The Wicked Problems Cookbook

Eating the IT Performance Monitoring Elephant

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Table of Contents Page No.

Letter From the Author

For over a decade I've been evangelizing unified monitoring as an enabler of transformative change for IT organizations. I've been an ITIL Expert since 2005 and continue to work with clients on transformational change associated with virtualization technologies, cloud operating models, DevOps (and monitoring). I have over 40 years' experience in IT as a customer, consultant, and, most recently, as a fool with a tool.

eG Enterprise is an industry-first truly converged application performance monitoring and infrastructure monitoring solution that delivers unparalleled monitoring reach across user experience, business transactions, application and the supporting infrastructure – all from a single console.

Goop Mélange of IT Monitoring Tools

The image that you see on the right will give you some idea of my state of mind when I wrote it, and shows my age (since millennials may have no idea what I'm talking about).

In an episode of TV's "The Odd Couple" Oscar took on making his own dinner. He mixed in potato chips, sardines, pickles, and whipped cream. It was then garnished with ketchup. When Felix asked what he called this mélange, Oscar answered, "Goop."

Goop Melange was the dish Felix ate to convince Gloria he was no longer finicky.

IT monitoring is often a 'goop mélange' of fragmented tool sets, made even worse by a lack of stakeholder management and no concept of managing a portfolio of monitoring tools. I've ranted about stakeholder management and goop mélange before, but this book will take a healthy bite from an IT performance monitoring perspective.

Bon appétit.

John Worthington,
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The Wicked Nature of IT Performance Monitoring

IT performance monitoring has long been known to be a wicked problem – it is highly social in nature (monitoring 'silos'), it has numerous stakeholders (each with different opinions) and is inextricably interconnected within the IT organization, technologies and processes.

But while wicked problems are never really 'solved', they are worth addressing. Since the digital user experience has become the basis of competition in the digital age, this is particularly true for IT performance monitoring and is one reason why DevOps seeks continuous monitoring.

If you look at DevOps from a continuous monitoring perspective, the ideal state is one where observability is designed-in – developers and/or site reliability engineers (SRE) make sure that appropriate telemetry is part of the application or IT service design based on business risk tolerance and budget.

Monitoring uses this telemetry to provide rapid and specific feedback across the application/service lifecycle, and to assure the performance of production applications and/or IT services.

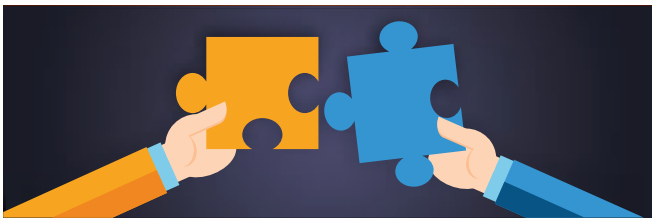
In fact, the use of applications as proxies for digital business services contributes to the wicked nature of the performance monitoring problem. Applications don't run in isolation, and in most enterprises there's a toxic mix of legacy, cloud services and technologies – sometimes across a single business service. People, technology, suppliers and other dimensions can all be different for different segments of a digital business service.

What are Wicked Problems?

Wicked Problems are those that are never really 'solved' due to incomplete, changing or contradictory requirements. They typically involve many people, have many interconnected elements and are highly social in nature.

- Rittel, Webber

Characteristics of Wicked Problems



1. The problem is not understood until after the formulation of a solution.
2. Wicked problems have no stopping rule.
3. Solutions to wicked problems are not right or wrong.
4. Every wicked problem is essentially novel and unique.
5. Every solution to a wicked problem is a 'one-shot' operation.
6. Wicked problems have no given alternative solutions.

The evolving nature of these dimensions has a tendency to simply 'shuffle the deck chairs' – the traditional silos (network, web, database, application) are sometimes replaced by 'infrastructure', 'applications' or 'the cloud'. In some cases, these new silos are in addition to traditional silos.

