

Getting Started with End-to-End Application Performance Management

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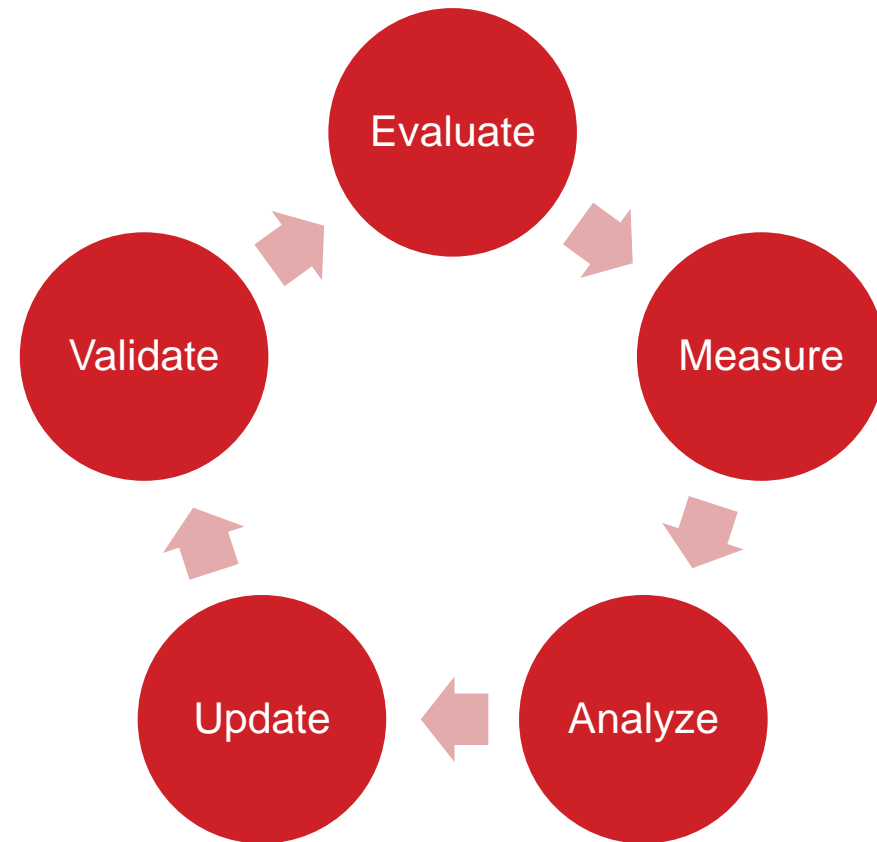


Agenda

- Overview of APM
- Why you want to adopt Cross Platform APM
- The APM Cycle
- Recommendations

What is APM?

- APM = Application Performance Management is the process and technologies of evaluating, measuring and analyzing performance data, updating, validating and repeating the cycle for continual improvement on application performance.
- Translating System Metrics into Business Value



Why do I want to adopt Cross Platform APM?

- Formalize your monitoring
- To mediate an immediate issue
- Improve or create cross-team collaboration
- End to End Application Visibility
- Faster Problem Resolution
- Quicker Time to Value
- Prioritize Resources to key applications
- Move from a system only monitoring perspective to an application perspective



Where do I start?

- Before you begin the cycle, you must develop an overall Application Performance Management strategy. Simply ask yourself

What am I trying to accomplish?

Improved
Customer
Experience

Fix
Performance
Issues before
Production

Better
Resource
Utilization

Improve
MTTR and
Root Cause

Improve
Cross
Platform
Collaboration

SLA
Monitoring
and
Reporting

How to Gain Leadership Buy-in

- Map your top 3 most business critical applications
 - Identify the monitoring type\level at each hop along the path
- Determine cost of down-time
 - Avg cost per customer x peak transaction volume
- Determine the cost of tool, hardware, staff
- Build your case (or not)
 - Cost of an outage vs. Cost of APM

Ok, all systems GO...now what?

- One you have decided that APM is right for you, it's time to define it for your organization.
- Assign a person or group who will own APM as a process within your organization.

This helps with:

- Efficiency
- Consistency
- Focused Effort



Who needs to be involved?

- Many people need to be involved to make APM effective as there is no one “APM Expert” that can know and do all.
 - APM Team
 - Application Architects
 - Developers
 - Business Analysts
 - Platform experts
 - Monitoring Software Administrators
 - Monitoring Teams
 - Performance Analysts



Conversation Terminology

- **business volume metrics (bvms)** – the number of business transactions executed during a given time interval with peaks identified
- **system volume metrics (svms)** – the number of system transactions executed on behalf of a business transaction
- **application performance budget** – the resource constraints (response time, cpu, etc) for a given application and its components
- **critical path** – the application path that is most used and provides the most business value
- **peak hour** – identifying when system utilization is likely to spike based on higher business/transaction volume

Platform Terminology

- It's important to understand the different platforms use different terminology, but there are a lot of similarities.
- Some technologies run on multiple platforms, for example, DB2...be aware of that and don't assume.

