



Analytics for Risks Management

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RISK ANALYTICS

TURN YOUR
DATA INTO
RISK
ANALYTICS



Risk Analytics and Risk Management: What is the big deal?

“ Due to technological advances and general transparency, the data collected is now more important for risk management than it has ever been before due to various changes in:

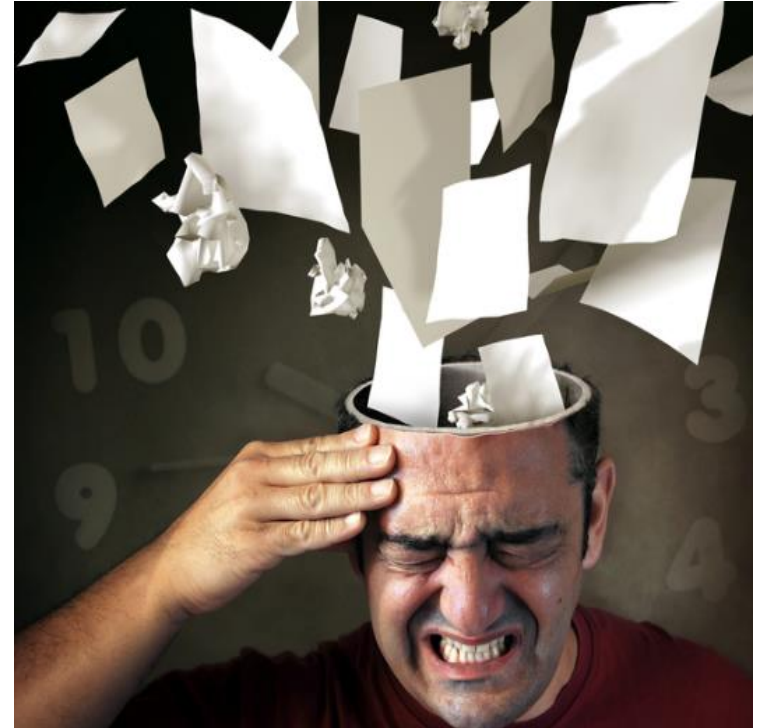
- . **Scope:** the range of topics from ever expanding sources of data is now readily available
- . **Scale:** the sheer quantity of data collected is unprecedented and is expected to grow by 40% per year worldwide
- . **Detail:** due to mobile phones, internet, and other technologies, minute details on people can now be tracked at an almost real-time level
- . **Speed:** modern IT systems allow organizations to quickly access information, enabling near real-time feedback about decision making

“ Risk analytics offers a means of transforming these data assets into actionable insights that can be used to significantly impact performance.

Why risk analytics?