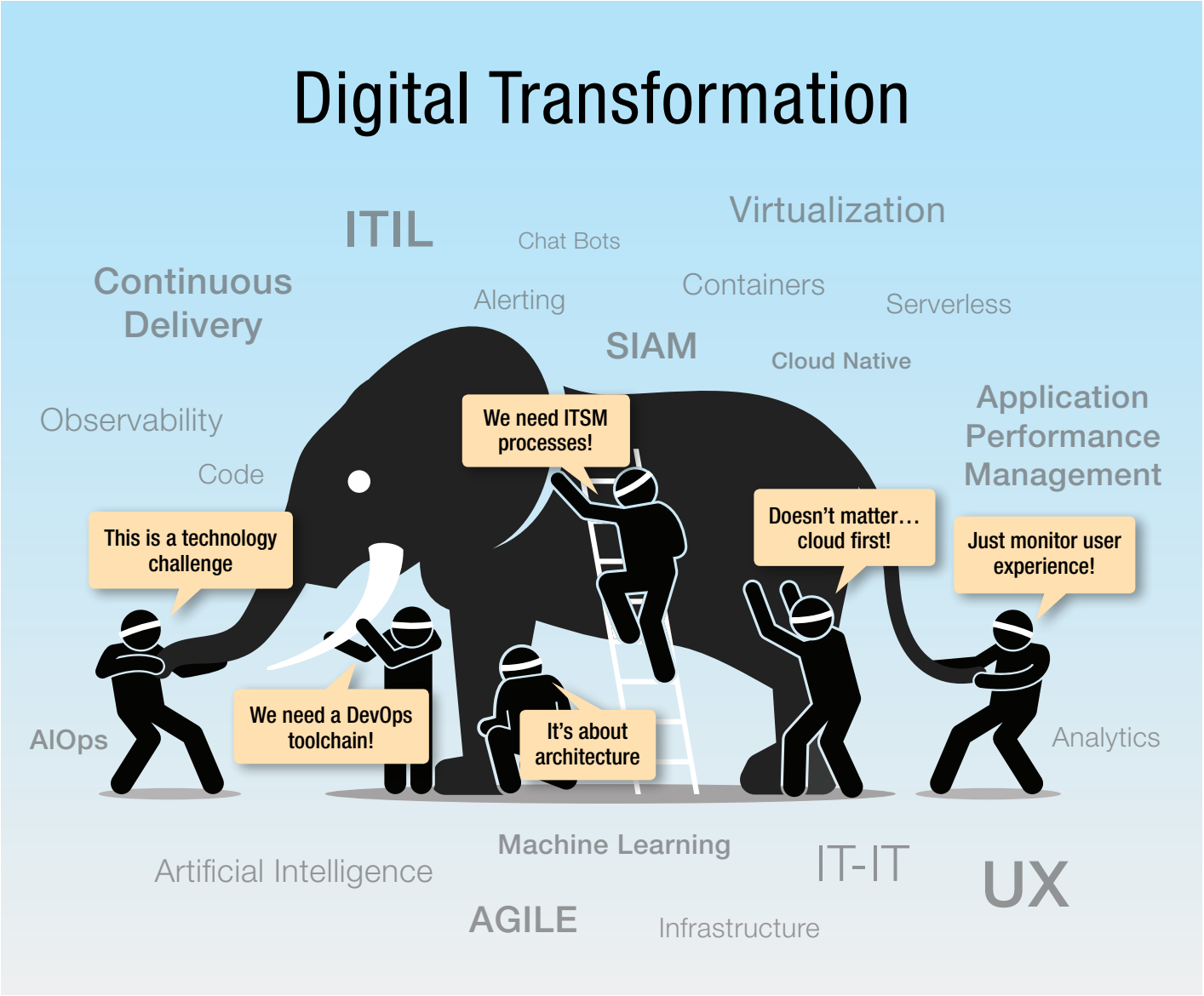
The four dimensions of service management are also impacted by many factors (legal, political, regulatory, etc.), and what can easily get lost in this complexity is the customer! Since a service is the means of delivering outcomes customers want to achieve, it's critical to take a services-oriented view of monitoring.

Part of monitoring's wickedness stems from the need for specialization to address complexity. But the need for specialization also creates specialists. These are people – and this is the heart of monitoring's true wickedness.

> Specialization allows us to handle evergrowing complexity, but ***the benefits of specialization can only be fully realized if the silos that it creates can be connected effectively.***
>
> - **Kersten, Mik.** Project to Product.
> IT Revolution Press. Kindle Edition.

The IT Performance Monitoring Elephant

For these reasons and others, eating the IT performance monitoring elephant requires an attention to people more than technology.

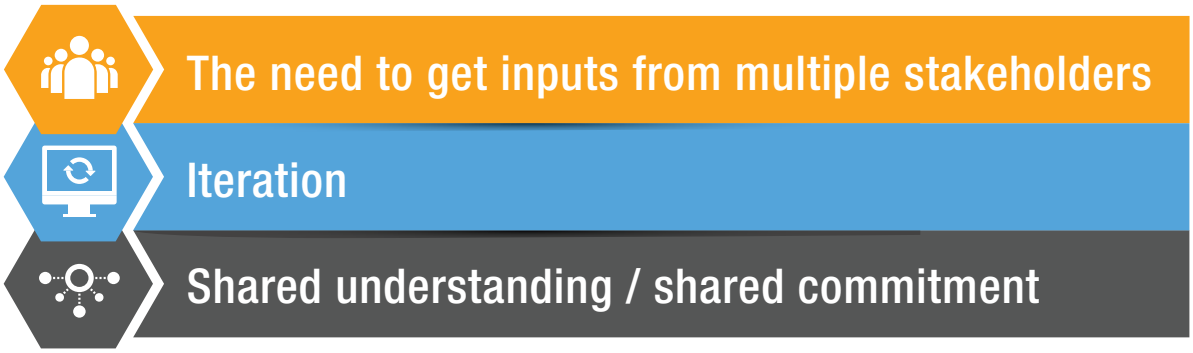


Effective monitoring has the unique ability to help break down walls. To establish real organizational transparency and trust. In fact, an effective monitoring program is fundamental to any continuous improvement effort. These programs mirror transformative change efforts, such as DevOps, cloud migrations and digital transformations.

