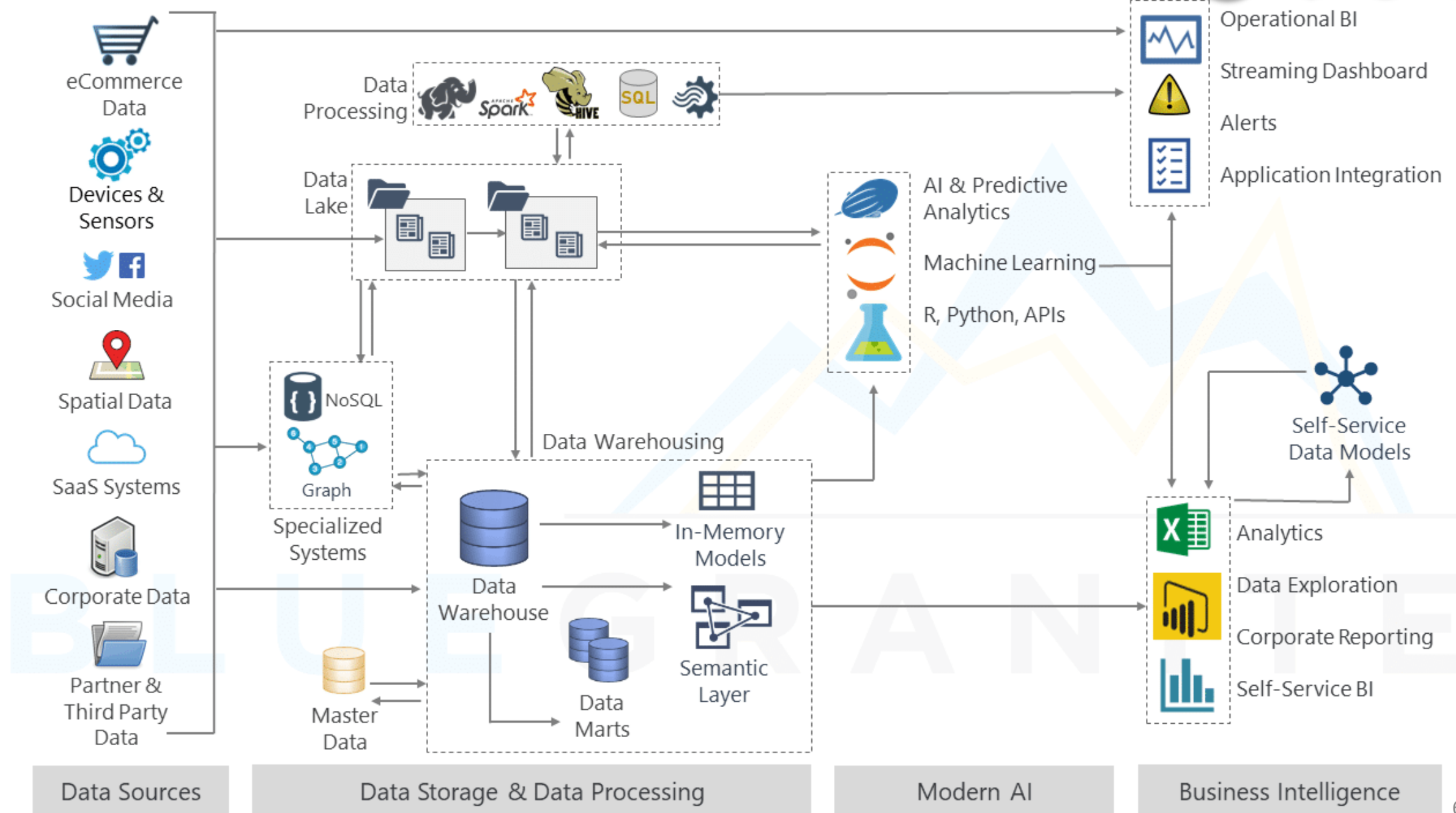
Transformed historical into read structures