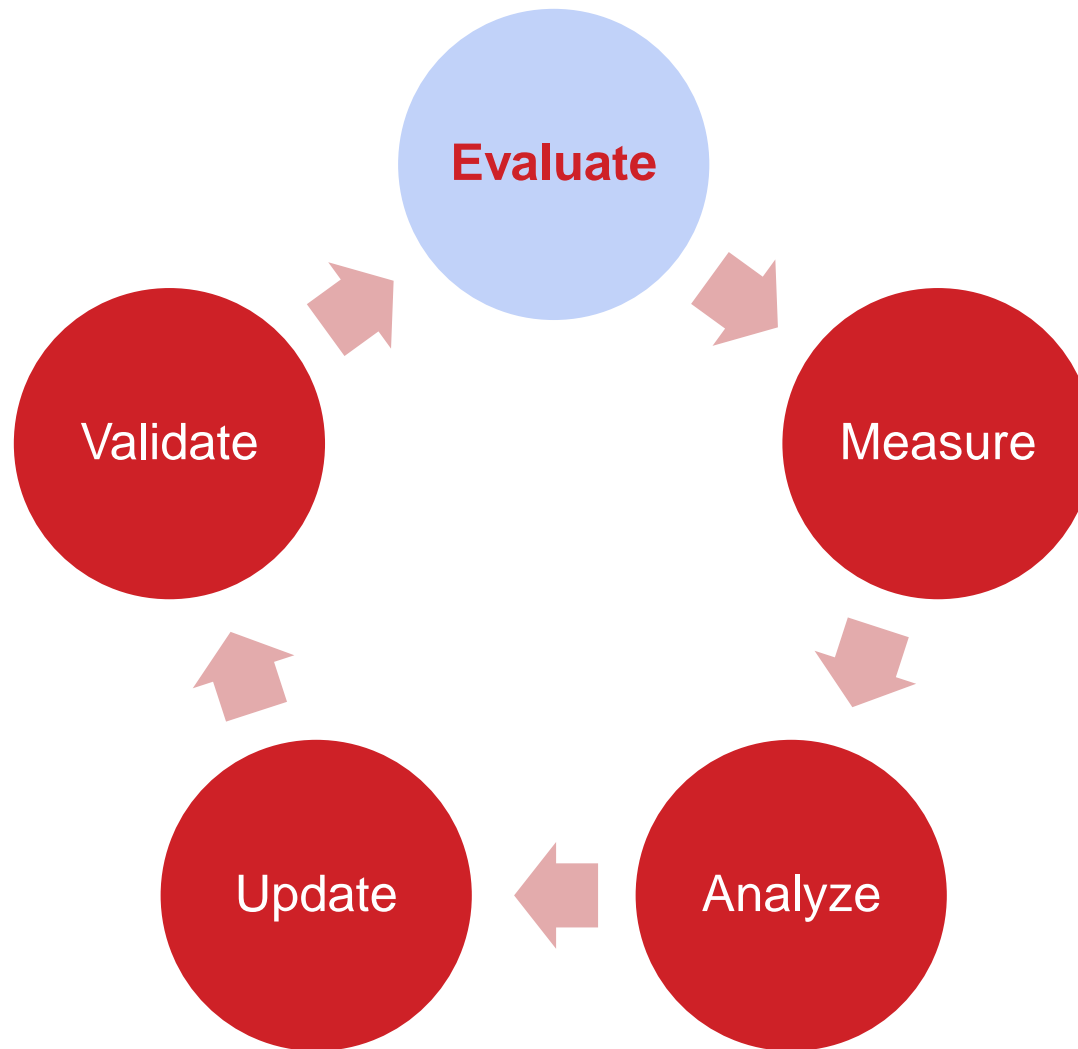
Distributed

- Server
- VM
- JVM
- Reboot
- Chicken Farmer



Mainframe

- Mainframe\Enterprise Server
- LPAR
- Started Task
- IPL
- Crusty old mainframer



Evaluate



Evaluate

- You must first evaluate your Company goals for your applications
- Take inventory of your applications and assign each to an application classification tier
- Begin APM with your Tier 1 applications

This is an important step to ensure you're consistently spending resources in the most effective manor to meet business needs.

