

IntelliMagic



2018 RMF/SMF Analytics Status & Predictions

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2018 RMF/SMF Analytics - Status & Predictions

z/OS Application Infrastructure Availability - Advancing Performance Operations through Superior Intelligence

- 2018 is a watershed year for how RMF (or CMF) and SMF data is perceived and used by performance and capacity teams.
- We will discuss:
 - AI and z/OS Performance & Capacity Jobs and Skills Gap
 - Application Infrastructure Availability, AI, and Machine Learning
 - Predictive, Preventive, Prescriptive Intelligence - with examples:
 - Enabling Valuable New uses for the Data
 - for Application Owners, for Application DevOps, for Outsourced sites...



2018 Predictions - Primary Areas

1. Artificial Intelligence & your job in z/OS performance/capacity
2. From AI-hype-induced-confusion to **clarity**
 - a. The Mainstream and AI modernization of RMF/SMF analytics
 - b. It's all about intelligence and insight – what does the data mean?
 - c. Specific z/OS perf/cap problems will differentiate hype v. reality
3. IT Executive recognition of modernization's strategic value
 - For IT ops, but also for application-centric areas (profit centers)

Background & Perspective for these Predictions

Intelligence can seem like Magic

"Any sufficiently advanced technology is indistinguishable from magic"

Futurist Arthur C. Clarke, 1962



Background & Perspective for these Predictions

IntelliMagic

"Any sufficiently advanced technology is indistinguishable from magic"

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1. Artificial Intelligence and your z/OS Perf/Cap Job

Will AI Replace Your Job?

Answer 1:

No – your job is more likely to be replaced (by outsourcing) if you **don't** adopt “real” Artificial Intelligence in the data analysis process.

Why not?

1. Bigger than ever demands and expectations for perf/cap teams
 - Increased infrastructure size, complexity, new technology and metrics, more dynamic workloads, agile application development releases, etc.
2. Smaller than ever pools of deep expertise – perf/cap Skills Gap
 - Experts really are retiring, and new staff can't learn it all quick enough
 - [Recorded Webinar on the z/OS Performance & Capacity Planning Skills Gap](#)
3. Pressure on financial executives about cost control, risk, focus

Will AI Replace Your Job?

Answer 2:

Yes – but only the manual and repetitive parts of your job, even for those tasks that require specialized expertise.

Why?

1. Your highest value is NOT in manual tasks like:
 - a. data manipulation, preparation, correlation, pdb management,
 - b. building daily spreadsheets, coding custom reports for each new view,
 - c. eyeballing 100's of static reports every day to try and spot problems
2. Your highest value IS in resolving risk, problems, and waste
 - Using AI-derived intelligence about what the data means
 - The objective is non-stop delivery of sufficient application availability

Will AI Replace Your Job?

Why the computer must do more for the Human Analyst:

- Usually 96 sets of RMF records per day (one every 15 min)
- Every LPAR has thousands of related devices, ports, CF structures, etc.
- All of those items each have 5 to 50 different metrics
 - Some are logical, some physical, and must consolidate/correlate counters
- To understand and proactively monitor performance you need to:
 - Continuously assess tens of millions of interrelated metric values
 - against hundreds of diverse areas of z/OS infrastructure expert knowledge and potential problem conditions such as:
 - Subsystem and component operational best practices, assess workload specific patterns within the context of hardware component limitations, identify loss of redundancy, error checking, cost-efficiency degradation, etc.



Will AI Replace Your Job?

Most manual tasks can and will be replaced, just as in many other industries

This allows human analysts to focus on more impactful results, and increases their value

I'm only aware of perf/cap staff reductions due to outsourcing, not due to AI-automation



"Spoons, not Shovels" – In 1960 Economist Milton Friedman visited a foreign worksite building a canal. He was shocked to see the workers using shovels and asked why they weren't using backhoes. The government bureaucrat explained: "You don't understand. This is a jobs program." Milton replied: "Oh, I thought you were trying to build a canal. If it's jobs you want, then you should give these workers spoons, not shovels."

In our competitive world today, backhoes will win over shovels every time

Will AI Replace Your Job?

- RMF/SMF is a very rich data source, ripe for automated assessment
 - But most sites are still using “shovel-era” RMF/SMF reporting processes
- You don’t need a new “reporting tool” for the data
 - You already have more reports than time to proactively review them
 - And very few people really know how to properly interpret all of them
 - Instead, you need better intelligence about what the data really means
- More work and complexity than workers dictates employing smarter technology as a **force multiplier**
 - For a big job, backhoes are far cheaper and more effective than shovels
 - The computer must assess and derive intelligence from data for humans
 - Not “human vs. machine” but “humans and machine vs. problem”

In 2018 it will become generally accepted that “inviting AI to the perf/cap team” is necessary to remain effective and competitive



2. From AI-hype-induced Confusion to Clarity



2.a

The Mainstream & AI modernization of RMF/SMF analytics

First: What is AI?