Flat, canned or multi-dimensional access to historical data

Many reports, multiple versions of the truth

24 to 48h delay





Applications for Big Data in Healthcare



Diagnostics

Data mining and analysis to identify causes of illness



Preventative medicine

Predictive analytics and data analysis of genetic, lifestyle, and social circumstances to prevent disease



Precision medicine

Leveraging aggregate data to drive hyper-personalized care



Medical research

Data-driven medical and pharmacological research to cure disease and discover new treatments and medicines



Reduction of adverse medication events

Harnessing of big data to spot medication errors and flag potential adverse reactions



Cost reduction

Identification of value that drives better patient outcomes for longterm savings



Population health

Monitor big data to identify disease trends and health strategies based on demographics, geography, and socio-economics

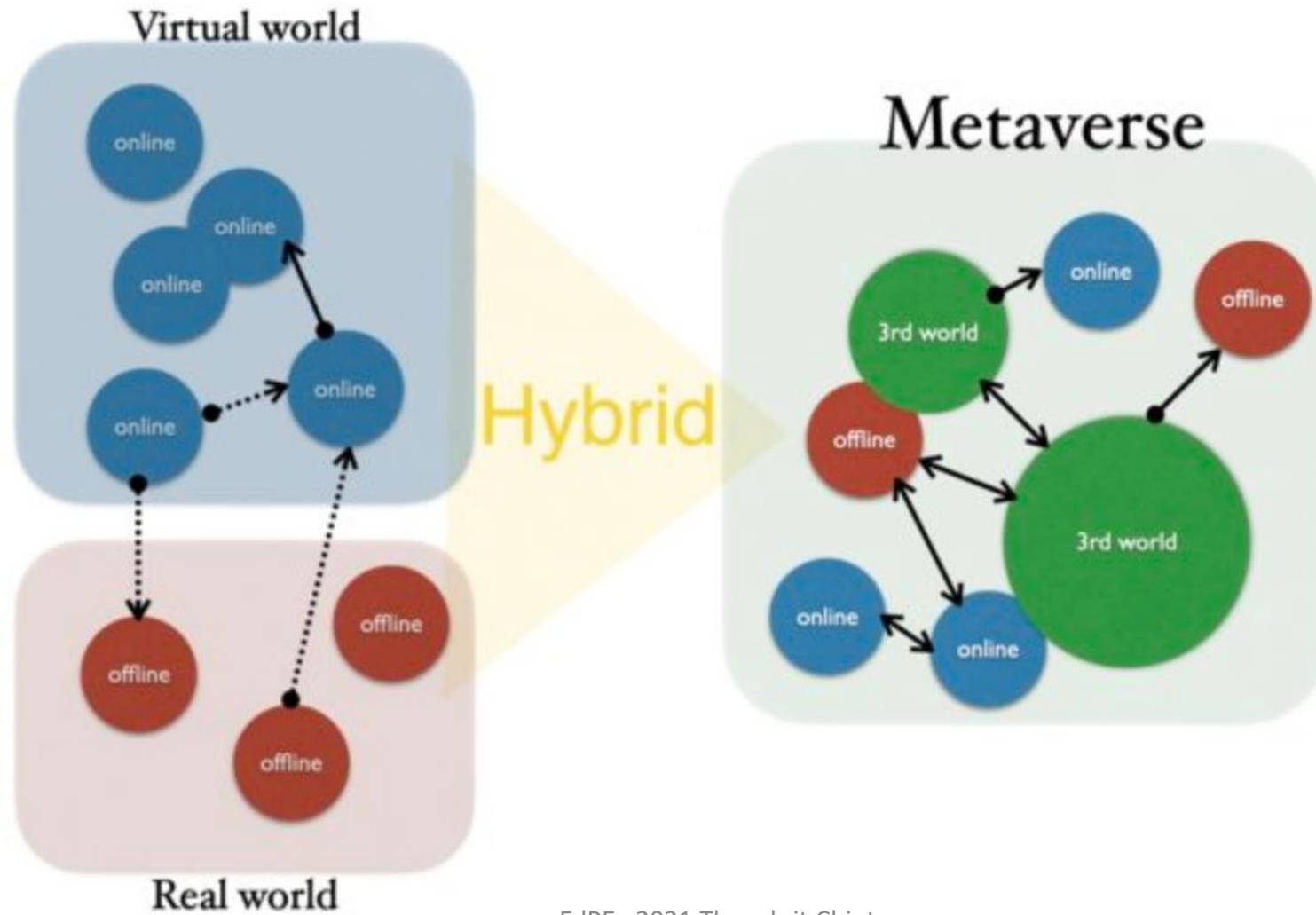
Watson Oncology

IBM x Bumrungrad





Metaverse





Philips' Azurion augmented-reality platform makes use of Microsoft's HoloLens headsets to guide surgeons through an operation. (Philips Illustration)



