



# Pulse2011

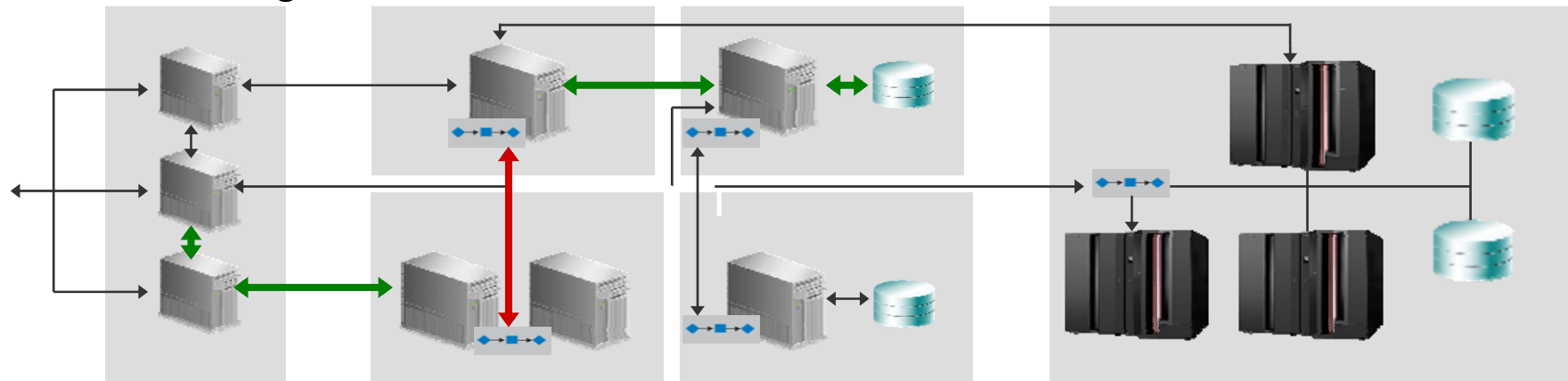


## **Application Monitoring Maturity: The Road to End-to-End Monitoring**

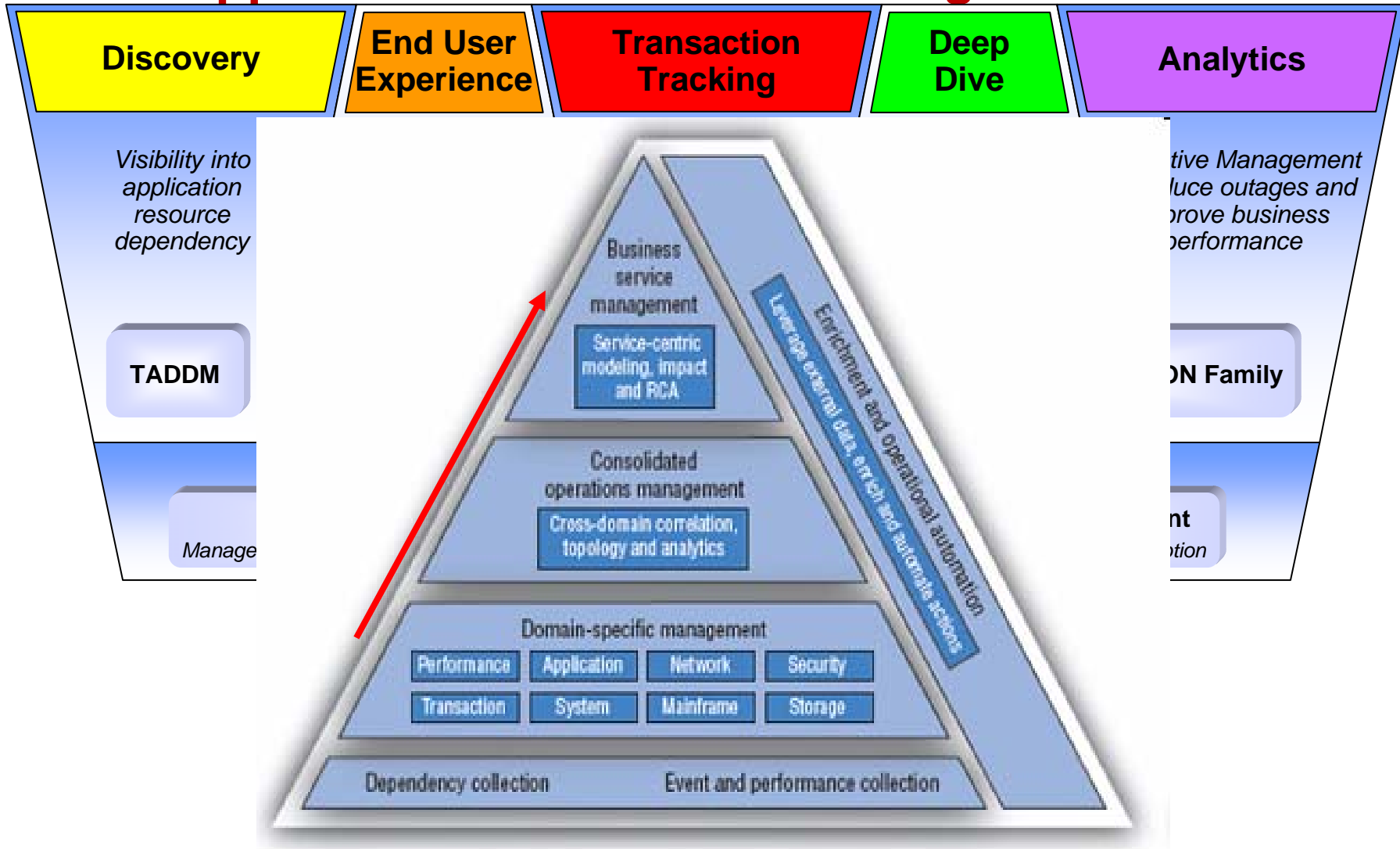
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ITCAM for Transactions  
Australian Development Lab

# What is Composite Application Monitoring?

- Composite Application is
  - N-tiered software architecture, or
  - Service Orientate Architecture
- Composite Applications are multi element
  - Implies CAM will consist of many elements
  - Many aspects – real/synthetic, KPI vs Tracking
  - “Tracking” is a vital function



# Tivoli's Application Performance Management Portfolio



## Examples of How CAM Will Help

Problem type	Options	Examples
SLA Conformance	<ul style="list-style-type: none"> <li>▪ Single domain monitors offering synthetic or real monitoring.</li> <li>▪ CAM adds problem isolation, and provide hand off to SME tools for diagnostics.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Rational Performance Tester senses SLA violation, <i>the exact transaction path is tracked in TT. Isolates the fault to WAS, deep dives to CAMfAD for SME to resolve.</i></li> </ul>
Application Performance Issue	<ul style="list-style-type: none"> <li>▪ All domain monitors reports their individual component is “fine” because vital values are lost in averages.</li> <li>▪ CAM tracking records averages on a per “transaction path” basis, giving much higher resolution into issues</li> </ul>	<ul style="list-style-type: none"> <li>▪ Two transaction types, t1 and t2, goes via same component, X.</li> <li>▪ t1 @X ~5ms, t2 @X ~500ms.</li> <li>▪ t1 @X spikes to 10ms, but average is only 505ms, so no alerts.</li> </ul>



