Previews of TDWI course books offer an opportunity to see the quality of our material and help you to select the courses that best fit your needs. The previews cannot be printed.

TDWI strives to provide course books that are content-rich and that serve as useful reference documents after a class has ended.

This preview shows selected pages that are representative of the entire course book; pages are not consecutive. The page numbers shown at the bottom of each page indicate their actual position in the course book. All table-of-contents pages are included to illustrate all of the topics covered by the course.
You will learn:

- How to identify, define, and select measures, metrics, and performance indicators for business impact
- Frameworks for dashboard development
- The processes, deliverables, and techniques of dashboard engineering
- The processes, deliverables, and techniques of self-service dashboard development
- How to combine dashboards and scorecards for performance management
- How Balanced Scorecard and strategy mapping techniques are used to identify and define business-aligned KPIs
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Module 1

Dashboards: What and Why

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Defining Dashboards

Continuum

- Personal Dashboard
- Workgroup Dashboard
- Departmental Dashboard
- Line-of-Business Dashboard
- Enterprise Dashboard

Self-Service Dashboards

Engineered Dashboards
Defining Dashboards

**Continuum**

**PURPOSE**

A dashboard puts all the vital information of an operation—whether driving a car or driving a business—on a single screen that can be viewed at a glance. Dashboards are an essential method for delivering information and intelligence. They provide effective measures and metrics that employees can use to improve performance.

Top executives use dashboards to monitor their companies at a high level. Individual call center representatives use dashboards or scorecards to track whether they are hitting their goals. People across an enterprise need to monitor statistics that pertain to their tasks.

**A CHANGING FIELD**

Not long ago, most businesspeople defined a dashboard as a visual report built by an IT developer that combined charts and graphs.

Since that time, advances in technology and practice have transformed the way dashboards are developed and used in business. Visualization software has increased the sophistication of dashboard displays, expanding the possibilities beyond simple graphs to include advanced visualizations such as heat maps and bullet graphs.

At the same time, self-service tools have brought dashboard development capability directly to business users, who are now able to produce solutions without the involvement of BI or IT staff.

Today’s information-driven enterprises feature a wide variety of dashboards, spread across a diversity of business functions. Some of these dashboards are engineered by BI and IT teams, while others have been assembled by business users.

**ROOM IN THE MIDDLE**

Some needs and use cases will lend themselves more easily to self-service dashboards, and some will seem like an obvious fit for engineered dashboards. Keep in mind that some situations might call for something in-between.
Dashboards in Context

Business Context

- executive / C-level
- senior mgmt / business units
- middle mgmt / departments
- line management / teams
- knowledge workers / operations staff

- implement strategy
- drive performance
- balance short- and long-term goals
- measure and monitor performance
- find gaps
- support management accountability
- communicate
Dashboards in Context

Business Context

**MANAGING WITH DASHBOARDS**

Dashboards are a management tool, not a technology. They can be useful for functions across every level of the enterprise, and they are an expected part of modern business management. Properly designed dashboards have many uses, including monitoring key indicators, tracking performance against goals, monitoring quality assurance, and enabling cross-department communication and strategy, among many others.

**PERFORMANCE MANAGEMENT**

Dashboards and scorecards are integral parts of a performance management program. Performance management enables business users to guide decisions and actions using data-driven metrics.

For example, consider a sales team that has monthly and quarterly targets to hit. A scorecard or dashboard that allows them to understand their current progress at a glance can help both the team members and their manager ensure that they are on track for success. Performance management will be discussed in detail later in this course.

**DECISION SUPPORT**

Dashboards are operational tools for people in the business. Personnel at every level need the right information to help them make decisions that drive toward the achievement of business goals and objectives. A dashboard allows the user to monitor processes, receive alerts, or spot potential optimizations.
## Module 2
### Dashboard Foundations

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Implementing Metrics

Process Overview

1. Identify metrics
2. Define metrics
3. Collect measurement data
4. Calculate metric values
5. Report metrics
6. Analyze metrics
7. Apply metrics
Implementing Metrics

Process Overview

Metrics implementation involves a sequence of activities that begins with identification and concludes with application of metrics, as outlined below.