Boeing 787 cockpit



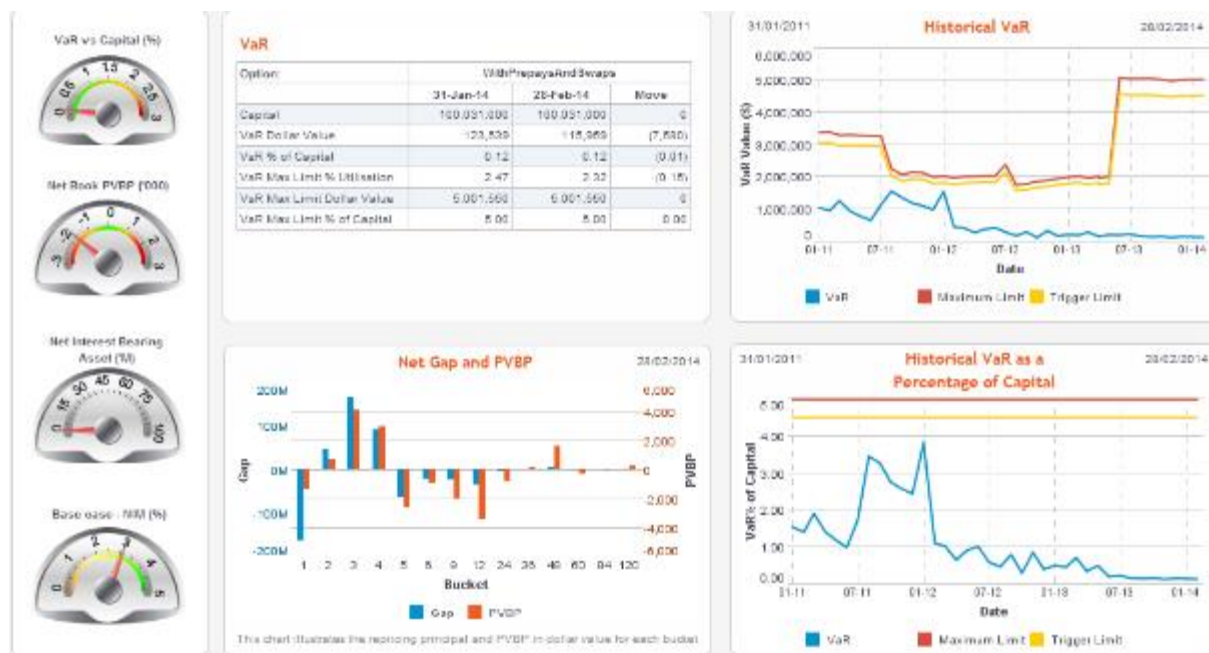
CEO/MD of a large institution

Which on one would you rather be?

Risk Analytics

What it is:

Providing **intelligence** to management from data and information to make decisions on uncertainties faced by the organisation.



Edward Snowden case 2013:

In a December 2013 letter to the people of Brazil, Snowden wrote:

"There is a huge difference between legal programs, legitimate spying ... and these programs of dragnet mass surveillance that put entire populations under an all-seeing eye and save copies forever ... These programs were never about terrorism: they're about economic spying, social control, and diplomatic manipulation. They're about power."



'People's lives are at risk': Intelligence chief blasts Snowden during Senate hearing

Published time: October 02, 2013 17:55



James Clapper, Director of National Intelligence listens to testimony during a Senate Judiciary Committee hearing on Capitol Hill, October 2, 2013 in Washington, DC. (AFP Photo / Mark Wilson)

Risk Analytics – genuine applications?

Case study 1:

You have just bought a car from a yard, while on your way home, you tweet “I just love my new Mercedes, Ngong rd Posh car dealers, you are the best”.

Before you get home, you receive a call from your health insurer.....“good day Mr. James, a beautiful day as is, we would like to inform of our special high end motor vehicle cover which would be offered to you at discounted price since you have a health cover with us.....”

Risk Analytics – genuine applications?

Case study 2:

Its Friday afternoon while you are preparing to go home after a long week of 'hard work'.....

A warning letter lands on your desk that leaves you shocked asking yourself.....how did they know?

During the week, you had made a deal with a cousin who is a selling latest movies for Shs.50 in town to supply him since the high speed internet in your office can download movies so fast. In a week, you managed to download 500 movies.

Risk Analytics – genuine applications?

Case study 3:

You are a regional manager of a large logistics company and recently you have been transferred from Nyanza to Mombasa region. This is the first time you have worked in the region.

First day walking to your new office, there is a notice board with interesting tables, graphs, dashboards etc

Taking a closer look, the following information catches your eyes:

- “ Losses of cargo in transit have always occurred along Likoni area and it occurs between 8pm and 10pm.
- “ Staff turnover of drivers has increased to 60% since Jan 2014 while it was 5% for the last 5yrs
- “ Average of 5 truck accidents per month has occurred with cargo getting lost and the drivers disappearing from scene since Jan 2014 etc.

Risk Analytics – genuine applications?

Case study 4:

Ball pens suppliers colludes with procurement department to be selected to supply pens and provides his cartel companies to quote a higher price while he quotes a lower price but already inflated (Shs.100 per pen) to cater for kick-back to the head of procurement and her team.

Procurement committee meets and approves the tender which goes for LPO raising in Finance unit.

Finance manager is required to record the price in a risk management system which sends a warning signal to finance, procurement and internal audit.

The tender is investigated and all anomalies identified and therefore cancelled.

Risk Analytics – genuine applications?

Case study 5:

Recently, staff absenteeism has been increasing especially towards end of the month. It has also been noted that the companies medical cover cost has been increasing at a high rate.

The new CEO is getting concerned that performance is being affected while cost of medical cover is increasing.