## Examples of How CAM Will Help

Problem type	Options	Examples
Planning support	<ul style="list-style-type: none"> <li>▪ History recording of transaction paths and their metrics, this provides a very detailed view on the “flow” within a data center.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Capacity planning, especially with mix of applications shifting.</li> </ul>
Compliance monitoring	<ul style="list-style-type: none"> <li>▪ Static – count, inventory</li> <li>▪ Dynamic – usage/rates, flows.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 3 DB clusters, but cluster 3 is ONLY licensed for application group X. Transaction tracking can provide affirmation of this.</li> </ul>

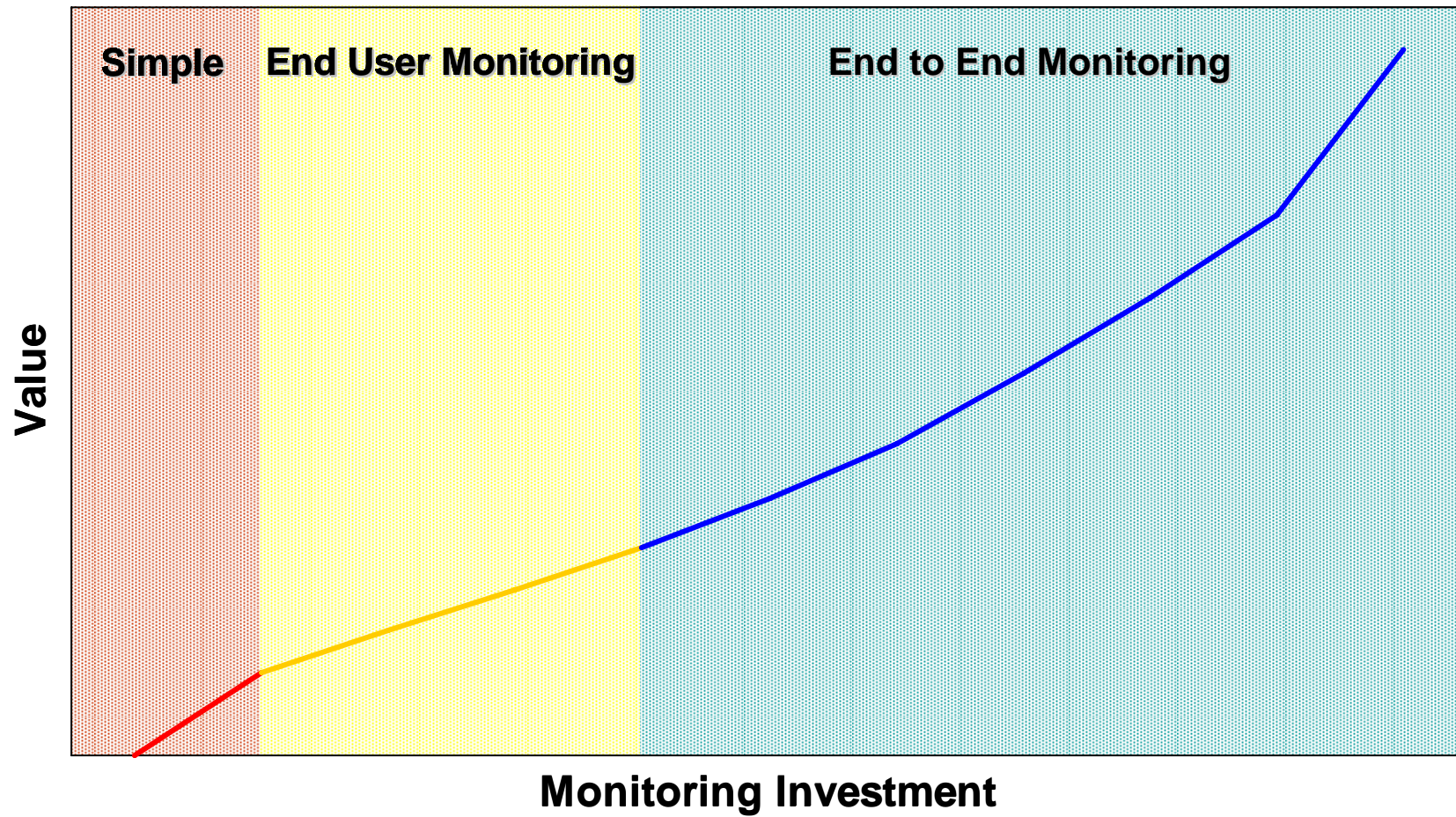


## CAM Maturity

- Means visibility in more types of issue in a typical data centre. Issues that affect a Line-of-Business manager –
  - Composite Application management is typically in the domain of a Line-of-Business manager
    - Reports to business operations
    - Peers with data centre manager, facilities manager
    - Leads/Interfaces with SMEs, application teams
- Means quicker time to resolution
  - Significant business impact in terms of minimizing opportunities lost
- Means ability to predict issues
  - Allows the LoB manager to be proactive rather than reactive



# Road to Maturity: Costs and Benefits

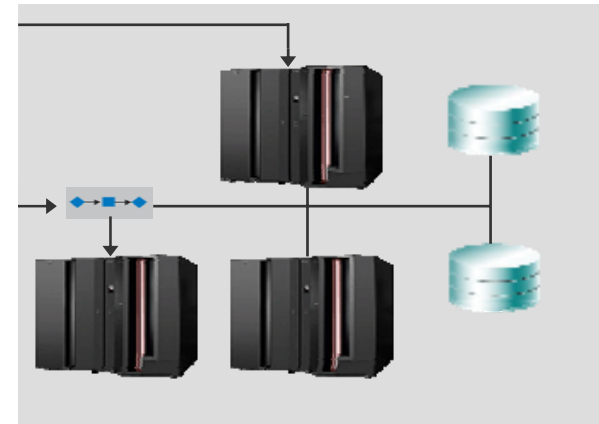


## An Example

- A natural evolution of a productive environment
  - Mainframe environment, eg
    - Transaction Processor is CICS
    - Database storage in DB2
    - Monitored by OmegaMon XE
  - N-Tiered
    - Business logic extension done in distributed environment
    - Custom coding (eg C++) to add new functionality
    - Interconnected to mainframe via MQ
  - Service Oriented Architecture
    - Functionality enhancement following SOA principles
    - Web and Application servers abound, load balanced to scale
    - Message passing via MQ/MB/Datapowers etc

