Society of Actuaries in Ireland

Enterprise Risk Management

in the Financial Services Industry

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Lecture Plan

- Define Enterprise Risk Management (ERM)
- Define Enterprise Risk (ER)
- How ER arises
  - Culture + Risk Appetite
  - Objectives
- Framework to understand and manage ER
  - Identification
  - Assessment
  - Response
  - Control
  - Information + Communication
  - Monitoring
- Current Developments
  - Solvency II
  - Leadership Role for Actuaries

What is ERM?

"ERM is the discipline by which an organization in any industry assesses, controls, exploits, finances, and monitors risks from all sources for the purpose of increasing the organizations short- and long-term value to its stakeholders."

("Overview of Enterprise Risk Management", Casualty Actuarial Society, Enterprise Risk Management Committee, May 2003)

What is Enterprise Risk?

- Anything that adversely impacts the Financial Statements

- Profit & Loss Account
  - Income
  - Expenditure

- Balance Sheet
  - Assets
  - Liabilities

General Insurance: P&L

Income		Expenditure	
UPR b/f	100	O/S Clms (+IBNR) b/f	500
GWP	300	Paid Claims	80
UPR c/f	120	O/S Clms (+IBNR) c/f	600
GEP	280	Gross Incurred Cost	180
RI Recoveries	10	RI Premium	25
		Commission	25
		U/W Expenses	30
		Claims Expenses	10
U/W Income	290	U/W Expenditure	270
U/W Profit	20		
Invest Income	30		
Insurance Profit	50		

General Insurance: Balance Sheet

Assets		Liabilities	
Cash	150	UPR	120
Bonds	480	O/S Clms Reserves	500
Equities	180	IBNR	100
Property	50	Creditors	100
RI Recoveries	50	Shareholders Funds	180
Debtors	90		
Total	1,000	Total	1,000

Life Assurance: P&L

Revenue		Expenditure	
Premium	750	Claims	350
Embed Val change	100	Surrenders	100
Interest less Tax	300	Expenses	400
		Profit	300
Total	1,150	Total	1,150

How does Enterprise Risk arise?

- Internal Culture
- Risk Appetite
- Objective Setting

Internal Culture 1

- Tone of Organisation set by directors + management
- People's integrity, ethical values and competence
- Risk Management Philosophy
- Devolution of authority + responsibility
- Organisation + development of people