Information and data analysis creates a relationship with performance target from top management with the most popular illness being stress-related.

The CEO implements a gymnasium, employee of the month award, bonus for meeting target, performance measures not related to targets.

Analysis 6mts later confirms a reduction in absenteeism and the next financial year medical cover is reduced through negotiation with the insurer.

Developing a risk analytics capability

“The journey from the traditional business which is dominated by historical data and focus on what has happened to one that is strategic and where risk management is an integral part of every business decision is primarily a journey from relative ignorance and lack of data, through the harnessing of relevant quality data sets to the turning of that data into intelligence”.....David Tattam.

The journey is not easy and needs to be travelled in a controlled and progressive manner.

Key points to consider.....

Current status. What is the status of the current business?

1. How are decisions currently made?
2. To what degree is risk intelligence used in decision making?
3. What risk data is currently available and what is its relevance and quality?
4. How is the current risk data being captured and stored?
5. How is the current risk data being analysed and reported?

Key points to consider.....

Data Collection

1. What key data should be collected?
2. How will the data be collected?
3. What are the sources of data?
4. What system will be used to collect and store the data?
5. What is the quality of the data?

Key points to consider.....

Reporting the data in a meaningful and relevant way

1. How will the data be turned into intelligence?
2. How will the converted data be reported?

How can the data sets be used for true risk insights?

1. What tools should be used for data analysis?
2. How should the analysis outputs be used?

Steps to developing a risk analytics

Step 1: Determine the key business questions you would like to answer.

For example, who is my potential customer? Where should I focus my marketing campaigns to? Which customers should be offered which benefits? What is the most optimum insurance premiums by product, age, location etc?

NOTE:

Business questions are driven by the Risk Profile – *the uncertainties affecting your objectives.*

Steps to developing a risk analytics

Step 2: Establish the data source requirements.

Data requirements will be driven by the business questions you will need answered. You may have the data internally or you may have to obtain from external sources.



Beware of the legal complications and resistance from other institutions to readily share data – Privacy laws.

Steps to developing a risk analytics

Step 3: Digitise records and Reconcile core systems within a single database – the Data Warehouse.

The data in the archives and registries in our organisations has a lot to tell and so is the data in the various applications used by the organisation.

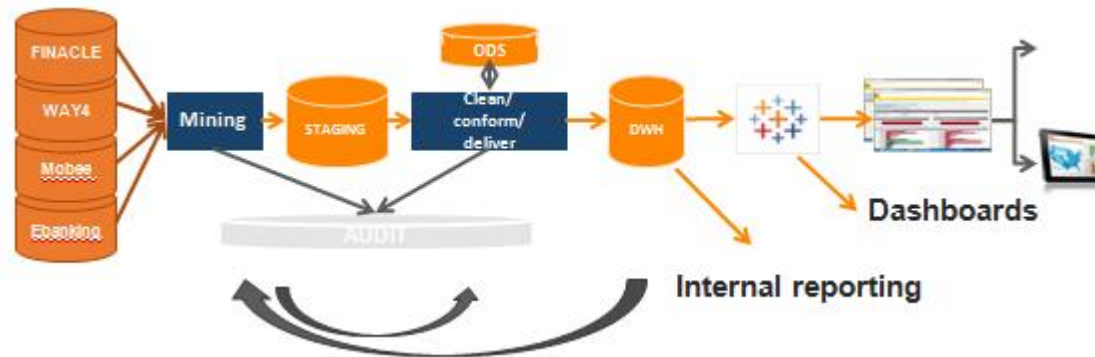
Organisations are best positioned to optimise on the data they hold within before going outside in search of more data.



Steps to developing a risk analytics

Step 4: Use data mining approach to mechanically and automatically clean unmatched data points.

Cleaning data ones in the warehouse is vital to ensure that accurate relations and patterns are establish using unique identifiers in the population.



Steps to developing a risk analytics

Step 5: Document processes to maintain and use of the data warehouse.