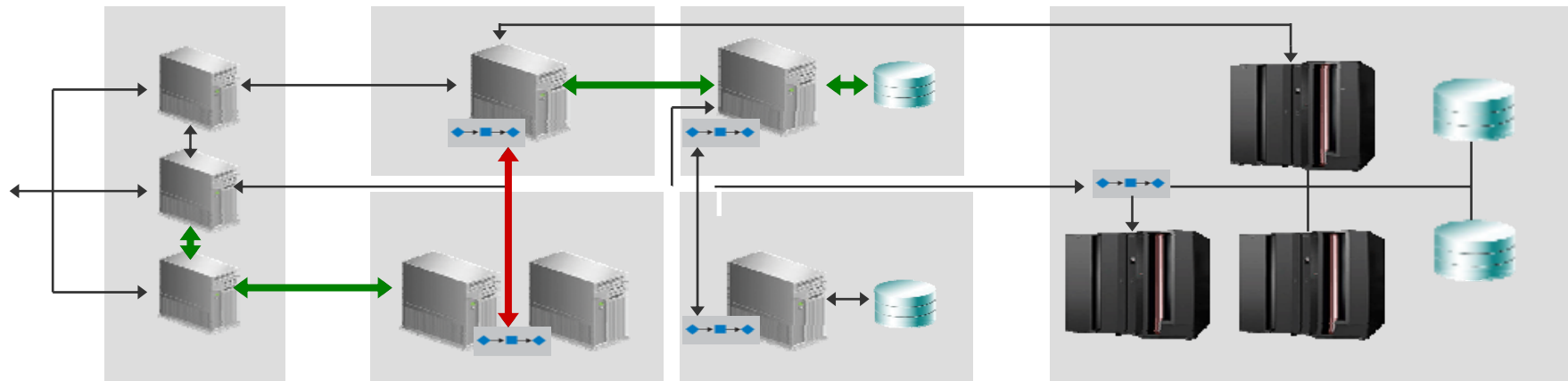






- Originally no significant issues
  - OmegaMon SME/Single domain tools sufficient for outage diagnostics
  - Visibility = High
  - Single “Silo” = no component interaction issues
- N-Tiered
  - 2 components connected via Enterprise Message Bus of some type
  - Logging within application
    - Good when breakage is within the application
    - Issues when transactions are “lost” between the two parts
  - Visibility = failing at interconnect between the two “Silos”





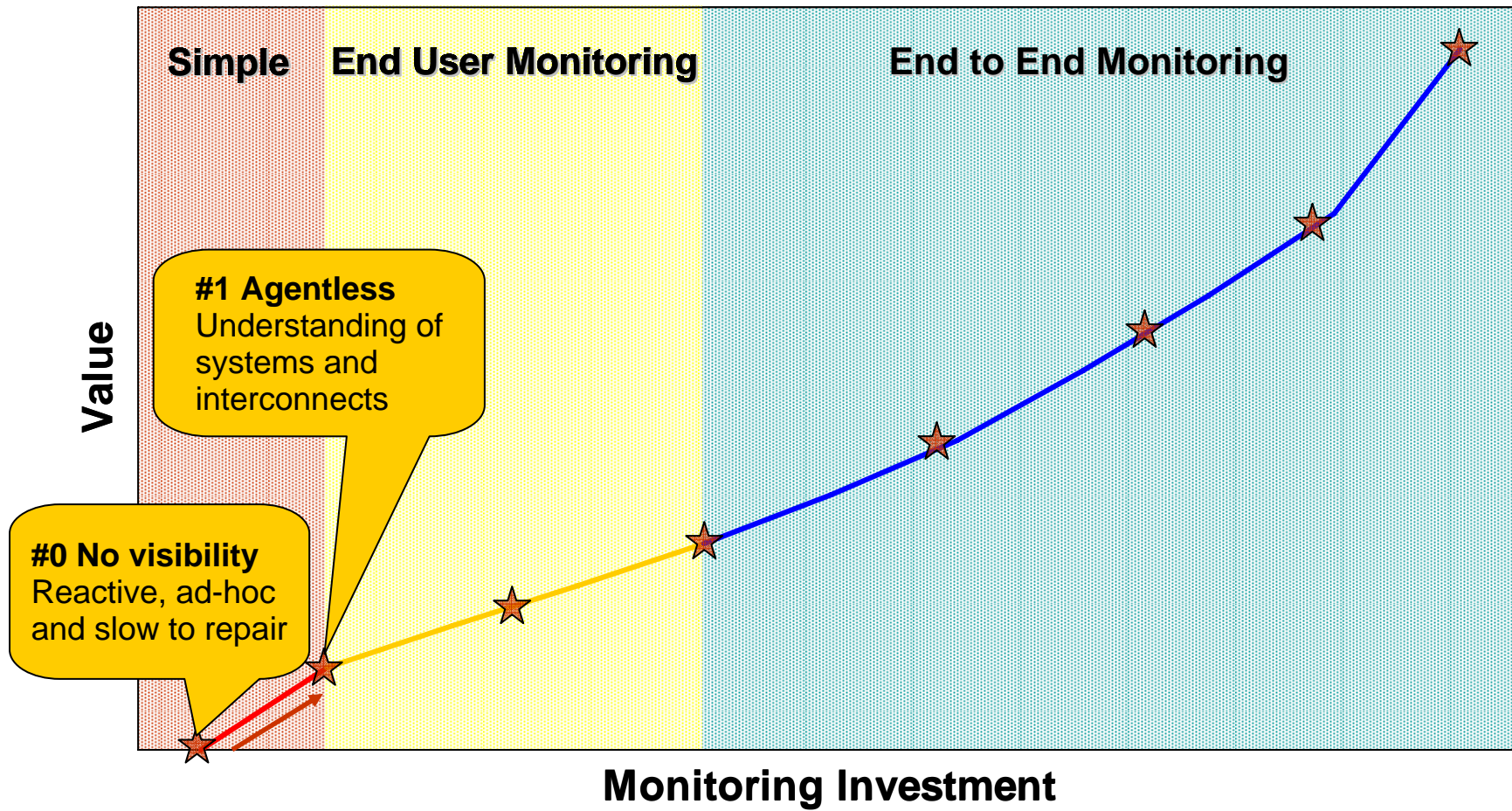
- SOA – adding load balancing, reusable component, common framework
  - Interconnects and the path itself now forms a major part of the business logic
  - Visibility = low, many Silos → can't easily associate a component breakage back to end user impact
  - Can't tell whether multiple exceptions are due to floor-level noise or are related and needs to be dealt with.

## Recover Monitoring Capabilities

- Visibility has not scaled with application growth
  - Previously engineered monitoring solutions no longer adequate
  
- 3 step initial triage, giving quick initial value -
  - Stage 1: Know your application layout/bottleneck analysis via Agentless
    - Application/component discovery
    - Links outages to components



