



2016 IIA INDONESIA 6-8 SEPTEMBER
NATIONAL CONFERENCE



Concurrent Session - 2:

Leveraging Data Analytics in Continuous Auditing



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BoG, IIA Indonesia

Current Practice & Common Terminology

What we found in survey?
Data Analytics Definition and characteristic



Technology Trends

Current trends in data analytics technology





Leveraging data analytics (DA)

Leverage DA, Data Maturity Model,
Continuous Auditing & Monitoring (CA/CM)

Common Concern to Continuous Auditing (CA) Implementation

4 concern to consider





Practical approach & samples

How to start, complete picture
some analytics method, Use case
screenshot

Conclusion

DA and CA Implementation Fact,
Question & Answer

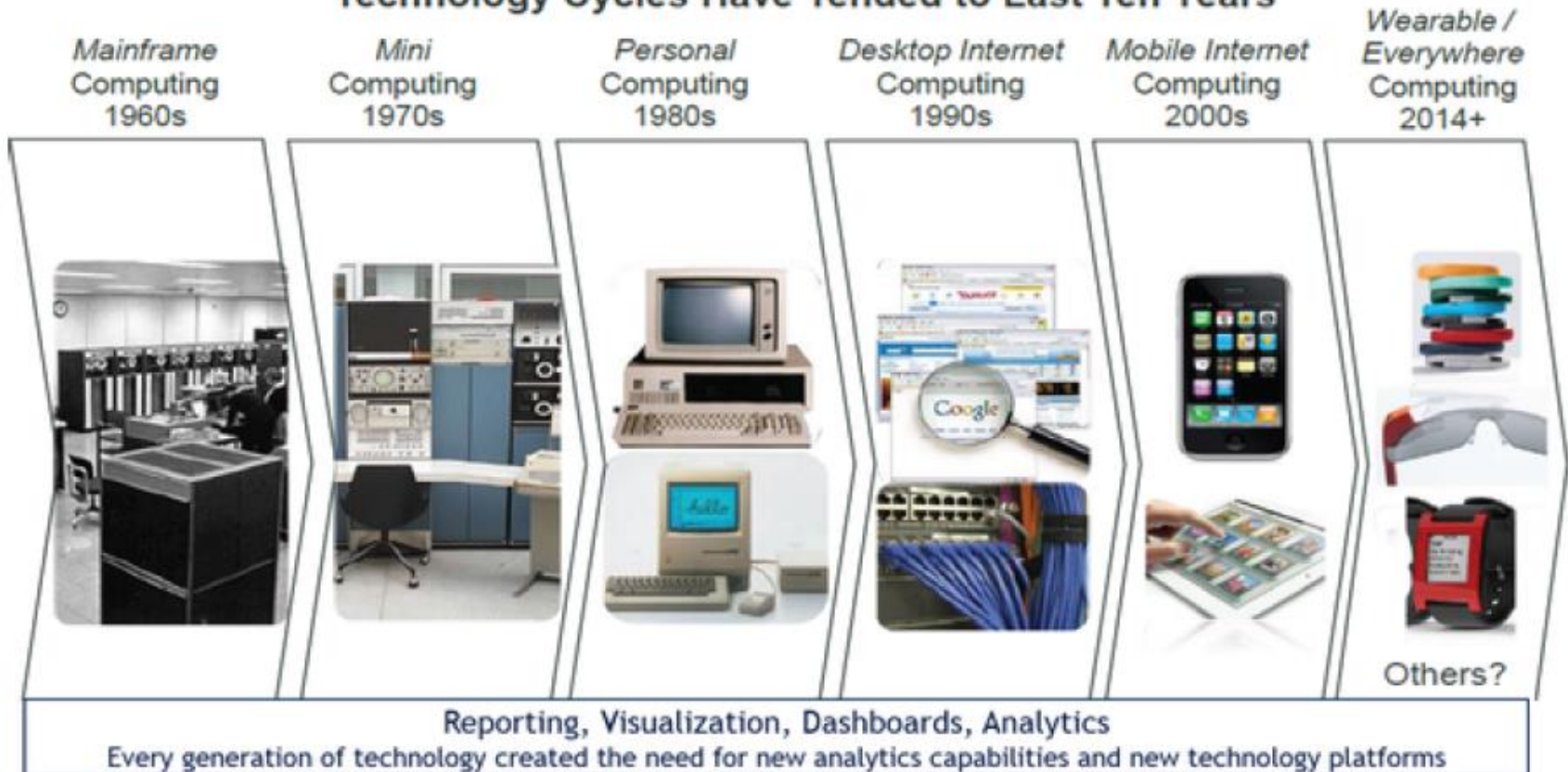


Technology Trends

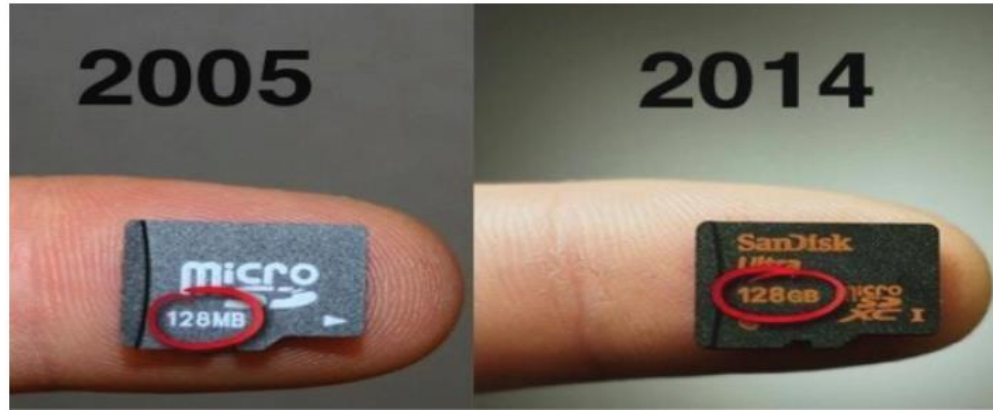


Technology Trends

Technology Cycles Have Tended to Last Ten Years



Technology Trends



Technology Trends

IBM Investor Briefing



Data is the new basis of competitive advantage

By 2017 there will be more than **1 trillion** connected objects and devices on the planet generating data.

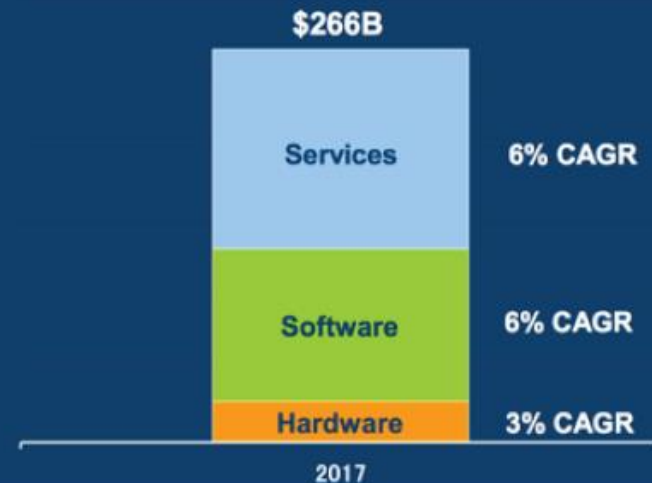
There are **2.5 billion** gigabytes of data generated every day...

of which **80%** is unstructured.

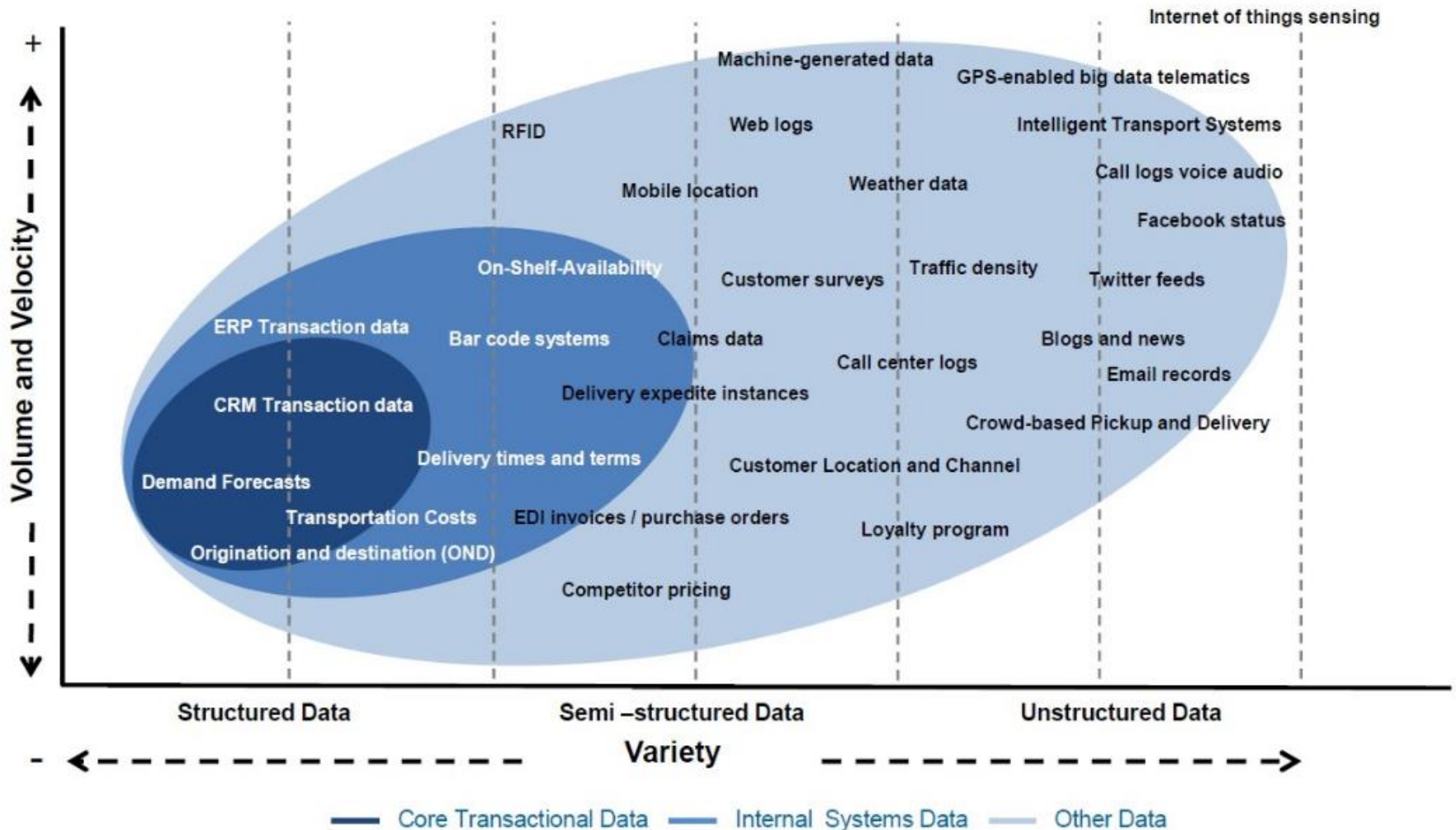
By 2017, WW data spend will be **\$266B.**