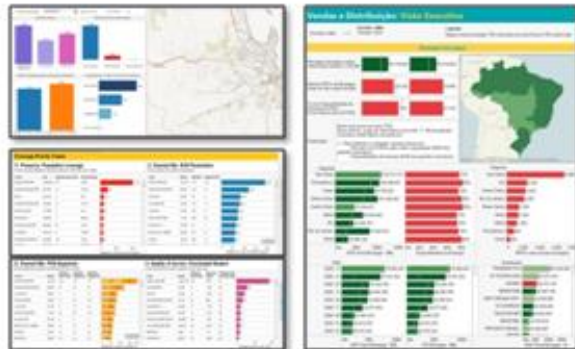
Clear instructions must be developed to ensure the data in the data warehouse is well maintained as to its currency, accuracy, reliability and relevance.

Steps to developing a risk analytics

Step 6: Develop guided analytics tool and dashboards.

Data scientists are well positioned to develop sophisticated routines and algorithms to analyse the data available to you based on the business questions you would like answered. The parameters used for this purpose are determined by **risk profiles** that must be understood very well by the institution.

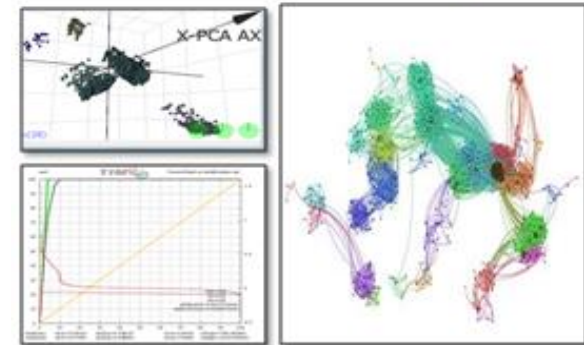
Guided Analytics



- Operational **dashboards** & visualizations
- Recommends **action buckets** to front-end business users with automated decision trees and algorithms
- Creates value by optimizing day-to-day decisions & execution, regardless of skill

Dashboards will enable you to be the pilot in a cockpit. Make decisions in a snap shot by using guided analytical tools.

Predictive Analytics



- Data enrichment & predictive modeling
- Recommends **campaigns** (individual targets, product & communication) connecting to campaign engines
- Creates value by transforming marketing: better targeting, better conversions

Steps to developing a risk analytics

Step 7: Train staff.

For continuity and self-sustainability, staff within the organisation must be trained to understand the sophisticated routines and algorithms parameters. This enables the institution to adopt to the changing risk profile as the environment changes.



Steps to developing a risk analytics

Step 8: Set workflow rules and escalation systems.

Link output of analytics to **risk appetite** and integrate to decision making through predetermined workflow rules and escalations.

Without a clear linkage to this, the organisation is still prone to complacency and staff who may have self-interests failing to take prompt and appropriate decisions.

Create automated workflow rules to send alerts at the appropriate levels and track actions being taken when the alerts are sent out.

WorkFlow Rules			
Field: <input type="text" value="Name"/>		Filter: <input type="text" value="X"/>	
Error	Enabled	Name	Description
	<input checked="" type="checkbox"/>	Notify Supervisor - Action Closed	Notifies the supervisor when an actions status changes to cl...
	<input checked="" type="checkbox"/>	Notify Supervisor - Action Pending	Notifies supervisor that an action has changed to pending.
	<input checked="" type="checkbox"/>	Notify Supervisor - Action changed to WIP	Notify supervisor when status changed from assigned to WIP
	<input checked="" type="checkbox"/>	Notify assignee - Action overdue	Notifies the assignee when an action is overdue
	<input checked="" type="checkbox"/>	Notify Supervisor - You have been set as...	Email notifies supervisor that they have been set as supervi...
	<input checked="" type="checkbox"/>	Notify Assignee - Action due within 7 days	Notifies the assignee that the action is due within 7 days.
	<input checked="" type="checkbox"/>	Notify Assignee - Action reopened	Notifies the assignee when an action is reopened.
	<input checked="" type="checkbox"/>	Notify Assignee - Action Assigned	Notifies the assignee that an action has been assigned to th...
	<input checked="" type="checkbox"/>	Anonymous Incident Entry Notification	Sends out a notification to person-in-charge once an inciden...
	<input checked="" type="checkbox"/>	Customer Complaints Entry Notification	Sends a notification to person-in-charge if an incident is ent...
	<input checked="" type="checkbox"/>	Customer Complaints User Receiving Co...	Sends a notification to User Receiving Compliant is notified...
	<input checked="" type="checkbox"/>	Fraud Register Entry Notification	Sends out a notification to person-in-charge once an inciden...
	<input checked="" type="checkbox"/>	Notify ICT Department - Issue has been r...	Notifies ICT Department that as Issue has been raised by a...
	<input checked="" type="checkbox"/>	Notify creator of incident on the action tak...	Notifies user of action taken by ICT department
	<input checked="" type="checkbox"/>	Operational Risk Incident Entry Notification	Sends out a notification to person-in-charge once an inciden...
	<input checked="" type="checkbox"/>	Security Breach Incident Entry Notification	Sends a notification to person-in-charge if an incident is ent...
	<input checked="" type="checkbox"/>	Compliance Questions and Control Attest...	Sends a reminder to the assignee 3 days before the due dat...