# Road to Maturity: Costs and Benefits



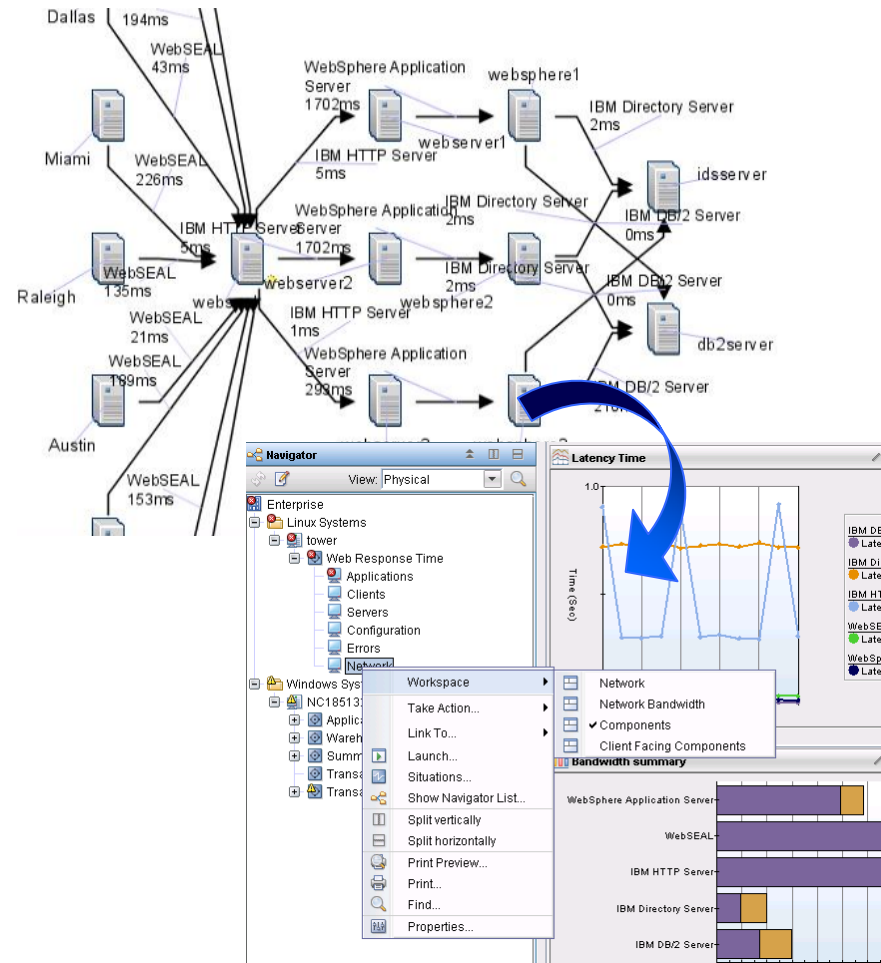
# Triage 1: Agentless Transaction Tracking

## Pros:

- Offers much faster Time-To-Value
- End-to-end view in short time span
- Zero overhead, zero transaction impact
- Using proven WRT technology
- Server and component level topologies
- Very little configuration
  - Most common applications are pre-configured out of the box
- Can add custom network applications

## Provides platform on which to invest agent-based tracking

- Visibility inside the server
- Transaction level details
- Does not provide instance data

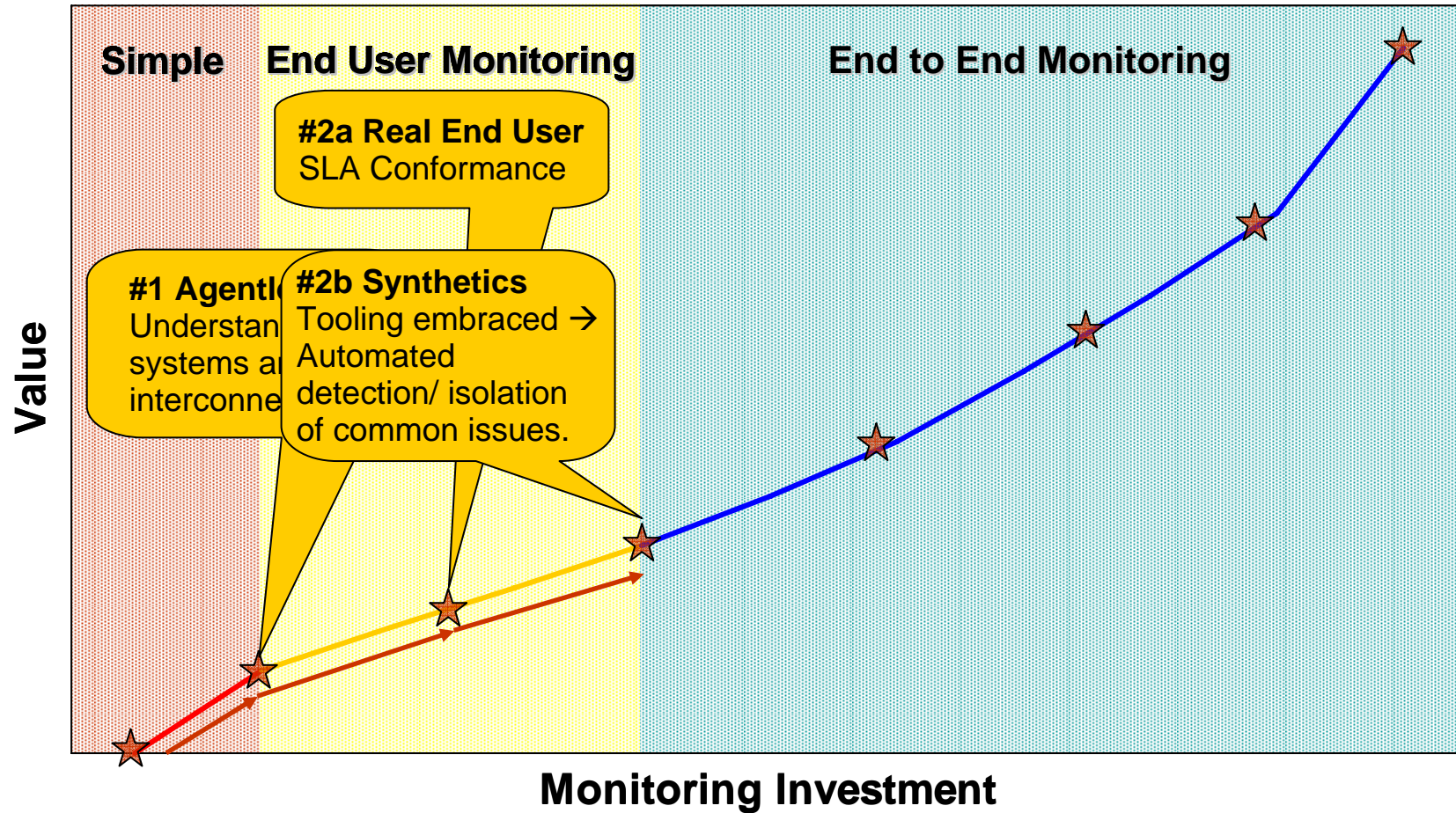


## Recover Monitoring Capabilities (Cont.)

- Initial triage, continued -
  - Stage 2: Real end user monitoring via WRT, CRT
    - ensures SLA conformance
  - Stage 3: Synthetic monitoring via RPT, ISM
    - Ensure application vitality
    - Allows reactive trigger to be an agent rather than an angry customer



