



How Risk Management systems can support Solvency II implementation

Emma Price
Director, Risk Advisory – Strategic Thought Group

- Background: questions for consideration
- Issues to address
- Using risk software – pillar 1
- Mapping the risk framework – pillar 5
- Software implementation approach
- Getting it right: the benefits
- Questions



- Is Solvency II anything new?
 - ERM/ GRC
 - ISO31000
 - UK Corporate Governance Code
 - Walker Report
 - Revised SEC regulations
 - Standards & Poor's assessment of ERM

- What are the drivers for change:
 - compliance project versus opportunity to embed ERM more effectively?

- How has software been used to support other risk initiatives?



- Organisational legacies - most insurance companies have evolved over time with the following consequences:
 - No or multiple risk management frameworks;
 - Differing models, modelling systems and methodologies; and
 - Multiple systems being used simultaneously to handle risk and exposure modelling needs.
- Outcomes - leads to a jumble of results and inconsistent risk output.
- Embedding:
 - People – Risk culture
 - Processes – embedded and sustainable ERM
 - Systems – data quality and management

- Calculation of:
 - MCR
 - SCR using either European Standard Formula, or an internal model subject to approval
 - Market consistent valuations of assets and liabilities
 - Response of capital requirements to the risk profile of the organisation
 - Calculation of Best Estimate Reserves & Margins, and the size of risk margins



Mapping the risk framework – pillar 5

Overall governance arrangements

- Strategy & Risk appetite
- Oversight arrangements

Use test, decision & planning support

- Technical pricing & value contribution is core input to product design & pricing
- Metrics to identify underperforming portfolios

Risk identification/Risk assessment/Risk monitoring

Risk Identification

- Covers all types of risks
- Identifying emerging risks

Risk assessment & measurement

- Single version of the truth
- Reflects the risks presented

Risk monitoring & mgmnt

- “Industrialised” analysis
- Control of key risks

Risk reporting & management information

- Information to drive business decisions
- Clear, concise and reflective of current status

Data, IT, infrastructure

- Integration of risk & finance systems architecture
- Data to be consistent, complete, accurate and auditable

Policies, Standards, People, Culture

- Clear ownership of tasks and risk decisions
- Consistent policies and standards

- Risk appetite definition
- ORSA report
- Supervisory disclosure & reporting

- KPIs/ KRIs
- Incident/ loss reporting
- Stress testing & scenario analysis

- Real time capture of all risk types
- Appropriate risk appetite
- Risk analysis techniques

- Escalation & notification process
- Common risk language
- Fast, easy access to quality risk data

- Integration with other software systems
- Customisable security
- Full audit history

- Different languages & currencies
- Risk process embedded in software
- Tracking of treatment actions & controls

- Initial steps:
 - Develop clear list of software requirements
 - Understand what systems are currently being used in the organisation, for what, and their capabilities in relation to the defined requirements
 - Look for opportunities to streamline systems and data and identify any gaps
 - Research and shortlist potential systems that will fill any identified gap

- Cultural aspects to consider:
 - Understand the business challenges
 - Broader change program should be considered
 - Key messages
 - Executive sponsorship
 - Common risk language
 - Training
 - Incentives and sanctions
 - Risk ownership and accountability
 - How risk mature is the organisation and how mature does it need to be?
 - Measurements of success