Application Classification Tiers

Tier 1

- Business Critical
- Directly tied to revenue with immediate impact
- High Volume
- Customer Facing

Tier 2

- Directly tied to revenue with impact within 5-7 hours
- High to medium volume
- Customer Facing

Tier 3

- Directly tied to revenue with impact in 7-10 days or more
- Medium to low volume
- Customer facing or internal

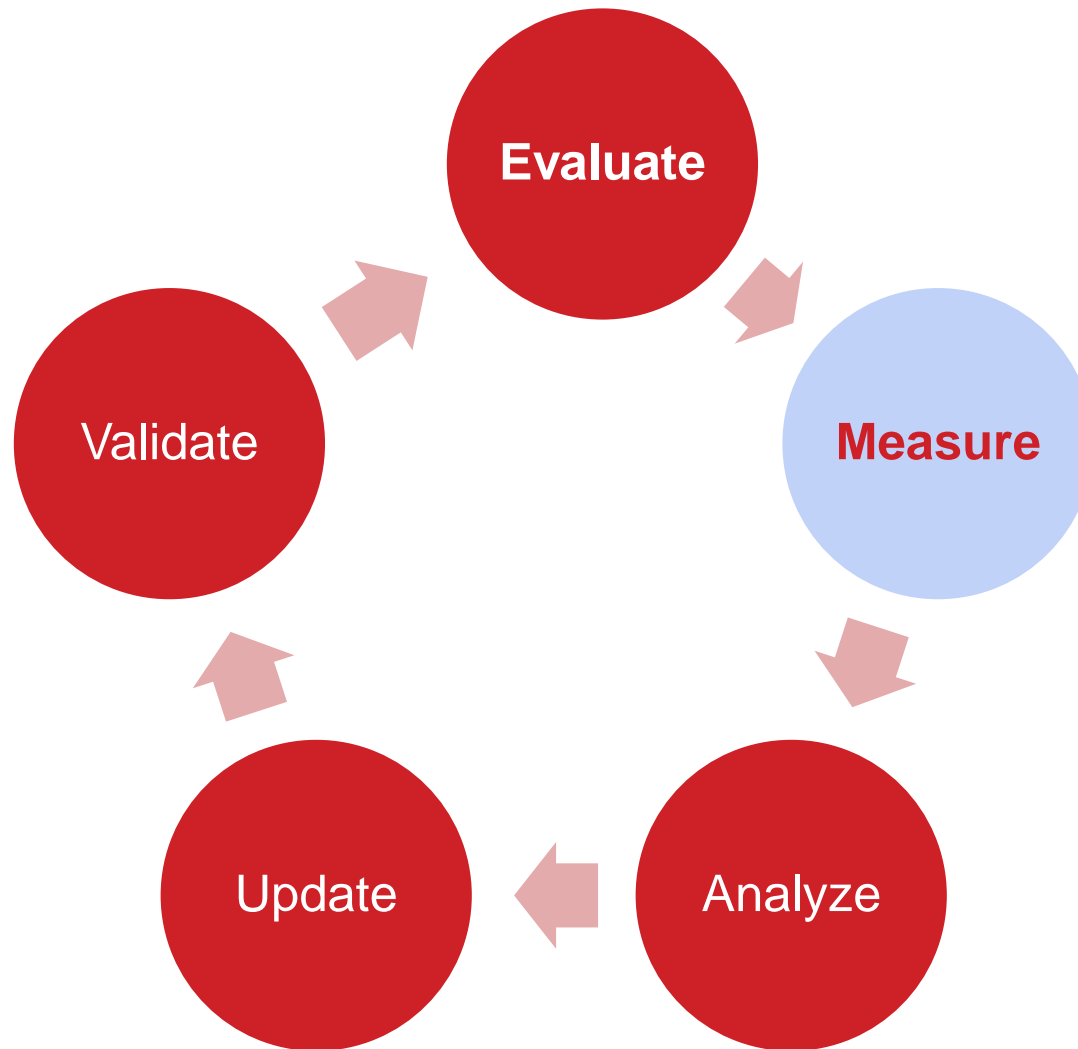
Tier 4

- Not directly tied to revenue; no real impact
- Low Volume
- Internal Only

These are samples, you must evaluate your business and application make-up and build out appropriate tiers.

Application Tiers

- How do I best determine what tier to classify app
 - Ask questions
 - Engage business analysts
 - Engage Platform teams
 - Create reports of historical data for transactions
- Define Business Transactions
 - Map system transactions
 - 1 Business transaction can equal 30 system transactions



Measure



Measure

- Determine monitoring gaps and develop a strategy to fill those gaps or determine they are acceptable
 - Deploy more monitoring agents
 - Purchase new software
 - Utilize system metrics
- Gather relevant performance metrics
- Eliminate metrics you do not need
- Determine Monitoring Classes
 - Current and Desired State
- Build Performance Budgets

Application Monitoring Tiers

Tier 1

- 24x7 Real-time Monitoring of all components to a single dashboard
- Thresholds and Alerts on all monitored components
- End-user Experience Monitoring

Tier 2

- All components monitored to a single dashboard
- Thresholds and Alerts on some monitored components
- End-user Experience Monitoring

Tier 3

- Some components monitored to a single dashboard
- No thresholds or alerts in place
- Synthetic monitoring

Tier 4

- Few to none components monitored
- System level monitoring only, not application level
- No thresholds or alerting in place