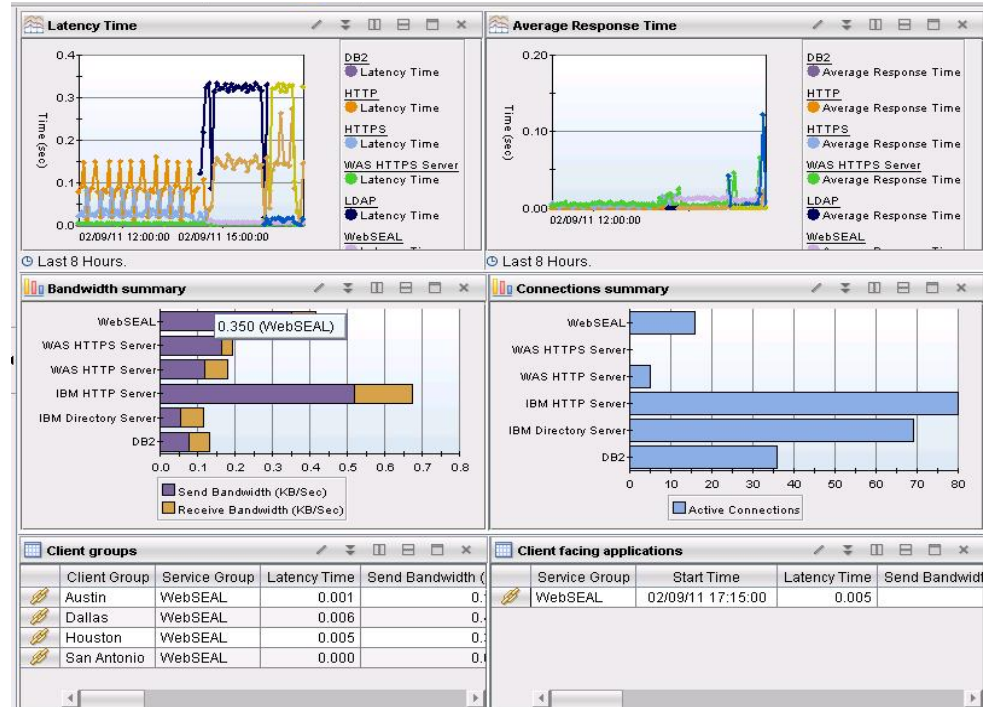
# Road to Maturity: Costs and Benefits



# Triage 2: Real User Monitoring

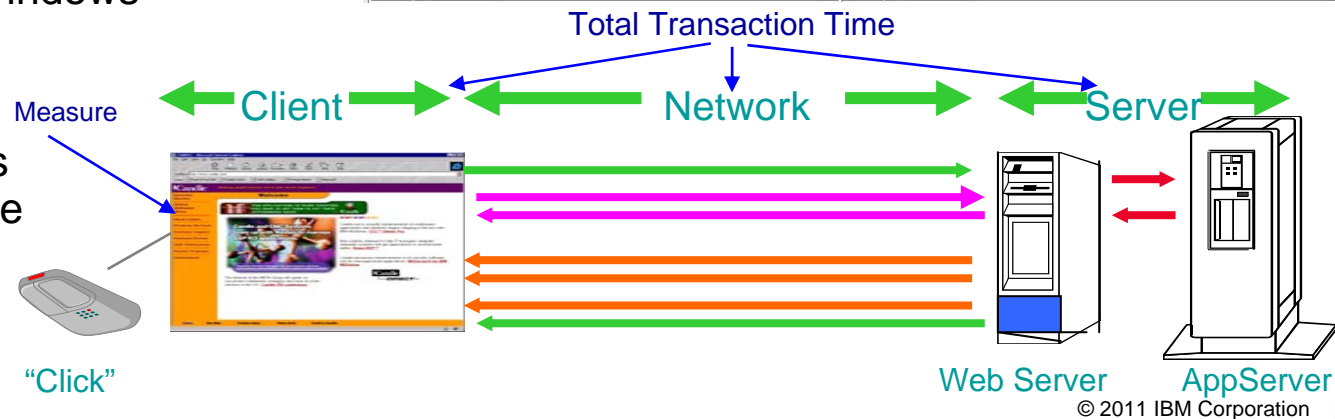
## Web Applications - Agentless

- Captures performance and availability data of actual users for SLA reporting
- Completely non-invasive, agentless monitoring
- Monitors network traffic for HTTP(S) requests to the web server



## Windows Applications - Agent

- Monitors selected Windows applications
- Agent on client workstation provides details response time analysis





# Triage 3: Robotic Monitoring

- Verification Points for content matching and response code checking
- HTTP transactions correlate with downstream instrumentation for problem isolation
- Improved scalability for more concurrent playbacks on a single agent
- Support for a growing list of protocols: HTTP(S), Siebel, Citrix, web services

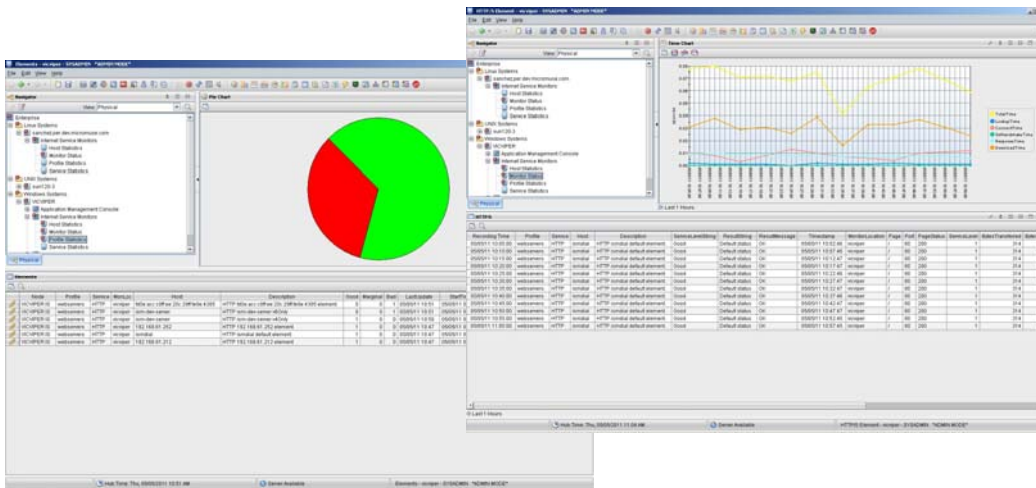


# Triage 3: Internet Service Monitors

## Agentless protocol-level availability monitoring

### Comprehensive service monitoring

- Measure availability, performance and content accuracy of services via 25 protocols
- Simulates clients of services
- Periodic testing
  - Measure against defined SLA - % availability
  - Identify long term trends with historical reporting
- Broad application / service coverage



**ITCAM for ISM supports 25 protocols and complements the robotic and real user response time monitoring functions of ITCAM for Response Time. Together they form Tivoli's comprehensive solution for application response time monitoring.**