Risk Data to Risk Intelligence



Boeing 787 cockpit

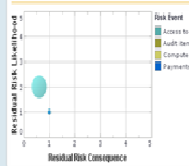
The Dashboard

Compliance Dashboard

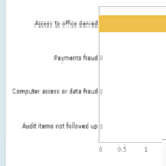
PROTECT. ERM.

0 My Not Attended
0 Managed 'Not Attended'
0 My 'No'
2 Managed 'No'
0 My 'Yes'
8 Managed 'Yes'

Residual Risk Consequence, Likelihood, and Total



Top 5 Risks with Least Number of Controls



Questions with the Most Number of 'No'

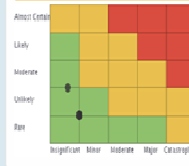


Risk Names with the Most Number of 'No'

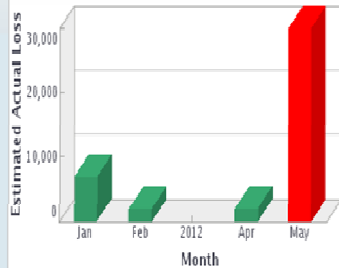
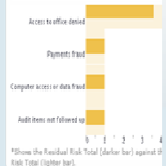


Loss and Event Dashboard

Residual Risk Consequence and Likelihood



Inherent Risk Total vs Residual Risk Total



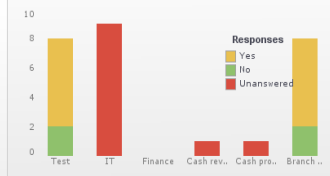
Business Unit	Risk Control	Inherent Likelihood	Residual Likelihood	Inherent Consequence	Residual Consequence	Inherent Risk Total	Residual Risk Total	Control Effectiveness
Finance	Access to office denied	2	2	3	6.6	6	6	4%
Finance	Payments fraud	1	1	1	1	1	1	
Finance	Audit items not followed up	1	1	1	1	1	1	
Finance	Computer access or data fraud	1	1	1	1	1	1	

Audit Dashboard

Scheduled Audits This Year

Branch Health and Safety	1st Qtr	2nd Qtr	3rd Qtr
Cash procedures			
Cash review			
Finance			
IT			
Test			

Question Status by Audit



Audit Details

Name	Scope	Objective	Owner Name	Start Date	End Date	Status
Branch Health and Safety	Human Resources Department	To ensure that the business units are complying with the OHS requirements and staff are provided in a safe and healthy working environment.	Audit Manager	2012-02-29	2012-03-02	In Progress
Cash procedures		Integrity of cash	Auditor 1	2012-09-03	2012-09-06	Completed
Cash review			Protedh11	2012-09-04	2012-09-04	Completed
Finance		* to form an independent opinion on the integrity of the financial information being presented and to establish reliability on the means by which it is reported	Audit Manager	2012-02-07	2012-02-09	Scheduled

