

Capital Allocation for Operational Risk Conference

Insurance of Operational Risk under the New Basel Capital Accord

November 15, 2001

Takayuki Sumi

Tokio Marine and Fire Insurance

Contents

- 1 Definition of Operational Risk
- 2 Mechanism of loss occurrence
- 3 Taxonomy of Operational Risk
- 4 Mapping of insurance
- 5 Data collection

Definition of Operational Risk

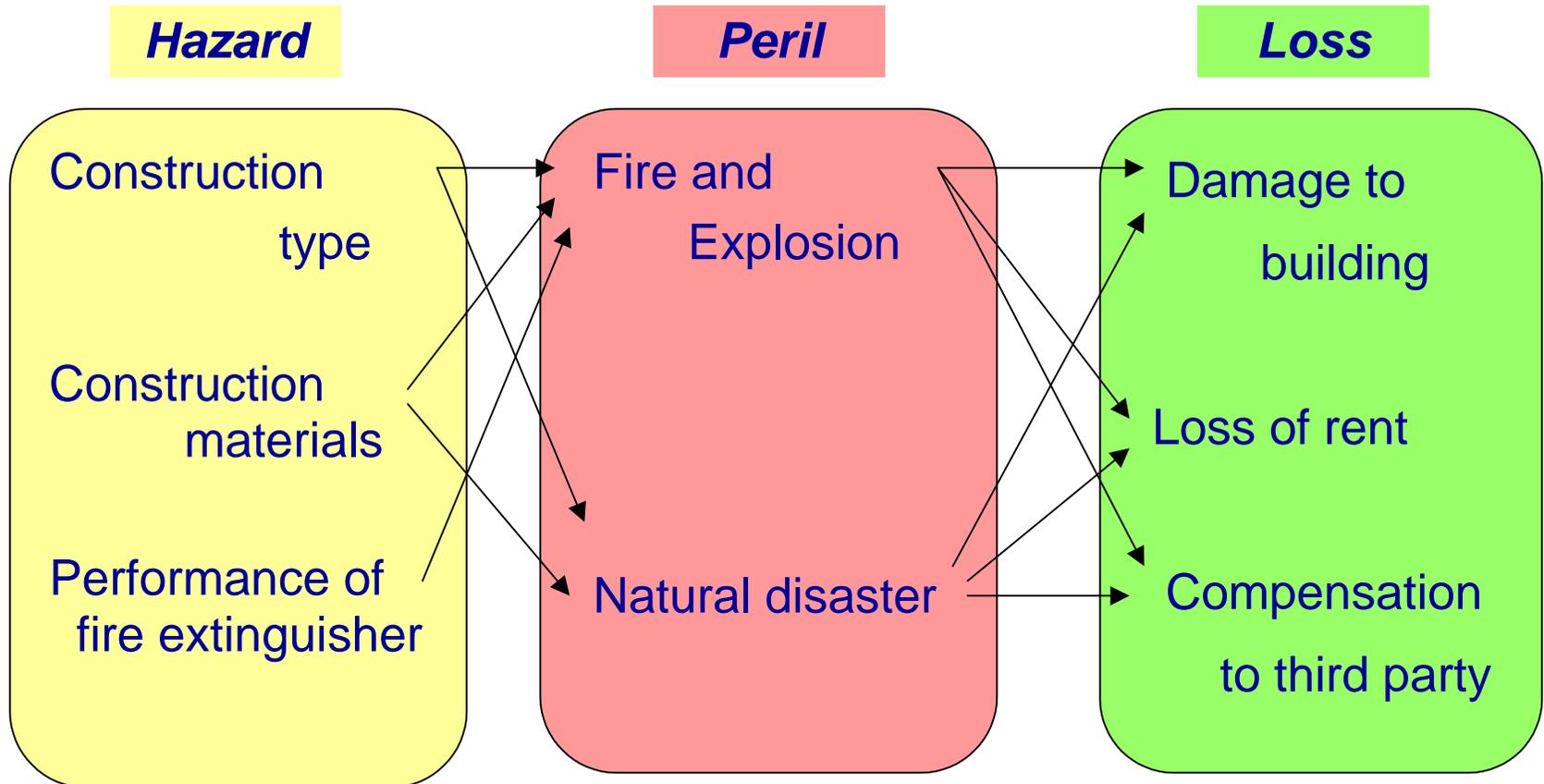
- Regulatory definition
 - “The risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events.”*
- Supplementary explanation
 - “strategic and reputational risk are not included”*
 - “the definition does not include systemic risk”*
 - “the capital charge does not intend to cover all indirect loss and opportunity costs”*
- Further clarification of certain terms is required
 - *Indirect loss, opportunity cost* and reputational risk shall be renamed **“loss of income and increase in cost of working**
 - *strategic risk?*
 - *systemic risk?*