This eBook takes a look at the wicked nature of IT performance monitoring and provides a few examples of how organizations can apply techniques for solving wicked problems in an IT performance monitoring context.

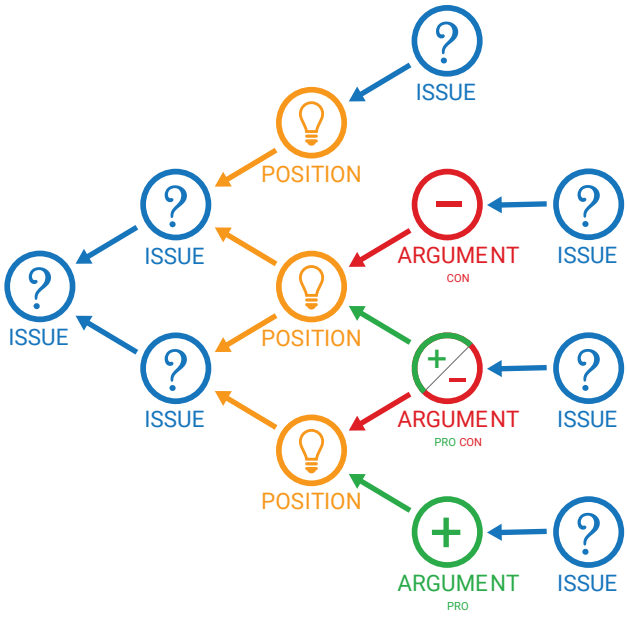
Wicked Problem-Solving Techniques

There are different approaches to solving wicked problems, and not all of them are addressed here, but they all have several things in common:



Issue-based Information System (IBIS) and Dialog Mapping

IBIS was invented by Werner Kunz and Horst Rittel in the 1960s, and is an argumentation-based approach to clarifying wicked problems—complex, ill-defined problems that involve multiple stakeholders. Diagrammatic visualization using IBIS notation is often called issue mapping.



Issue mapping is the basis of a meeting facilitation technique called dialogue mapping. A dialogue map does not aim to be as formal as, for example, a logic diagram or decision tree, but rather aims to be a comprehensive display of all the ideas that people shared during a conversation.

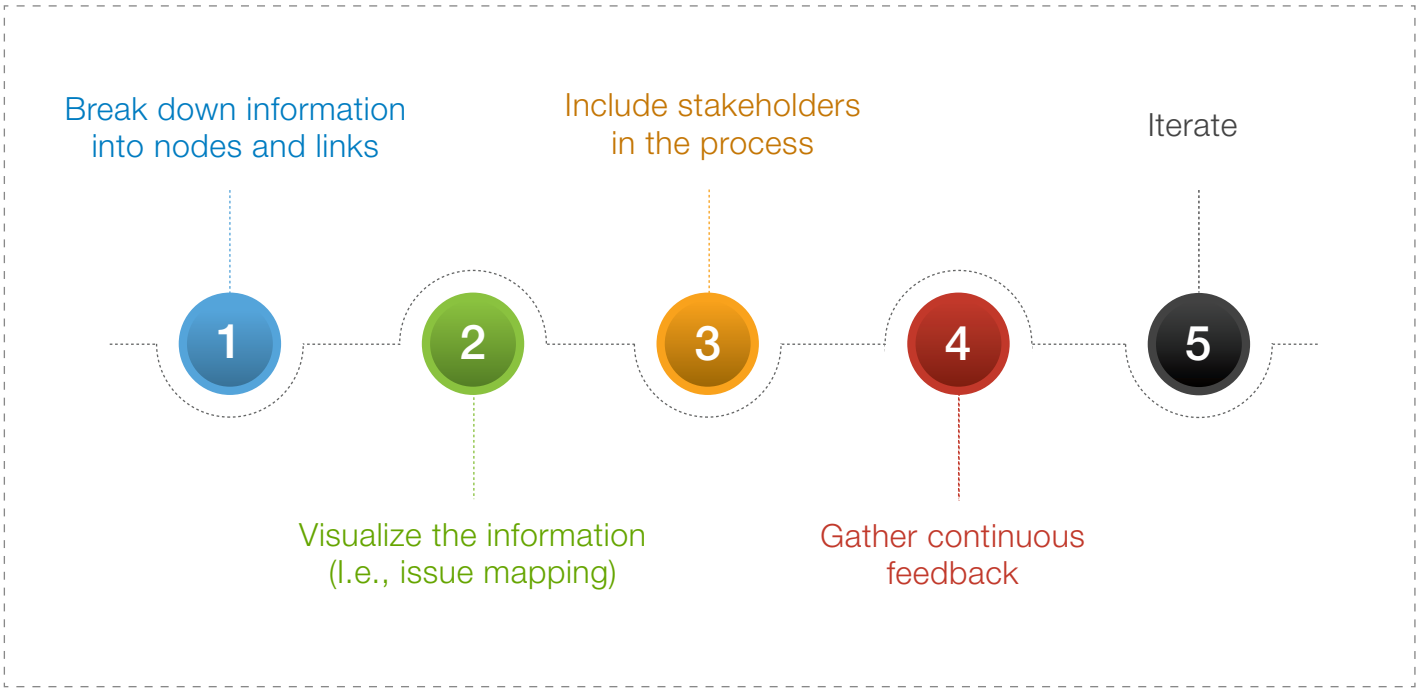
Jeff Conklin, founder of CogNexus, is the creator of the Dialogue Mapping™ method, an approach for building shared understanding among meeting participants.