Education service with holo lens



Security Control



Quality Control



Access Control

What data ?
Who owns it ?
How often is it updated?
Where's it from ?

Data Governance

Data Governance : ธรรมาภิบาลข้อมูล

Accuracy Completeness Timeliness Security Privacy Connectedness Worthiness

Organization &
Stewardship

Data management
Policy

Audit

Building Knowledge &
Awareness

Function of

- DG Committee
- Steward team
- Data

Controller/Processor/User

- Data Lifecycle
- Data Security & Privacy
- Data Quality Assurance
- Data Exchange

- Data Risk Management
- Law & Regulation Compliance
- Data Quality Audit

- Program Coverage
- Measurement
- Ongoing

Data Management Policy : นโยบายการบริหารจัดการข้อมูล

Data
Lifecycle

Create

Store

Use

Archive

Destroy

Data Catalog

Data Security & Privacy

Data Quality

- What data ?
- Who's the owner ?
- Search Tags
- Data sources

- Confidentiality
- Availability
- Integrity

- Accuracy
- Validity
- Timeliness
- Completeness
- Uniqueness
- Consistency

Foundation

Data Exchange



เบิก Screening จากสปสช.

- รพ.รัฐ data latency เยอะ
- เอกชน Realtime authn



สปคม

Disease Control Team

web

detected case data

Co-Link
GBDi

Detected case (DDC)