Big Data & Analytics Market Opportunity

6% CAGR through 2017

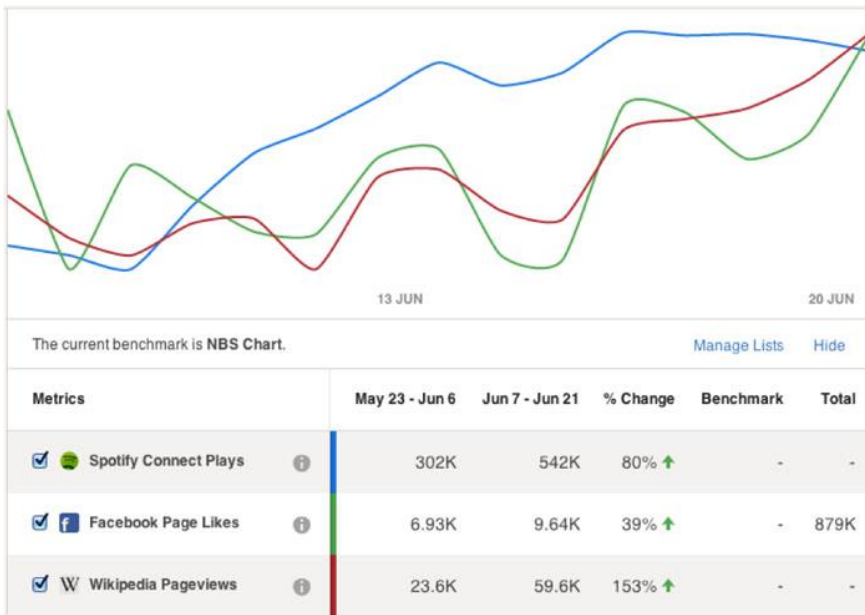


Technology Trends

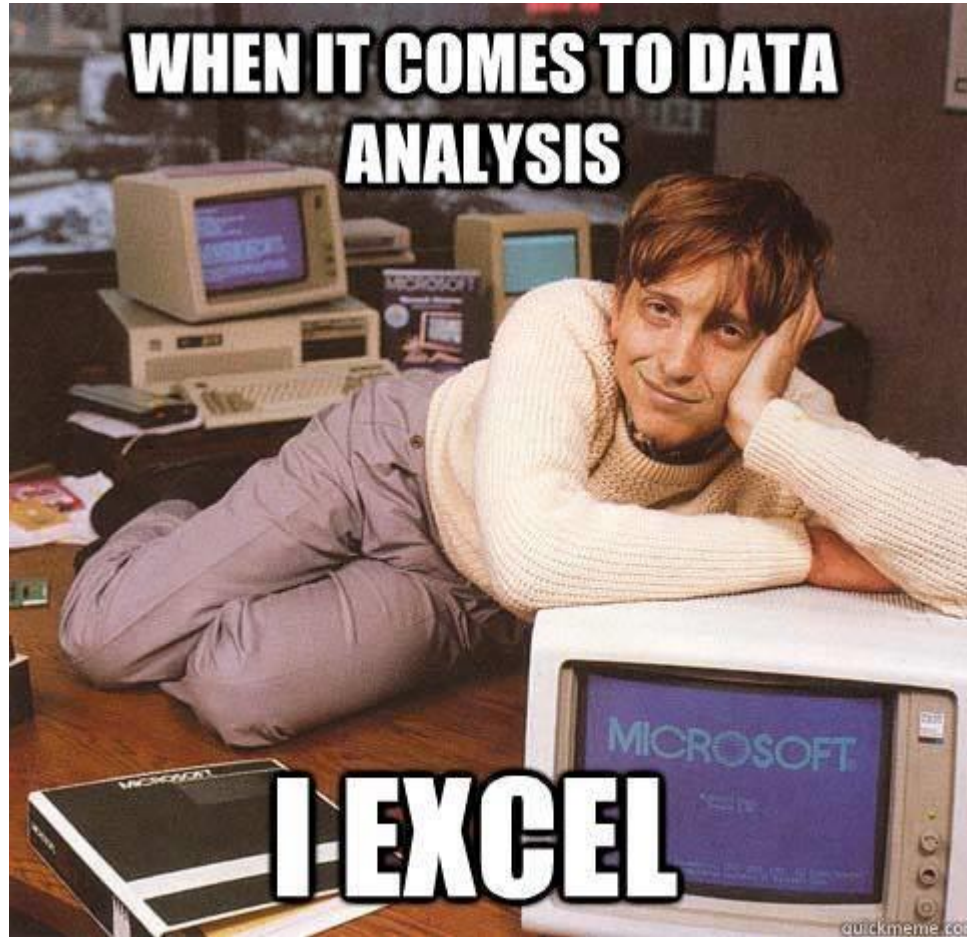


Technology Trends

What Lady Gaga Can Teach You About Analytics?



Technology Trends

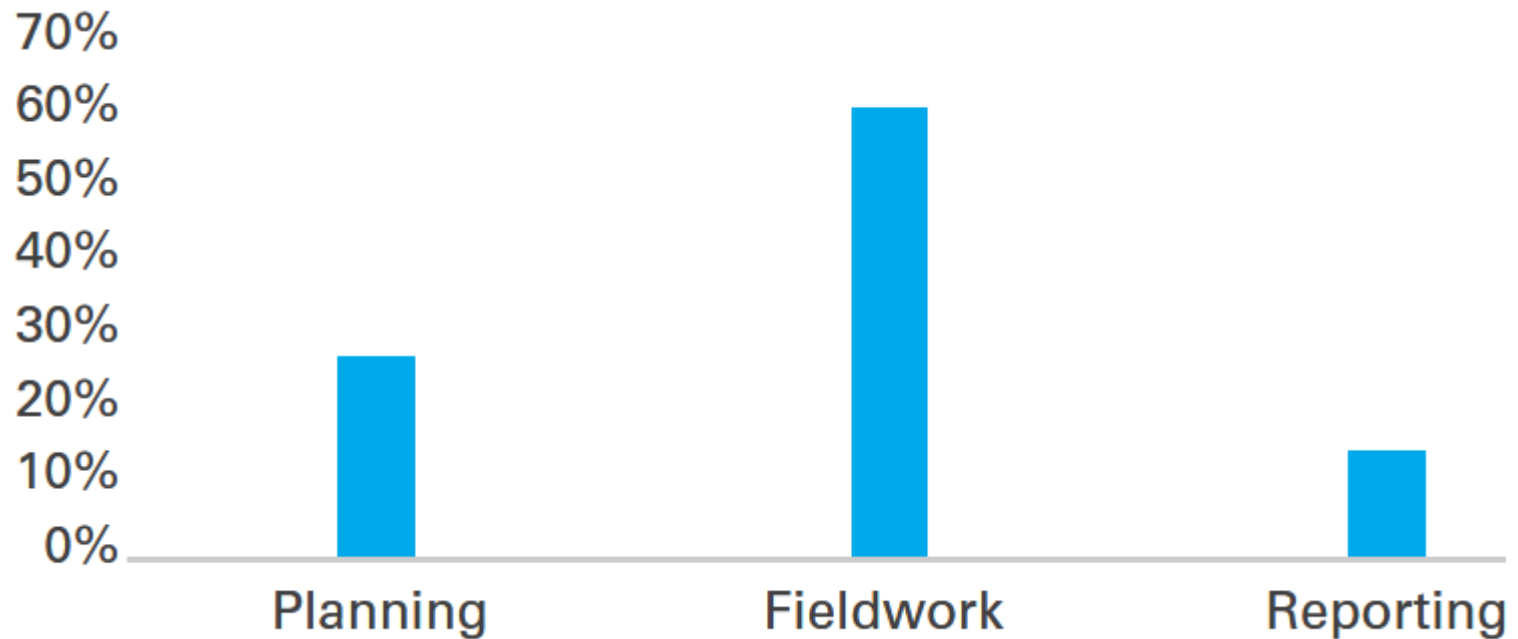


Current Practice & Common Terminology



Current Practice & Common Terminology

Indicate in which of the following audit stages you are using DA tools and techniques?



2015 KPMG Survey, Data & Analytics-enabled Internal Audit



Current Practice & Common Terminology

Where does IA use data analytics in the audit lifecycle?



2015 EY GRC Survey insights

Current Practice & Common Terminology

In which processes or compliance areas does IA use data analytics?



2015 EY GRC Survey insights

Data analytics:

defined as the process of inspecting, cleaning, transforming, and modelling data with the goal of highlighting useful information, suggesting conclusions, and supporting decision making.

- Various source



Data analytics:

an analytical process by which insights are extracted from operational, financial, and other forms of electronic data internal or external to the organization.

Insights can be ..

- Historical, real-time, or predictive
- risk-focused or performance-focused, and
- frequently provide the 'how?' and 'why?' answers to the initial 'what?' questions frequently found in the information initially extracted from the data

- KPMG



Data analytics is not a new concept, but continues to rise.

- Late 1980's
Known as Generalized Auditing Software companies from
 - ACL, 1987
 - CaseWare, 1988
- Charles Carslaw, Applying Benford Law for Accounting, 1988
- Continuous Process Auditing System, AT&T Bell Laboratories, 1989



Current Practice & Common Terminology



Internal Audit has been using data analysis techniques since the 1990s when CAATs (Computer Assisted Auditing Techniques) first became a 'buzz' acronym.

The industry has now progressed ..

from CAATs → to Analytics

The difference is **analytics goes beyond control testing** helping understand business risk and tell the business something not know.

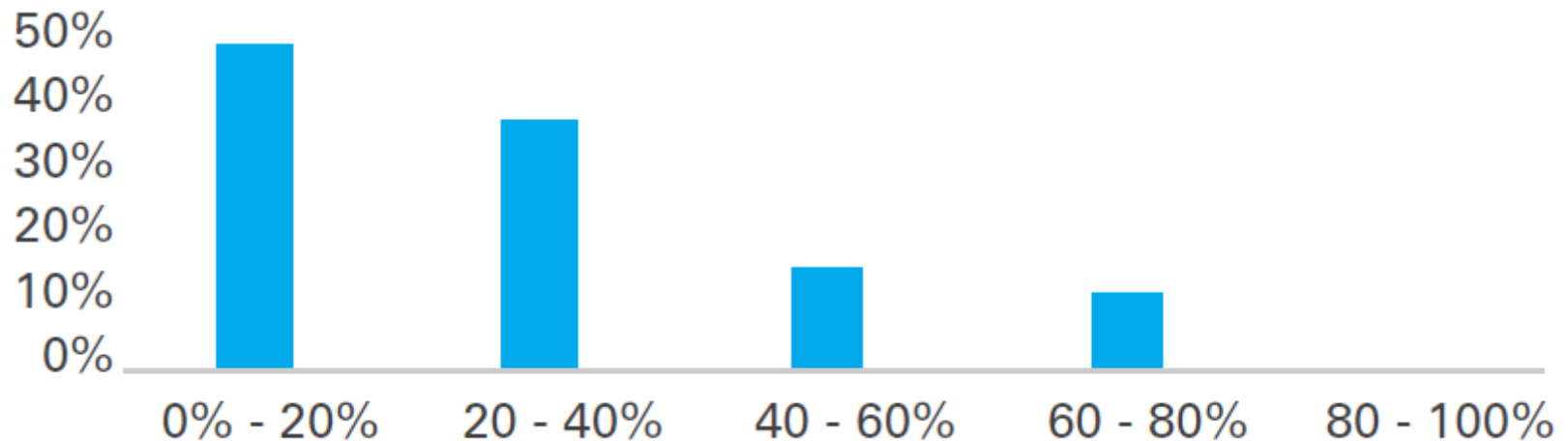


Leveraging data analytics (DA)



Leveraging Data Analytics

Indicate the proportion of your audits that leverage DA?



2015 KPMG Survey, Data & Analytics-enabled Internal Audit



Leveraging Data Analytics

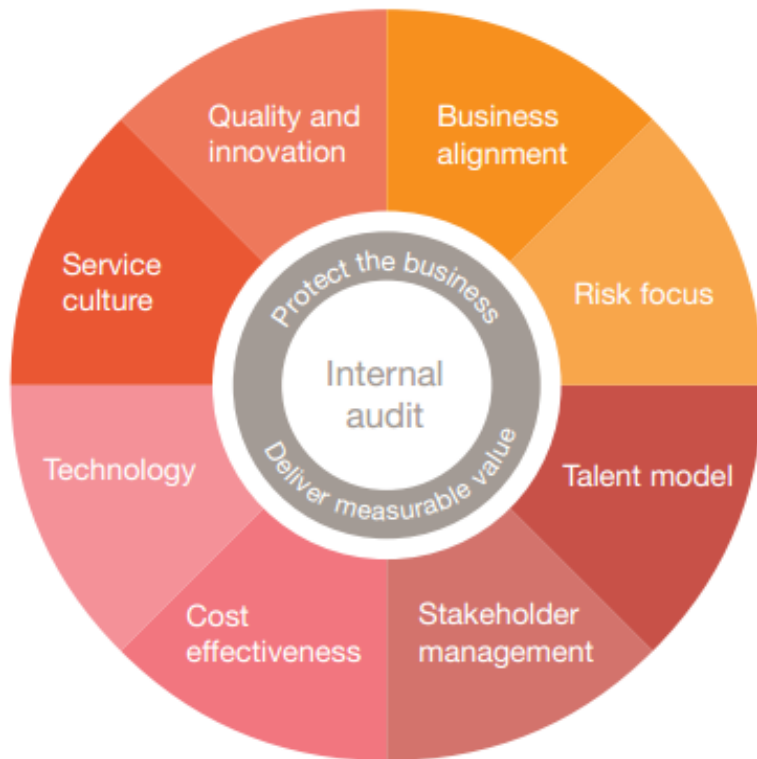
How Internal Audit is leveraging data analytics

- As part of audit planning process (quantitative component to complement traditional qualitative process) to help enable dynamic audit planning (e.g. technology enabled, quantitative enhanced, continuous risk assessment process)
- As part of the pre-fieldwork scoping (data discovery using operational BI tools, etc.)
- As part of audit execution
- In connection with specific, tactical efforts like proactive fraud detection, compliance, etc.