For more information, go to http://www.cognexus.org/cognexus_institute.htm

Agile and Systems Thinking

The iterative and collaborative nature of the agile methodology can be useful when working with wicked problems. Systems thinking requires an understanding of how components of a system influence each other and other systems.

Design can use these 5 steps to help address wicked problems:



Digital transformation, DevOps and IT performance monitoring can all be wicked problems. Each attempt at 'solving' a wicked problem can create other new, wicked problems and is another reason why when it comes to wicked problems, you're ***never done.***

Sound familiar?

Wicked Problems and People: A Cautionary Note

Part of monitoring's wickedness stems from the need for specialization to address complexity. This leads to a lot of tools – and tool users. Be cautious about managing your monitoring portfolio.

There is nothing in the world more helpless and irresponsible and depraved than a specialist frozen in the depths of a monitoring optimization program.

In addition, it's highly likely that non-IT people may be better suited to address many people issues. Technologists tend to focus on technology, so before you have an architect tell every domain SME about the virtues of his/her 'monitoring architecture' remember nothing sells an IT person more than a tool *that works*.

Examples of Wicked IT Performance Monitoring Problems

Each of the dimensions of service management, and the factors influencing them, will vary from customer to customer. The scenarios that follow were taken from a variety of real-world situations with customers:

The DevOps Toolchain

Shifting Monitoring Left

Cloud First

Note:

These scenarios are a goop mélange of customer activity over a decade in what has been, and continues to be, a savage journey in the hopes of finding the heart of service management excellence.

Any resemblance of conditions, situations or human factors that resemble your organization are purely coincidental. But the stories are all true; only the names have been changed to protect the innocent.

Remember, every customer is unique.

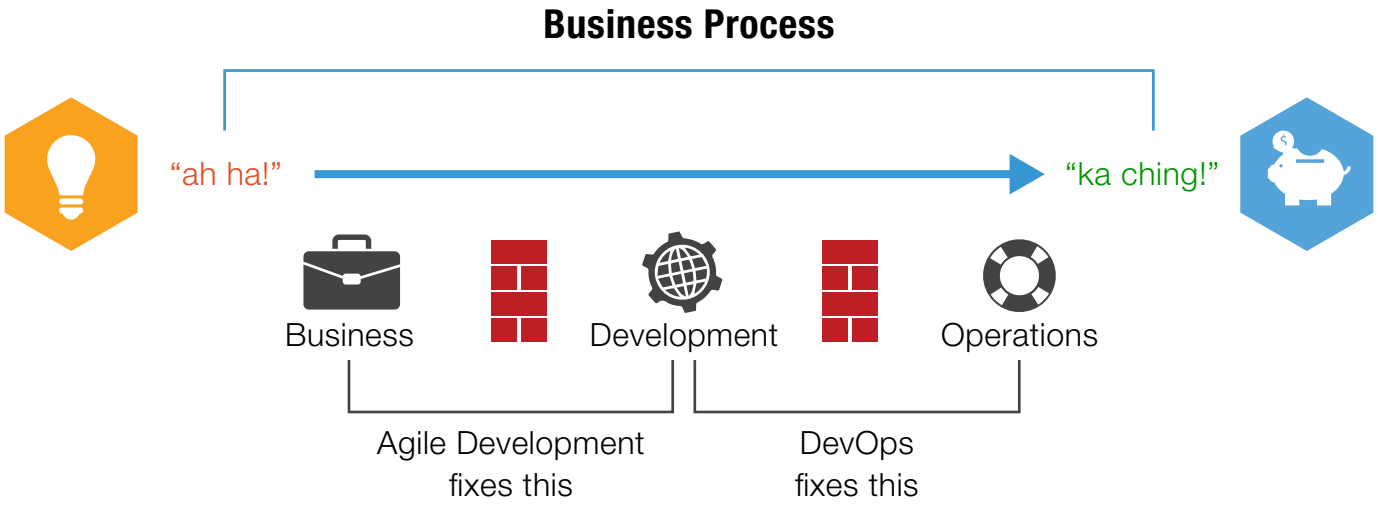
Including you.