- Simple AI Definition:

- *"Artificial intelligence is the science of making machines do **things** that would require intelligence if done by men"*

– *Marvin Minsky 1968*

- For example, things like:

- Continuously assess and rate for violation severity all the data against every component's saturation point and all IBM Redbook Best Practices for z/OS subsystem operation

- More Detailed AI Definition:

- Search "Periodic Table of AI"

Sr	Si								
Ar	Ai	Pi	Pl						
Fr	Fi	Ei	Ps		Lr				
Ir	li	Sy	Dm	Lg	Lc	Ml		Cm	
Gr	Gi	Da	Te	Lu	Lt	Ms	Ma	Cn	

- Machine Learning is:

- A subset of AI that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.
- Machine Learning "models" store and apply learned knowledge.

Is AI on RMF/SMF Performance Data Mainstream?

Answer 1:

No – The common *Machine Learning* solutions are so far unable to displace any of the antiquated RMF/SMF reporting processes.

Why not?

1. Only able to identify some *symptoms* of production problems
 - **Not** able to understand or monitor root causes of problems
 - So not truly **predictive**, or even prescriptive for resolving problems
2. Machine Learning has a vendor-agnostic data focus
 - Detailed Information Models (e.g., CIM) for z/OS data are missing
 - Create report for every metric from scratch (here we go again)
 - Contextual knowledge to interpret deeper data meaning still missing

Is AI on RMF/SMF Performance Data Mainstream?

Answer 2:

Yes – With other types of AI, some of the largest shops in the world have displaced most or all of their antiquated reporting solution.

- The key is AI-driven decision making to interpret:
 - **what the data means** for performance, availability, efficiency
 - To what degree **is it good or bad** in the context of the application workloads and the infrastructure capabilities and best practices?
 - Goes far beyond symptom correlation for “is there a problem or not?”

In 2018, most performance teams experimenting with ML-focused solutions like Splunk, Elastic Stack, Spark, etc. will realize the need for additional AI approaches to increase the data's value for perf/cap uses.



2.b

Intelligence & Insight – What the Data Means

How to Derive Intelligence and Insight?

There is **absolute truth** about the z/OS hardware and software infrastructure characteristics and capabilities. The metrics must be assessed in the context of this for true intelligence and insight.

The deeper GPS Analogy...



Precise Current Location + Detailed Digitized Maps

- How long and painful would it be for Machine Learning to figure out every one-way road, intersection, store...?
- Deep, digitized z/OS infrastructure expert knowledge is needed for the same reasons.

How to Derive Intelligence and Insight?

3 Different Ways to get the Required Contextual Expert Domain Knowledge

1. Experienced Human Experts

- High-quality decision making by humans
- Time consuming, impossible to go through all data points for every data center every day
- Expensive, not computer accessible, 'skills gap' – especially for deep perf/cap experts

2. Machine Learning Techniques

- Statistical learning techniques applicable to any big data; fully machine-driven
- Shows correlations but does not offer explanations; no hardware capacity awareness
- Effective to detect changes & trends in symptoms, but not for root causes or prevention

3. Machine-Readable Expert Domain Knowledge

- z/OS specific expert domain knowledge made accessible to machine algorithms
- Performance capacity of components, configuration and operational best practices, etc.
- Understands and monitors root causes to detect and rate risk, recommend resolutions, etc.

2018 will bring more clarity on the necessity of automating the metric interpretation in the context of z/OS specific knowledge in order to deliver more insight and meaning for performance/capacity uses of the data