Mechanism of loss occurrence

- **Hazard:** factors/conditions/circumstances which affect occurrence probability of certain event and/or severity of damage resulting from such event
- **Peril:** event which is caused by Hazard and which directly incurs Loss
- **Loss:** monetary evaluation of damage due to certain event

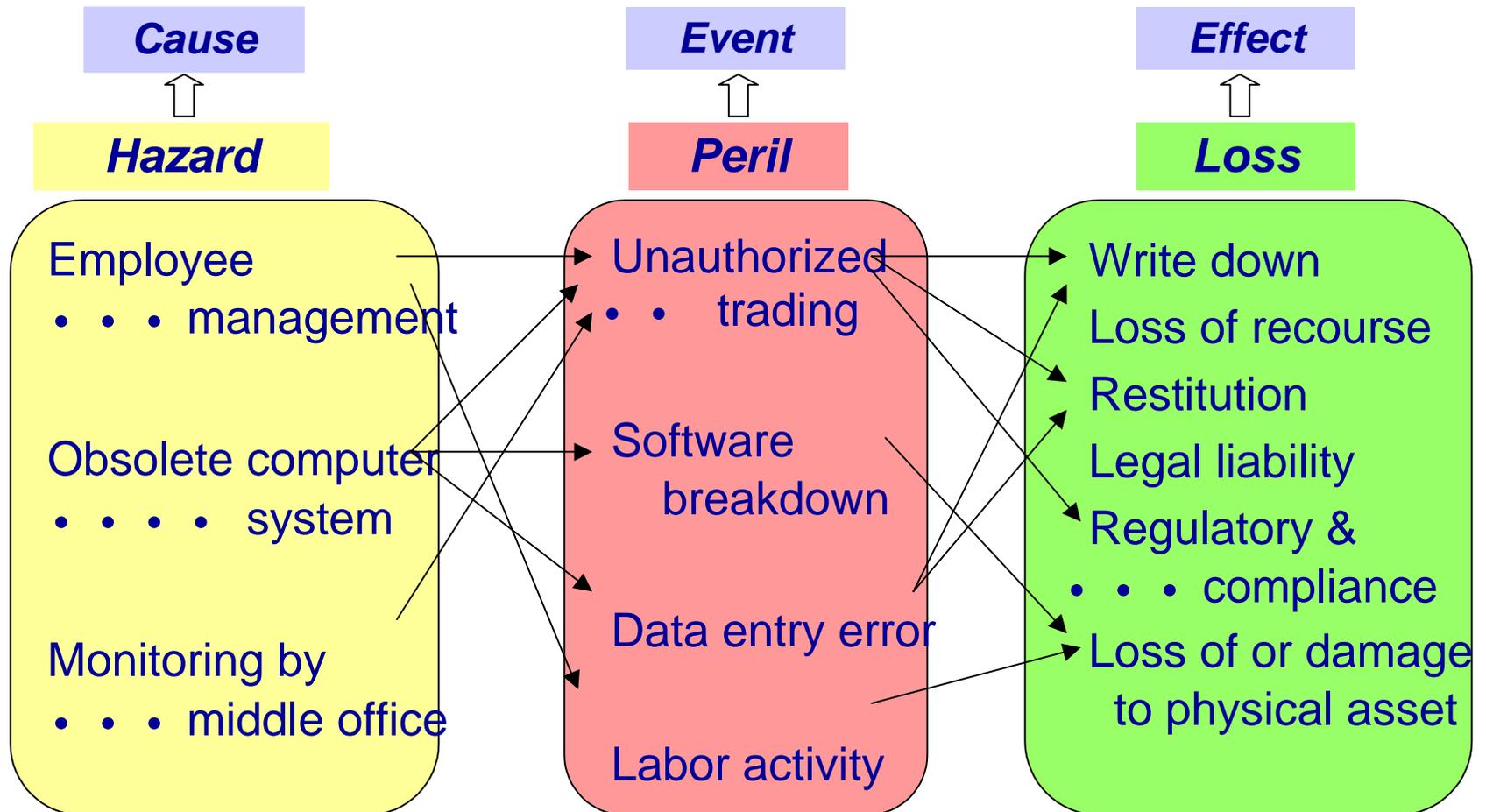
Mechanism of loss occurrence