The DevOps Toolchain

What DevOps Toolchain customers had in common was an insatiable desire to accelerate flow through the development pipeline.

This is almost always driven by a business desire to accelerate time-to-market, or to enable 'digital transformation' even though in many cases the business had no idea what that meant.

I've always liked the *Ah-Ha* to *Ka-Ching* analogy, which not only describes the business motivation but places some IT reality checks along the way.



Condition:

As various initiatives were undertaken, monitoring's wicked nature began to reveal itself. In some cases, there were 'monitoring wars' that which pitted one IT tribe against another and in others it was so severe that there was a form of 'anti-collaboration'. Knowledge was closely guarded, not shared and there were endless war rooms and debates.

These conditions were sometimes a result of a split between development and operations, in spite of the DevOps objective to break down this wall.

Problem:

There were a variety of 'flash points' that led to successful improvements. In one case, a major incident exposed the organization's inadequate problem management. Operations struggled to isolate performance issues with production systems and there was significant finger-pointing.

In other cases, limited historical analysis capability severely limited problem analysis, which kept the organization at a reactive level of maturity. There were so many different monitoring tools in use, it was impossible to view any meaningful event history (in either dev or ops).

At the same time, development ‘hit the wall’ at systems/integration testing, partly as a result of a diverse (heterogeneous) tool chain that was not prepared for the testing.

Solution:

Several organizations had success with the monitoring solution for a specific application, and others used the monitor for a supporting IT service (in these cases, it was treated as a separate technical domain).

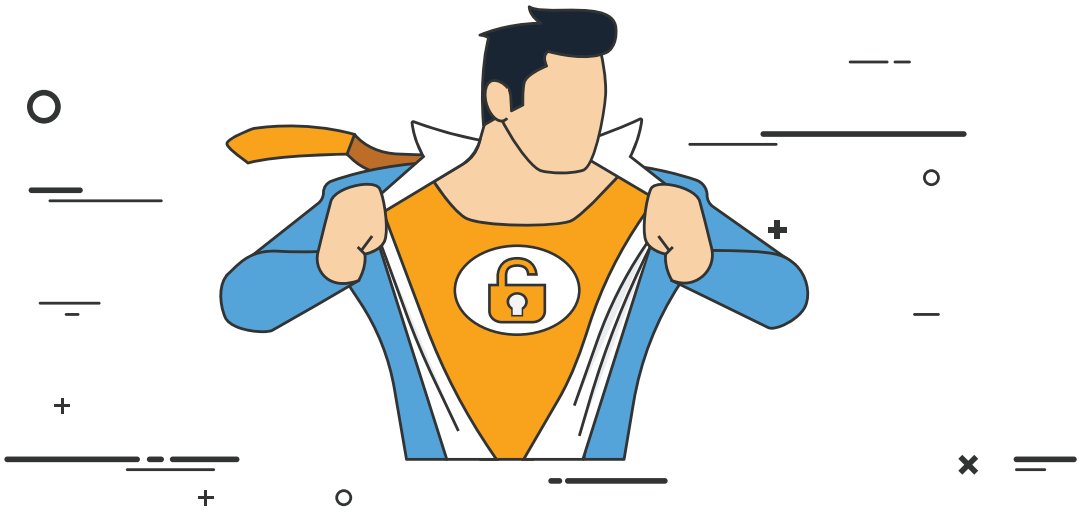
In one case, the monitor was used to ensure that a heterogeneous toolchain was optimized at each step along the development pipeline, which removed a critical bottleneck at systems/integration testing.

Each of these customers were able to demonstrate to other parts of the organization how the monitor worked, and what it provided for the target services.

Key monitoring stakeholders were reassured that this was NOT an ‘optimization’ program, and that no decision was being made to decommission existing monitoring tools. This gave these stakeholders time to provide input to domain-specific requirements and reduced resistance significantly.

All of these examples had the following traits:

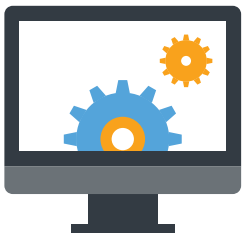
- They captured and documented monitoring value; some through unique ‘testimonials’
- They began to use the monitor for cross-domain knowledge sharing and training
- They moved (over time) from finger-pointing to a culture of observability



“I want you to put me in touch with reality, but be ready to break the connection fast.”

Shifting Monitoring Left

‘Shifting monitoring left’ customers usually had initial success with the monitor in production, usually for a specific service target; it could be a customer-facing service or a supporting IT service but it usually had end-to-end dependencies that forced the organization to cross-functional boundaries.