Leveraging Data Analytics

Foundational Attributes



Technology

Data analytics are deployed, which allows for alignment with business areas while also providing efficiency in testing through automation.

Data is utilized to provide deep and persuasive intelligence business issues and observations/recommendation.

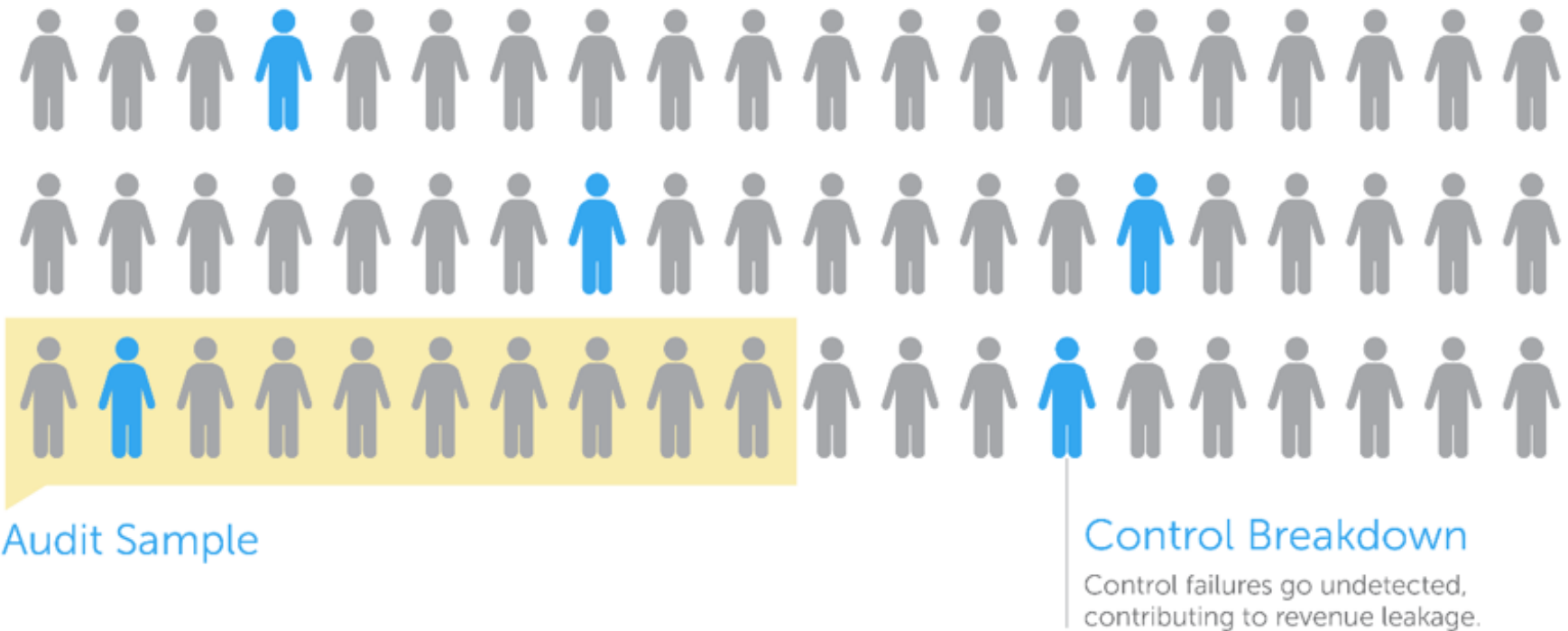
Continuous auditing techniques are leverage to increase audit coverage to provide early warning of risk indicators and increase audit coverage.

Source: PwC 2014 State of the Internal Audit Profession Study

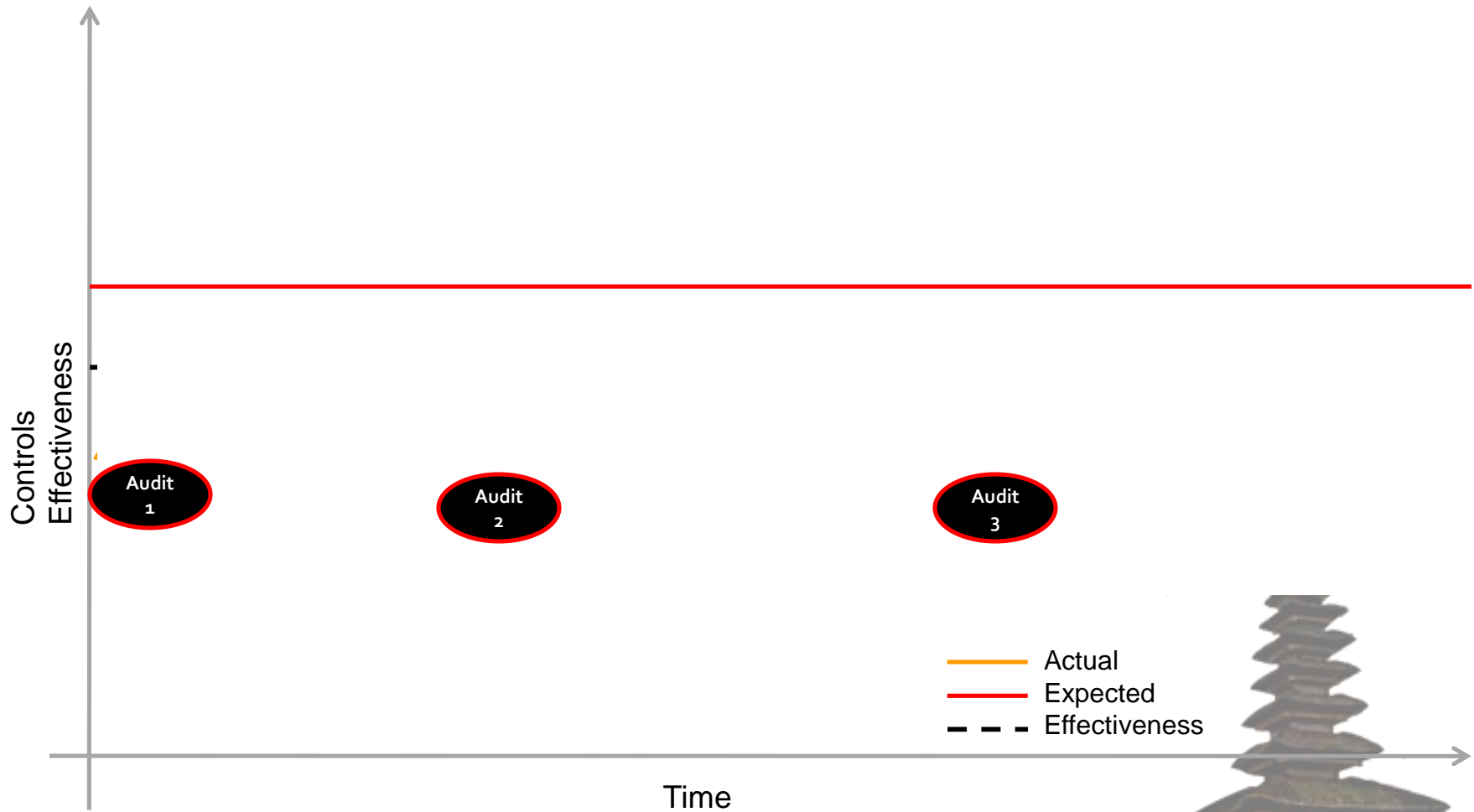


Leveraging Data Analytics

Sampling and periodic audit are unreliable for detecting and preventing potential threats.

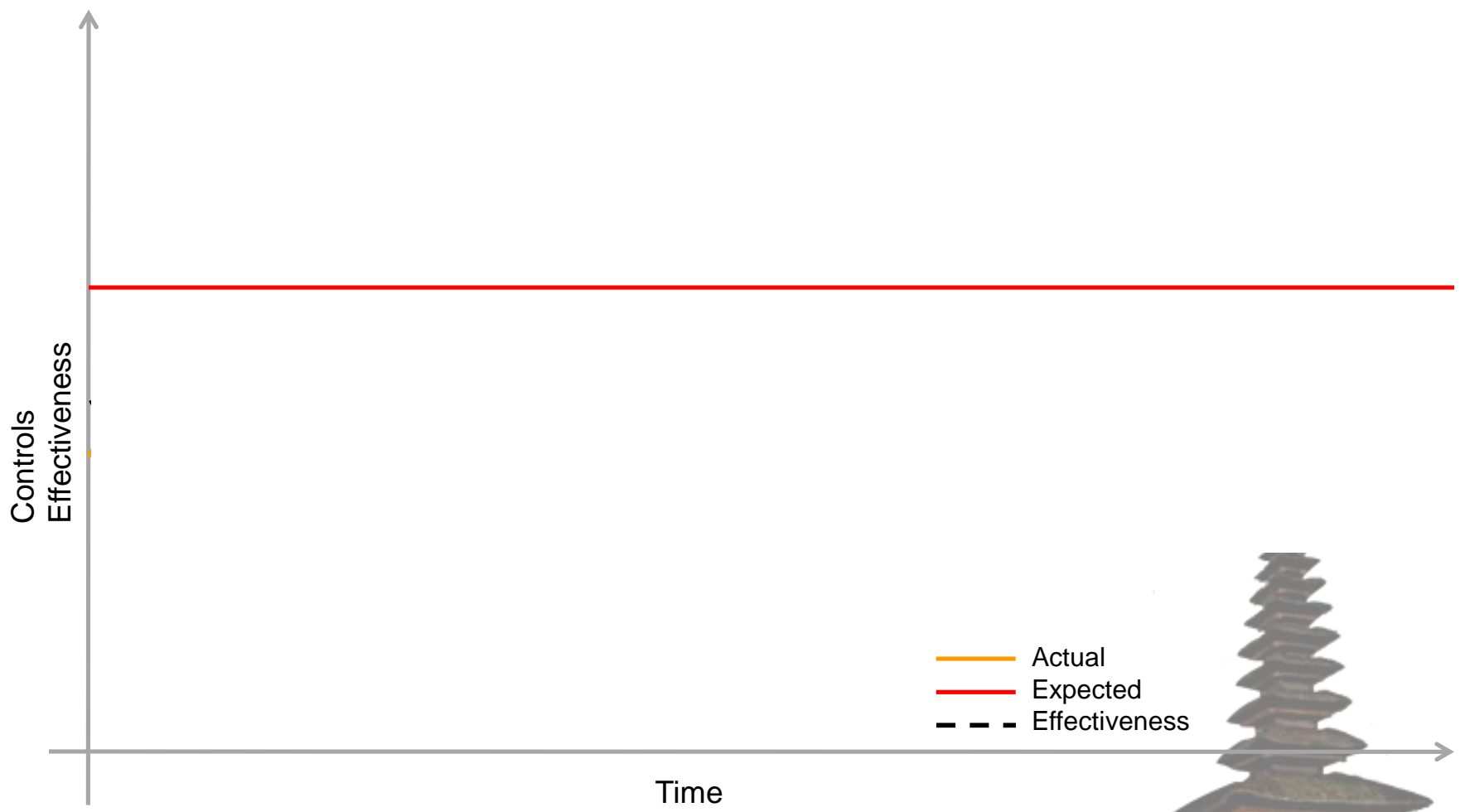


Leveraging Data Analytics



Source: Continuous Auditing From a Practical Perspective, Kevin Handscombe

Leveraging Data Analytics



Source: Continuous Auditing From a Practical Perspective, Kevin Handscombe

Leveraging Data Analytics

Continuous Auditing:

defined as any method used by auditors to perform audit related activities on a more continuous or continual basis.