Compliance Dashboard

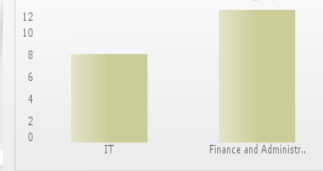
01/Jan/12 - 07/Nov/12



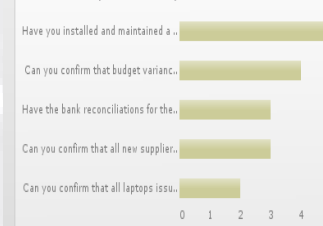
Non-Compliance by Risk



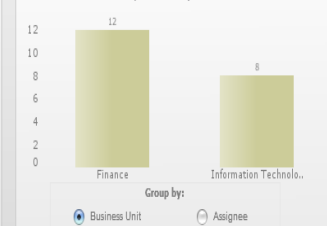
Top 5 Non-Compliance by Category



Top 5 Non-Compliant Questions



Non-Compliance by Business Unit



Report Timeframe

☒ This Year
☐ This Financial Year
☐ Custom Period
Select Date Range

Category

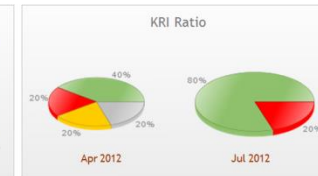
- ☒ APS 110: Capital Adequacy
- ☒ APS 232: Business Continuity M
- ☒ Authorisations
- ☒ Billing
- ☒ Environment
- ☒ Finance and Administration
- ☒ IT
- ☒ OHS
- ☒ PCI DSS

Business Unit

- ☐ Customer Services
- ☐ Environment
- ☒ Finance
- ☐ Human Resources
- ☒ Information Technology
- ☐ Legal
- ☐ Sales and Marketing

Key Risk Indicators

April 2012 & July 2012



Period Comparison



KRI Details

Risk Name	Key Risk Indicator	Old Value	New Value	Comment
Server failure, Router failure, Telecomunications failure	Hours downtime of core systems	1.5	0	CB continues to go down
Website unavailable, Router failure, Access to office denied, Server failure	BCP Test Rating	32	1	
Workforce injury	OHS Claims	0	0	
Employee harassment or discrimination	Number of employee complaints re harassment	1	4	A number of complaints
Customers do not understand products	Number of customer complaints elevated to severe	0	2	

Overall Red KRI Trend



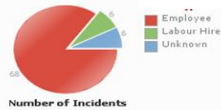
Scaled Score Traffic Light



The Dashboard

Vehicle Accidents Register (01/Jul/12 - 30/Jun/13)

\$1,522.25
Average Estimated Costs
\$5,521.67
Average Incurred Costs



Select Report Timeframe

- ☐ This Year
☒ This Financial Year
☐ Custom Date Range

→ Select Date Range: 2012 %

Current Status

- ☐ Closed
☐ Open
☐ Please Select

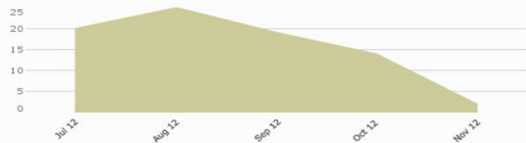
Your Business Unit

☐

Your Location

☐

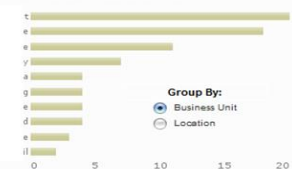
ACCIDENTS PER MONTH



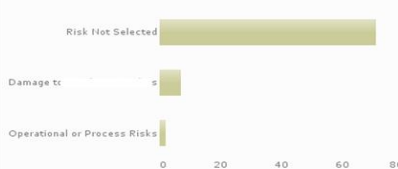
ALCOHOL/DRUG CONSUMPTION IN LAST 12 HOURS



TOP 10 BUSINESS UNITS



ASSOCIATED RISKS



ID	Date of Accident	Business Unit Name	Location	Estimated Costs	Incurred Costs	Alcohol/Drug Consumed?	Status	Date Closed	Accident Age
1000280	13/07/12	Employee			\$1,808.00	No	Closed	2012-09-19	67 days
1000281	18/07/12	Employee			\$1,862.00	No	Closed	2012-10-25	98 days
1000282	13/07/12	Labour Hire				Please Select			116 days
1000284	21/07/12	Employee				No	Closed		0 days
1000285	24/07/12	Employee				No	Closed		0 days
1000286	23/07/12	Employee			\$94.00	No	Closed		0 days