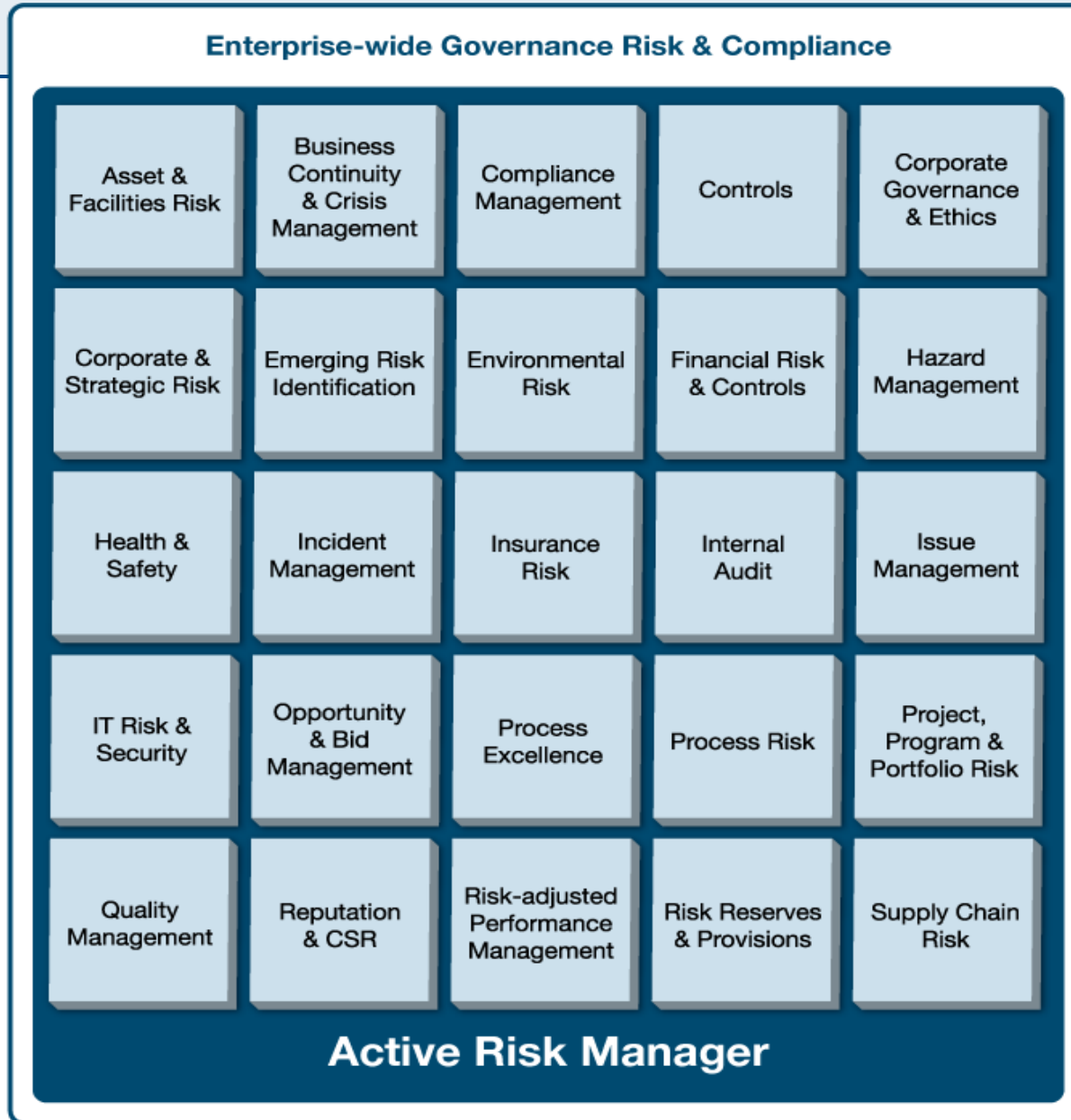
Getting it right: the benefits

- Key strategic advantages to be gained through embedding an efficient and effective software support system are:
 - Aggregation and escalation of data
 - Broader risk linkages e.g. between strategy, risks, controls and incidents/ losses
 - Reduction in time spent on manual risk processes
 - Auditability of evidence based approach
 - Proactive email alerts
 - Customised information management





Required software capabilities



ARM Active Risk Manager

File Edit New View Link Analysis Reports Tools Help

Activities

- ARM Sententia Group
 - ARM Sententia Corporate
 - Finance
 - IT
 - Infrastructure Management
 - Support
 - Information Security
 - Information Systems
 - Accounts Payable
 - Accounts Receivable
 - Procurement
 - Treasury
 - Contract Management
 - Payroll
 - Audit and Assurance
 - Regulatory Issues
 - Legal
 - Sales and Marketing
 - Marketing
 - Business Development
 - Pipeline
 - Strategic Planning
 - Risk
 - Corporate Reporting
 - Business Analysis
 - Business Planning - Projects
 - Business Planning - Operations
 - Business Planning - Support Services
 - Business Continuity Planning
 - HSE
 - Occupational Health
 - Operational Safety
 - Environmental Management
 - Environmental Aspects

Scoring Schemes Configuration - Windows Internet Explorer

Scoring Scheme: 1M Project [2]
 500K Project [3]
 Corporate [5]
 Credit [4]
 Customer Satisfaction [9]

Default Available for Re-assessment
 This default scoring scheme cannot be deleted. You can however modify the values in this scheme.