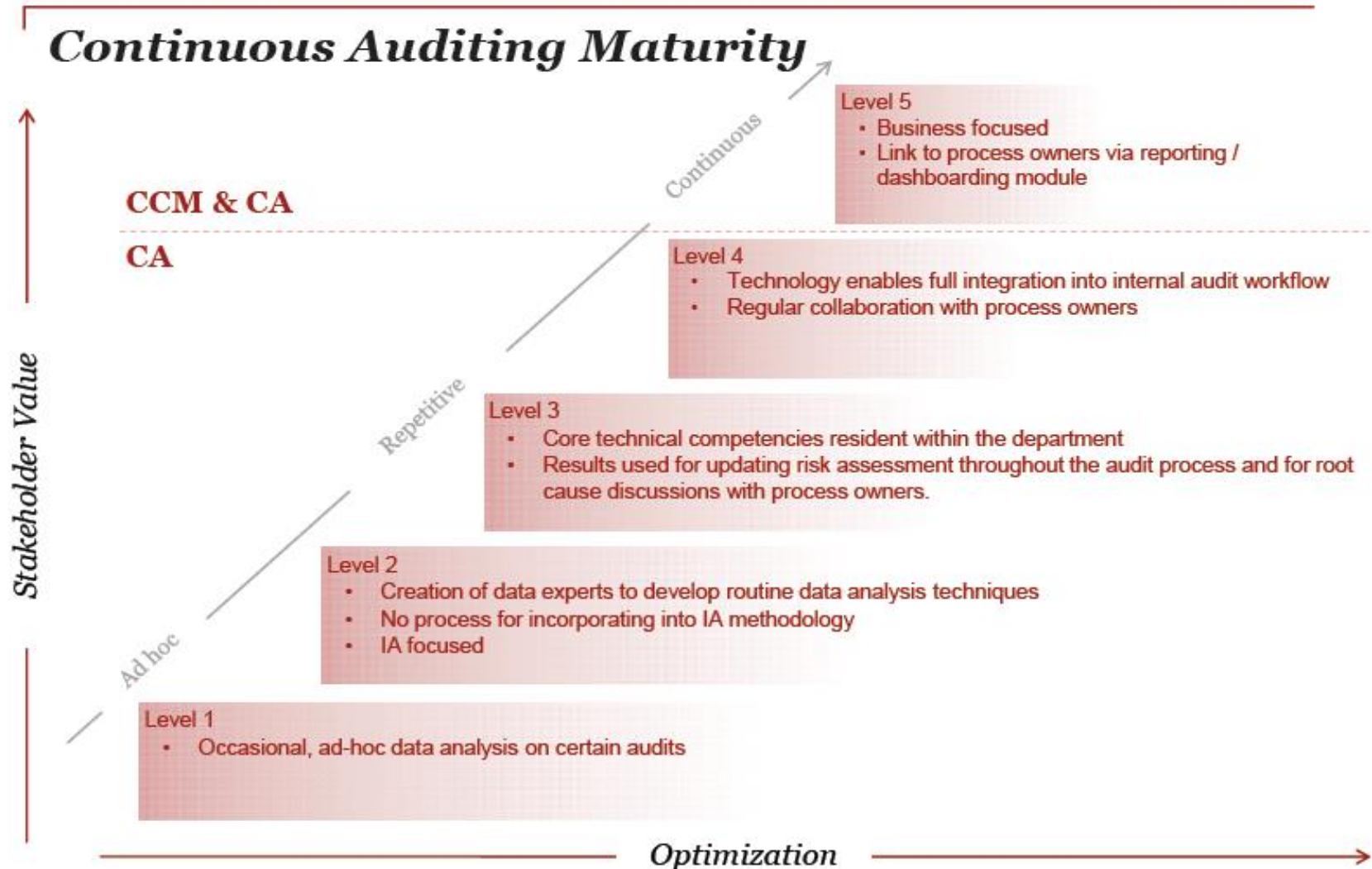
It is the continuum of activities ranging from continuous control assessment to continuous risk assessment - all activities on the control-risk continuum.”

-The IIA, GTAG 3: Continuous Auditing: Implications for Assurance, Monitoring, and Risk Assessment

- Continuous controls auditing using automated tools is one of the methods of continuous auditing
- Set frequency - daily, weekly, monthly, etc.



Leveraging Data Analytics

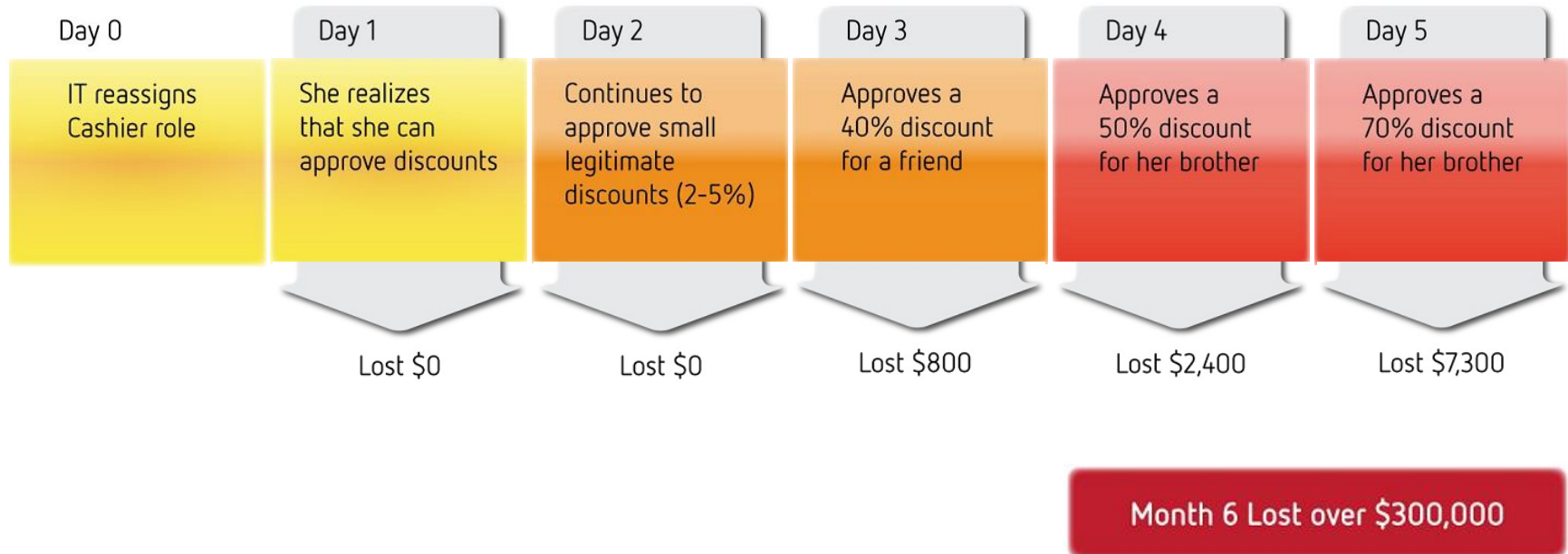


Leveraging Data Analytics

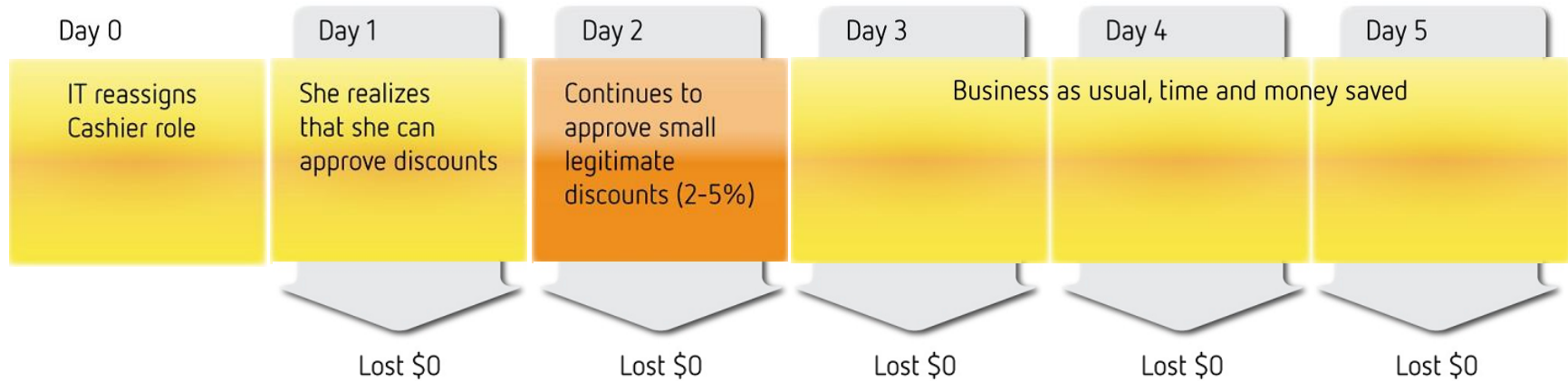
Activity	Definition	Unique Characteristics	Common Characteristics
Continuous Auditing (CA)	Collection of audit evidence and indicators by an auditor on information technology (IT) systems, processes, transactions, and controls on a frequent or continuous basis, throughout a given period	<ul style="list-style-type: none"> ■ Third Line of Defense ■ Not intended to become part of the internal control environment ■ Process can also be used for Continuous Risk Assessment for dynamic audit planning purposes 	<ul style="list-style-type: none"> ■ Wide variety of organizational Data ■ Technology-enabled process ■ Analytic capabilities include: <ul style="list-style-type: none"> – Efficient ETL processes – Flexible types of analytics – Scalable and extendable – Frequency can be modified
Continuous Monitoring (CM)	Feedback mechanism (monitoring method) used by management to ensure that controls operate as designed and transactions process as prescribed	<ul style="list-style-type: none"> ■ First and second lines of defense ■ Responsibility of management ■ Important component of the internal control structure ■ Can provide automated controls and processes 	<ul style="list-style-type: none"> ■ Dynamic reporting with actionable output ■ Workflow management capability ■ Integration with a process

Definitions taken from KPMG LLP's *Continuous Auditing and Continuous Monitoring: Transforming Internal Audit and Management Monitoring to Create Value*, 2008

Leveraging Data Analytics



Leveraging Data Analytics

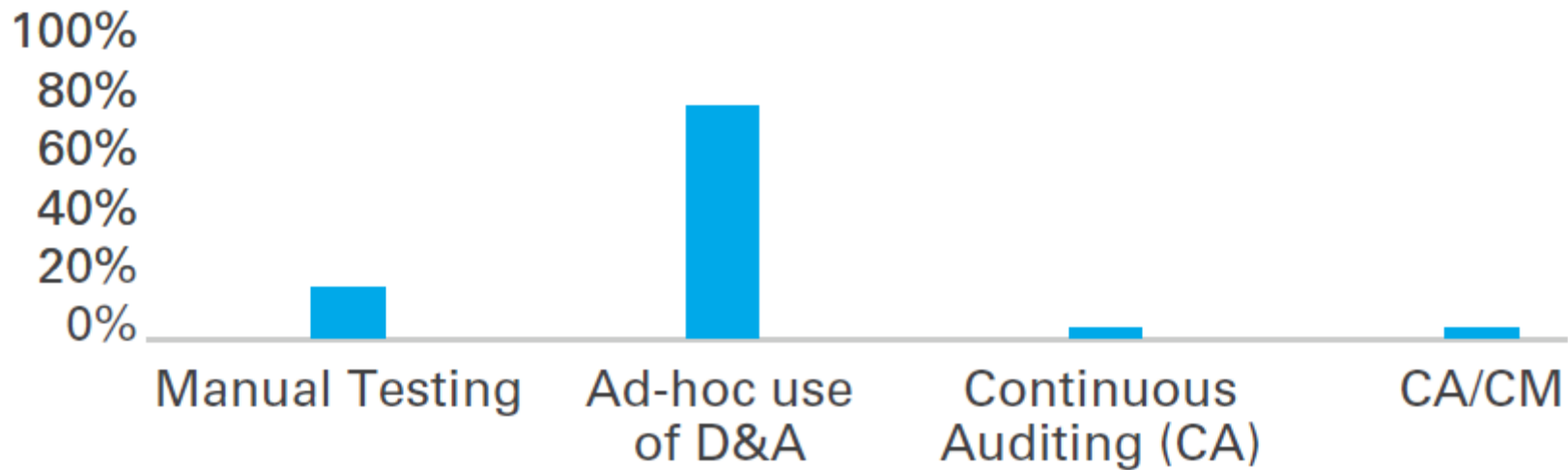


Detect	Alert # 1 Store Manager Segregation of Duties violated.	Alert # 2 Escalation: Loss Prevention Officer System Abuse – same user creating and approving discount.
Correct	No Action Taken	I.T. ALERTED. Cashier's privileges revoked
Protect	Business as usual, time and money saved	



Leveraging Data Analytics

Select your DA maturity level for internal audit purposes?