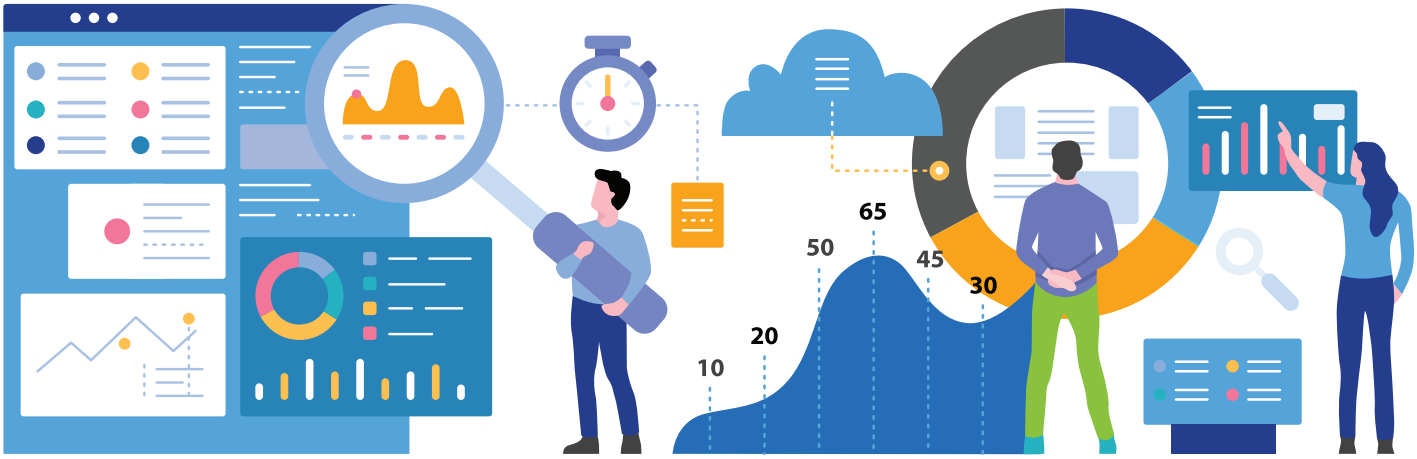


Condition:

These customers often had success monitoring a digital workspace:

- Monitoring was limited to the production environment only
- The digital workspace was treated as a separate technical domain
- There were no resources dedicated to monitoring

Since the monitor was limited to production and was largely contained within a single technical domain, there was no understanding by others what the monitor could do for them. This made it difficult to justify expansion of the monitor; each domain basically ‘rubber-stamped’ monitoring using their own domain-based monitoring tools – the digital workspace was an exception.

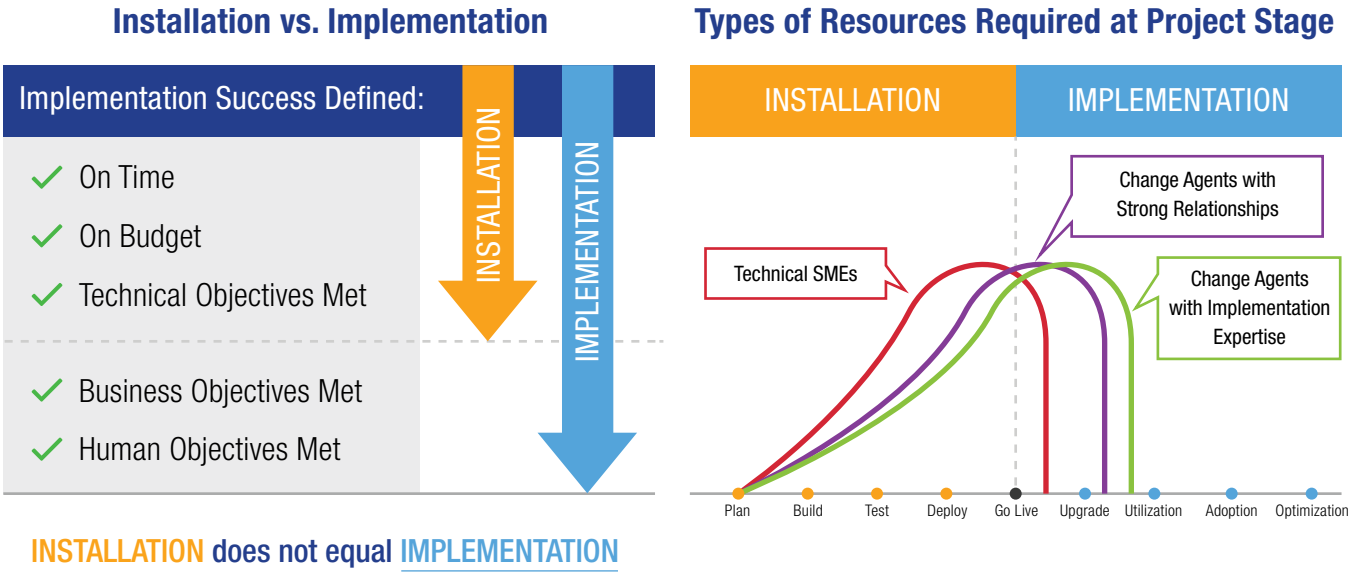


Problem:

The part-time nature of performance monitoring resulted in very limited capabilities in-house for diagnosing performance issues. This was leading to staff burnout and turnover. In addition, IT was not consistently meeting the needs of the business from a performance perspective.

