



What are Design Patterns?

Reusable templates that guide the enterprise to implement a set of technologies in standard ways

How do Design Patterns relate to the Enterprise?

Design Patterns translate OI&T's strategic goals, as documented in the Enterprise Technology Strategic Plan (ETSP), into "real world" direction to guide system design

How can I learn more?

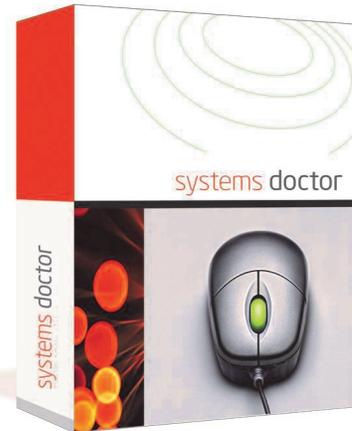
To learn more about the APM Design Pattern, contact Joseph Brooks (joseph.brooks2@va.gov)

To read the full document, see the TS website: www.techstrategies.oit.va.gov

To ask questions about Design Patterns in general, reach out to askCTS@va.gov

Enterprise Design Patterns: Application Performance Monitoring (APM)

- **APM Defined:** APM detects and diagnoses application performance problems to maintain an expected level of service
- **Current State:** Many IT PMOs do not consider APM until after a system goes live, which leads to performance problems down the road
- **Design Pattern Solution:** VA has purchased APM capabilities, which are available at enterprise data centers. Project teams must tap into VA's APM capabilities early in the development lifecycle



APM uses key performance indicators (KPIs) to measure performance in the following five areas during the transit of traffic from user requests to data and back again

1. *End-User Experience Monitoring:* How are transactions performing? Who is affected when there are problems?
2. *Application Behavior Analytics:* Do problems stem from the network, application, or server?
3. *Application Component Analysis:* Do problems stem from the application code, the database, or the backend web service?
4. *Comprehensive Infrastructure Monitoring:* How well is the network delivering the service? What systems and hardware support the application? Which fault and performance conditions take priority?
5. *Service Operations Management:* How is the service as a whole performing?

Currently, many IT PMOs do not make full use of the APM tools that VA purchased and now deploys at the VA data centers

When applications develop their own APM capabilities, or neglect APM during system design altogether, they create information silos and increase costs. All applications must maintain an expected level of service (SLA) for the system to be useful. By extension, it becomes much easier to determine where an application performance problem stems from when you have established the application's KPIs upfront. The current challenge at VA is that many IT PMOs are not tapping into enterprise shared services (ESS) for the setting and monitoring of KPIs.

APM capabilities must be made a part of software design upfront in order to anticipate future application problems. This proactive planning will boost security and decrease total costs

The APM Design Pattern provides guidance for program managers and developers to work during the **application design phase** to come up with KPIs. These KPIs can then be used to monitor application performance.

By working with stakeholders in OI&T Service Delivery and Engineering (SDE) Enterprise Operations (EO) **early** in the software development lifecycle (PMAS Milestone 0), applications can **plug into VA's existing APM capabilities.**