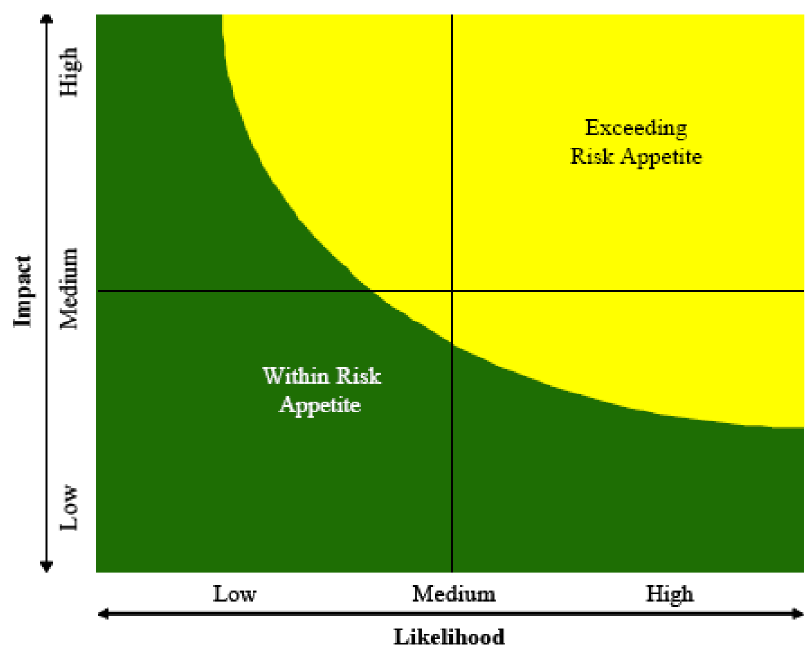
Internal Culture 2

Risk Related Culture Survey

#	Question	Attribute	Mean Rating		Std Dev	Count	SD	D	N	A	SA
1	The leaders of my unit set a positive example for ethical conduct	Leadership and Strategy	1.42	Strong	0.71	186	1	3	9	77	96
2	I understand the entity's overall mission and strategy	Leadership and Strategy	1.05	Good	0.69	186	0	7	18	119	42
3	Disciplinary action is taken against those who engage in professional misconduct	Accountability and Reinforcement	0.21	Action Needed	1.20	175	11	55	18	68	23
4	Turnover of personnel has not significantly affected our ability to achieve objectives	People and Communication	0.81	Caution	0.88	145	4	3	39	69	30
5	The leaders of my business unit are receptive to all communications about risk, including bad news	Risk Management and Infrastructure	0.99	Good	0.85	183	2	13	16	106	46

Risk Appetite

1. What risks is the company in business to accept and what risks will it not accept – e.g., is the organization prepared to accept minor losses from fraudulent Motor claims but not willing to accept large Property claim losses from natural catastrophes?
2. Is the company comfortable with the amount of risk accepted, or to be accepted, by each of its classes of business or product channels?
3. What levels of risk is the company prepared to accept on new product initiatives in order to achieve the company-wide desired return on invested capital of 15%?
4. Is the entity prepared to accept more risk than it currently is accepting and, if so, what return level would be required?



Objective Setting 1

- Set at the strategic level
- Basis for operations, reporting, and compliance objectives
- Subsidiary, business unit, division, entity level
- Precondition to event identification, risk assessment + response
- Objectives aligned with risk appetite
- Risk tolerance levels for the entity
- Mission linked to strategic objectives, strategies + related objectives

Objective Setting 2

Example: Setting Strategic Objectives

An insurance company considering its options for enhancing customer services identified three strategies:

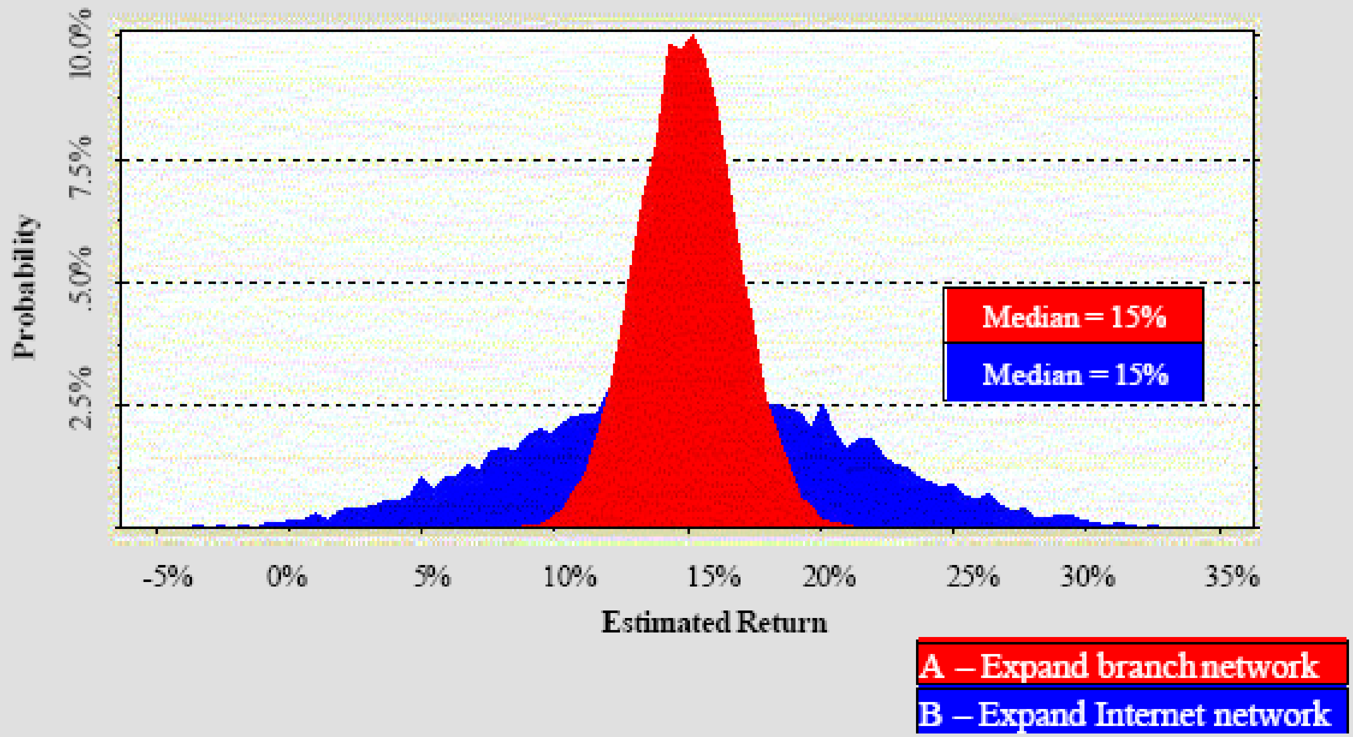
- Option A – Expand its branch network into new areas matching its target demographics
- Option B – Scale back the branch network to 50% of its current size , and significantly enhance its Internet and call-centre capabilities
- Option C – Maintain the branch network, and outsource the existing Internet and call-centre operations to a lower-cost company in a foreign country