Example 1



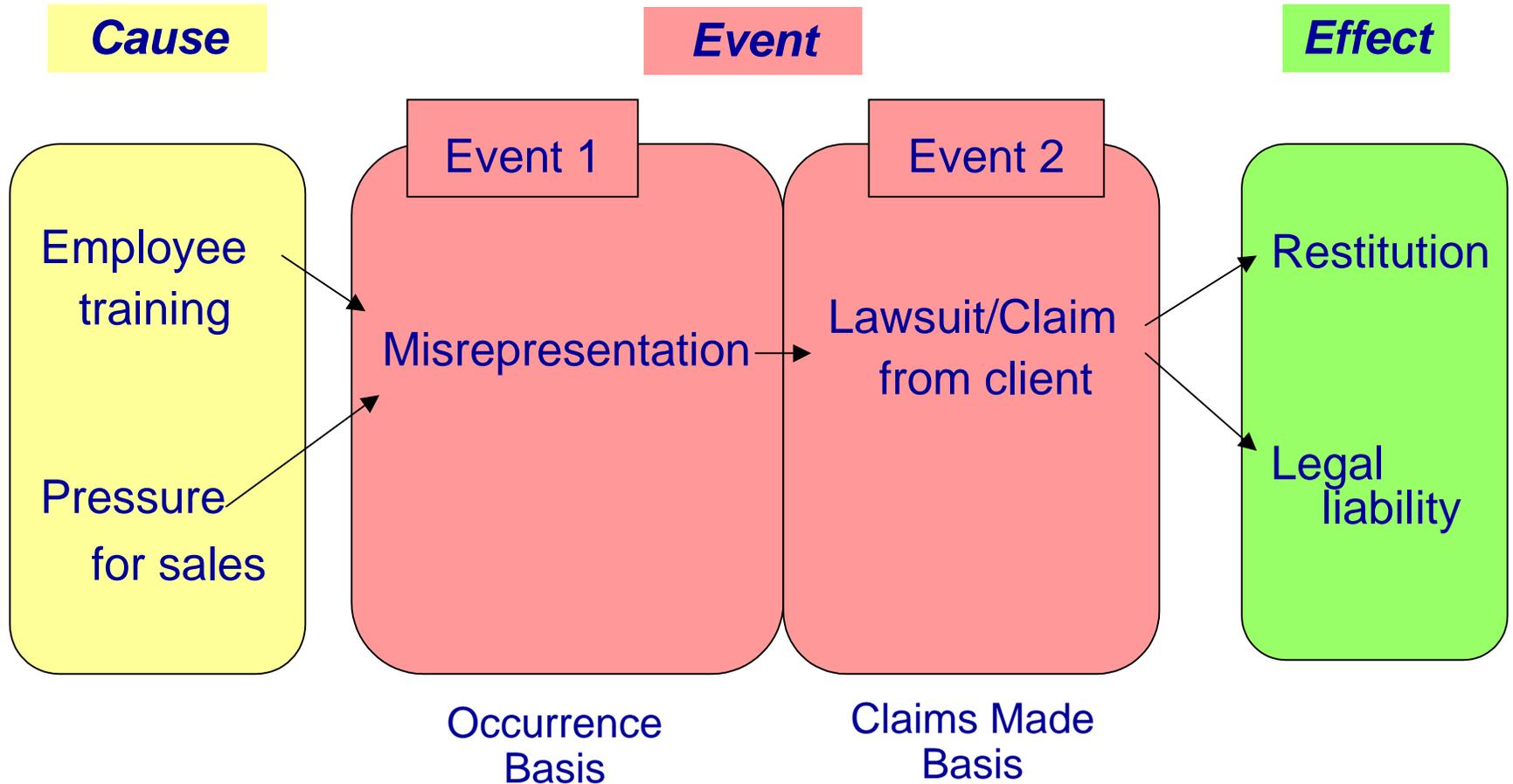
Mechanism of loss occurrence

Example 2



Mechanism of loss occurrence

Example 3



Taxonomy of Operational Risk

- Introduction of Initial level (People, Processes, Systems and External)
- Enhancement of activity examples
- Consideration of whether each activity example fall under Business risk
- Reshuffling of categories