Patient admit status

Consolidation Table

Co-Ward

API

Co-Lab

API

ATK-enabled
ICT MoPH

Lab result

Hotline case

ATK
Co-Lab2
ICT MoPH

web
Hotlines

API



Dashboard



Hospitals

export

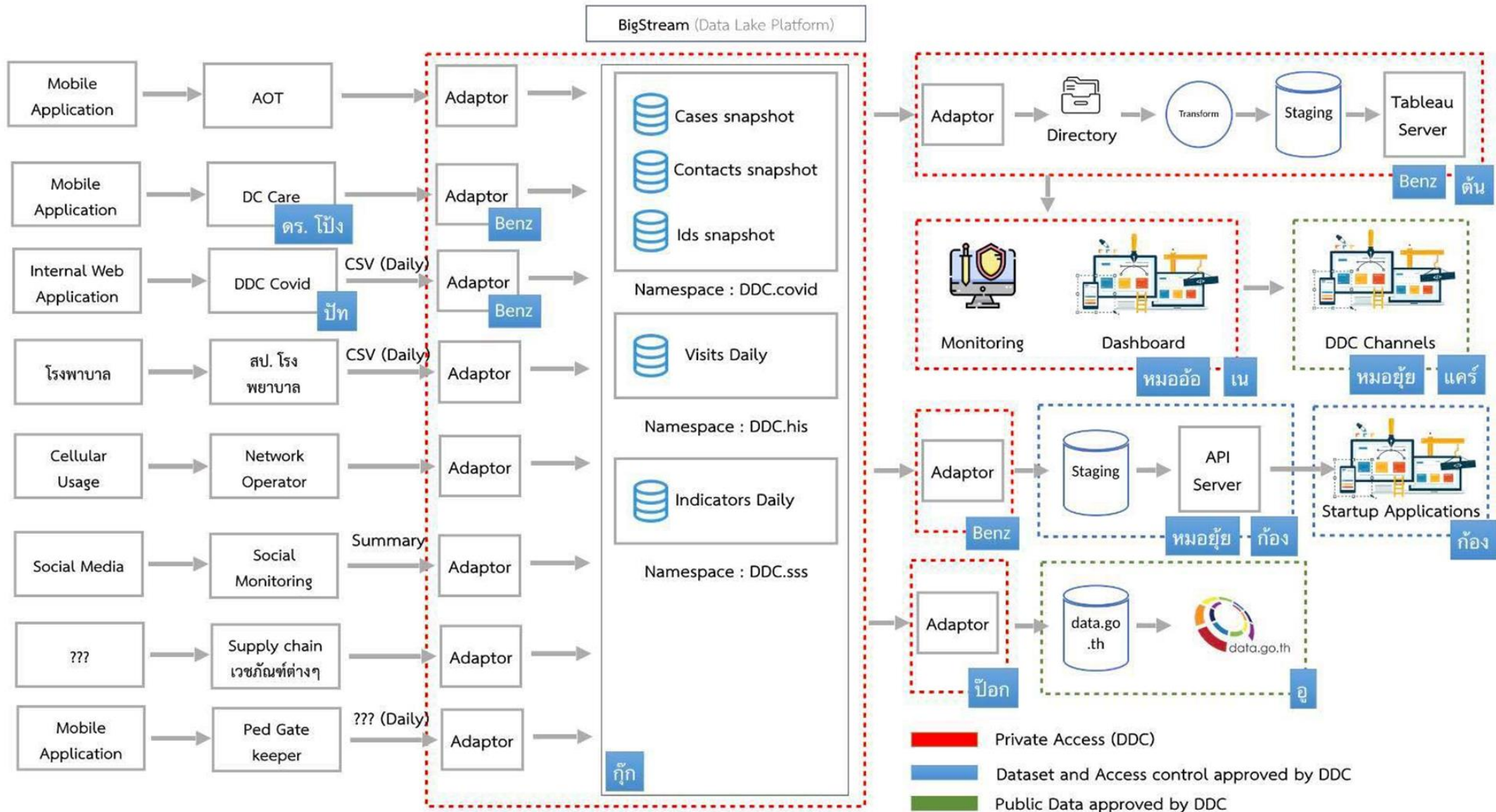
Co-Ambulance

HI ขอกลับบ้านเกิด

request ambulance

respond to the bed request

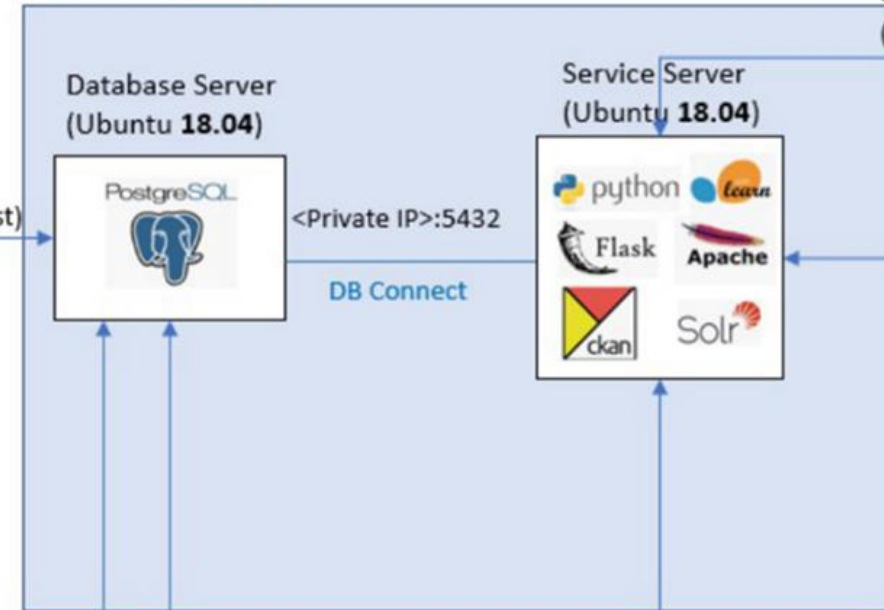
situation report





<Public IP>:
5432 (PostgreSQL)
22 (SFTP)
(Set firewall IP whitelist)