- **Metrics identification**
  - What to measure
  - Purpose: predictive, diagnostic, descriptive, discovery
  - Application: audience and intent

- **Metrics definition**
  - Name and description
  - Measurement scale and units

- **Measurement**
  - Data sources and data collection methods
  - Data requirements: metric components, reference data, identifiers, timing
  - Comparative data (compare to goal, total, prior period, etc.)

- **Metrics calculation**
  - Base measures to derived measures
  - Derived measures to metrics
  - Aggregation

- **Metrics reporting**
  - OLAP
  - Scorecards
  - Dashboards

- **Metrics application**
  - Analysis: descriptive, diagnostic, discovery, predictive, prescriptive
  - Impact: Decision and action
Metrics Applications

Business Impact
Metrics Applications

Business Impact

Metrics are a critical part of management; if you can’t measure something, how will you improve it? With well-defined metrics that are up-to-date, organizations can align decisions and actions with objectives and goals.

Many widespread business management practices depend on metrics. Examples include:

- **Financial Management**
  - Planning and budgeting, revenue accounting, cost accounting, general ledger, fixed assets, payroll, accounts payable, treasury operations, internal controls, financial compliance, tax accounting, etc.

- **Customer Relationship Management (CRM)**
  - Service and support, marketing, sales force automation, call center, customer data integration, loyalty management, customer advocacy, customer value, 360-degree view of customers, etc.

- **Supply Chain Management (SCM)**
  - Customer servicing, demand management, order fulfillment, manufacturing flow management, supplier relationship management, product development, product commercialization, returns management, etc.

- **Operations Management**
  - Materials and resources, production schedules, purchasing and procurement, production, transportation and logistics, product delivery, service delivery, receiving and warehousing, inventory, etc.

- **Human Capital Management (HCM)**
  - Workforce planning, workforce policies, recruiting and retention, separation and termination, employee and career development, compensation and benefits, competency development, learning management, employee performance, retirement, etc.
# Module 3

Dashboard Design Techniques

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Multiple Paths
Self-Service Versus Engineered

All dashboards need some fundamental design principles
Multiple Paths
Self-Service Versus Engineered

HOW WILL YOU USE IT?  
Recall that we discussed the major differences between dashboards engineered by IT and dashboards created by line-of-business users. The type of dashboard you need depends on many factors, including the purpose, time frame, intended use, and intended users.

FUNDAMENTALS  
Developing a dashboard of any type requires understanding some fundamental design principles. In this module, we’ll first focus on engineered dashboards. Next we will discuss design principles—most of which may apply to any type of development process. Finally, we will look at a process for developing self-service dashboards.
Self-Service Dashboard Development
Process Framework

Concept
- What is the business need?
- Who needs to know what?
- How will you measure it?
- How will they use it?

Storyboard
- What data is needed?
- Where to get data?
- What data preparation?
- Define your metrics

Design
- Visualize your metrics
- Create a dashboard layout
- How does the dashboard access the data?
- How often?
- How will you calculate metrics?

Build and Productionize
- Define the source-to-dashboard data flow
- Do you need automated refresh?
- Define access rights
- Manage security

Iterate
Self-Service Dashboard Development

Process Framework

JUST ENOUGH STRUCTURE
Developers of self-service dashboards have different needs than the developers of engineered dashboards, but they still will end up with a better product if they follow a process, such as the simple four-part process presented here. Consider this process flexible in length and depth, depending on the scope of the effort: it may be stripped down to a brief brainstorming session, or it may involve an entire department.

CONCEPT
Don’t start dashboard conceptualization by looking at the data that you have. Start with what you need to know, or what your business need is. Will you use the dashboard? Will others? What is its purpose? Will the dashboard show what happened in the past or project what is coming next? What capabilities will the dashboard provide?

STORYBOARD
Once you have a clear idea of your business need, start concrete planning. Determine what data you require to answer your business question. Define the metrics you will display. How will the data be filtered? Where will you find it? How much preparation or cleansing will it need? Can you do that data prep or do you need support?