Another issue was that monitors were simply installed; there was limited to no efforts being made to identify monitoring-specific roles and activities. There was no attention being paid to the human aspects of monitoring, including training and other aspects of organizational development.

This also inhibited monitoring from being truly integrated with business objectives, leading to frustration up and down the organization. This also tended to keep sponsorship from being cascaded throughout the organization, further inhibiting the organization's ability to exploit the monitor.



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The lack of resources and production focus of monitoring was a catch-22; there was no ability to learn and IT kept cycling through people who struggled with the monitor because of a lack of organizational commitment.

Solution:

Once these customers established the monitor in a pre-production environment, they were able to experiment with other potential service targets. This 'shifting left' of monitoring from production to pre-production also began to highlight the organizational need for more specific, monitoring-related roles.

This led to less 'rubber-stamping' of monitoring over time, and enabled business stakeholders to include transformative benefits in monitoring business cases and a greater understanding of the overall importance of monitoring to the organization.

The gradual inclusion of additional stakeholders through pre-agree and prioritized service targets also improved sponsorship; managers across the various elements of the service team components were made aware of the importance of service monitoring and 'bought-in' to the program (and the monitor).

Cloud First

Condition:

Most of these scenarios had:

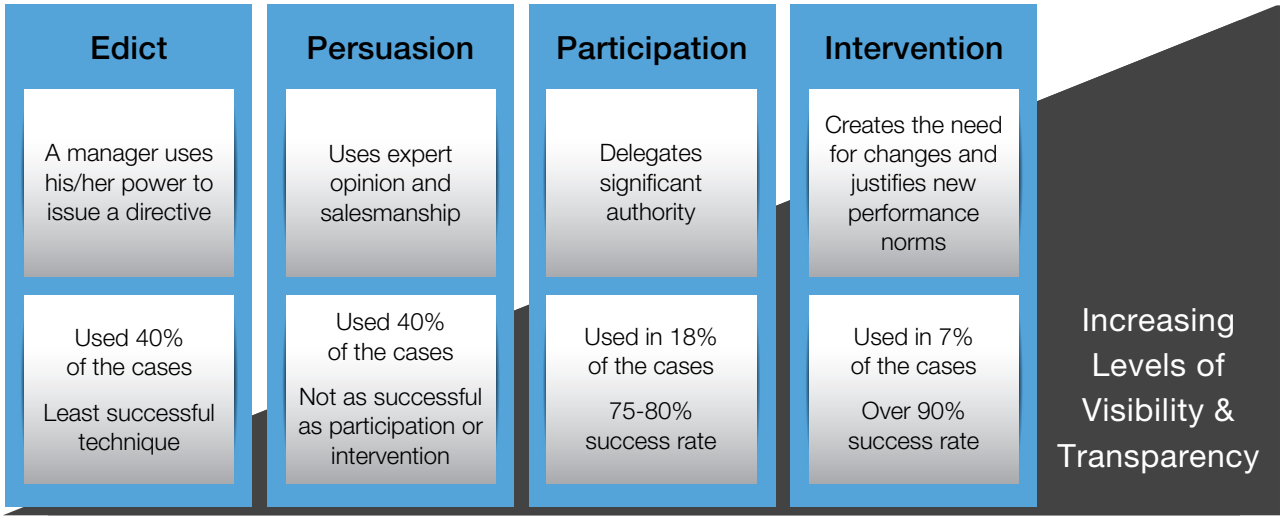
- Management edicts to move to the cloud
- Limited baselines of performance for existing IT services.

This led to an 'all hands on-deck' mentality; everyone was totally focused on preparing for the cloud migration, frantically learning about cloud technologies and evaluating cloud vendors.

Problem:

This gradually led to a dilution of resources dedicated to supporting existing production services, and performance-related issues began to increase in frequency and duration.

In a few cases, the increasing technical debt began to develop management concerns around migration risk. The decision-making technique (edict) did not engage stakeholders in the decision-making process, which did not expose potential migration risks.



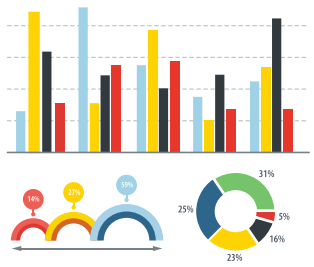
Solution:

As these customers re-visited their cloud migration plans, they began to place monitoring up-front in the planning stage. Some went as far as creating monitoring as a specific program and began to improve monitoring well before migrations took place.

The results were more effective baselines of performance, a more effective migration plan and less concerns about migration risk. As monitoring was established for existing services (pre-migration), performance improved and technical debt associated with existing services was reduced, freeing up time for migration tasks.