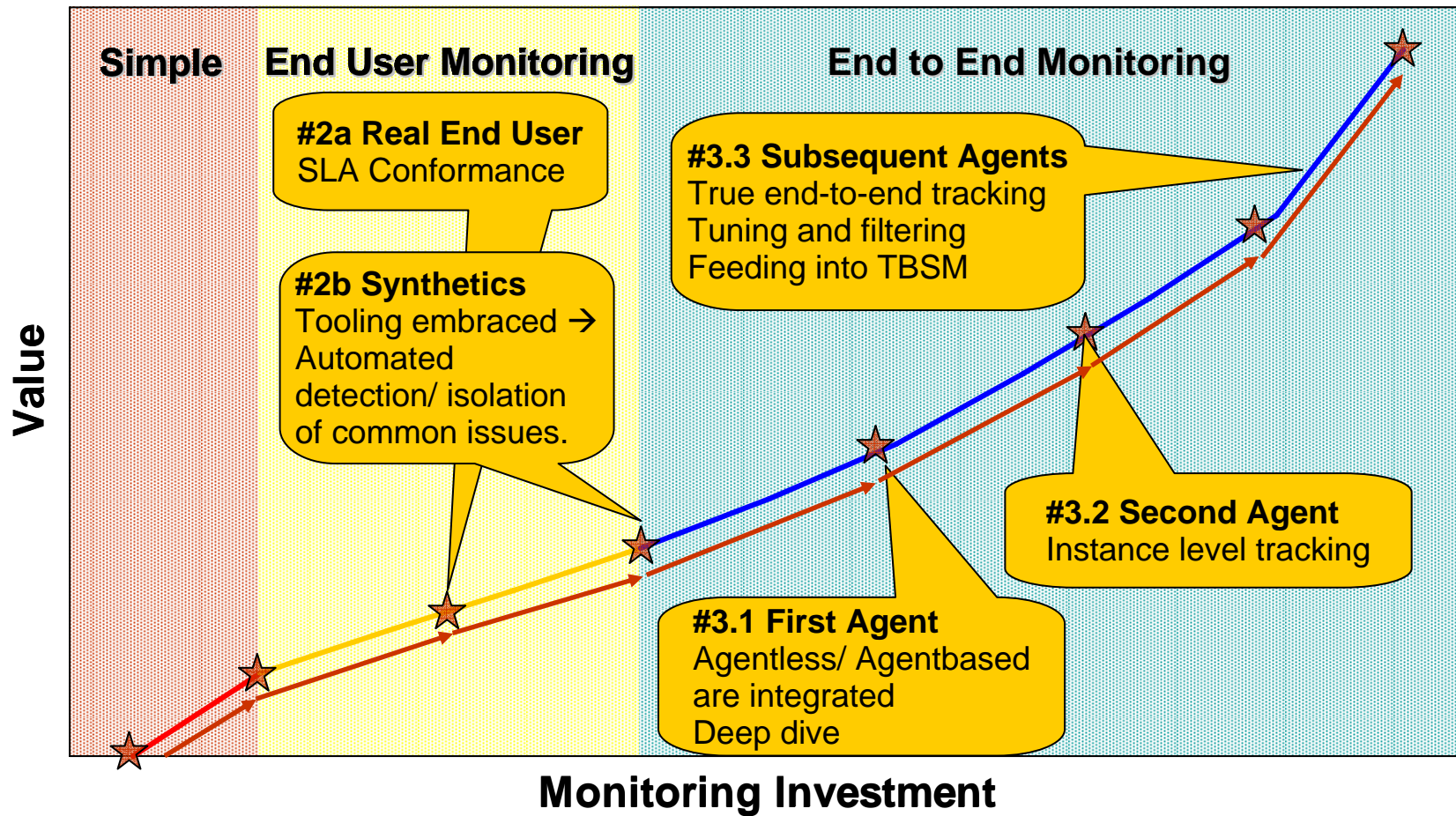


## Enhancing Monitoring Maturity

- Aim of triage is to move CAM to a proactive rather than reactive position
  - A first step, next step is to reduce the time to resolution
- Reaching higher levels of visibility – gaining true end to end tracking.
  - Add Domain tracking monitors (eg TT's MQ data collector)
  - Add Domain SME monitors as appropriate (eg ITCAM for AD, OmegaMon for CICS)
- Build up data over time
  - Allows for production capacity planning
- Start linking to Business Impact Monitoring tools
  - BPM, BSM, TADDM, TBSM, etc
  - Example
    - TT exports via Common Data Model to TBSM giving it topological visibility
    - TT via Omnibus, sends outage events to TBSM to enable business impact analysis



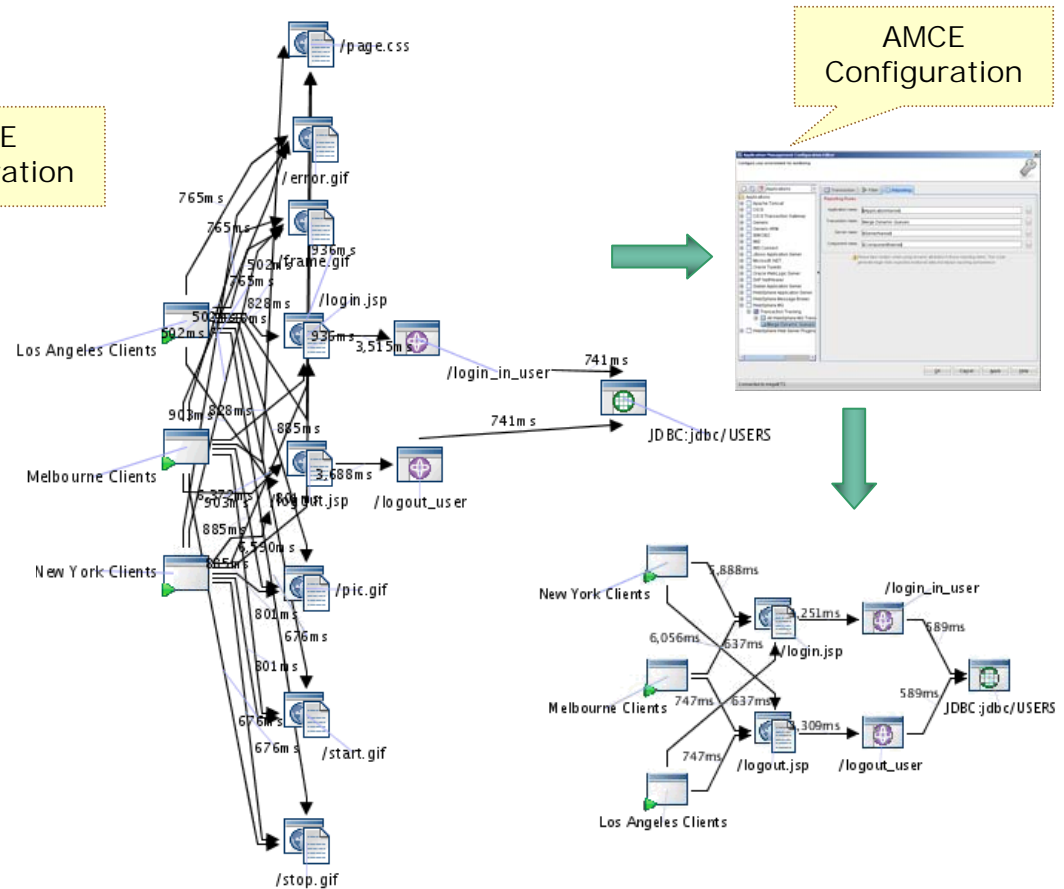
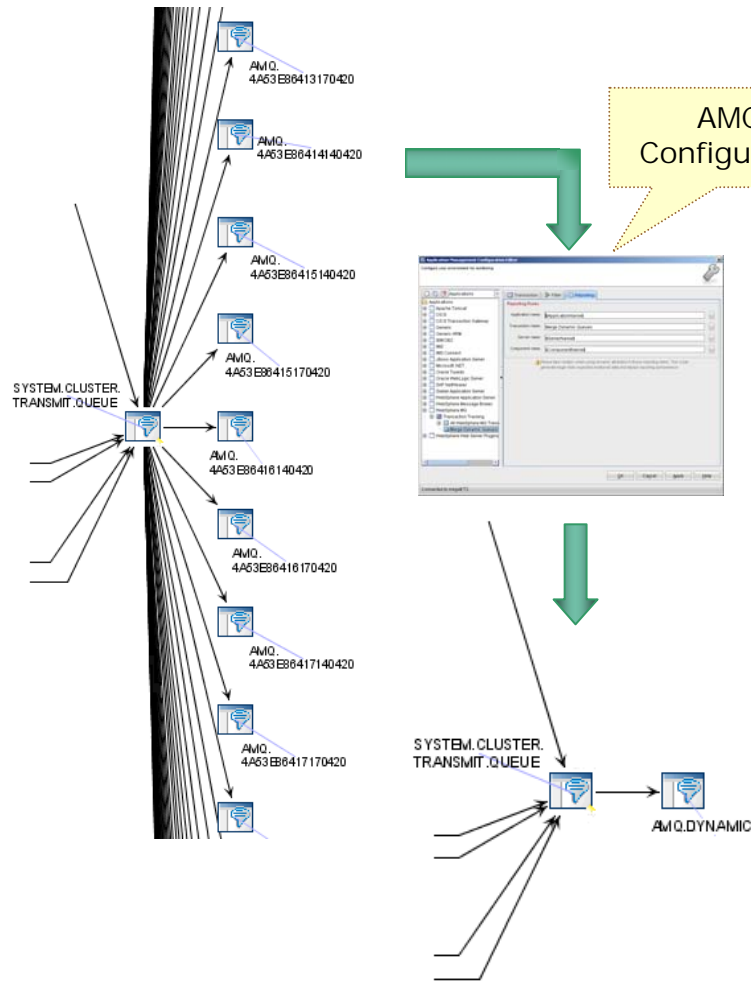
# Road to Maturity: Costs and Benefits