When considered against the company's vision, which encompasses contributing to the communities within which it operates, Option C was seen as inconsistent with the vision, given the job losses that would result.

Management then focused on Options A and B.

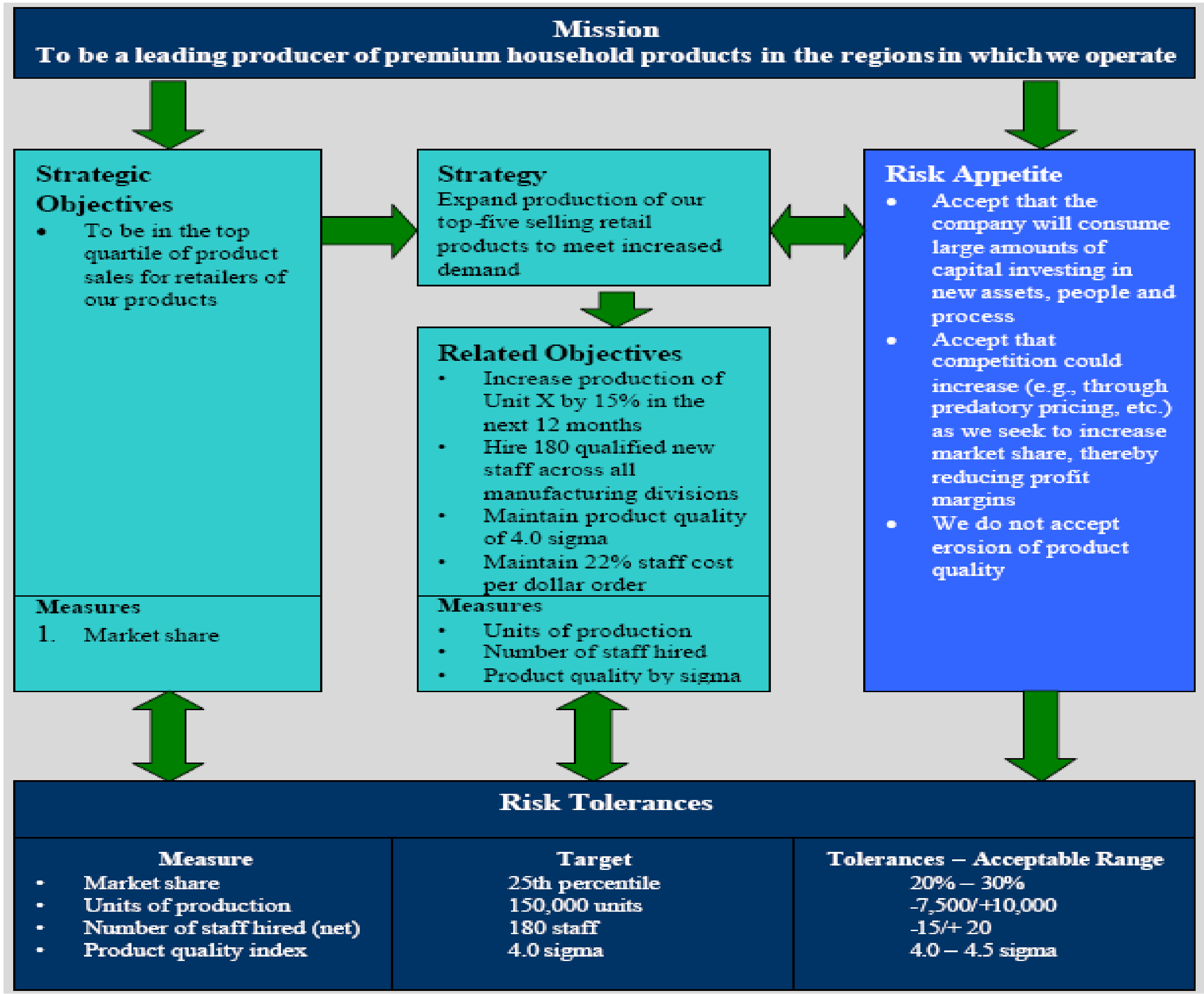
Objective Setting 3

Example: Setting Strategic Objectives



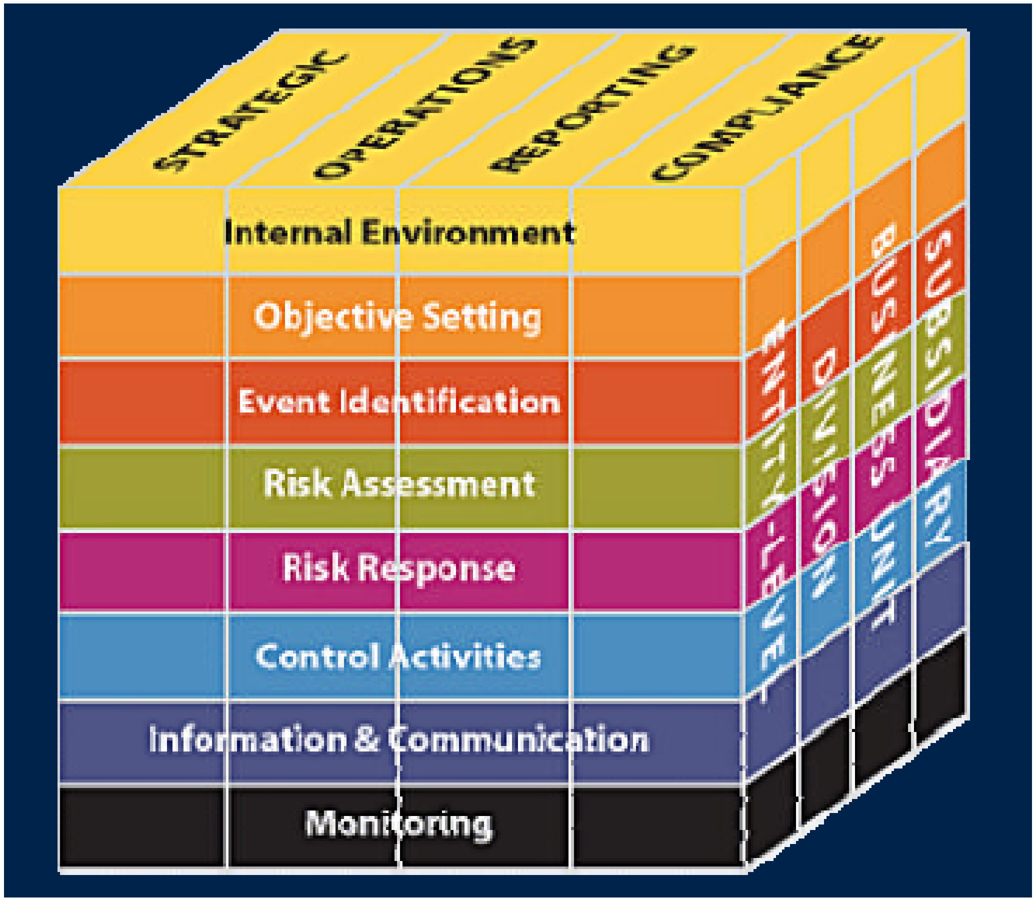
Based on this analysis, management adopted Option A, deciding to forego the potential upside but avoiding the potential downside of Option B.

