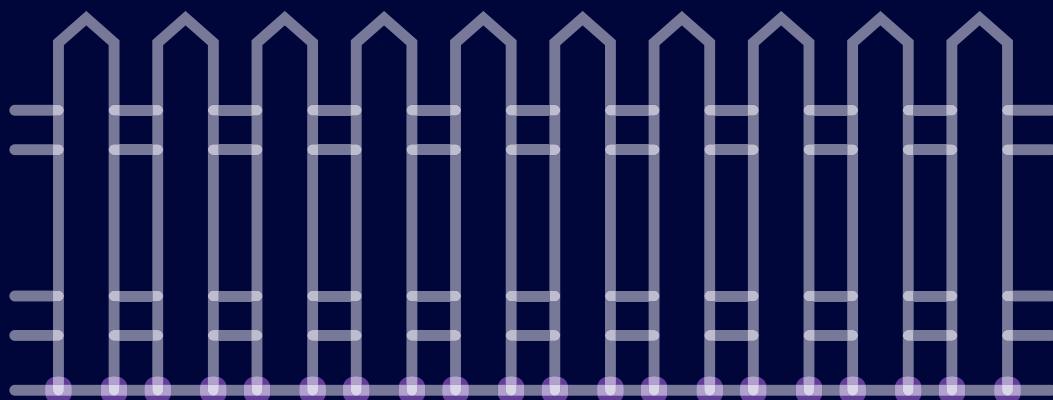


Defining the boundary

An industry-wide appraisal of the operational risk-insurance risk boundary

August 2016



ORX

The Operational Riskdata eXchange Association (ORX) is the world's leading financial services operational risk consortium. ORX was founded in 2002 with the primary objective of creating a platform for the secure and anonymised exchange of high-quality operational risk loss data and now supports a wide range of risk management and risk measurement services.

In May 2014 ORX started to work with leading global insurers to establish an ORX Global Insurance Service offering the same services to insurers as are offered to banks. ORX is also engaged in the development of a Global Asset Management Service. ORX is a not-for-profit industry association, incorporated in Geneva, Switzerland, owned and managed by its Members.

ORX has 90 members in 23 countries.

For more information, please visit: www.orx.org

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KPMG is a global network of professional services firms providing Audit, Tax and Advisory services.

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Executive summary

Background and scope

Understanding the boundary between risk categories lies at the foundation of developing mature risk management practice. If there is an absence of clarity around whether an operational risk loss event impacts other types of risk exposure such as insurance risk, then management risk responses may not adequately address all the real risks and consequently the level of exposure may be misrepresented.

This research was commissioned by ORX. It set out to establish what current industry practices are for the identification and management of risk events lying on the boundary between operational risk and insurance risk. It was undertaken jointly with KPMG LLP in the UK with the participation of 16 insurance firms from around the world, some of whom are ORX Members. The purpose of the research is to identify convergent practice and to use this as a basis for discussions about future Insurance Industry standards.

Key research findings

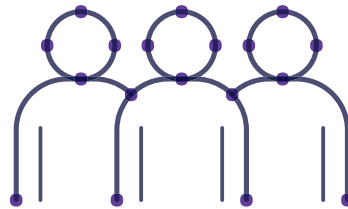
The operational risk - insurance risk (OR-IR) boundary deserves greater attention from insurance firms because it can inform action they can take to reduce risk and also optimise capital. The most important benefit is providing a means to manage risk better across the boundary of these two categories of risk. Flagging OR-IR boundary events can also help avoid over or under-estimating the operational and insurance components of insurers' risk capital models.

Over 40% of operational risk losses are likely to be considered OR-IR boundary events and so there is a significant opportunity for insurance firms to improve their risk management and risk measurement activities. The research shows that current industry practice in managing events on the OR-IR boundary is not yet mature and is based on risk definitions that could be more consistent across the Insurance Industry. Gaps in good practice include not having clear policy, standards and responsibilities for the identification and management of OR-IR boundary events.

40%

Over 40% of operational risk losses are likely to be considered OR-IR boundary events and so there is a significant opportunity for insurance firms to improve their risk management and risk measurement activities.