Data Sync



Database Server
(Ubuntu **18.04**)

PostgreSQL

<Private IP>:5432

DB Connect

Service Server
(Ubuntu **18.04**)



<Public IP>:443 , 8080, 5000
(Set firewall IP whitelist)

<Public IP>:443 , 8080, 5000
(Set firewall IP whitelist)

REST API Request/Response

**War Room
Data Scientists**



Partner Server



<Public IP>:22 (SSH)
(Set firewall IP whitelist)

<Public IP>:22 (SSH), 5432 (PostgreSQL)
(Set firewall IP whitelist)



GBDi User
(System Admin)

2 Ubuntu Host Resource:

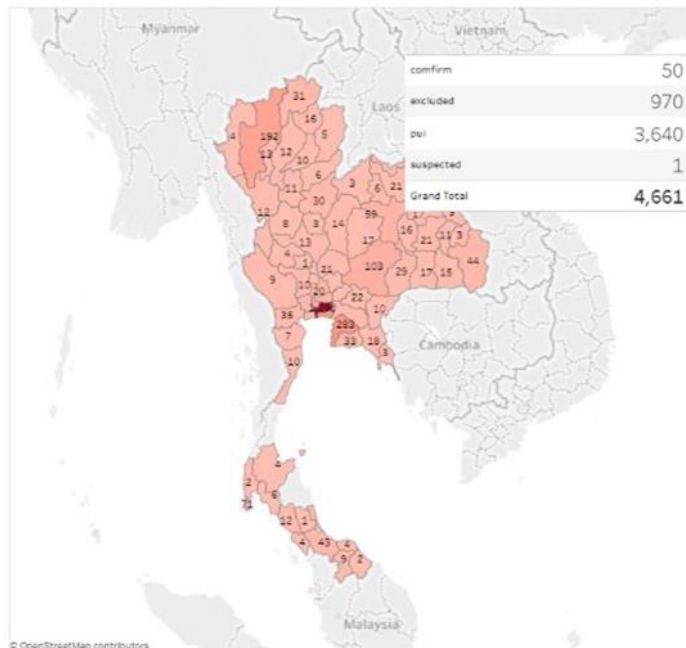
- 1 - Database Server : 16Core CPU, 64 GB RAM, 1TB GB HD
- 2 - Service Server : 16Core CPU, 64 GB RAM, 500 GB HD

GBDi Tableau

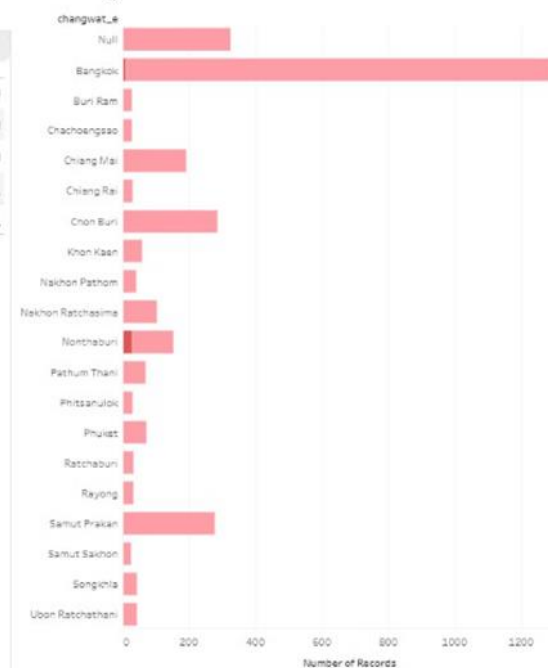




ผู้ป่วยเข้าเกณฑ์ต้องเฝ้าระวัง (สีชมพู)
และผู้ป่วยติดเชื้อยืนยัน (สีแดง)