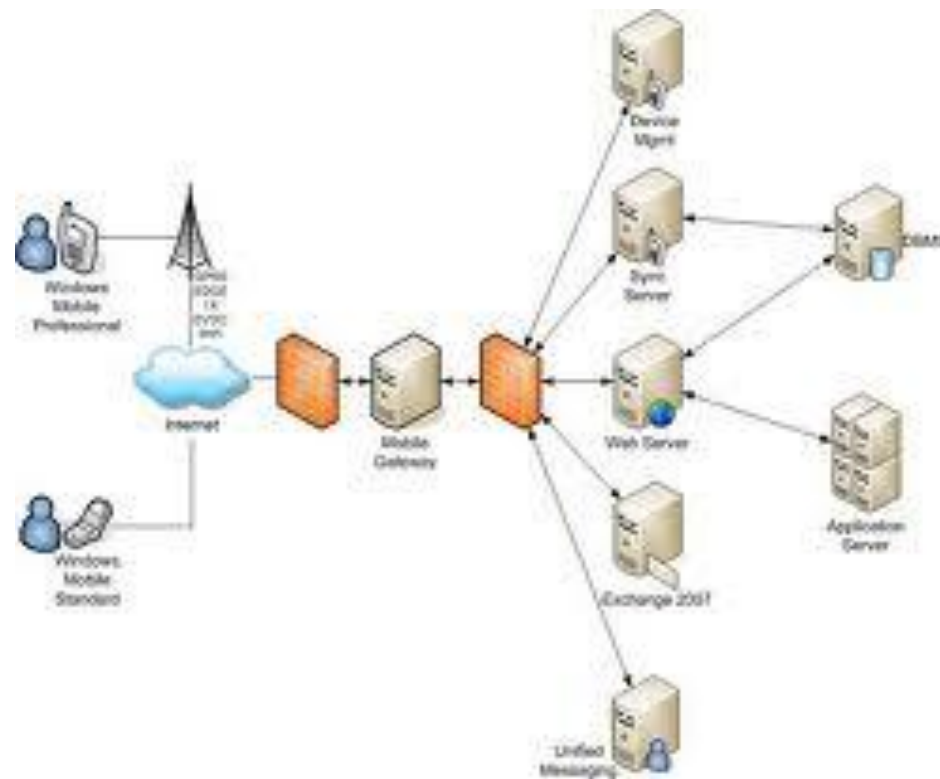
Performance Budgets

- Application Performance Budgeting is an approach to ensure applications meet their response time objectives and proactively mitigate performance concerns at any phase – development, performance testing, production.
- Always updating and validating
- May assist in identifying performance bottlenecks and inefficiencies.
- A Performance Budget breaks down a transaction to allow for the developer to code to requirements and enable operations to maintain the application and continue meeting design specifications.

Performance Budgets

- identify the required pieces of the application before a single line of code is written
 - data sources and locations
 - security/authentication requirements
 - hardware hops
- measure the infrastructure response times.

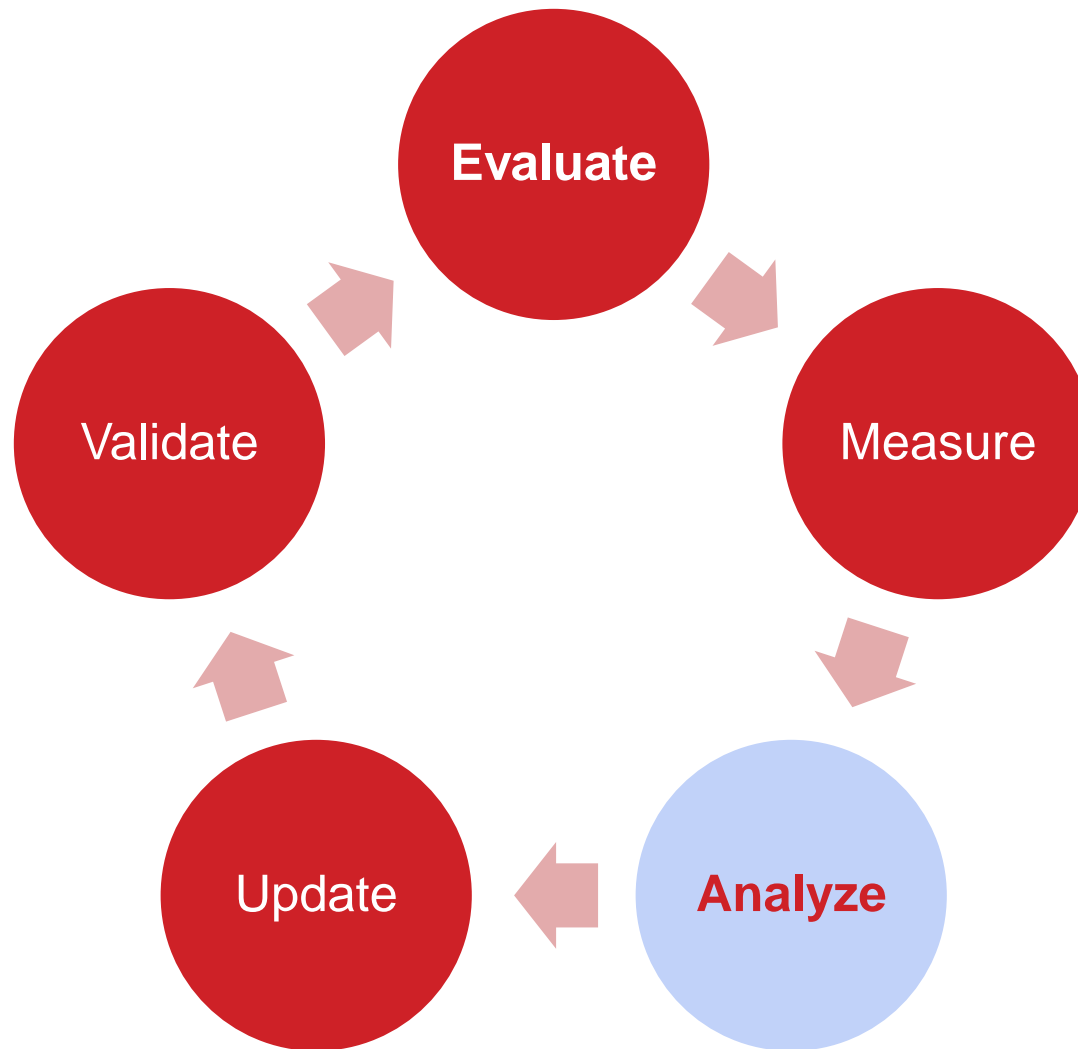
before a single line of code is written, you know the fastest this application will ever run!