Clone Exposure: Threat

Qualitative Quantitative

	Nil	Very Low	Low	Medium	High	Very High
Probability (%)	NL	Occurrence is highly unlikely (0% <= 10)	Occurrence is improbable (10% <= 20)	Occurrence is possible (20% <= 40)	Occurrence is likely (40% <= 60)	Occurrence is almost certain (60% <= 100)
Frequency (Per Year)	NL	Less than once every 100 years	Less than once every 10 years	Less than once every 4 years	Less than once a year	More than once a year
Threat	Nil	Very Low	Low	Medium	High	Very High
<input checked="" type="checkbox"/> Cost (\$)	NL	Insignificant Financial Loss (0 <= <= 25000)	Minor Financial loss (25000 <= <= 125000)	Moderate Financial loss (125000 <= <= 500000)	Major Financial Loss (250000 <= <= 500000)	Catastrophic Financial Loss (500000 <= <= 750000)
<input checked="" type="checkbox"/> Default						
<input checked="" type="checkbox"/> Mandatory						
Sequence						
<input checked="" type="checkbox"/> Time (Days)	NL	Insignificant delay to project schedule	Minor delay to project schedule, not impacting any milestones	Moderate delay to project schedule affecting key milestones	Major delay to project schedule severely affecting key milestones	Catastrophic delay to project schedule severely impacting contractual delivery dates
<input checked="" type="checkbox"/> Default						
<input checked="" type="checkbox"/> Mandatory						
Sequence						
<input checked="" type="checkbox"/> Performance (%)	NL	Very low impact on Performance	Low impact on performance	Medium impact on Performance	High impact on Performance	Very High impact on Performance

OK Save New Delete Cancel Help

Scoring Schemes Configuration Local Intranet 100%

Performance Target	Impact Category	Target	Actual	On Track	Current Risk	Target Risk	Mitigation Cost (£)	Rol	Owner
Project Profit Target	Cost	1,000,000	750,000		262,500.00	3,750.00	14,500.00	16.84	Alessandro Riolo
Green House Gas (GHG) Emission Reduction	Process Emissions	10.0%	8.0%		0.40	0.20	12,340.00		Andrew Darby
Increase in automation of extraction processes	Extraction Time	5.0%	2.0%		0.55	0.10	43,260.00		ARMTesT
Waste material reduction	% Waste	10.0%	11.0%		0.20	0.10	98,700.00		John Hillhouse

- Greater than 20% of Target
- Within 20% of Target
- Within 10% of Target
- KPIs not configured correctly

$$\text{Return on Investment (Rol)} = \frac{\text{Current EMV} - \text{Target EMV} - \text{Remaining Response Cost}}{\text{Remaining Response Cost}}$$

ARM Reporting Services

Trend Chart

[Show/Hide Filters](#)

<< View Parent

Item	Current Total EMV	Net Loss This Year
Finance	1,365,683	14,800
IT	2,688,758	35,000
Accounts Payable	745,150	13,000
Accounts Receivable	1,076,283	
Procurement	200,250	
Treasury	2,539,487	326,500
Contract Management		32,000
Payroll		18,000
Audit and Assurance	1,887,917	
Total	10,581,504	489,300

Current EMV Exposure Over Time (£'000s)

Losses Over Previous Periods

Risk identification, assessment, monitoring & management

The screenshot shows the ARM Active Risk Manager interface. The main window displays a risk register with columns for ID, Risk Title, Risk Owner, Status, Risk Level, and Related Records. A risk titled 'Unforeseen Ground Conditions' is highlighted in yellow. Below the main window, a pop-up window titled 'Related Responses Of Risk ID: 1 - Unforeseen Ground Cond.' shows a list of response actions with columns for ID, Title, Target, Due Date, Owner, and Status.