2015 KPMG Survey, Data & Analytics-enabled Internal Audit



Common Concern to CA Implementation



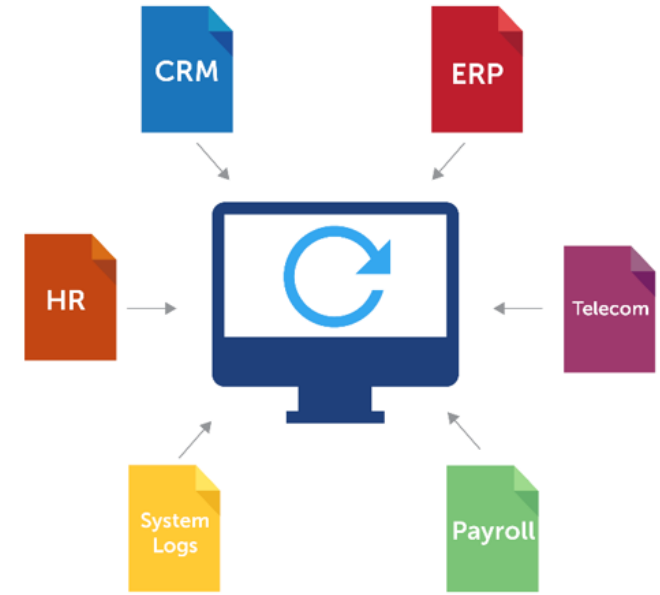
Concern # 1

I have too many
disparate system



Disparate System

- Access data from any source
- Pull data from:
 - ERP (SAP, Oracle, etc.)
 - Legacy systems
- Access data dumps:
 - Data files
 - Reports
 - Spreadsheets, PDF



Common Concern to CA Implementation



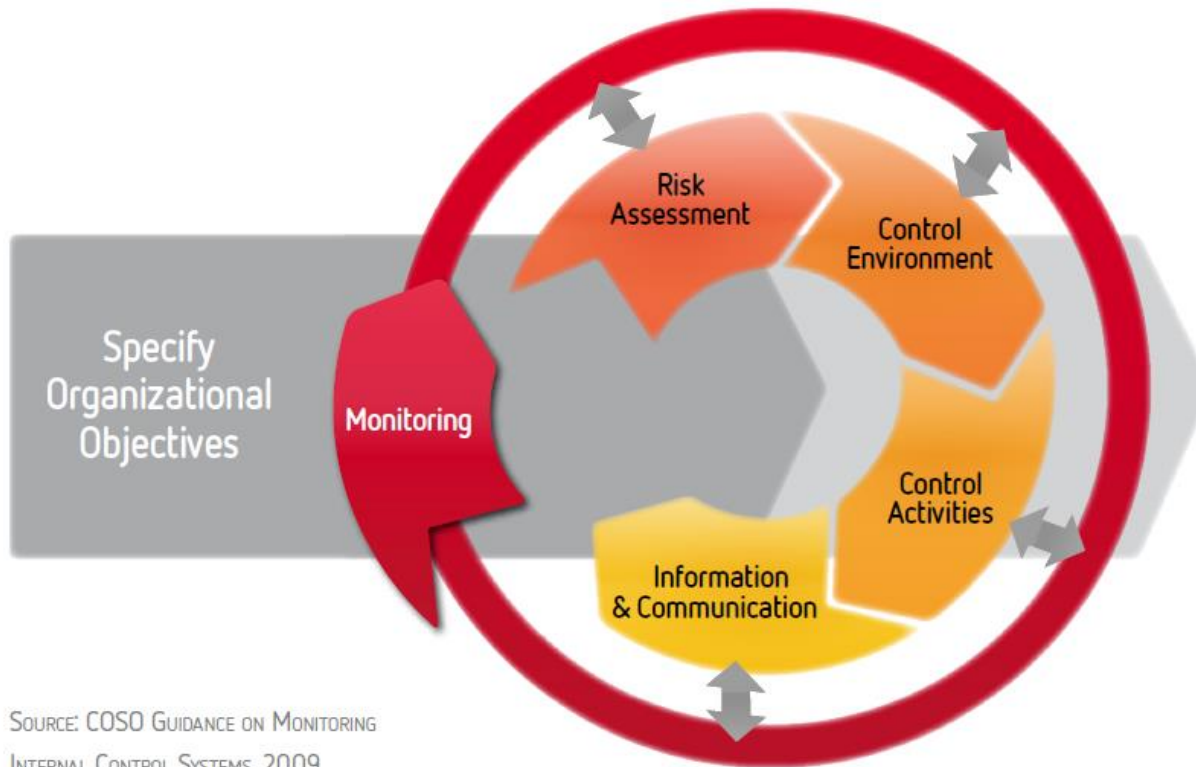


Concern # 2

This already covered by my GRC and ERM framework



Common Concern to CA Implementation



SOURCE: COSO GUIDANCE ON MONITORING
INTERNAL CONTROL SYSTEMS, 2009



Concern # 3

I will not get adequate support from my IT Department



Building Trust

- Audit wants:
 - “Can do” attitude
 - Advice and guidance
 - Some autonomy
- IT wants:
 - Less work from them
 - Nothing to disrupts existing infrastructure
 - To ensure that it will be properly managed
 - To maintain IT standards and security



Concern # 4

My company is too small or not relevant for CA/CM



Size is not relevant

- Company size
 - Billion IDR to Trillion IDR Company
- Audit Department size
 - 1 person to hundreds
- Control tested
 - 5 to 500



Common Concern to CA Implementation

What matters?

- Strong leadership in internal audit, risk and compliance
- Tone from the top
- Meeting the demand of the board

TONE *— at the —* TOP



Practical approach & samples



Practical approach & samples

How to start/ implement ?



simple



complex



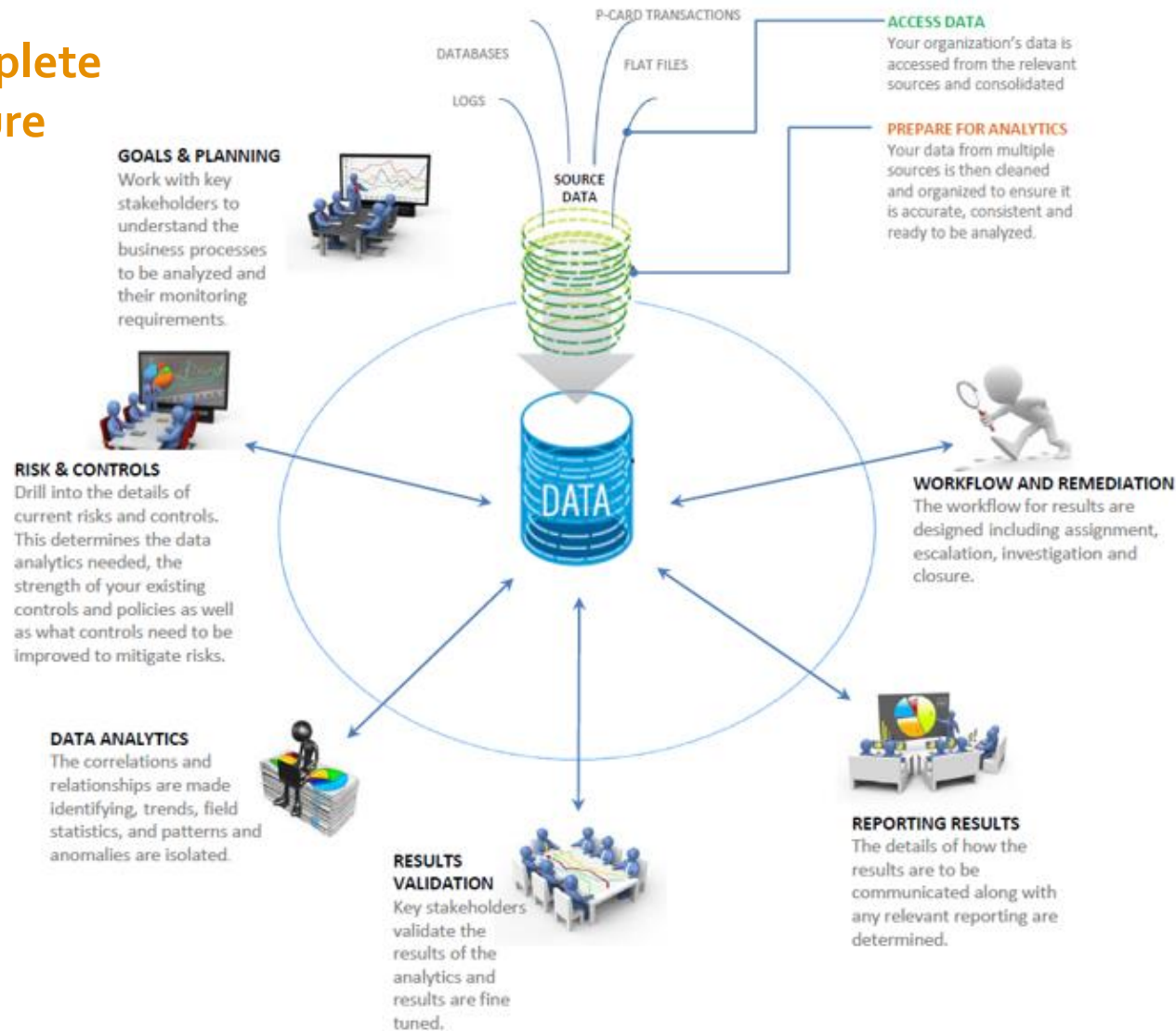
Practical approach & samples

- Implement in phase
- Start with a **business process you know**
- Work with **data already available**
- Use **previous audit finding** as basis
- Use **existing risk and control** matrix
- Adopt **proven methodologies**