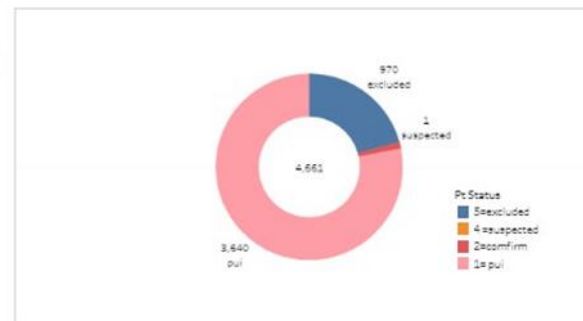


จังหวัดที่พบผู้ป่วยเข้าเกณฑ์เฝ้าระวัง

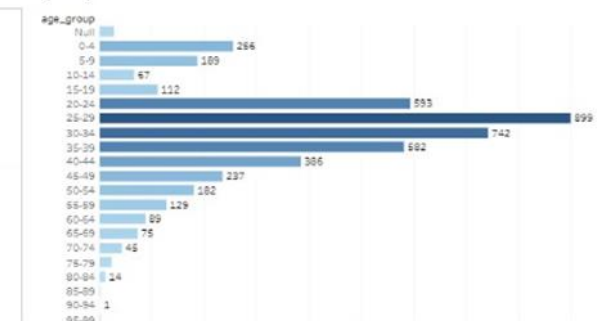


PUI novel coronavirus

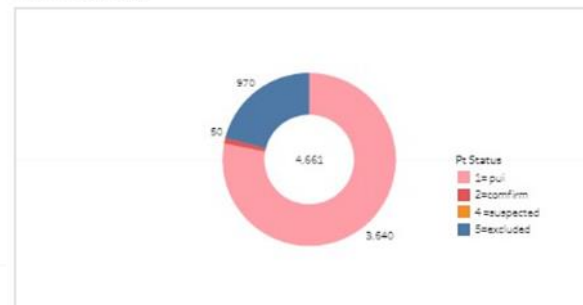
จำแนกผลการคัดกรอง



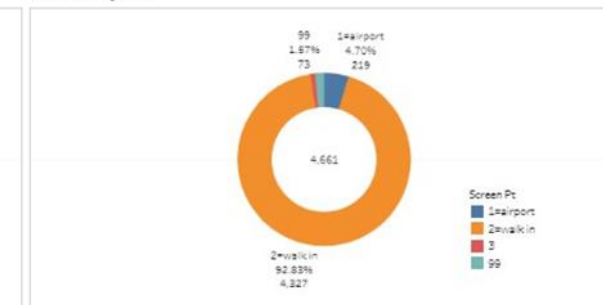
กลุ่มอายุ



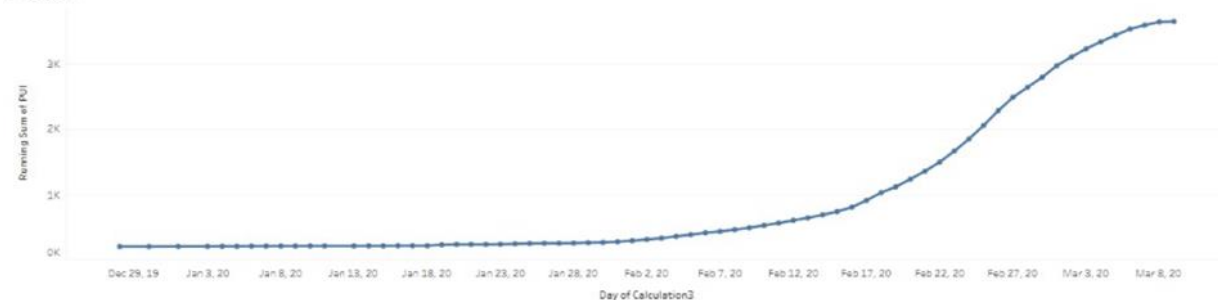
จำแนกประเภท PUI



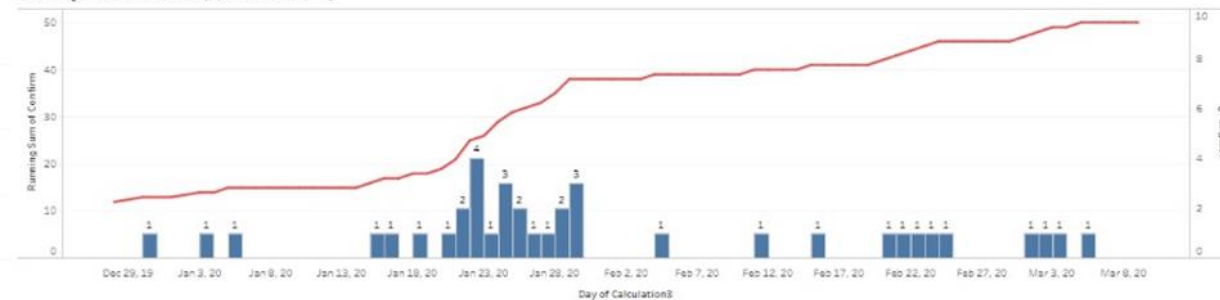
สถานที่พบผู้ป่วย



PUI a:au



จำนวนผู้ป่วยยืนยันรายวัน(epidemic curve)



COVID 19 State Management

- Situation Monitoring
- Inbound- outbound Monitoring
- Resources Management
- Public hearing



ข้อมูลล่าสุดวันที่ 10/04/2020 11:34

จำนวนผู้ติดเชื้อ
2,473 คน

หายแล้ว
1013 คน

รายใหม่
50 คน

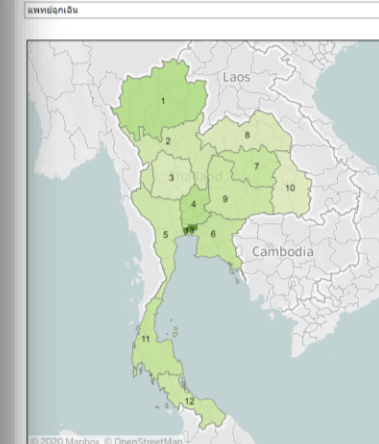
รักษาอยู่ใน รพ.
1,427 คน

เสียชีวิต
33 คน