DESIGN
Now you’re ready to design the layout. Decide what visualizations, charts, tables, etc. will be used to display the metrics and KPIs. How will the metrics be calculated and/or aggregated? How does the dashboard access the data? What additional filters or discovery options will the dashboard allow?

The design step may involve several iterations and/or trial and error with the dashboard development tool.

BUILD AND PRODUCTIONIZE
Build the final dashboard with your self-service tool of choice. Make sure that the connection to the source data doesn’t violate any security or privacy concerns. If the dashboard will be used more than once, consider how often the data needs to be refreshed. Who needs access to the dashboard? Do you need to limit access for any reason?
Module 4
Performance Management

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Defining Performance Management
Performance + Management
Defining Performance Management
Performance + Management

MANAGING PERFORMANCE
Performance is the doing of something. Some key concepts related to performance include execution, action, procedures, requirements, and skills. Management is to direct a group, generally in pursuit of an end—key concepts include goals, objectives, resources, efficiency, and effectiveness.

At the intersection of these concepts we need processes to:
- Measure and monitor performance
- Analyze performance measures
- Decide what to do and take action

PERFORMANCE MANAGEMENT DEFINED
Gary Cokins defines performance management concisely as “the translation of plans into results—execution. It is the process of managing an organization’s strategy.”

Wayne Eckerson says performance management “consists of a series of processes and applications designed to optimize the execution of business strategy… a framework that takes the long-standing task of measuring performance to the next level, that of managing performance.”

Frank Buytendijk states, “Performance management tries to capture an organization’s business model. As it becomes clear how various business domains affect the business results, performance management provides insight into who drives results and how results are driven.”

Although each of these definitions offers a slightly different perspective, they all support some common themes about performance management:
- Performance management focuses on execution of strategy.
- Measurement is only a part of performance management.
- Analysis, especially cause-and-effect analysis, is a key part of performance management.
- The right actions and results are the goals of performance management.

1 Performance Management, pp. 9, Cokins
2 Performance Dashboards, pp. 11, Eckerson
3 Performance Leadership, pp. 17, Buytendijk
Performance Management Processes

Goal Setting and Measurement

- define performance indicators
- set performance goals
- measure performance
- analyze performance measures
- decide and act
- monitor performance

feedback
Performance Management Processes

Goal Setting and Measurement

**PERFORMANCE INDICATORS**

Performance management requires performance measurement, but measures alone don’t do the job. Performance measurement to support performance management happens at three levels. We discussed earlier that *measures* are quantitative data that assign numeric values to business inputs, activities, or outcomes. *Metrics* are measures with dimensions—time, customer, product, location, etc.—that support aggregation and analysis. *Performance indicators* are metrics with time-based performance targets that align with business strategy.

The “time-based performance targets” of performance indicators are the specific performance goals of business managers and/or business units.

**IDENTIFYING INDICATORS**

Performance management begins by selecting and defining the right performance indicators. A balanced performance management program includes both effectiveness and efficiency indicators. Well-defined indicators determine the metrics and measures that are needed.

**SETTING GOALS**

Goal setting is the next step in the process. Each performance indicator needs to have corresponding goals that express both the level of performance to be achieved and the time frame of the goal. Goals may be different for each manager to whom the indicator applies. Goals take a variety of forms depending on the nature of the indicator:

- *Achievement* expresses goals to produce more. Exceeding the target is considered better than meeting it. Examples include revenue and customer satisfaction.
- *Reduction* expresses goals to produce less. A level below the target is better than meeting the target, for example customer attrition.
- *Zero* expresses a goal to entirely eliminate a business outcome or condition. Examples include workplace accidents and product defects.
- *Absolute* goals express an exact number to be achieved, for example delivery time in manufacturing.
- *Fixed range* goals are similar to absolute goals, with the target expressed as minimum and maximum values. Mean time between repairs is an example of a fixed range goal.

**MEASURING PERFORMANCE**

Measurement collects the data needed to calculate actual performance values for each indicator. Measurement includes quantitative data, reference data to associate measures with dimensions, and identity data needed to trace performance indicators to their sources.