Objective Setting 4



Framework to understand and manage ER

Enterprise Risk Management (ERM) and the COSO Cube



Event Identification

- Event Inventories
- Facilitated Workshops
- Interviews
- Questionnaires
- Surveys
- Process Flow
- Leading Event Indicators
- Escalation Triggers
- Loss Event Data Tracking

Event Identification Mechanisms

Mechanism – Input from	External Factors					Internal Factors			
	Economic	Natural Environment	Political	Social	Technological	Infrastructure	Personnel	Process	Technology
Industry/technical conferences	✓	✓	✓	✓	✓	✓	✓	✓	✓
Peer company websites and advertising campaigns	✓				✓				
Political lobbyists			✓						
Internal risk management meetings						✓	✓	✓	✓
Benchmarking reports	✓				✓	✓	✓	✓	✓
Competitors' regulatory filings	✓			✓	✓				
Key external indices	✓	✓	✓	✓	✓				
Key internal indices/risk & performance measures/scorecards						✓	✓	✓	✓
New legal decisions	✓		✓	✓					
Media reports	✓	✓	✓	✓	✓				
Monthly management reports						✓	✓	✓	✓
Analyst reports	✓		✓	✓					
Electronic bulletin boards and notification services	✓	✓	✓	✓	✓				
Industry, trade, and professional journals	✓	✓	✓	✓	✓				
Timing of new product launches versus competitors	✓						✓	✓	✓
Profiling calls to customer service	✓				✓			✓	
Real-time feeds of financial market activity	✓								

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Event Identification in Insurance

Business Risks

- Record premiums
- Calculate earned premiums
- Intermediaries default
- Inadequate pricing
- Adverse selection
- Large claims
- Claims accumulations
- Commission
- Reinsurance
- Poor expense control
- Claims handling
- Financial provisions
- Asset Liability mismatching
- Market risk
- Credit Risk

Other Risks

- Strategic
- Reputational
- Legislative
- Regulatory
- Operational
- Environmental
- Dominance
    - PMPA
    - ICI
    - Independent
    - Equitable Life

Risk Assessment

- Likelihood + Impact
- Inherent + Residual
- Qualitative assessment
  - Risk Ranking
  - Questionnaires
- Quantitative assessment
  - Loss Distributions
  - Value at Risk
  - Market Value at Risk
  - Back testing
  - Sensitivity Analysis
  - Scenario Analysis
  - Stress Testing
  - Benchmarking

Insurance Applications

- Pricing
- Reserve + Provision Setting
- Budget Planning
- Capital Requirements
- Authorisation applications
- Reinsurance

Risk Response

Avoidance	Sharing
• Disposing of a business unit, product line, geographical segment • Deciding not to engage in new initiatives/activitie s that would give rise to the risks	• Insuring significant unexpected loss • Entering into joint venture/partnership • Entering into syndication agreements • Hedging risks through capital market instruments • Outsourcing business processes • Sharing risk through contractual agreements with customers, vendors, or other business partners
Reduction	**Acceptance**
• Diversifying product offerings • Establishing operational limits • Establishing effective business processes • Enhancing management involvement in decision making, monitoring • Rebalancing portfolio of assets to reduce exposure to certain types of losses • Reallocating capital among operating units	• "Self-insuring" against loss • Relying on natural offsets within a portfolio • Accepting risk as already conforming to risk tolerances

Insurance Risk Response

Non - Capital

- Avoid
  - Don't write line of business
- Share
  - Coinsurance
  - Quota Share Reinsurance
  - Surplus Reinsurance
- Reduce
  - Excess of Loss Reinsurance
- Accept
  - Self Insurance
  - Captive

Capital

- Uncertainty protection
- Variability of outcomes
- Residual risk
- Known or unknown unknowns
- Inability to measure
- New business strain
- Public Relations
- Assurance