ความพร้อมทางห้องปฏิบัติการ/เตียง/บุคลากรทางการแพทย์

ข้อมูลที่กำลังแสดงในแผนที่ (แบ่งตามเขตสุขภาพ)



โรงพยาบาลและเตียง	โรงพยาบาล	เตียง	โรงพยาบาลที่มี ICU	เตียง ICU
	1,235	141,790	440	7,418
บุคลากร	แพทย์	อายุรแพทย์ระบบทางเดินหายใจ	อายุรแพทย์โรคติดเชื้อ	แพทย์เวชบำบัดวิกฤต
	36,938	263	199	63
ห้องปฏิบัติการและครุภัณฑ์	แพทย์รังสีวินิจฉัย	แพทย์ระบบประสาทวิทยา	แพทย์เวชศาสตร์ฉุกเฉิน	พยาบาล
	637	96	595	165,541
ห้องปฏิบัติการและครุภัณฑ์	CT Scan	ARI Clinic	AIIR	Modified AIIR
	578	725	515	767
ห้องปฏิบัติการและครุภัณฑ์	Cohort Ward	Isolation Room		
	3,209	2,962		

ข้อมูลจาก: รายงานสรุปของศูนย์บริหารสถานการณ์โควิด-19 ประจำวันที่ 24 มีนาคม 2564 กรมสุขภาพจิต, ศูนย์สุขภาพจิตที่ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 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