ID	Risk Title	Risk Owner	Status	Risk Level	Related Records
21	Customer expectations on delivery timescales are not adequately understood	Jacob Smith	Open	High	
13	Lack build capacity in dockyards	Emily Jones	Open	High	
3	System integration more complex than expected	Madison Johnson	Excluded	Moderate	S
4	Excessive Fan Vibration	Madison Johnson	Open	Moderate	
14	Market Requirement Unknown	Emily Jones	Open	Moderate	
15	lack of proven concept design strategy	Madison Johnson	Open	Moderate	
16	lack of proven build strategy	Emily Jones	Open	Moderate	
1	Unforeseen Ground Conditions	Jacob Smith	Open	Moderate	
3	System integration more complex than expected	Madison Johnson	Excluded	Moderate	

ID	Title	Target	Due Date	Owner	Status
1	Develop site plan	0.70	22 Nov 2001	Michael Williams	Complete
3	Plan survey and testing programme	0.60	10 Dec 2001	Emily Jones	Active
4	Implement survey programme	0.50	22 Jan 2002	Emily Jones	Active
5	Review results and plan secondary surveys	0.40	9 Apr 2002	Emily Jones	Active
6	Undertake second surveys and report	0.30	4 May 2002	Madison Johnson	Active

Scoring Scheme: TetraPak Quantification

Assessments

Assessment: Current Target

Exposure: Threat

Probability	Nil	A - Unlikely	B - Low Probability	C - Possible	D - Probable	E - High Probability	F - Almost Certain
Probability (%)	Nil	1% probability this year once in next 100 years	5% probability this year once in next 20 years	10% probability this year once in next 10 years	20% probability this year once in next 5 years	50% probability this year once in next 2 years	90% probability this year once in next year
Threat	Nil	6	25	70	200	650	1000
Cost (€)	Nil	2-10 million Euros	10-40 million Euros	40-100 million Euros	100-300 million Euros	300-1000 million Euros	1000 m + Euros
Non Financial Impact (I)	Nil	Local legal action, social disruption	Death serious injury, local strike or industrial action	Important, loss of reputation/ legal action/ market share or threat to future growth	Serious loss of reputation/ legal action/ market share or threat to future growth	Critical loss of reputation/ legal action/ market share or threat to future growth	Threat to future of Group

Active Risk Manager

The screenshot shows the Active Risk Manager interface. On the left, there is a navigation tree with categories like 'Strategic Objectives', 'Improving Operational Perf.', 'Product Innovation and Re.', 'Mergers and Acquisitions', and 'Corporate Governance'. The main area displays a table of risks with columns for ID, Risk Title, Risk Owner, Status, Risk Level, and Related Records. One risk is highlighted in yellow: ID 1, 'Unforeseen Ground Conditions', owned by Jacob Smith, with a 'Moderate' risk level. Below the main table, there is a section for 'Related Responses Of Risk ID: 1 - Unforeseen Ground Cond.' with a table of responses including Title, Target, Due Date, Owner, and Status.

ARM Lite

The screenshot shows the ARM Lite interface. It features a 'Risk List' window with columns for Title, Owner, Status, Risk Level, and Source. A risk titled 'Unclear Health & Safety requirements in respect of...' is highlighted. To the right, a 'Response List' window shows a table with columns for ID, Title, Response Owner, Due, Status, and Progress Index. Below these, there is a detailed view of a response, including fields for Title, Response Owner, Start, and End, along with a description of the response: 'Investigate any delay to large deliveries of materials in the next few weeks'.

ARM Collaborative Workshop Solution

The screenshot shows the ARM Collaborative Workshop Solution interface. It displays a 'Risk Register' table with columns for Risk Title, Risk Owner, Risk Status, Risk Description, Risk Category, Risk Source, Scoring Current Probability Band, Scoring Current Cost Band, Scoring Current Overall Risk Band, Scoring Current Overall Risk Band, and Plan/Fallback Description. A 'Risk profile - Count' chart is visible on the right, showing the distribution of risks across different risk levels. At the bottom, there is a table for 'Existing Controls' with columns for Title, Owner, Target Score, Due, Planned Cost (\$), and Funded From (Priority).