Taxonomy of Operational Risk

- Internal Fraud and External Fraud Categories in Level 1 are renamed Internal Acts and External Acts.
- Computer Crime appears in both the Internal and External Acts category.
- Employment Practices and Workplace Safety has been incorporated into the People Event Type Category.
- Clients, Products & Business Practices has been incorporated into the People Risk category.
- Execution, Delivery & Process Management comprises the Process Category.
- Safe Environment has been relabelled Safe Environment and Third Party.
- Damage to Physical Assets has been changed to Damage to or Loss of Assets.

Event-Type Category (Initial Level)	Event-Type Category (Level 1)	Definition	Categories (Level 2)	Activity Examples (Level 3)	Business Risk?
People / Relationship Risk The risk of loss intentionally or unintentionally caused by an employee or involving employees, or losses caused through the relationship or contact that a firm has with its clients, shareholders, third parties, or regulators.	Internal acts	Losses due to acts of a type intended to defraud, misappropriate property or circumvent regulations, the law or company policy, excluding diversity / discrimination events, which involves at least one internal party.	Unauthorized Activity/Trading Misdeeds	Transactions not reported (intentional)	N
				Trans type unauthorized (w/ monetary loss)	N
				Mismarking of position(intentional)	N
				Insider trading	N
				Frontrunning	N
				Market manipulation	N
			Trading above limits	N	
			Theft and Fraud	Fraud / credit fraud / worthless deposits	N
				Theft extortion/embezzlement/robbery	N
				Misappropriation of assets	N
				Malicious destruction of assets	N
				Forgery	N
				Check kiting	N
				Smuggling	N
				Account take-over/impersonation/etc.	N
				Tax non-compliance / evasion (willful)	N
				Bribes / kickbacks	N
				Insider trading (not on firm's account)	N
				Unauthorized funds transfer	N
				Wire fraud	N
	Money Laundering	N			
	Computer Crime (Internal)	Theft of information (w/ monetary loss)	N		
		Hacking	N		
		Manipulation of data	N		
		Web page defiance	N		
		Inadequate passwords	?		
		Firewall breakdown	N		
	Employment Practices And Workplace Safety	Losses arising from acts inconstant with employment, health or safety laws or agreements, from payment of personal injury claims, or from diversity / discrimination events	Employee Relations	Compensation, benefit, termination issues	Y
				Organized labor activity	Y
				Hostile environment	N
Wrongful termination				?	
Harassment				N	
Libel / Slander / Defamation				N	
Employee illness				?	
Breach of noncompetete				N	
Improper discharge				N	
Safe Environment-Workers & Third Party				General liability	N
				Employee health & safety rules events	N
				Workers compensation-Medical	N
				Workers compensation – Indemnity	N
				Accident coverage for employees	N

Event-Type Category (Initial Level)	Event-Type Category (Level 1)	Definition	Categories (Level 2)	Activity Examples (Level 3)	Business Risk?			
People / Relationship Risk (continued)	Employment Practices And Workplace Safety (continued)			Negligent use of autos & other vehicles	N			
				Pollution	N			
				Other events causing BI or PD to third parties from general operations (not Professional liabilities)	N			
			Diversity & Discrimination	Sexual-based	N			
				Race-based	N			
				Age-based	N			
				Religion-based	N			
				Other Discriminatory Items	N			
				Nationality-based	N			
				Clients, Products & Business Practices	Losses arising from an unintentional or negligent failure to meet a professional obligation to specific clients (including fiduciary and suitability requirements), or from the nature or design of a product.	Suitability, Disclosure & Fiduciary	Fiduciary breaches / guideline violations	N
							Suitability/disclosure issues (KYC, etc)	N
							Retail consumer disclosure violations	N
							Breach of privacy	N
							Aggressive Sales	Y
	Account churning	N						
	Misuse of confidential information	N						
	Lender Liability	N						
	Breach of contract	N						
	Negligent advise	N						
	Concealing Losses	N						
	Nondisclosure of sensitive issues	N						
	Misuse of important information	N						
	Unapproved access to accounts	N						
	Improper Business or Market Practices						Antitrust	Y
							Improper trade / market practices	Y
				Market manipulation	N			
				Insider trading (on firm's account)	N			
				Unlicensed activity	N			
				Money laundering	N			
				Director or Officer negligence	N			
Errors and Omissions				N				
Improper advertising				N				
Copyright infringement				N				
Product Flaws			Professional negligence	N				
			Merger and Acquisition	N				
			Sales Discrimination	N				
			Libel	N				
			Product defects (unauthorized, etc)	Y				
			Model Errors	Y				