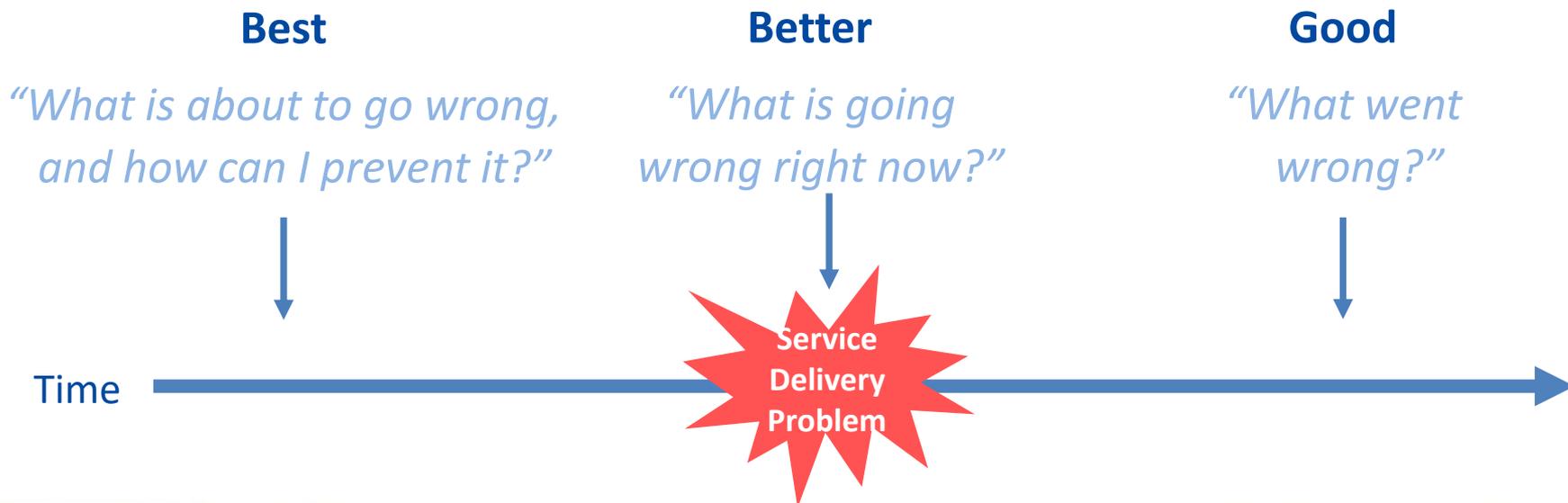


2.c

Evaluating New Technology with Specific z/OS
Perf/Cap Problems will Differentiate Hype from Reality

What Kind of Answers Can the Solution Provide?

- *"Machines are for answers, humans are for questions"* K. Kelley
- But the best answers require machine-readable deep expert knowledge



What Kind of Answers Can the Solution Provide?

Automated application of AI knowledge fills an important gap

Performance Management

- **Key Question:** How to resolve current problems and restore service?
- **Data Used:** Lag Measures; detailed data
- **Urgency and Focus:** Immediate, fire-fighting focus on **minutes**

Availability Intelligence

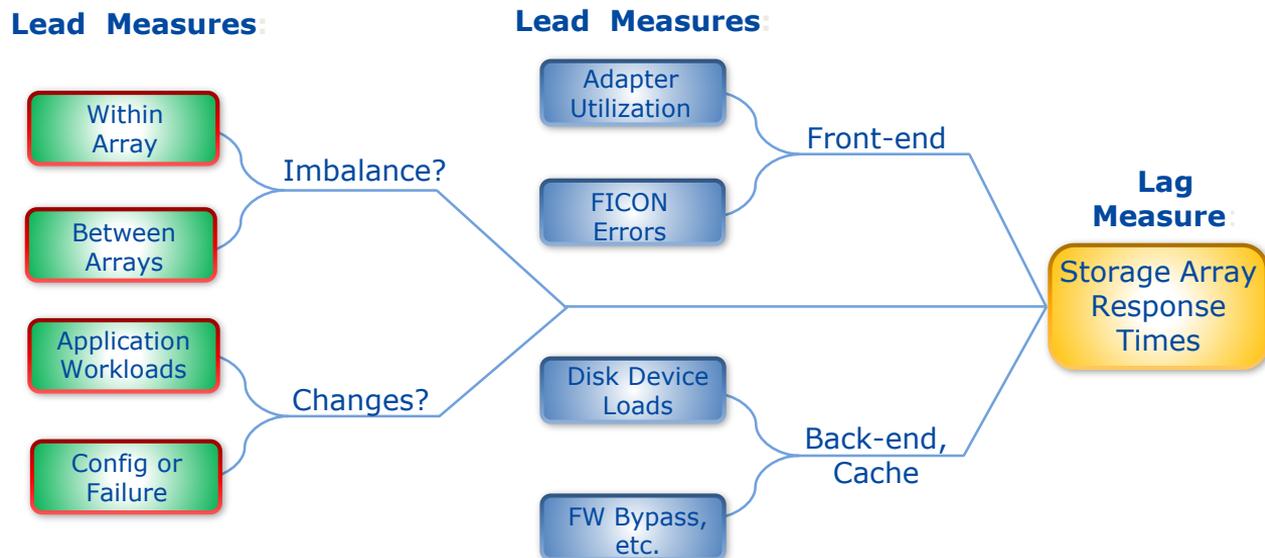
- **Key Question:** How to prevent disruptions by detecting problem risk?
- **Data Used:** Lead Measures, detailed and summarized data
- **Urgency and Focus:** Near-term, prevention, focus on **days or weeks**

Capacity Planning

- **Key Question:** What is needed to deliver service levels in the future?
- **Data Used:** summarized data plus hw/sw specific capacity knowledge
- **Urgency and Focus:** Long term, procurement; focus on **months**

Provides continuous, granular assessment of ITIL v.3 Capacity Management:
*"considers **all** resources required to deliver service levels"*

What Kind of Answers Can the Solution Provide?