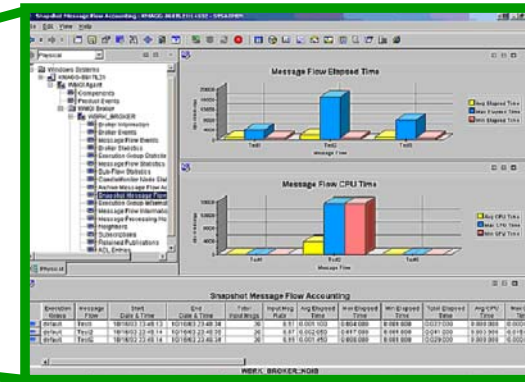
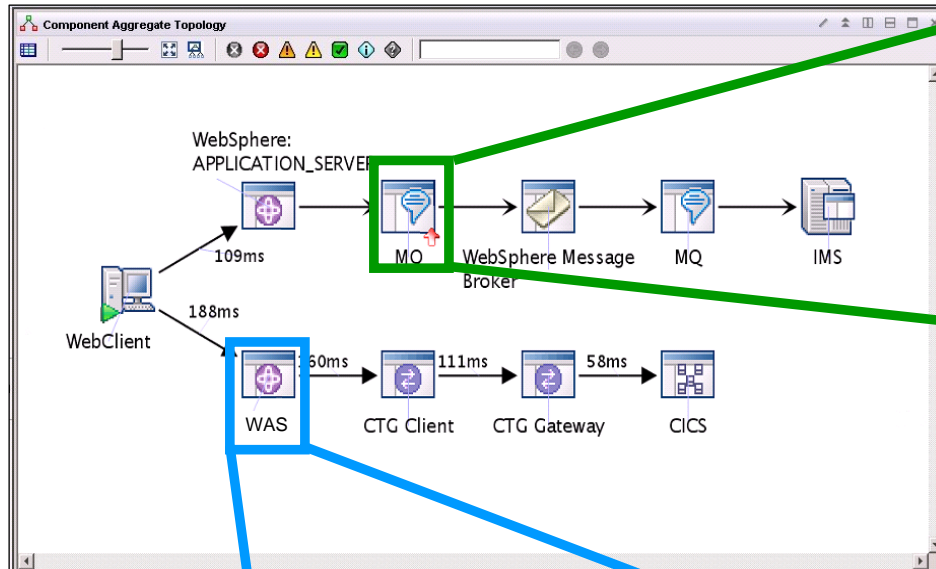


# Simplifying the Topology with Filtering and Grouping

Grouping – MQ Dynamic Queues

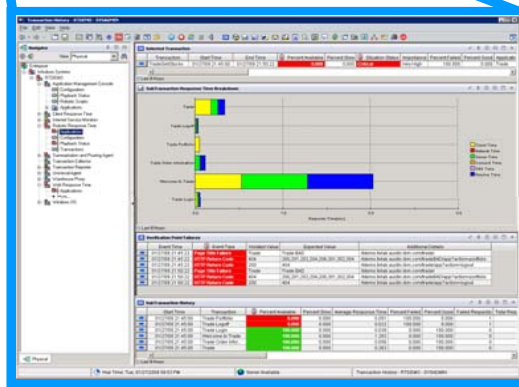
Filtering – IHS Image Filtering





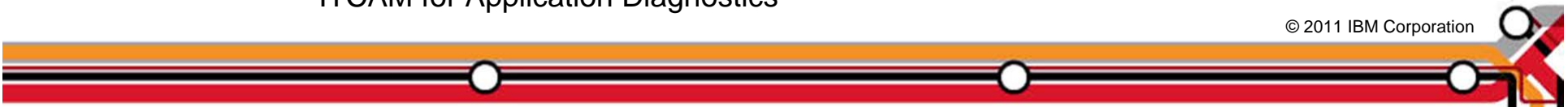
OMEGAMON XE for Messaging

ITCAM for Transactions



ITCAM for Application Diagnostics

- Launch-In-Context allows SME to quickly and easily drill down to the problem
- Speeds MTTR





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# Backup slides





# Simplifying the Topology with UI Filtering

## Topology Filter Configuration - Example

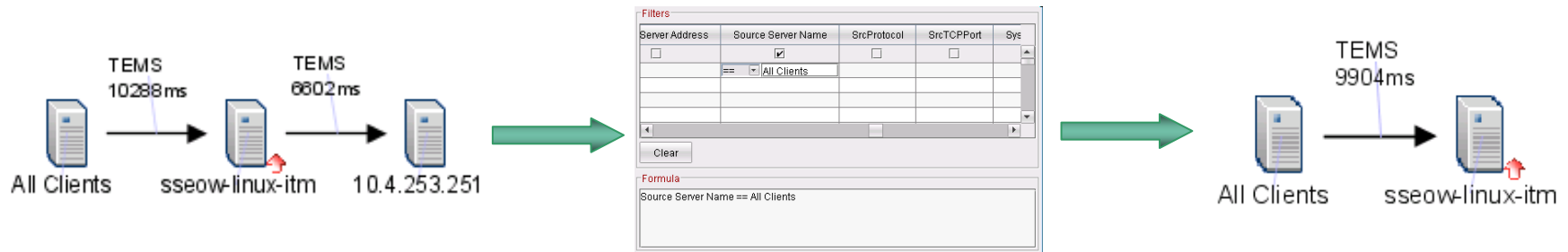
With a Server Component Interaction topology that aggregates on Server Name and shows Component interaction on the arrows, we could show only interactions from “All Clients”