Event-Type Category (Initial Level)	Event-Type Category (Level 1)	Definition	Categories (Level 2)	Activity Examples (Level 3)	Business Risk?
People / Relationship Risk (continued)	Clients, Products & Business Practices (continued)		Selection, Sponsorship & Exposure	Failure to investigate client per guidelines	Y
				Exceeding client exposure limits	N
			Advisory Activities	Disputes over performance of advisory activities	Y
				Denial of service	N
Process Losses from failed transactions, client accounts, settlements and every day business processes	Execution, Delivery & Process Management	Losses from failed transaction processing or process management, from relations with trade counterparties and vendors	Transaction Capture, Execution & Maintenance	Miscommunication	N
				Data Entry, maintenance or loading error	N
				Missed deadline or responsibility	N
				Model / system misoperation	Y
				Accounting error/entry attribution error	N
				Other task misperformance	N
				Delivery failure	N
				Collateral management failure	Y
				Reference Data Maintenance	N
				Monitoring and Reporting	Failed mandatory reporting obligation
			Inaccurate external report (loss incurred)		N
			Customer Intake & Documentation	Client permission/disclaimers missing	N
				Legal documents missing/incomplete	N
			Customer/Client Account Management	Unapproved access given to accounts	N
				Incorrect client records (loss incurred)	N
				Negligent loss or damage of client assets	N
			Trade Counterparties	Non-client counterparty misperformance	N
				Misc. non-client counterparty disputes	N
			Vendors & Suppliers	Outsourcing	Y
				Vendor disputes	Y
Systems Losses arising from disruption of business or system failure due to unavailability of infrastructure or IT	IT and Utilities	Losses arising from disruption of business or system failures	Systems	Hardware breakdown NOC	N
				Software breakdown NOC	N
				Telecommunication failures	N
				Utility outage / disruptions (excluding telephone)	N
				DOS	N
				Backup failures	N
				Programming error/bug	N
				Human error	N
				Disruption of vendor services	N
				Computer Virus	N
				Computer Glitch	N
				Incompatible software	N
				UPS failure	N
				Telephone related	N
				Fax-related	N
				Internet Related	N

Event-Type Category (Initial Level)	Event-Type Category (Level 1)	Definition	Categories (Level 2)	Activity Examples (Level 3)	Business Risk?
External / Physical Assets The risk of loss from the actions of third parties, including external fraud, damage to physical property or assets, or from change in regulations that would alter the firm's ability to continue doing business in certain markets.	Damage to or Loss of Assets	Losses arising from loss or damage to physical assets from natural disaster or other events.	Physical Asset Damage	Storms	N
				Hurricane/Typhoon/Tornado	N
				Hail	N
				Frost	N
				Flood	N
				Earthquake / Volcanic eruption	N
				Landslide / Mudslide	N
				Avalanche	N
				Fire/Explosion	N
				Lightning	N
				Sprinkler leakage	N
				Overvoltage	N
				Mechanical breakdown	N
				Terrorism	N
			Bomb threat	N	
			Collision of aircraft/vehicle/ship/satellite	N	
			Political	War	N
				Expropriation	N
	Strike/Riot/Civil Commotion	N			
	Act of government	N			
	External Fraud	Theft / robbery / extortion / embezzlement		N	
		Forgery		N	
		Check Kiting	N		
		Smuggling	N		
		Account take-over/impersonation/etc.	N		
		Bribes / kickbacks	N		
		Misappropriation of assets	N		
		Fraud/credit fraud/worthless deposits	N		
		Computer Crime (External)	Theft of information (w/ monetary loss)	N	
			Hacking	N	
Manipulation of data			N		
Web page defiance			N		
Inadequate passwords	N				
Firewall breakdown	N				

Mapping of insurance

- Perceived complexity of insurance lies in
 - existence of various tailored cover
 - segregated product offerings
- Mapping of insurance provides visual representation of coverage provided by insurance
- Identification of standard insurance products
- The mapping of insurance can adjust itself to reshuffling of any level of categorization