All the participants in the research agreed that trying to define an OR-IR boundary event was best served by industry experts undertaking a detailed analysis of the topic based on their own experience and judgement, rather than by a top-down imposition of a theoretical definition. With this in mind, the research proposed the development of a range of tools and practices to support firms in managing their OR-IR boundary events. The key actions to be led by ORX should be to:



1. Propose a general definition of an operational risk boundary event and of the OR-IR Boundary in particular:

“An operational risk boundary event is an operational risk event which triggers a consequence (e.g. financial loss) in another risk category.”

”

Source: Roundtable discussion
(18 November 2015)

“An Insurance Risk /Operational Risk boundary event is an operational risk event that triggers an insurance risk consequence (e.g. a financial loss).”

2. Define a concerted set of activities to address the issues highlighted by the research:
 - Propose a process to facilitate how to identify OR-IR boundary events
 - Provide examples of OR-IR boundary events to increase awareness and consistency

These next steps will then result in the drafting by ORX of industry standards that will make the collection of boundary events better understood and more consistent within firms and across the Insurance Industry.

Key themes and findings

Importance of the OR-IR boundary

Although practice among insurance firms varies, our research has established that the OR-IR boundary is an important input to operational risk management. As expected, the research shows that a number of firms are at an early stage of developing their practice of managing boundary events.

Operational risk practitioners involved in the research estimated that perhaps 40-50% of operational risk events could be categorised as OR-IR boundary events with the percentage being greater for general insurance than life insurance lines of business. A conclusion of the research is that a better estimate of this proportion can only be achieved by first setting a clear definition for OR-IR boundary risk events and then collecting information consistently about them.

The key benefits of investing in the identification and management of boundary events are to improve risk management and capital modelling. A better understanding of OR-IR boundary risk events and their underlying causes and impacts could help managers and underwriters reduce avoidable losses. It would be beneficial if there were industry standards or guidance to assist insurance firms identify and manage these boundary risk events.

Maturity of OR-IR boundary management practice

Around half of the firms that participated in the research did not have a definition for an OR-IR boundary event leading to the conclusion that current practice across the Insurance Industry is not yet mature. This presents an opportunity for insurance firms to define and implement an industry standard boundary definition before any divergence in practice becomes embedded. The research shows that:

- There was consistency in how firms define operational risk because these definitions are based on Basel II/Solvency II definitions but there is less consistency in how insurance risk is defined.
- Half of the firms surveyed had no formal approach for the identification or management of OR-IR boundary events. There was acceptance by the participants in the research that there is scope to improve management practices relating to the OR-IR boundary. They recognised that understanding the OR-IR boundary was complicated and so clear standards, responsibilities and policies would be fundamental building blocks to enable the establishment of improved practices.
- A range of operational risk management tools and techniques is used to identify loss events, however few are set up to quantify routinely the proportion that are OR-IR boundary events.
- A lack of staff awareness, training, resource constraints and reporting system limitations are all seen as issues when considering improving practice.
- As insurance firms are expected to model risk capital, there is an added incentive to have a clearer understanding of the OR-IR boundary. Both double-counting and/or not taking account of losses could have an effect on the accuracy of capital calculations.

Consistency in categorising OR-IR boundary events

Categorising OR-IR boundary events correctly is not straightforward and requires, at a minimum, a set of well-understood risk categories and a boundary risk event definition. To help promote consistency of practice within firms, there was demand from the participants in the research for the development of practical guidance. This should incorporate a decision-tree, detailed case studies and examples which explain when an event is an OR-IR boundary event and why.

The roundtable discussed the research survey and proposed the following general boundary event definition, of which the OR-IR boundary is one example:

In addition to adopting a consistent definition, there was an expectation that practice would mature through targeted actions focusing on governance and training. Findings from the research shows that firms are planning to take action already, such as:

- Raising awareness of the OR-IR boundary in the business
- Conducting their own studies to understand the significance of OR-IR boundary events to their businesses
- Working with management to enhance their management and so realise potential benefits

“ An operational risk boundary event is an operational risk event which triggers a consequence (e.g. financial loss) in another risk category. **”**

Source: Roundtable discussion
(18 November 2015)

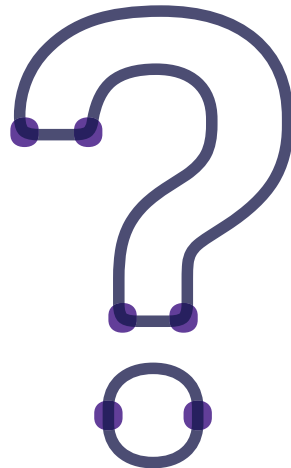
Operational risk practitioners involved in the research estimated that perhaps 40-50% of operational risk events could be categorised as OR-IR boundary events with the percentage being greater for general insurance than life insurance lines of business.