Practical approach & samples

Complete Picture



Practical approach & samples

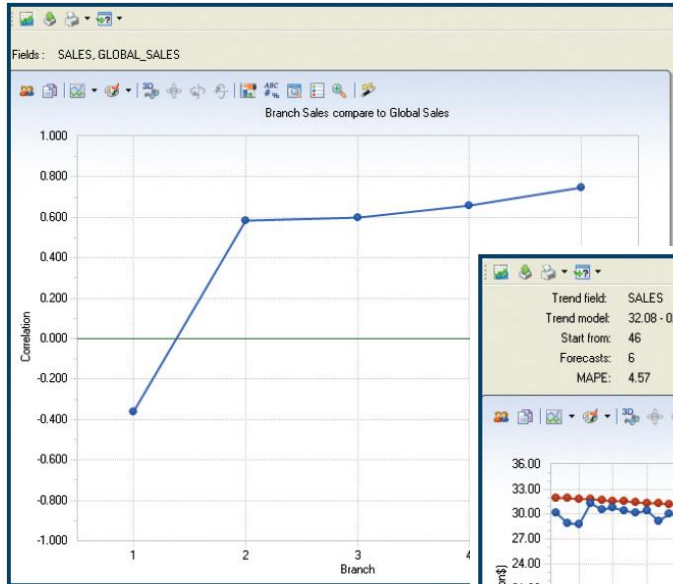
Analytical Methods can be used

- Correlation analysis
- Regression
- Benford's Law
- Visualization
 - Tree Map

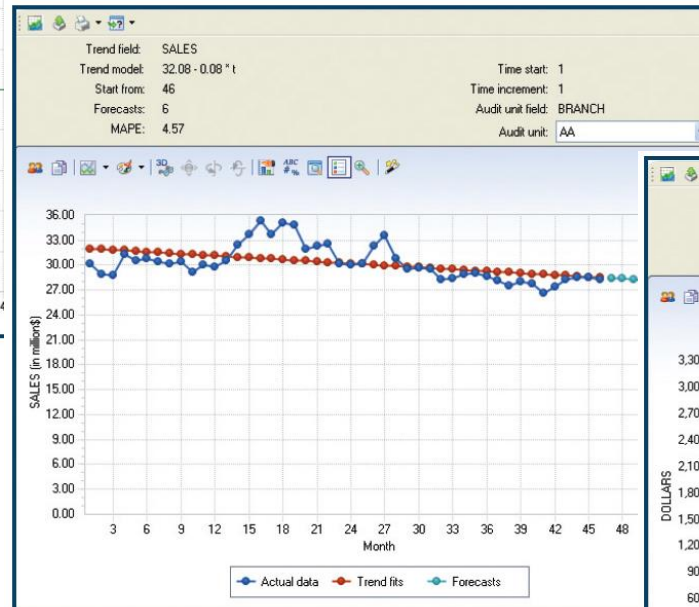


Practical approach & samples

Correlation



Trend Analysis

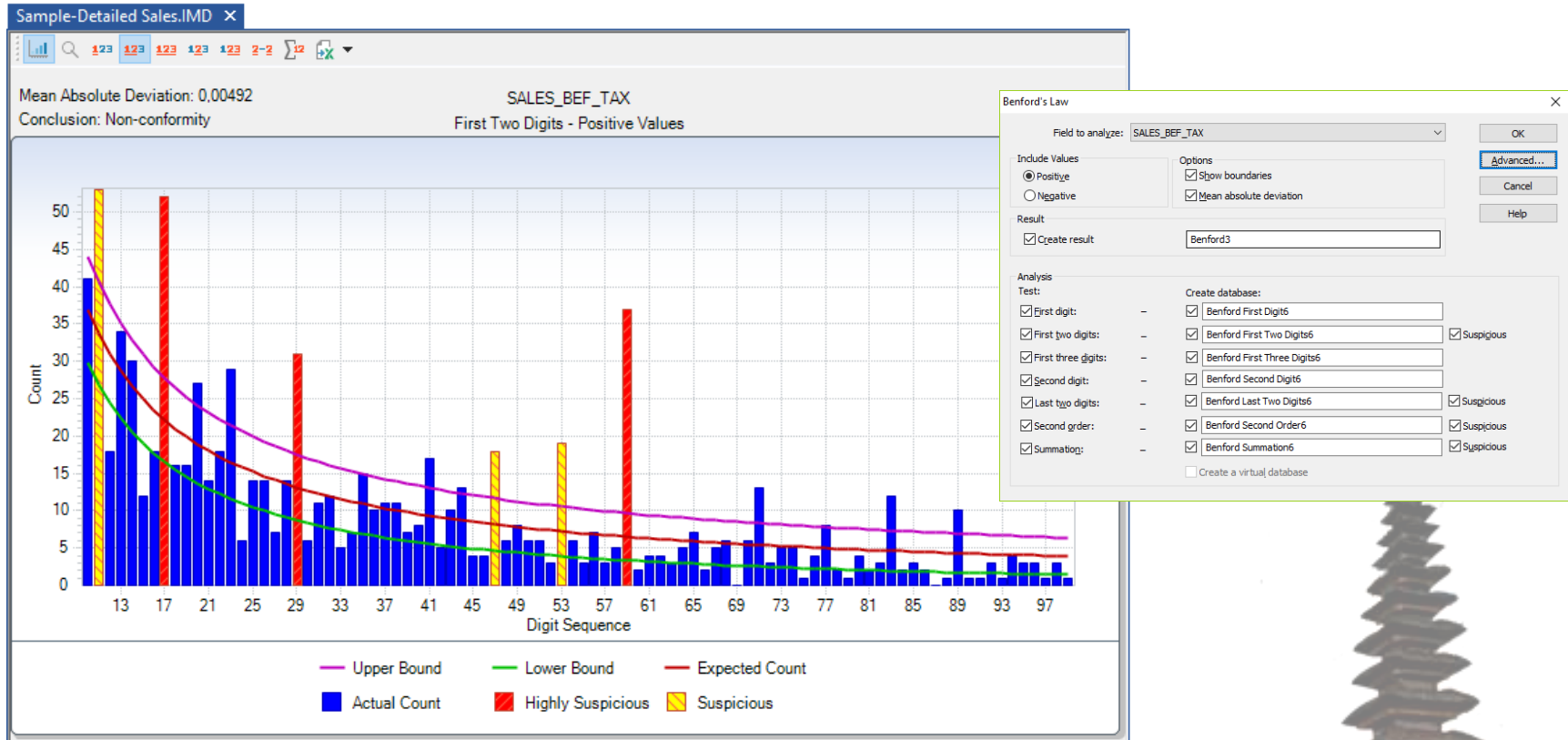


Time Series



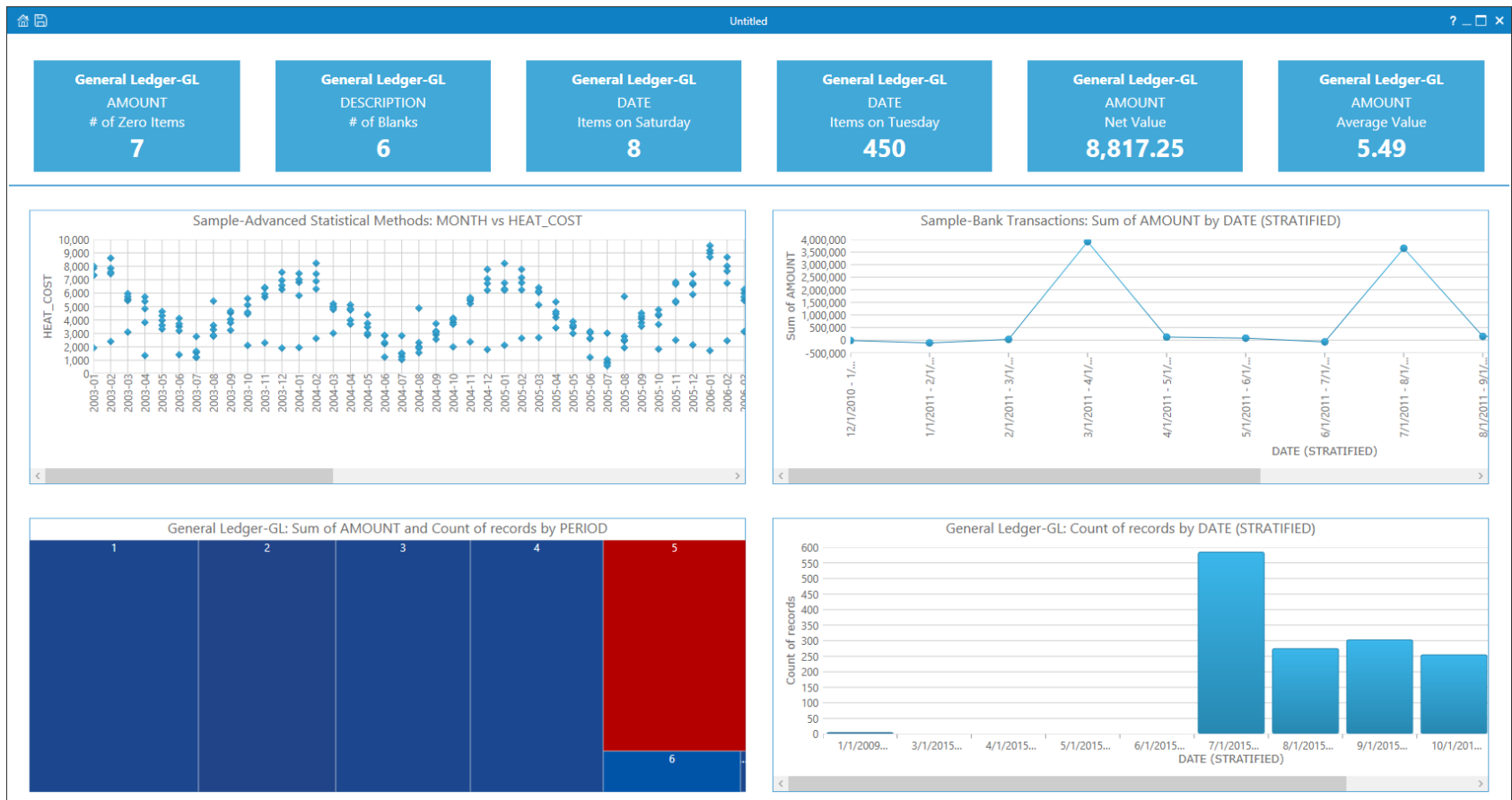
Practical approach & samples

Benford's Law



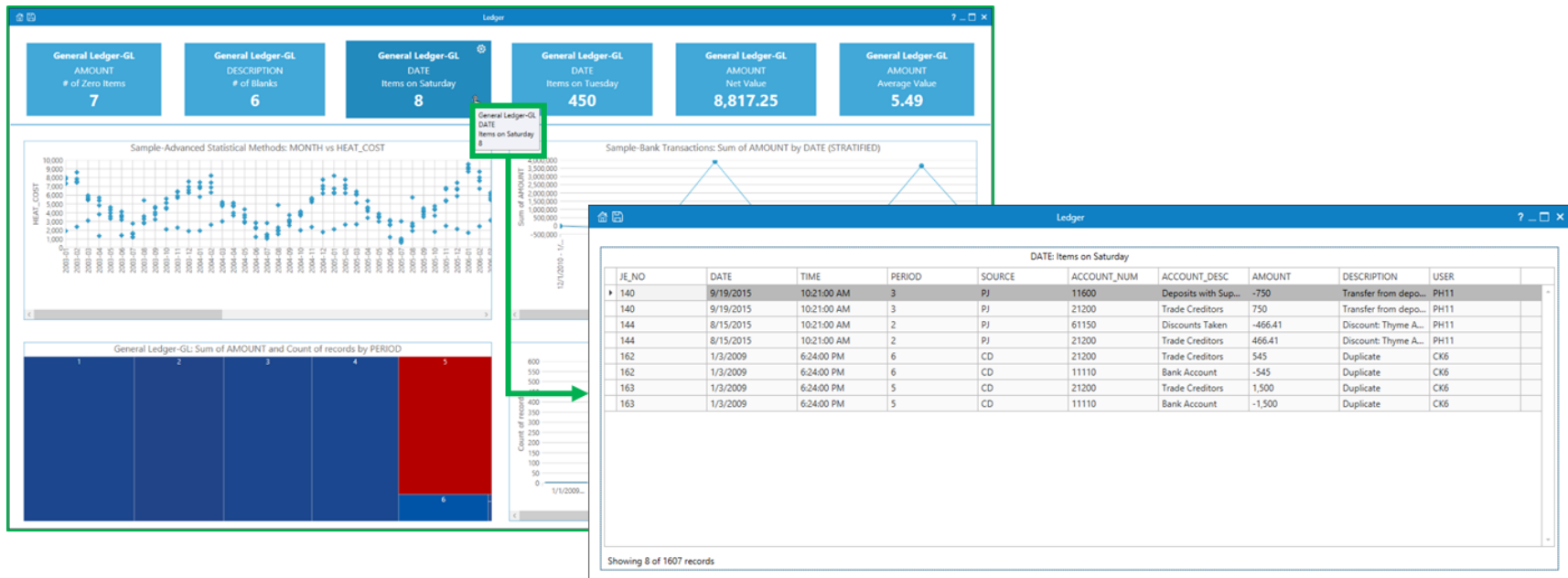
Practical approach & samples

Data Visualization



Practical approach & samples

Data Visualization



The screenshot displays the SAP Ledger interface with several key components:

- Summary Cards:** Six cards at the top provide quick metrics:
 - General Ledger-GL AMOUNT # of Zero Items: 7
 - General Ledger-GL DESCRIPTION # of Blanks: 6
 - General Ledger-GL DATE Items on Saturday: 8
 - General Ledger-GL DATE Items on Tuesday: 450
 - General Ledger-GL AMOUNT Net Value: 8,817.25
 - General Ledger-GL AMOUNT Average Value: 5.49
- Visualizations:**
 - Sample-Advanced Statistical Methods: MONTH vs HEAT_COST:** A scatter plot showing data points over time from 2003-01 to 2006-02.
 - Sample-Bank Transactions: Sum of AMOUNT by DATE (STRATIFIED):** A line chart showing transaction amounts over time.
 - General Ledger-GL: Sum of AMOUNT and Count of records by PERIOD:** A bar chart with five bars, where the fifth bar is highlighted in red.
- Transaction Table:** A detailed view of transactions for the date '12/2009-12'. The table shows 8 records with columns for JE_NO, DATE, TIME, PERIOD, SOURCE, ACCOUNT_NUM, ACCOUNT_DESC, AMOUNT, DESCRIPTION, and USER.