BBB: Bankers Blanket Bond, **CC:** Computer Crime Policy, **CGL:** Commercial General Liability Policy, **DO:** Directors & Officers Liability Policy, **EI:** Electronic Insurance Policy, **EPL:** Employment Practice Liability Policy, **P:** Property Insurance Policy, **PI:** professional Indemnity Policy, **WC:** Workers Compensation Policy, **UT:** Unauthorized Trading Policy

Event-Type Category (Initial Level)	Event-Type (Level 1)	Categories (Level 2)	Activity Examples (Level 3)	Effect-type						
				Write-downs	Loss of Recourse	Restitution	Legal Liability	Regulatory & Compliance (including Taxation)	Loss of or Damage to Assets	
People/Relationship Risk	Internal acts	Unauthorized Activity/Trading Misdeeds	Transactions not reported (intentional)	UT	UT					
			Trans type unauthorized (w/monetary loss)	UT	UT					
			Mismarking of position(intentional)	UT	UT					
			Insider trading	UT	UT					
			Frontrunning	UT	UT					
			Market manipulation			PI/DO	PI/DO			
			Trading above limits	UT	UT					
	Theft and Fraud			Fraud/credit fraud/worthless deposits	BBB	BBB	BBB	BBB		
				Theft extortion/embezzlement/robbery	BBB	BBB	BBB	BBB		
				Misappropriation of assets	BBB	BBB	BBB	BBB		
				Malicious destruction of assets	BBB	BBB	BBB	BBB		P
				Forgery	BBB	BBB	BBB	BBB		
				Check kiting	BBB	BBB	BBB	BBB		
				Smuggling	BBB	BBB	BBB	BBB		
				Account take-over/impersonation/etc.	BBB	BBB	BBB	BBB		
				Tax non-compliance/evasion (willful)	BBB	BBB	BBB	BBB		
				Bribes/kickbacks	BBB	BBB	BBB	BBB		
				Insider trading (not on firm's account)			PI	PI		
				Unauthorized funds transfer	BBB	BBB	BBB	BBB		
				Wire fraud	BBB	BBB	BBB	BBB		
	Money Laundering			PI/DO	PI/DO					
			Computer Crime (Internal)	Theft of information (w/monetary loss)	BBB	BBB				P
				Hacking	BBB	BBB				
				Manipulation of data	BBB	BBB				
				Web page defiance	BBB	BBB				
				Inadequate passwords	BBB	BBB				
				Firewall breakdown	BBB	BBB				

(1/5)

BBB: Bankers Blanket Bond, **CC:** Computer Crime Policy, **CGL:** Commercial General Liability Policy, **DO:** Directors & Officers Liability Policy, **EI:** Electronic Insurance Policy, **EPL:** Employment Practice Liability Policy, **P:** Property Insurance Policy, **PI:** professional Indemnity Policy, **WC:** Workers Compensation Policy, **UT:** Unauthorized Trading Policy

Event-Type Category (Initial Level)	Event-Type (Level 1)	Categories (Level 2)	Activity Examples (Level 3)	Effect-type					
				Write-downs	Loss of Recourse	Restitution	Legal Liability	Regulatory & Compliance (including Taxation)	Loss of or Damage to Assets
	Employment Practices And Workplace	Employee Relations	Compensation, benefit, termination issues			EPL	EPL		
			Organized labor activity			EPL	EPL		
			Hostile environment			EPL	EPL		
			Wrongful termination			EPL	EPL		
			Harassment			EPL	EPL		
			Libel/Slander/Defamation			EPL	EPL		
			Employee illness			EPL	EPL		
			Breach of noncompete			EPL	EPL		
			Improper discharge			EPL	EPL		
		Safe Environment-Workers & Third Party	General liability			CGL	CGL		
			Employee health & safety rules events			WC	WC		
			Workers compensation-Medical			WC	WC		
			Workers compensation – Indemnity			WC	WC		
			Accident coverage for employees			WC	WC		
			Negligent use of autos & other vehicles			WC	WC		
			Pollution			WC	WC		
			Other events causing BI or PD to third parties from general operations (not Professional liabilities)					WC	WC
		Diversity & Discrimination	Sexual-based			EPL	EPL		
			Race-based			EPL	EPL		
			Age-based			EPL	EPL		
			Religion-based			EPL	EPL		
			Other Discriminatory Items			EPL	EPL		
	Clients, Products & Business Practices	Suitability, Disclosure & Fiduciary	Fiduciary breaches/guideline violations			PI/DO	PI/DO		
			Suitability/disclosure issues (KYC, etc)			PI/DO	PI/DO		
			Retail consumer disclosure violations			PI/DO	PI/DO		
			Breach of privacy			PI/DO	PI/DO		
			Aggressive Sales			PI/DO	PI/DO		
			Account churning			PI/DO	PI/DO		
			Misuse of confidential information			PI/DO	PI/DO		
			Lender Liability			PI/DO	PI/DO		
			Breach of contract			PI/DO	PI/DO		
Negligent advise			PI/DO	PI/DO					