Linking Objectives, Events, Risk Assessment + Risk Response

Operations objective	• Hire 180 new qualified staff across all manufacturing divisions to meet customer demand without overstaffing • Maintain 22% staff cost per dollar order				
Objective unit of measure	Number of new qualified staff hired				
Tolerance	165–200 new qualified staff, with staff cost between 20% and 23% per dollar order				
Risks	**Inherent risk assessment**		**Risk response**	**Residual risk assessment**	
	Likelihood	**Impact**		**Likelihood**	**Impact**
Decreasing number of qualified candidates available	20%	10% reduction in hiring → 18 unfilled positions	Contract in place with a third party hiring agency to source candidates	10%	10% reduction in hiring → 18 unfilled positions
Unacceptable variability in our hiring process	30%	5% reduction in hiring due to poor candidate screenings → 9 unfilled positions	Review of hiring process conducted every two years	20%	2% reduction in hiring due to poor candidate screenings → 4 unfilled positions
Alignment with risk tolerance	Response expected to bring company within risk tolerance				

Control Activities

- Approvals
  - Underwriting policies
- Authorizations
  - Claims settlement authority
- Verifications
  - Cover in force
- Reconciliations
  - Accounting information
- Reviews of operating performance
  - Financial result v expected budget
- Security of assets
  - Reinsurance recovery
  - Broker balances
- Segregation of duties
  - Underwriter does not settle claims
  - Trader does not settle trades

Information + Communication

- Information needs to be identified, captured, and communicated in a form and timeframe that enable people to carry out their responsibilities.

- Information systems use internally generated data, and information from external sources, providing information for managing risks and making informed decisions relative to objectives.

- Effective communication also occurs, flowing down, across, and up the organization.

- All personnel receive a clear message from top management that ERM responsibilities must be taken seriously. They understand their own role in ERM, as well as how individual activities relate to the work of others.

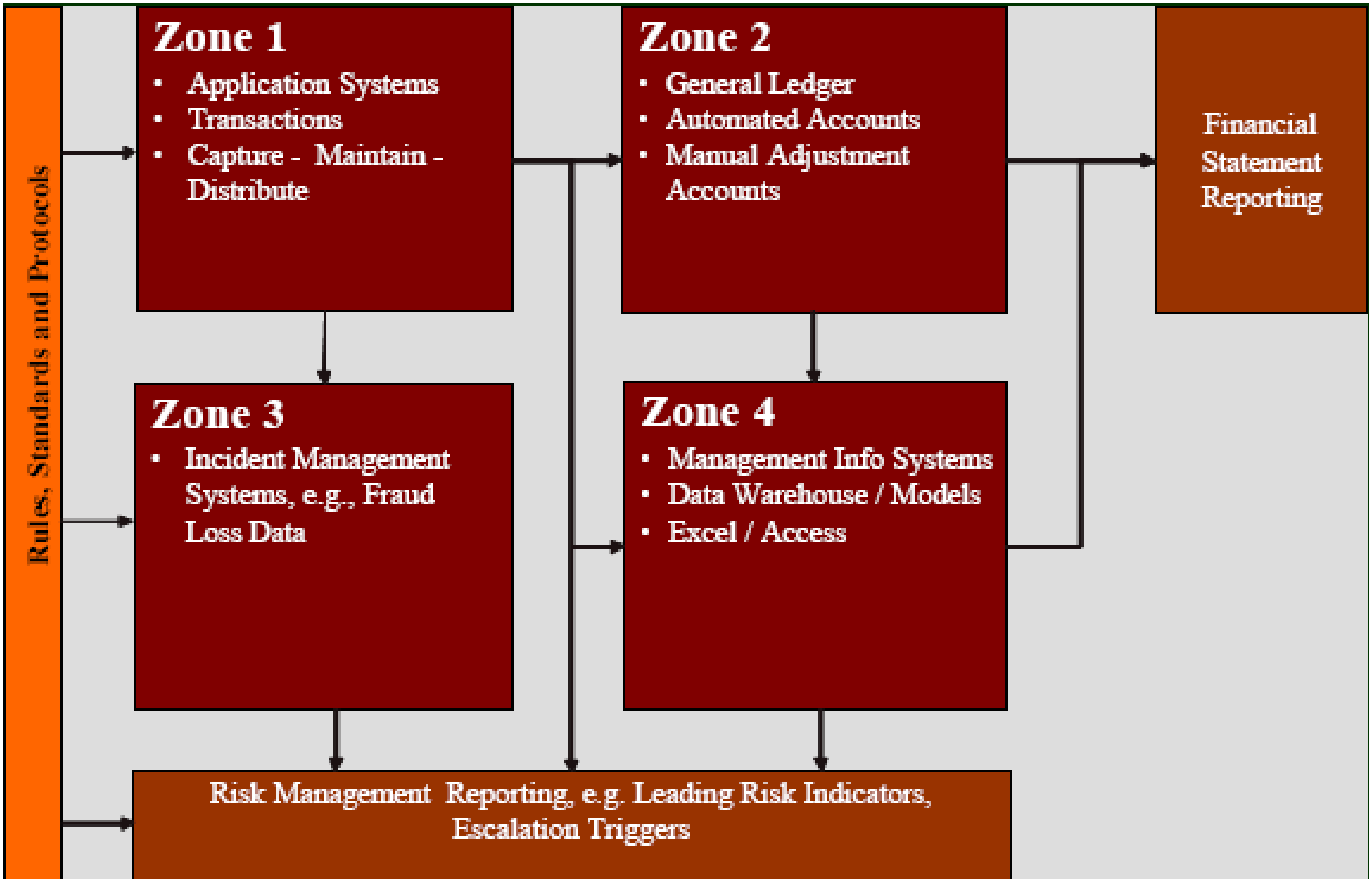
- They must have a means of communicating significant information upstream.