Build the Application Performance Budget

- start with what you know. use existing metrics, industry standards, vendor metrics
- start by allocating time across the tiers for each transaction class to add up to the maximum response time.

	Client Tier	Network Tier	Middle Tier	Database Tier
Transaction Class 1 0 – 3 second objectives	.3 seconds	1.9 seconds	.5 seconds	.25 seconds
Transaction Class 2 0 – 5 second objectives	.45 seconds	2.9 seconds	.9 seconds	.7 seconds
Transaction Class 3 0 – 10 second objectives	.75 seconds	4.5 seconds	1.75 seconds	2.75 seconds

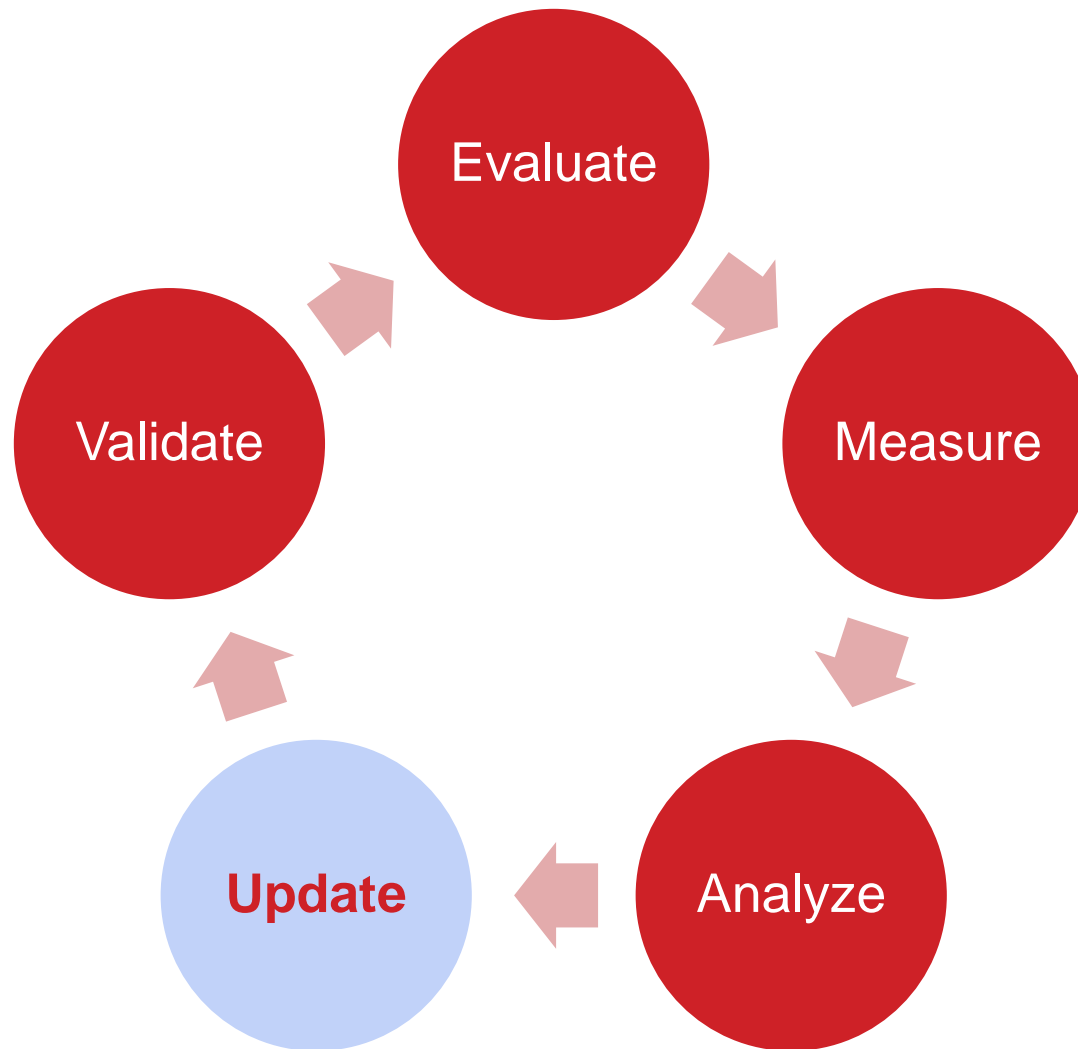


Analyze



Analyze

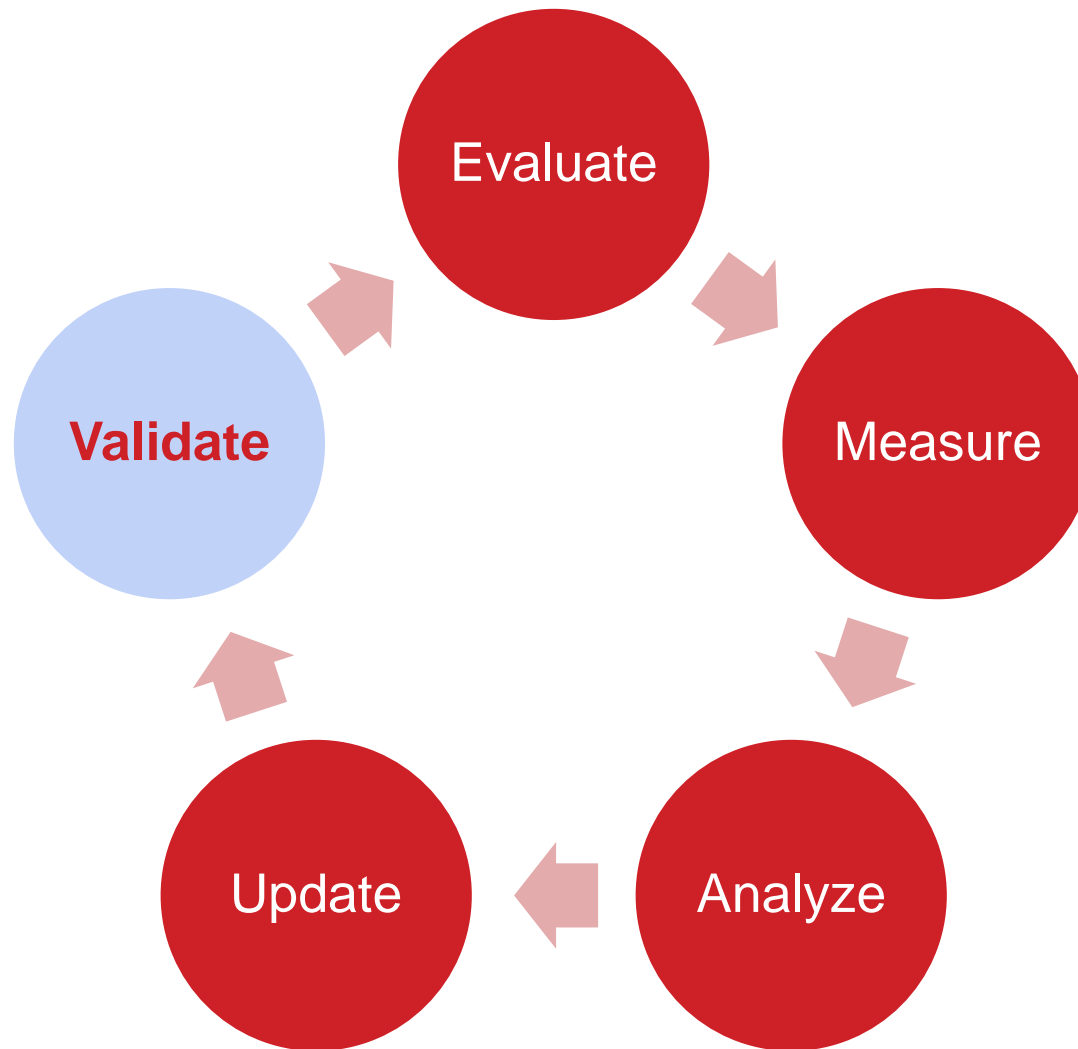
- Analyze the Application Tiers and Monitoring Tiers you have assigned
- Analyze the data you are collecting
 - Are you collecting at adequate intervals?
 - Are you collecting enough or too much data?
 - At what granularity are you keeping that data at?
 - Are the metrics within your guidelines or SLAs?
- Analyze the application flow and data collection for any gaps
- Analyze the dashboards for meaningful metrics