ACTIONS DUE IN THE NEXT 90 DAYS

Action	Priority	Due Date	Overdue	Assignee
Please attach financial records for the year 2013 together with Board meeting minutes.	Critical	23/03/2014	Yes	John Smith
Review and follow up issues raised in Whistleblower Register.	High	17/04/2014	No	Jane Doe
Obtain and review BCP testing results from third party suppliers. Results to be filed in BCP file.	Medium	05/02/2014	Yes	John Smith
Review contractor agreements asap and renew licenses.	Medium	08/09/2014	No	Mary Hall
Create project plan to review credit risk management policy.	Low	08/09/2014	No	Jane Doe

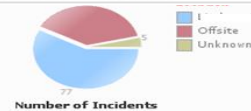
OUTSTANDING COMPLIANCE

Business Unit	Compliance	Responsible
WA	Can you confirm that budget variances above 5% have been investigated and commented on?	John Smith
NSW	Have all safety incidents within the past 3 months been reported to the OHS officer?	Jane Doe
VIC	Please confirm that all breaches or client complaints regarding privacy have been logged in the incident register.	Mary Hall
QLD	Has BCM testing been conducted this quarter?	Mary Hall
NT	Please confirm that all corridors are cleared from obstacles?	Jane Doe

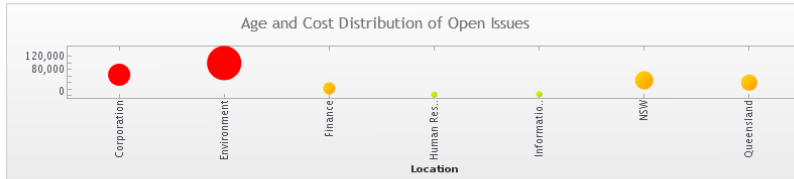
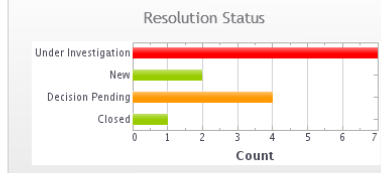
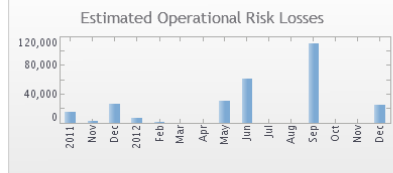
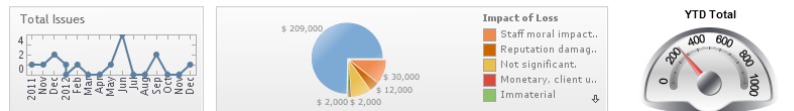
OUTSTANDING KEY RISK INDICATORS

Business Unit	KRI	End of Period
WA	Number of back-up failures during the month	31/01/2014
NSW	Number of Expense Claims per month	28/02/2014
VIC	OHS Claims	31/03/2014
QLD	BCP Test Rating	17/04/2014
NT	Number of Reported Injuries in a month	30/06/2014

\$1,011.43
Average Estimated Costs
\$3,183.43
Average Incurred Costs



Loss and Event Dashboard

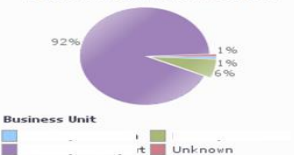


Incident Detail			
Location	Incident Date	Description	Loss
Finance	2012-01-10	Cheque was paid into established account and cashed as soon as cleared...	7,000
Corporation	2011-12-13	...	14,600

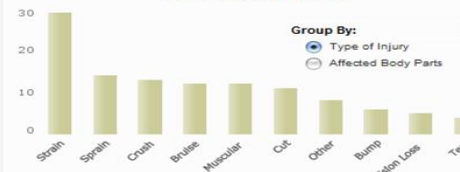
INCIDENTS PER MONTH



BUSINESS UNIT DISTRIBUTION



TOP 10 INJURY TYPES



INCIDENT SEVERITY



ID	Date of Occurrence	Business Unit	Location	Estimated Cost	Incurred Cost	Type of Injury	Severity of Injury	Risk Name	Date Closed
1000661	04/11/2012					Superficial	Insignificant - No Lost Time		
1000660	02/11/2012					Other	Minor - Lost Time 1 Shift or Less		2012-11-06
1000642	18/10/2012					Tear	Moderate - Lost Time of		

Q & A





Thank You

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