JE_NO	DATE	TIME	PERIOD	SOURCE	ACCOUNT_NUM	ACCOUNT_DESC	AMOUNT	DESCRIPTION	USER
140	9/19/2015	10:21:00 AM	3	PJ	11600	Deposits with Sup...	-750	Transfer from depo...	PH11
140	9/19/2015	10:21:00 AM	3	PJ	21200	Trade Creditors	750	Transfer from depo...	PH11
144	8/15/2015	10:21:00 AM	2	PJ	61150	Discounts Taken	-466.41	Discount: Thyme A...	PH11
144	8/15/2015	10:21:00 AM	2	PJ	21200	Trade Creditors	466.41	Discount: Thyme A...	PH11
162	1/3/2009	6:24:00 PM	6	CD	21200	Trade Creditors	545	Duplicate	CK6
162	1/3/2009	6:24:00 PM	6	CD	11110	Bank Account	-545	Duplicate	CK6
163	1/3/2009	6:24:00 PM	5	CD	21200	Trade Creditors	1,500	Duplicate	CK6
163	1/3/2009	6:24:00 PM	5	CD	11110	Bank Account	-1,500	Duplicate	CK6



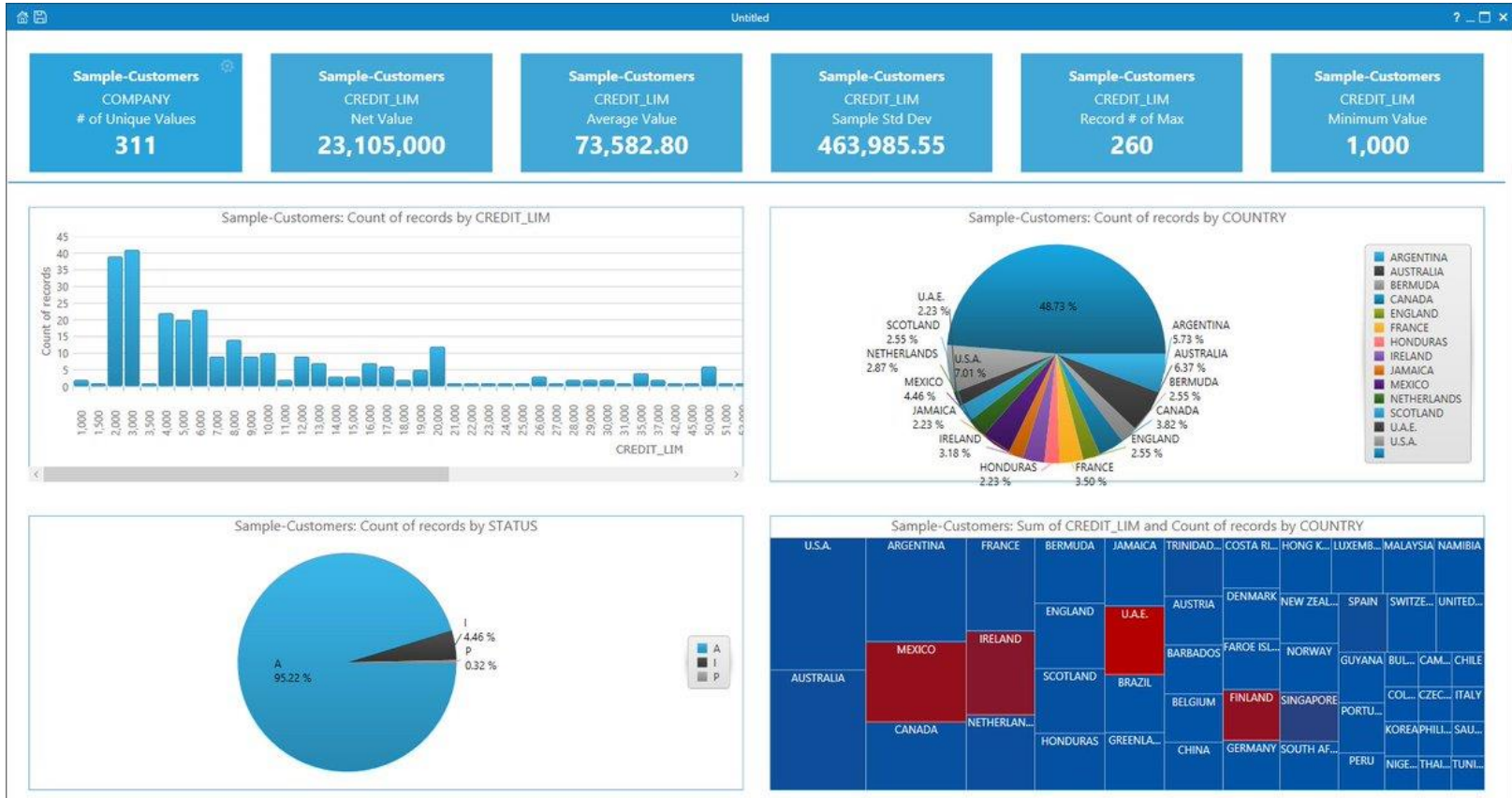
Practical approach & samples

Data Visualization – Tree Map



Practical approach & samples

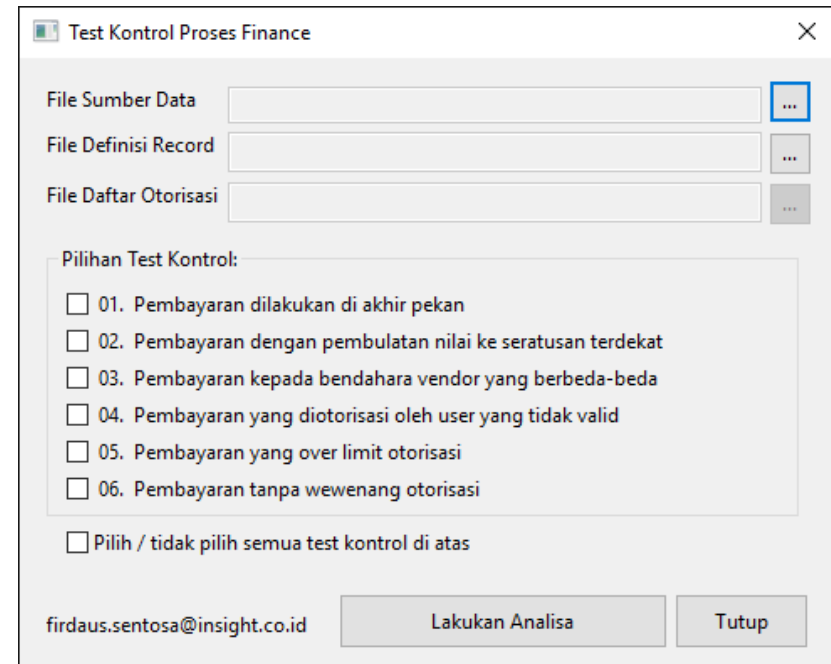
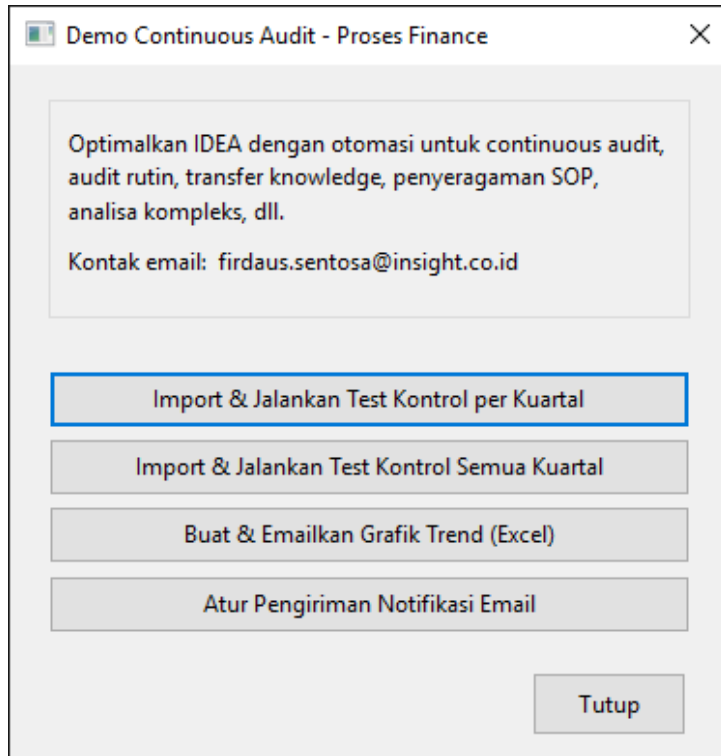
Data Visualization



Use Case Screenshot: Leveraging Desktop Tools



Practical approach & samples



Practical approach & samples

CaseWare IDEA

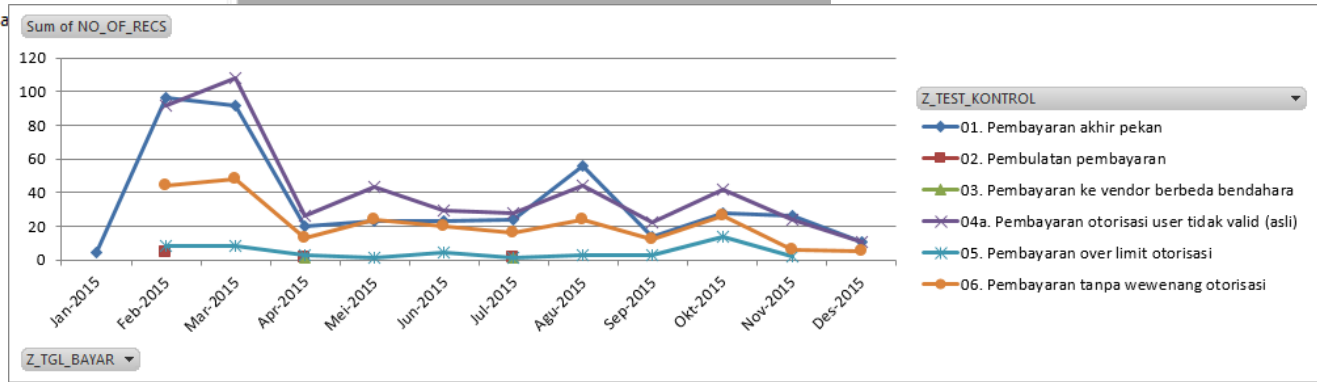
File Home Data Analysis View Macros SmartAnalyzer Otomasi

Re-run Tasks Extract Explore Categorize Relate

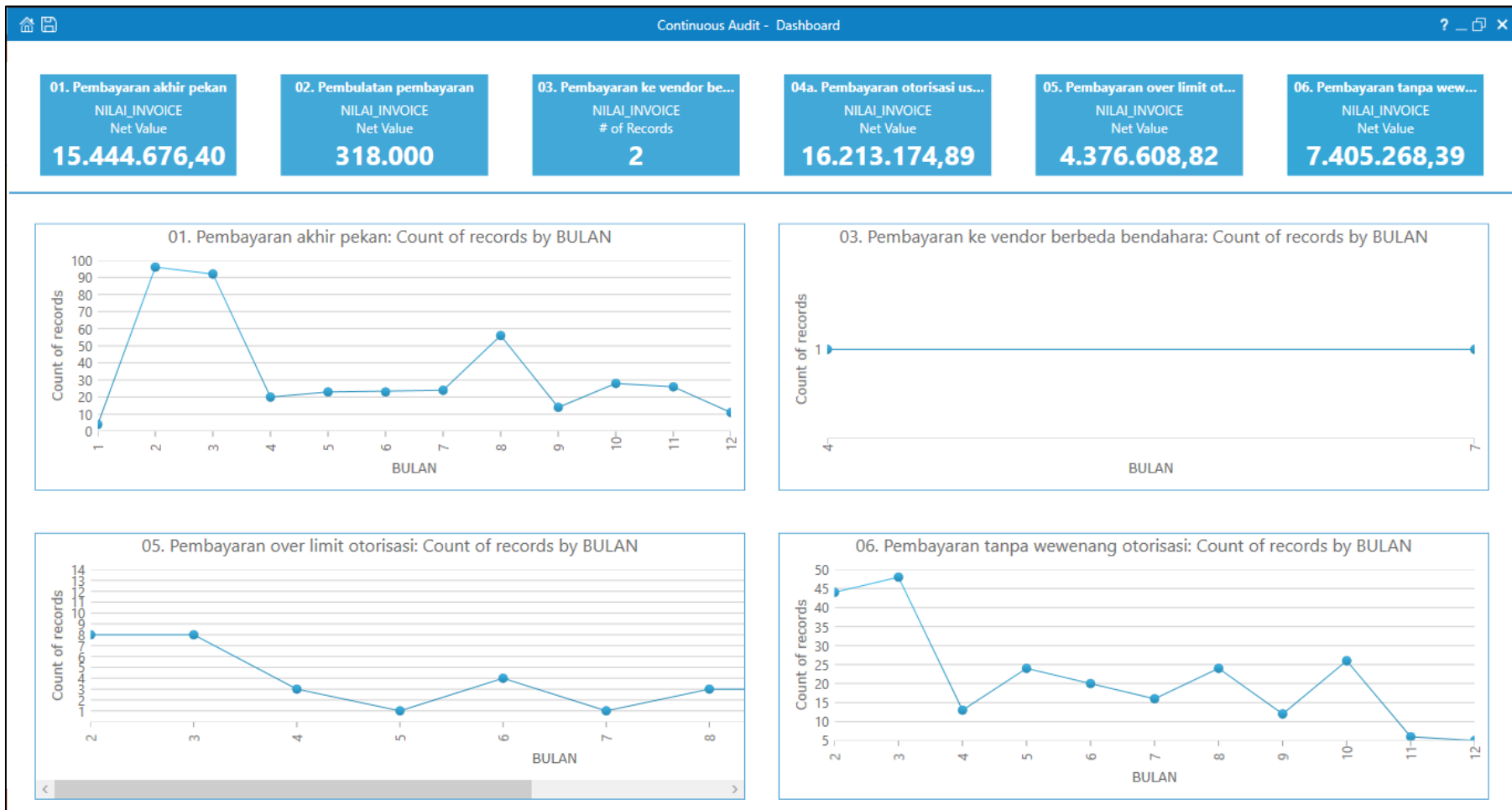
- Direct, Top Records, Gap Detection, Duplicate Key, Summarization, Aging, Join, Visual Conne
- Indexed, Key Value, Benford's Law, Statistics, Stratification, Pivot Table, Append, Compare
- Chart

File Explorer

Name	Records
Desktop Project	
Daftar Otorisasi Penyetuju-Sheet1	5
Semua Pembayaran Dbs	1.591
01. Pembayaran akhir pekan	417
02. Pembulatan pembayaran	6
03. Pembayaran ke vendor berbeda bendahara	2
04a. Pembayaran otorisasi user tidak valid (asli)	469
04b. Pembayaran otorisasi user tidak valid (stripped)	238
Pembayaran dan limit penyetuju	1.591
05. Pembayaran over limit otorisasi	47
06. Pembayaran tanpa wewenang otorisasi	



Practical approach & samples



Practical approach & samples

Pengaturan Notifikasi Email [X]

Kirim notifikasi email via Outlook

Kepada

Cc

Petunjuk:
Pisahkan dengan titik koma (;) bila alamat email lebih dari satu.
Contoh: abcd@gmail.com; xyz@gmail.com


firdaus.sentosa@insight.co.id

FILE MESSAGE ADOBE PDF

Rab 03/08/2016 15:28

Firdaus Sentosa <firdaus.sentosa@insight.co.id>
Grafik Trend Hasil Test Kontrol Pada Proses Finance

To 'firdaus.sentosa@gmail.com'

Message  Summ Hasil Test Kontrol - rad18B29.xlsx (22 KB)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Berikut disampaikan grafik trend hasil test kontrol pada proses Finance.
Mohon agar dilakukan follow up sebagaimana harusnya.