ARM in Outlook

The screenshot shows the ARM in Outlook interface. It features a 'Dashboard' with several key metrics and charts: 'High Risks have Plans', 'Risks Within Review Date', 'Targeted EMV Reduction', and 'Overdue Actions'. Below these are four gauge charts showing progress percentages: 100%, 41%, 61%, and 77%. A 'Risks by Level' bar chart shows counts for High, Medium, Low, and Nil risk levels. An 'Exp Cost Trend' chart shows a 0% trend. The interface also includes a sidebar with 'Shortcuts' and 'RSS Feeds'.

Financial Views

Embedding Financial Models
(eg. Provision Allocation)

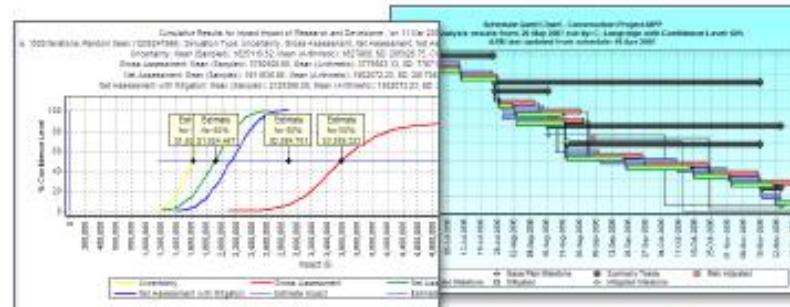


Optimised

Risk adjusted return on cash flow across the portfolio

Management Views

Prioritise & Quantify Risk Data
(eg. Cost and Schedule)



Embedded

Risk Management driving the decision making process
Linkage to project planning

Simple Views

Improving Quality of Data
(eg. Role-Based Portals)



Established

Risk mitigation
Communication & Accountability

Formalised

Basic risk assessment against project activities & requirements
Audit and Risk Awareness

ARM Active Risk Manager Internal Audit

Home Internal Audit Surveillance Security Health & Safety Management Systems

ARM Enterprise Compliance Management > Internal Audit > Pages > Action Tracking

Action Tracking Use this page to track the status of findings, issues and recommendations arising from an audit. To edit details for an action, click its title.

Select an Audit

Audit	Audit ID	Year	Quarter	Start Date	End Date	Content Type	Directorate	Lead Auditor
<input type="radio"/> Intellectual Property	IA.08.99	2009	Q4	16/02/2009	25/02/2009	Completion	Decommissioning & Clean Up	Etienne Lambert
<input type="radio"/> LCBLI Project	IA.08.12	2009	Q3	06/10/2009	23/11/2009	TOR	Decommissioning & Clean Up	Karl Pringle
<input type="radio"/> Cash reimbursements to SLC's	IA.08.13	2008	Q1	16/04/2008	01/04/2009	Audit Report	Finance & Resources	Darren Thorp
<input type="radio"/> IT Governance Audit	IA.08.14	2009	Q1	16/05/2009	23/11/2009	Pla		
<input type="radio"/> Audit of Governance Structures - Rutherford	IA.08.15	2009	Q4	16/01/2009	23/05/2009	Fi		
<input type="radio"/> Recruitment Audit	IA.07.17	2008	Q1	16/05/2008	23/07/2008	Co		
<input type="radio"/> Review of Governance Arrangements of Subsidiaries - Hinton and Rutherford	IA.08.29	2008	Q4	23/02/2008	04/05/2008	Co		
<input type="radio"/> Review of Governance Arrangements of Subsidiaries - DRS	IA.08.30	2009	Q4	23/02/2009	04/07/2009	Fi		
<input type="radio"/> Commercial FY 2008 Audit	IA.09.31	2009	Q4	02/03/2009	13/08/2009	As		
<input type="radio"/> Customer complaint handling	IA.09.32	2009	Q4	05/01/2009	30/06/2009	Au		
<input type="radio"/> Audit of petty cash	IA.09.33	2009	Q4	01/03/2009	01/12/2009	Pla		