- There is also effective communication with external parties, such as customers, suppliers, regulators, and shareholders.

Considerations in Determining Information Requirements

- What are the key performance indicators for the business?
- What key risk indicators provide a top-down perspective of potential risks ?
- What performance metrics are required for monitoring?
- What data are required for the performance metrics?
- What level of granularity of information is needed?
- How frequently does the information need to be collected?
- What level of accuracy or rigor is needed?
- What are the criteria for data collection?
- Where and how should data be obtained (e.g., from business units or operating areas, electronically or manually)?
- What data/information are present from existing processes?
- How should data repositories be structured?
- What data recovery mechanisms are needed?

Overview of Data Flows Within a Reporting Process



Monitoring

- Management reviews reports of key business activity indicators such as flash reports of new sales or cash position, and information on backlog, gross margins, and other key financial and operational statistics.

- Operating management compares production, inventory, quality measures, sales, and other information obtained in the course of daily activities to systems-generated information and to budget or plan.

- Management reviews performance against limits established for risk exposures, such as acceptable error rates, items in suspense, reconciling items, foreign currency exposure balances, or exposure to counterparties.

- Management reviews transactions reported through escalation triggers.

- Management reviews key performance indicators such as trends in direction and magnitude of risks, status of strategic and tactical initiatives, trends or variances in actual results to budget or prior periods, and event triggers.

Solvency II

“One of the objectives of Solvency II is for insurers to have an enterprise-wide risk management organisation in place”

(Sigma No. 4/2006)

Solvency II

- Solvency 1 a crude measure of ER
- Business mix
- Reserve risk
- Premium risk
- Asset Liability mismatch
- Market Risk
- Credit Risk
- Operational Risk
- Catastrophe Risk
- Concentration Risk
- Expense Risk
- Longevity Risk
- Epidemic Risk
- Lapse Risk
- Disability Risk
- Correlation

- Pillar 1
  - MCR + SCR
  - Standardised factors
- Pillar 2
  - Supervisory intervention
  - Internal models
- Pillar 3
  - Disclosure

Leadership Role for Actuaries

- ERM = Actuarial Control Cycle ??
- Frequency / Severity approach to other Risks
- Risk Appetite + Objective Setting
- Banking: Economic Capital + Credit Risk
- Non Financial areas
- IFRS 2 + Risk Margins
- SOA, CAS and CIA + Joint Risk Management Section
- International Network of Actuarial Risk Managers + Webcast
- IAA + Harry Panjer and ERM designation
- New designation of Chartered Enterprise Risk Analyst (SOA)
- The Institute of Actuaries of Australia + RM Practice Committee
- The UK actuarial profession + RM Special Interest Group
- SAI + RM subgroup

Conclusion