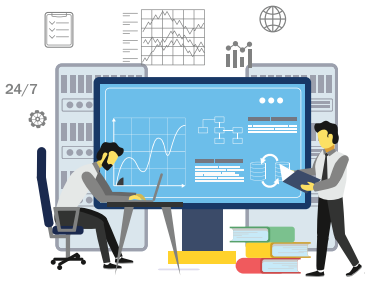
Lessons Learned

Of course these scenarios were a goop - mélange of customer experiences, and took place over many years. But we can make some observations:



Monitoring will never be ‘solved’; focus on continuous improvement

The heart of all monitoring problems lies outside the organization, not in the technology



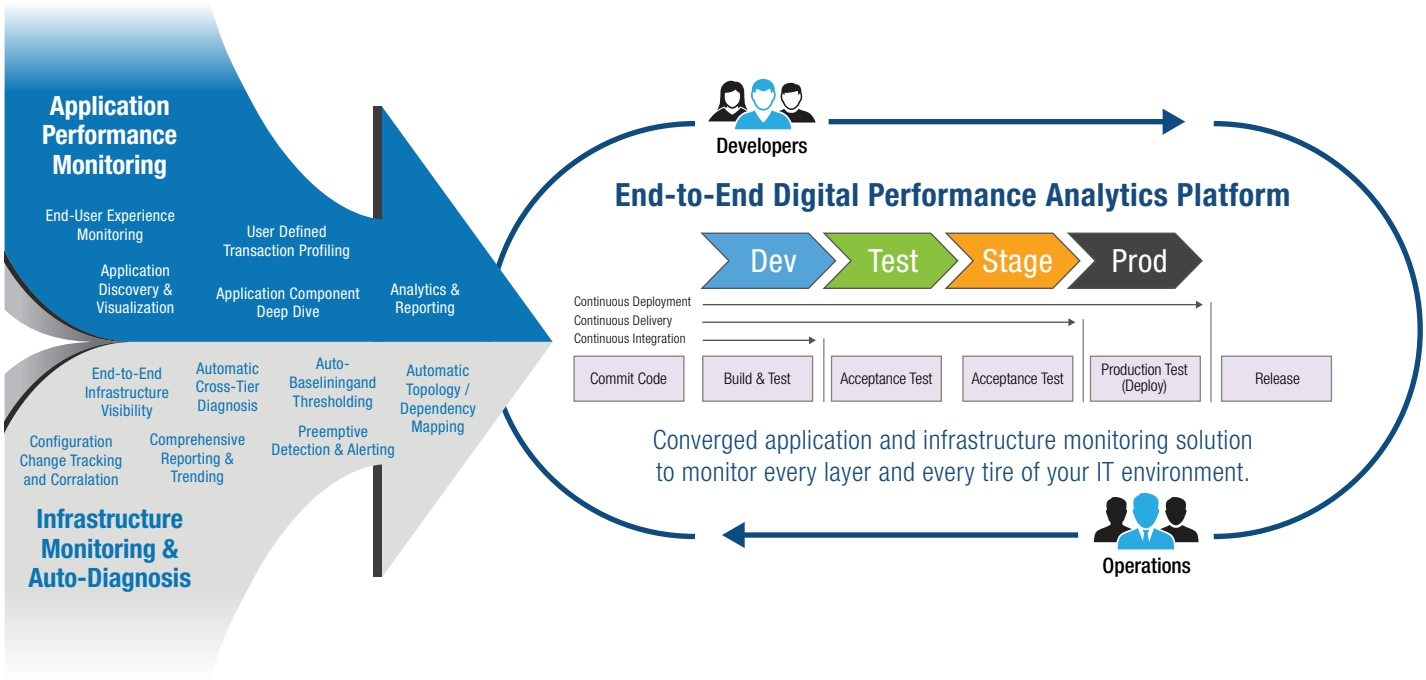
Effective monitoring must be an ongoing team sport

Above all, monitoring is a PEOPLE issue. Here’s some things customers did (or said they did) that may also help:

1. Capture monitoring’s value. Keep a record or create ‘testimonials’ (good and bad) and have them ready when needed.
2. Use monitoring for cross-domain knowledge sharing and training whenever feasible.
3. Avoid organizational politics; use the monitor to stick to FACTS and evidence.
4. Try not to ‘rubber-stamp’ monitoring; take the time to review the monitoring portfolio once in awhile (but not constantly).
5. Understand monitoring roles, how they will evolve, and account for them.
6. Be aware of the transformative (intangible) benefits of monitoring.
7. Make monitoring a program of work.
8. Focus on end-to-end, services-oriented monitoring.
9. Understand that monitoring may increase in importance as services move to the cloud.
10. Optimize the monitoring portfolio as your culture will permit and with stakeholder involvement.

eG Innovations

eG Innovations has been pioneering unified monitoring for well over a decade. Our award-winning eG Enterprise technology provides organizations with a 360 degree view of their entire IT infrastructure. This single pane of glass view allows enterprise IT teams to collaborate easily and solve key user-visible problems. Unparalleled visibility also allows IT architects to determine how to right-size and optimize their IT infrastructures for maximum ROI.



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