In TEP properties

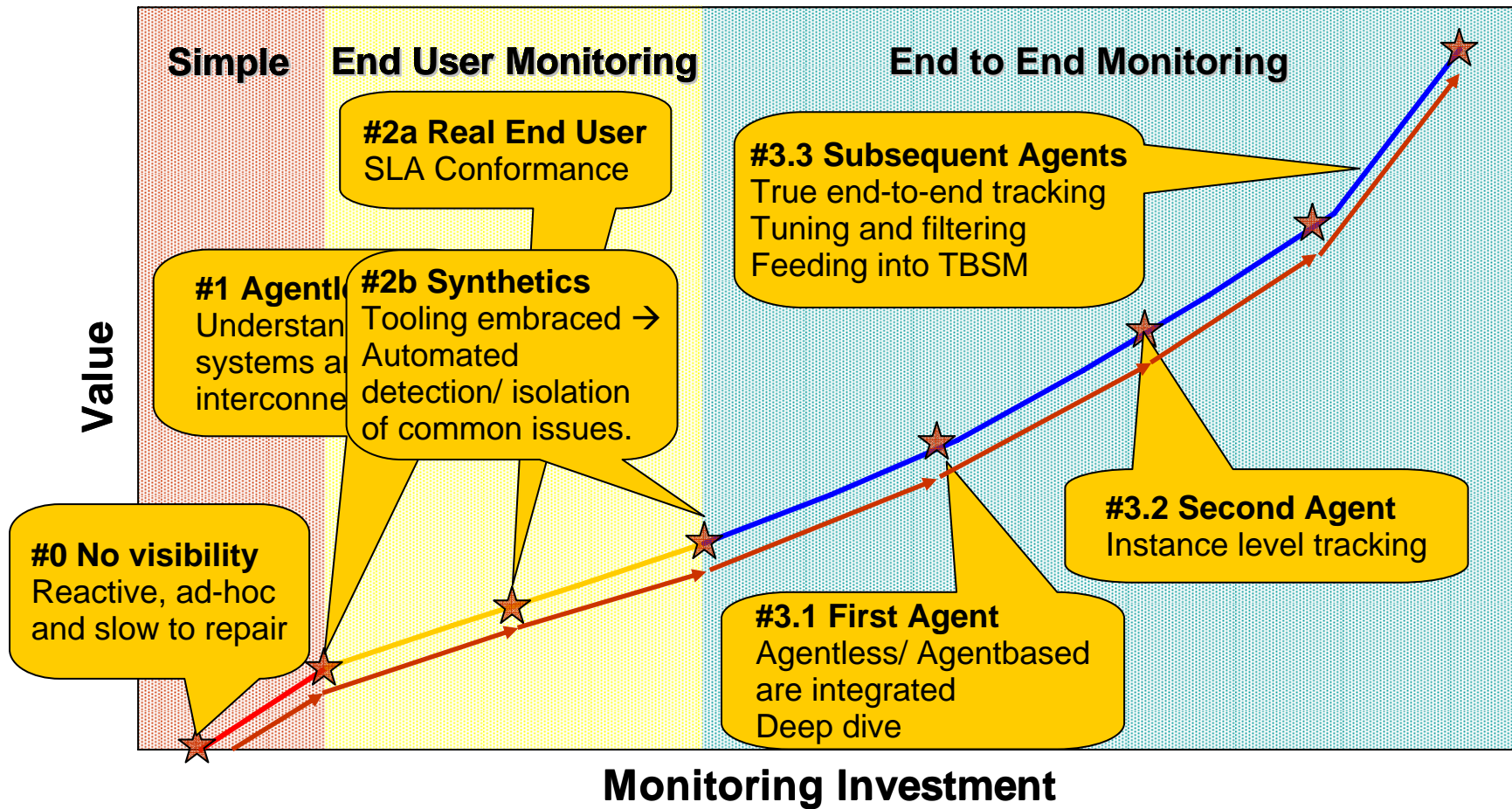
Different views on same data

Allow for presentation changes

This gives the following topology:

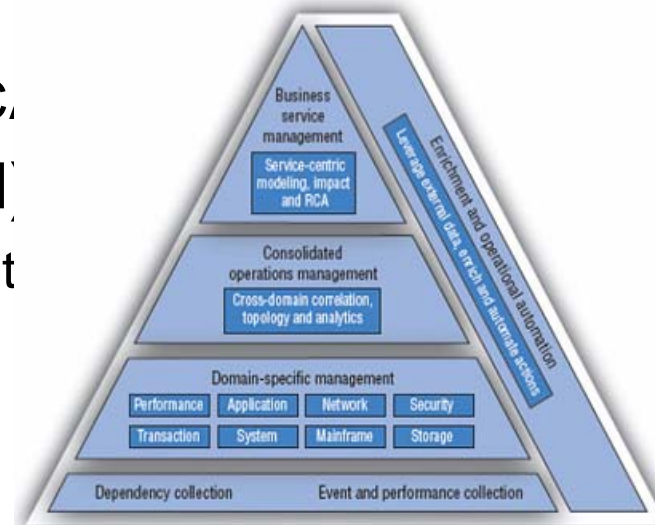


# Road to Maturity: Costs and Benefits



## CAM – What it isn't

- Single domain monitors doing only KPI
  - Monitors that just observe one element's KPIs, eg
    - Network monitor
    - OS monitor, or
    - Even Middleware monitors that report only KPIs.
  - “Tracking” is the distinction between a CAM vs. a collection of point monitors
  - “Deep Dive” is another capability of C.
- Business monitors (eg BPM, TBSM)
  - Business monitors reports on impact to “business” capability/processes
  - More business orientated than CAM



## How does this help me?

- Solving classes of real monitoring problems that can't be solved by other means.

Monitor Type	Solutions offered	Examples
Single domain	<ul style="list-style-type: none"> <li>▪ KPIs – element vitality.</li> <li>▪ SLA conformance.</li> <li>▪ SME information – diagnostics.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Network monitor</li> <li>▪ ITM OS monitor</li> <li>▪ OmegaMon XE</li> </ul>
Cross domain event correlating monitors. “Transactions Tracking”	<ul style="list-style-type: none"> <li>▪ Application interaction tracking</li> <li>▪ Problem sensing and isolation</li> <li>▪ Repair verification</li> </ul>	<ul style="list-style-type: none"> <li>▪ ITCAM for Transactions</li> </ul>
Business monitors. Including impact and process monitoring.	<ul style="list-style-type: none"> <li>▪ Business impact analysis</li> <li>▪ Process compliance monitoring</li> </ul>	<ul style="list-style-type: none"> <li>▪ TBSM</li> <li>▪ Websphere BPM</li> </ul>