Firdaus Sentosa RE: Draft laporan training Bank Jateng

74% 15:32

Grafik Trend Hasil Test Kontrol Pada Proses Finance Inbox ☆

 Firdaus Sentosa
to me
15:28 [View details](#)

Berikut disampaikan grafik trend hasil test kontrol pada proses Finance.
Mohon agar dilakukan follow up sebagaimana harusnya.

	A	B	C
1			
2			
3			
4			
5			
6			
7			
8	120		
9	100		
10			
11			

 Summ Hasil...18B29.xlsx

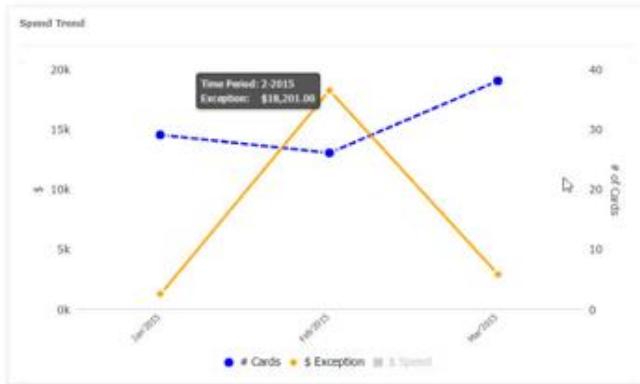
Reply Reply all Forward

Use Case Screenshot:

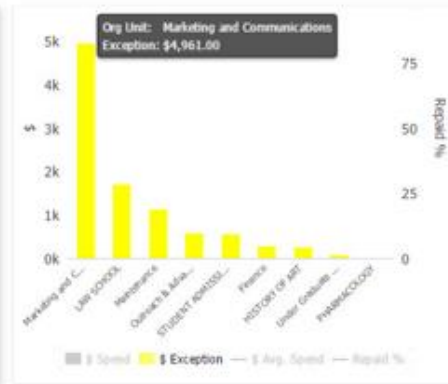
Leveraging Data analytics using CA/CM Solution



Practical approach & samples



Significant spike



Identify outliers



See trends and patterns



Practical approach & samples

CASEWARE MONITOR

[Dashboards](#) |
 [Work Items](#) |
 [Reporting](#) |
 [Configure](#)

[Dashboard Management](#) |
 [Message Center](#) |
 [My Dashboard](#) |
 [C Level](#)

Dashboards -> My Dashboard

Open Work Items by State and Risk (Chart)

State	None	Low	Medium	High
Assigned	0	~210	0	~90
Exempted	0	0	0	0
Reported	0	0	0	~10
Reviewed	0	0	~5	0
Verified	0	0	0	~5

Trend of Work Items Assigned and Closed (Area Chart)

View By: Daily

Notifications

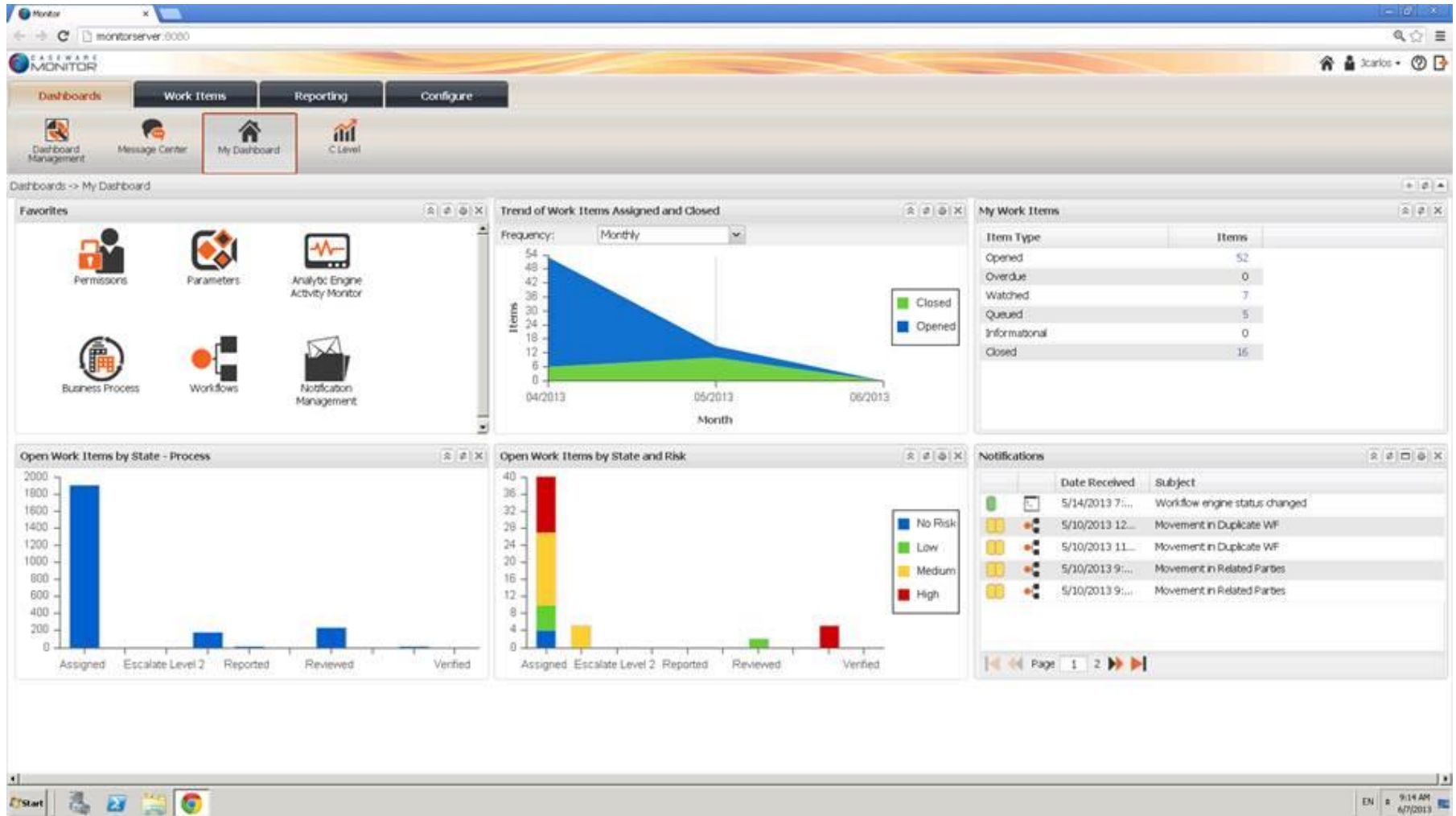
	Date Received	Subject
	3/8/2013 3:54...	Workflow engine status changed
	2/26/2013 10:...	Work item 2353 has been modified by JCarlos.
	2/26/2013 10:...	Work item 2352 has been modified by JCarlos.
	2/26/2013 10:...	Work item 2351 has been modified by JCarlos.
	2/24/2013 8:3...	Workflow engine status changed

Page 1 2

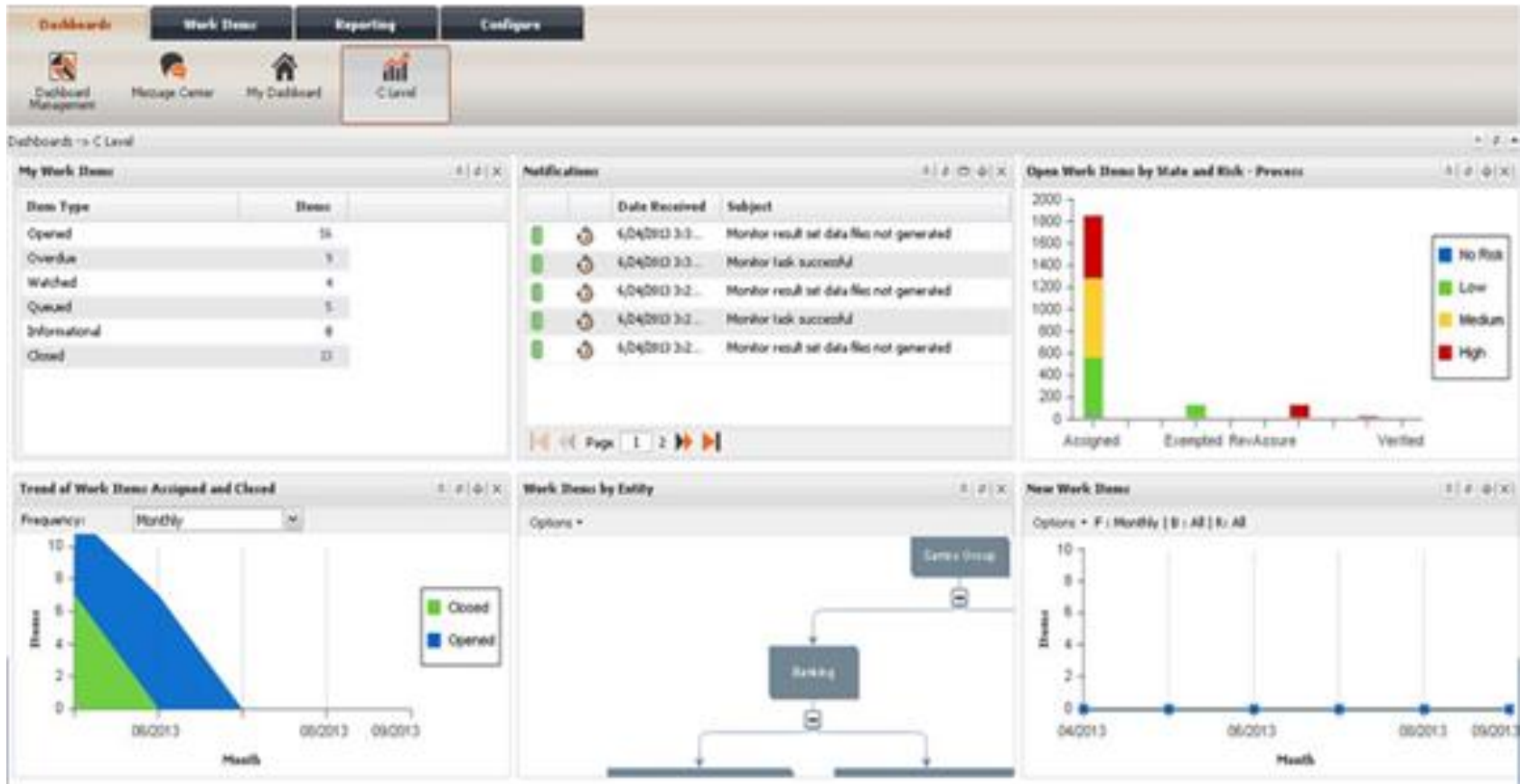
Trend of Work Items Assigned and Closed (Line Chart)

View By: Daily

Practical approach & samples



Practical approach & samples



Conclusion



Data Analytics & Continuous Auditing Facts

- DA, CA (and CM) always adds value
- The business is demanding it
- The ROI is exceptional
- The technology exist today



Continuous change

Staying ahead of risk allows you to evolve your business processes one small step at a time rather than trying to implement mass changes.





Contact

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