Action Tracking

Action Number	Audit Lookup	Risk Lookup	Findings or Issues	Priority Rating	Actionee	Due Date	Management Resp
Closed Out : No (6)							
001	Cash reimbursements to SLC's	IA: 1002	2 payments were not countersigned Lack of documentation around the IP controls		Etienne Lambert		
004	Review of Governance Arrangements of Subsidiaries - DRS	ARM: 27	There is no formal identification of key operational risks regarding delivery of key	B	Mike Balut	30/05/2009	We concur with the findings and have budgeted for Strat Thought to assist u deploying such a

Preferences Configuration **Security** Integration Maintenance

Roles

Manage rights associated with roles. The rights determine which operations a user will be able to perform, for example Add or Approve Risks. [Roles...](#)

Attributes

Manage security attributes. These can be used to restrict access to certain risks based on matching attributes assigned to individual users. [Attributes...](#)

Users & Groups

Manage users, resources and groups. Users must be associated with a Windows logon identity and be a member of at least one group as access is managed at group level. [Groups...](#) [Defaults...](#) [Users...](#)

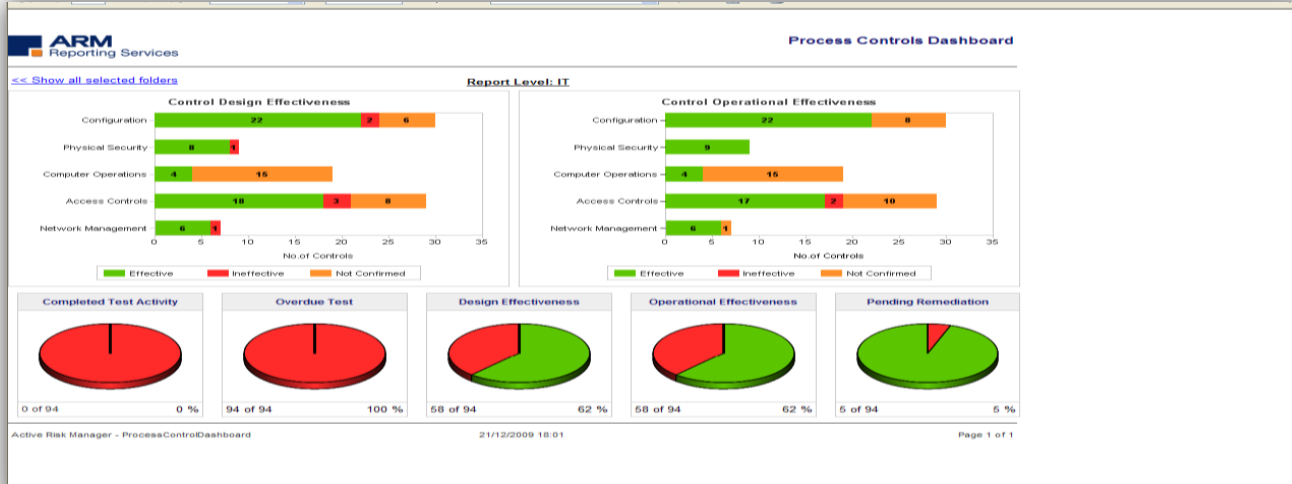
Access

Manage user access to specific business areas (folders, activities, requirements etc) and Risks. [Business Area...](#) [Risks...](#)

Disclaimer

Define a warning message or disclaimer to display to users before they are allowed to enter Active Risk Manager. [Edit...](#)

Policies, standards, people, culture



File Edit View Link Help

Risk Scoring **Action Plan**

Summary Response Detail Evaluation New Response

ID: 656 Title: Plan to reduce impact of loss of business in Iran

Owner: Andrew Darby Strategy: Reduce Cost (€): 0

High Level Description:

Fallback Plan Description:

Response List

ID	Title	Target Score	Due	Owner	Effectiveness
266	Develop contingency plan for PM supply from outside Eu...		26 Feb 2009	Karl Davey	Undefined
269	Proposal for local production of PM		26 Feb 2009	Jaime Galiano	Undefined
267	Drive IT compliance		26 Mar 2009	Keiran Betteley	Undefined
268	Continued focus on existing controls - see below for su...		31 Dec 2009	Mike Balut	Undefined

Page 1 of 1 (4 records)