Update

Update

- Update the Application Tiers
 - Have you added any new applications?
 - Have you integrated functionality of applications?
 - Have you created any new application dependencies?
- Update the Monitoring Tiers for each application to see if any have gone up or down a tier
 - Have you filled monitoring gaps?
 - Have you added thresholding and alerting?
- Update the Application dashboards
- Update the Performance Budgets



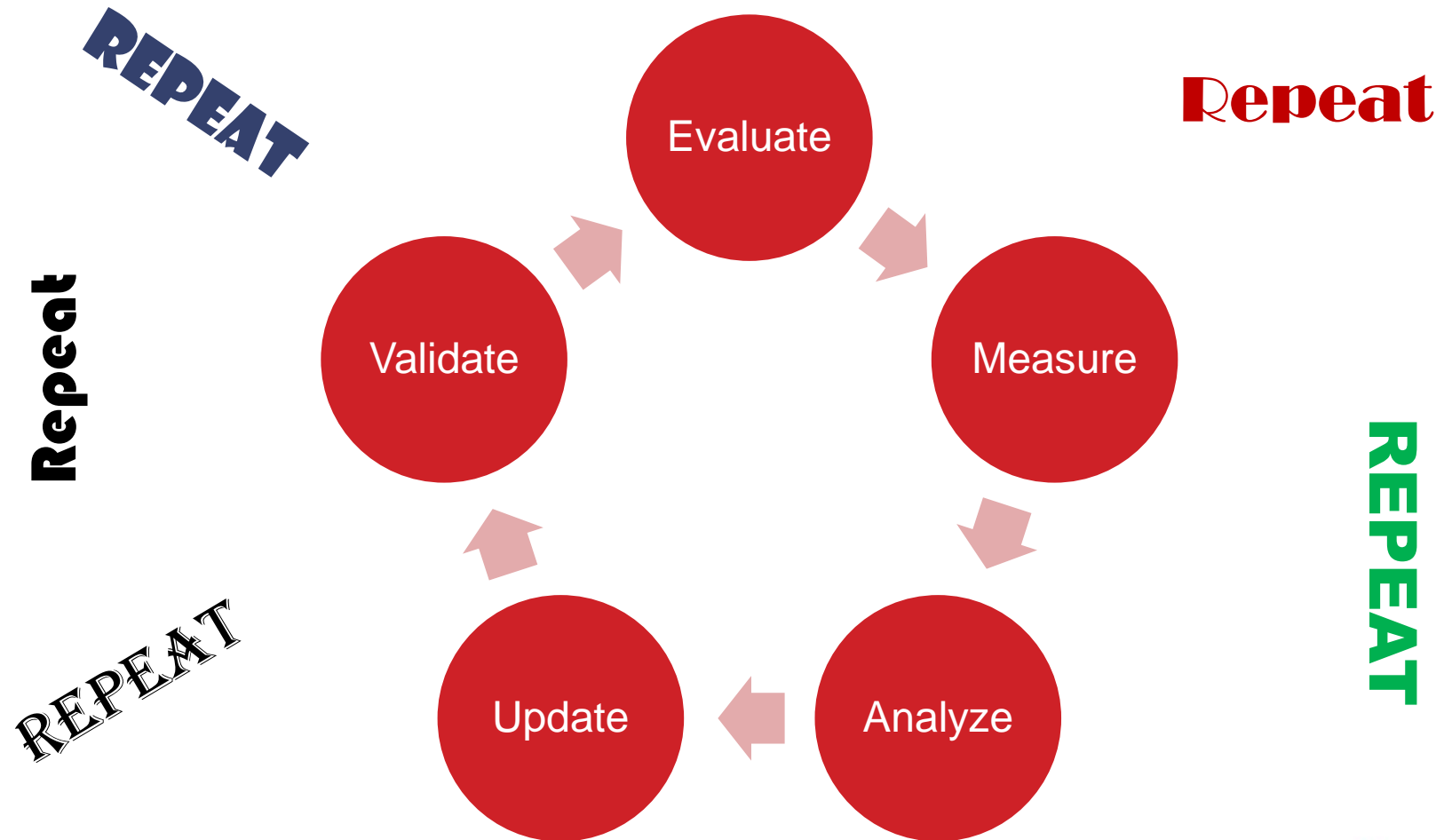
Validate



Validate

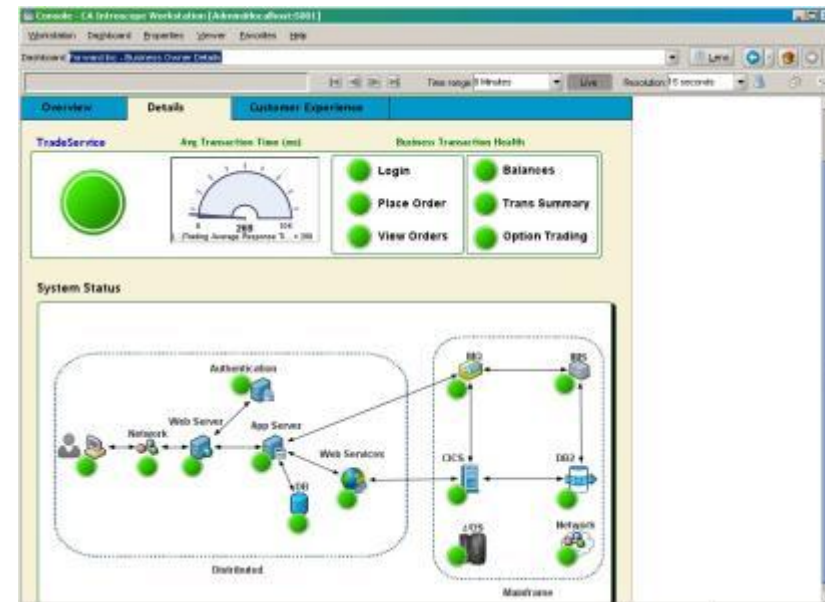
- Validate your updates
 - Are you collecting the metrics you're expecting?
 - Are you missing any metrics?
- Compare your monitoring to your application architecture diagram
- Validate your Performance Budget with metrics from production
 - Are you seeing the volume and response times you expected?
- Validate your Application dashboards are adequately representing the data

Repeat the cycle



Recommendations

- Develop a Performance and Availability Team
 - Include members from all platforms
 - Standardize on tooling on each platform
 - Standardize on metrics provided/measured where possible
 - Standardize on a single pane of glass application view
 - Standardize on dashboard design



Recommendations

- Get Performance engaged early
 - Build performance reviews into project plan
 - Include capacity planners
 - Schedule design reviews with platform performance teams
- Require application specific dashboards built in development or testing phase before moving into production
 - Deploy monitoring with the application

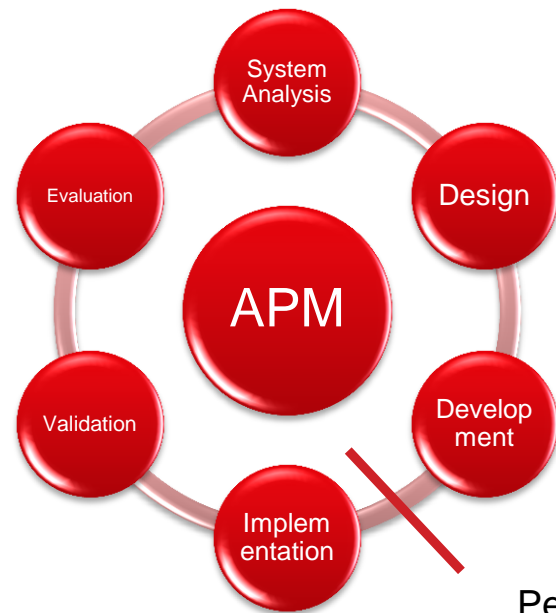
Recommendations

- Change your mindset from a system perspective to an application perspective
- Use both real user monitoring and synthetic monitoring
 - What is the performance within our firewall?
 - What is the customer experience from external sites around the world?
- Produce meaningful application level reports from this data