(2/5)

BBB: Bankers Blanket Bond, **CC:** Computer Crime Policy, **CGL:** Commercial General Liability Policy, **DO:** Directors & Officers Liability Policy, **EI:** Electronic Insurance Policy, **EPL:** Employment Practice Liability Policy, **P:** Property Insurance Policy, **PI:** professional Indemnity Policy, **WC:** Workers Compensation Policy, **UT:** Unauthorized Trading Policy

Event-Type Category (Initial Level)	Event-Type (Level 1)	Categories (Level 2)	Activity Examples (Level 3)	Effect-type					
				Write-downs	Loss of Recourse	Restitution	Legal Liability	Regulatory & Compliance (including Taxation)	Loss of or Damage to Assets
			Concealing Losses			PI/DO	PI/DO		
			Nondisclosure of sensitive issues			PI/DO	PI/DO		
			Misuse of important information			PI/DO	PI/DO		
			Unapproved access to accounts			PI/DO	PI/DO		
		Improper Business or Market Practices	Antitrust			DO	DO		
			Improper trade/market practices			PI/DO	PI/DO		
			Market manipulation			PI/DO	PI/DO		
			Insider trading (on firm's account)			PI/DO	PI/DO		
			Unlicensed activity			PI/DO	PI/DO		
			Money laundering			PI/DO	PI/DO		
			Director or Officer negligence			PI/DO	PI/DO		
			Errors and Omissions			PI/DO	PI/DO		
			Improper advertising			PI/DO	PI/DO		
			Copyright infringement			PI/DO	PI/DO		
			Professional negligence			PI/DO	PI/DO		
			Merger and Acquisition			PI/DO	PI/DO		
			Sales Discrimination			PI/DO	PI/DO		
			Libel			PI/DO	PI/DO		
		Product Flaws	Product defects (unauthorized, etc)			PI	PI		
			Model Errors			PI	PI		
		Selection, Sponsorship & Exposure	Failure to investigate client per guidelines			PI/DO	PI/DO		
			Exceeding client exposure limits			PI/DO	PI/DO		
		Advisory Activities	Disputes over performance of advisory activities			PI	PI		
			Denial of service			PI	PI		
Process	Execution, Delivery &	Transaction Capture, Execution & Maintenance	Miscommunication			PI	PI		
			Data Entry, maintenance or loading error			PI	PI		
			Missed deadline or responsibility			PI	PI		
			Model/system misoperation			PI	PI		
			Accounting error/entry attribution error			PI	PI		
			Other task misperformance			PI	PI		
			Delivery failure			PI	PI		
			Collateral management failure			PI	PI		
			Reference Data Maintenance			PI	PI		

(3/5)

BBB: Bankers Blanket Bond, **CC:** Computer Crime Policy, **CGL:** Commercial General Liability Policy, **DO:** Directors & Officers Liability Policy, **EI:** Electronic Insurance Policy, **EPL:** Employment Practice Liability Policy, **P:** Property Insurance Policy, **PI:** professional Indemnity Policy, **WC:** Workers Compensation Policy, **UT:** Unauthorized Trading Policy