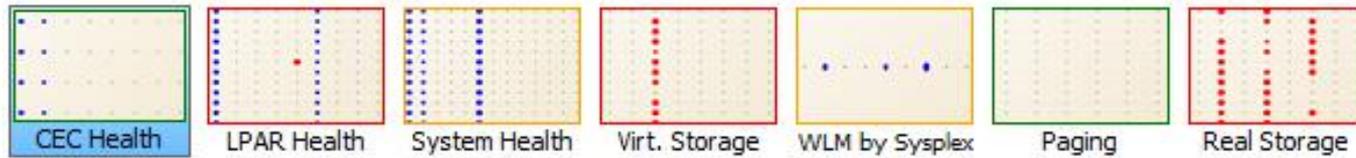
What Kind of Answers Can the Solution Provide?

- Specific real-world challenges can distinguish capabilities



What Kind of Answers Can the Solution Provide?

- Specific real-world challenges can distinguish capabilities
- The ability to continuously assess and rate specific z/OS infrastructure conditions improves performance and availability
- e.g., the following tables visualize 569 rated assessments



In 2018, specific-performance problem use cases will distinguish predictive, preventive, and prescriptive capabilities from solutions that can only monitor symptoms of problems already occurring, and this distinction will prioritize and accelerate investment and adoption.



Live Demo

Predictive, Preventive, and Prescriptive Intelligence



3. Intelligent Analytics Enables New Uses for the Data

What New Uses of RMF/SMF Does this Enable?

1. DevOps - Agile Application Performance Testing
 - [Watch One Hour Recorded Webinar](#)
2. Business Application Owner – Application Infrastructure Performance Risk Dashboard
3. Outsourcer SLA Performance and Cost Efficiency Validation Services
 - Upcoming Webinar, stay tuned

In 2018, the realization of new uses of the RMF/SMF data made possible through more intelligence in the algorithms will provide IT Executives additional motivation to initiate AI-driven modernization projects.



Summary, Offer, Questions

Predictions / Recommended Focus Points

- *In 2018 it will become generally accepted that **"inviting AI to the perf/cap team"** is necessary to remain effective and competitive*
- *In 2018, most performance teams experimenting with ML-focused solutions like Splunk, Elastic Stack, Spark, etc. will realize **the need for additional AI approaches** to increase the data's value for perf/cap uses.*
- *2018 will bring more clarity on the necessity of **automating the metric interpretation in the context of z/OS specific knowledge** in order to deliver more insight and meaning for performance/capacity uses of the data*
- *In 2018, **specific-performance problem use cases will distinguish predictive, preventive, and prescriptive capabilities** from solutions that can only monitor symptoms of problems already occurring, and this distinction will prioritize and accelerate investment and adoption.*
- *In 2018, the realization of **new uses of the RMF/SMF data** made possible through more intelligence in the algorithms will provide IT Executives additional motivation to initiate AI-driven modernization projects.*

Summary of Key Takeaways



1. Modernize analytics only ensuring root problem intelligence
 - Only worth it if the new technology is truly a game-changer for perf/cap
 - What matters most is automatically deriving useful intelligence from the data
 - i.e., what the data means for perf/cap in the context of the z/OS infrastructure
 - Can external consultant use it to see in only hours the biggest risks and issues?
2. If not outsourcing, you will be modernizing RMF/SMF analytics
 - The sooner you do, the quicker you will benefit from the new intelligence
 - Most upper management is able to see the strategic value to the business
 - Cloud delivery of the analytics increases the value you are able to provide
3. If outsourced – performance & cost accountability is available
 - Independent validation of the performance and cost-efficiency of service level delivery is valuable to business application owners and IT execs

Offer to See AI in Operation with Your Data

Purpose:

- Explore your site to see automated assessment results, navigate through the environment, etc.

Process:

- Send IntelliMagic data
- IntelliMagic loads, analyzes, prepares presentation for you
- Present summary of results to your team (two to three hours)
- Your team can logon to interactively explore the new analytics for your data

Cost:

- No financial cost for qualified sites in North America, minimal time cost
- [Click this link to request more details](#)





Questions

Please stay on the line to complete a short survey

Would you like more information about specific areas?

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