 - This is a great tool for your capacity planners and Business Analysts

The SDLC and APM

- APM must be part of the Software Development Lifecycle

Get Engaged Early



Performance Gateway
GO/NO GO

Recommendations

- Create a performance gateway where the performance team reviews the performance testing numbers and must sign off before the application can be implemented into your production environment.
 - This is the final opportunity to keep poor performing applications from being implemented into production
 - This also gives you an opportunity to acquire necessary capacity planning numbers



Reasons APM Fails

- Lack of commitment from Leadership
- Organizational Silos
 - No communication across teams
- Too much data – Big Data
- Dashboard complexity
 - Keep it simple, avoid flashy dashboards
 - Build a dashboard that answers critical performance questions in one click or less
 - Focus on showing basic, easy to understand real-time metrics



Books on APM

- **APM Best Practices: Realizing Application Performance Management**
Michael J. Sydor

- **Application Performance Management: A Practical Introduction**
Dr Sampath I Prakash, John J Sikora

Both books available on Amazon.com in print and Kindle format as of this writing.

Questions? Comments? Experiences?



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Thank you!





- **Tom Quinn** is a Principal Consultant, Mainframe Technical Sales at CA technologies responsible for mainframe performance monitoring products. Tom joined CA in 2009, bringing with him over 15 years of technical and leadership experience in Information Technology. Having worked for a large Mid-Western insurance company in mainframe system and application performance, Tom understands the technical challenges a large organization can face and utilizes his ITIL and ScrumMaster experience to discover and build customer solutions. You can reach him at tom.quinn@ca.com or tomquinn03@gmail.com.