Event-Type Category (Initial Level)	Event-Type (Level 1)	Categories (Level 2)	Activity Examples (Level 3)	Effect-type					
				Write-downs	Loss of Recourse	Restitution	Legal Liability	Regulatory & Compliance (including Taxation)	Loss of or Damage to Assets
		Monitoring and Reporting	Failed mandatory reporting obligation			DO	DO		
			Inaccurate external report (loss incurred)			DO	DO		
		Customer Intake & Documentation	Client permission/disclaimers missing			PI	PI		
			Legal documents missing/incomplete			PI	PI		
		Customer/Client Account Management	Unapproved access given to accounts			PI	PI		
			Incorrect client records (loss incurred)			PI	PI		
			Negligent loss or damage of client assets			PI	PI		
		Trade Counterparties	Non-client counterparty misperformance			PI	PI		
			Misc. non-client counterparty disputes			PI	PI		
		Vendors & Suppliers	Outsourcing			PI	PI		
			Vendor disputes			PI	PI		
Systems	IT and Utilities	Systems	Hardware breakdown NOC						P
			Software breakdown NOC						
			Telecommunication failures						P
			Utility outage/disruptions (excluding telephone)						P
			DOS			EI	EI		P
			Backup failures						P
			Programming error/bug						P
			Human error						P
			Disruption of vendor services						P
			Computer Virus						P
			Computer Glitch						P
			Incompatible software						P
			UPS failure						
			Telephone related						
			Fax-related						
Internet Related					EI	EI			

(4/5)

BBB: Bankers Blanket Bond, **CC:** Computer Crime Policy, **CGL:** Commercial General Liability Policy, **DO:** Directors & Officers Liability Policy, **EI:** Electronic Insurance Policy, **EPL:** Employment Practice Liability Policy, **P:** Property Insurance Policy, **PI:** professional Indemnity Policy, **WC:** Workers Compensation Policy, **UT:** Unauthorized Trading Policy

Event-Type Category (Initial Level)	Event-Type (Level 1)	Categories (Level 2)	Activity Examples (Level 3)	Effect-type									
				Write-downs	Loss of Recourse	Restitution	Legal Liability	Regulatory & Compliance (including Taxation)	Loss of or Damage to Assets				
External/Physical Assets	Damage to or Loss of Assets	Physical Asset Damage	Storms						P				
			Hurricane/Typhoon/Tornado						P				
			Hail						P				
			Frost						P				
			Flood						P				
			Earthquake/Volcanic eruption						P				
			Landslide/Mudslide						P				
			Avalanche						P				
			Fire/Explosion						P				
			Lightning						P				
				Sprinkler leakage						P			
				Overvoltage						P			
				Mechanical breakdown						P			
				Terrorism						P			
				Bomb threat						P			
				Collision of aircraft/vehicle/ship/satellite						P			
						Political	War						
							Expropriation						
							Strike/Riot/Civil Commotion						
							Act of government						P
	External Acts	External Fraud	Theft/robbery/extortion/embezzlement	BBB	BBB	BBB	BBB		P				
			Forgery	BBB	BBB	BBB	BBB						
			Check Kiting	BBB	BBB	BBB	BBB						
			Smuggling	BBB	BBB	BBB	BBB						
			Account take-over/impersonation/etc.	BBB	BBB	BBB	BBB						
			Bribes/kickbacks	BBB	BBB	BBB	BBB						
			Misappropriation of assets	BBB	BBB	BBB	BBB						
			Fraud/credit fraud/worthless deposits	BBB	BBB	BBB	BBB						
		Computer Crime (External)	Theft of information (w/ monetary loss)	CC	CC								
			Hacking	CC	CC								
			Manipulation of data	CC	CC								
			Web page defiance										
			Inadequate passwords										
			Firewall breakdown										

(5/5)

Data Collection

- Collection of qualitative factors in addition to the information specified in the QIS 2 is necessary
 - Analyses of the causes of events provide necessary qualitative feedbacks for loss prevention measures
 - Necessary for implementation of effective risk management
- Development of data standard is necessary
 - Inaccuracy and inconsistency of data cannot be compensated by statistical techniques
- Two-stage approach to achieve a balance between detail and practical simplicity

Data Collection

- Level 1 – Minimum threshold
 - Gross loss and Net loss
 - Currency
 - Country of occurrence
 - Date of occurrence and date of discovery
 - Event-type (level 2)
 - Business line
 - Effect-type

Data Collection

- Level 2 – Unexpected loss threshold
 - Event-type (level 3)
 - Causative factor
 - Product/Process/Function type
 - Type of insurance coverage (e.g. bankers blanket bond, property, etc.)
 - Date of insurance recovery
 - Status of loss (open/close)
 - Value of exposure indicator at the time of loss
 - Value of relief indicators (e.g. insurance premium, limits, deductibles)