40-50%

1 Introduction

The definition of the boundary between operational risk and insurance risk has been identified by the insurance industry as a fundamental issue in the consistent collection and modelling of operational risk loss data.

Practice differs across the industry, but so far there has been no in-depth research into the approaches firms take to manage this boundary.



As operational risk is one of the main categories of risk to which an insurance company is exposed, it is important there is a clear understanding of the boundaries between operational and the other categories of risk, so that each can be managed and measured appropriately.

This research was designed to establish the maturity of current industry practice in the definition and application of the boundary between operational risk and insurance risk. In so doing, it has aimed to identify similar and differing approaches to managing this boundary and to provide a basis for discussion on the desired direction and requirements for industry standards relating to it.

2 Approach

ORX partnered with KPMG LLP to perform this research, which comprised two main phases: a survey followed by a roundtable discussion on 18 November 2015 to review and analyse the survey results. Sixteen insurers from Australia, Belgium, Canada, France, Germany, Italy, South Africa, Switzerland and the USA accepted an invitation from ORX to participate in a survey. These were:

Ageas	Allianz	Allied World Assurance Company	AXA
CommInsure	Assicurazioni Generali	Hannover Re	Liberty
Manulife Financial	Munich Re	RBC Insurance	Swiss Reinsurance Company
Talanx Group	Teachers Insurance and Annuity Association	UnipolSai Assicurazioni	Zurich Insurance Group

Survey questions were drawn up by ORX and KPMG LLP to gather information and data on:

- risk definitions used by the respondents
- how OR-IR boundary events are managed
- firm's internal experience of OR-IR boundary events
- the categorisation of events that could potentially be on the OR-IR boundary

The roundtable was held following circulation of the survey results. It was a facilitated workshop led by ORX and KPMG LLP for participating firms to review and challenge the results and gather expert opinion from operational risk practitioners. The event was attended by representatives from 11 of the 16 participating insurers.

The roundtable first debated and concluded on the importance of the OR-IR boundary to insurers, before then reviewing the survey's results. Through this process a consensus of expert opinion emerged and was recorded. Further consultations then took place to gather the views of the five insurers unable to take part in the roundtable. These supported the conclusions of the roundtable.

This report sets out the main survey results and conclusions reached during the Roundtable and follow-up discussions.

3 Why the OR-IR boundary is important

“ Although practice among insurers varies and in some cases is at an early stage of development, the research has established that the OR-IR boundary is seen as an important input to operational risk management. ”

Source: Roundtable discussion
(18 November 2015)

Improved event management

Focusing on the principal benefit of improved risk management:

- The view of insurance industry expert practitioners involved in the research was that not all events on the OR-IR boundary were getting sufficient management attention with regard to their prevention or avoidance. They agreed at the roundtable that a good understanding of OR-IR boundary risk events could help reduce avoidable losses and therefore greater scrutiny and understanding of them should ultimately improve outcomes.
- Historically OR-IR boundary events have not been considered in detail; an improved understanding of them and learning lessons about how to control risk better has the potential to reduce instances of avoidable loss.
- To achieve this, insurance firms should raise awareness of operational risk and the OR-IR boundary, particularly in the first line of defence and at board-level. The focus should be on improving data quality, understanding the events better and categorising risk events more accurately, rather than changing the capital models.

To provide a context for the survey's results, the first question the roundtable addressed was a fundamental one: "Is the OR-IR boundary important to insurance firms?" As pointed out later in section 6 of the report, it was concluded by the operational risk expert practitioners involved in the research that approximately 40% to 50% of operational risk events are likely to be OR-IR boundary events. Hence the boundary should be of interest to all management disciplines within insurance companies, not just risk.

In the survey and at the roundtable, there was a consensus that there are two main benefits for clearly defining the OR-IR boundary. The most important benefit is improved management of risk events on the OR-IR boundary; of lesser importance is improved capital modelling.

It is important to know if an event is on the OR-IR boundary and to assess its financial and non-financial impact. Firms participating in the research were invited to describe how their standard risk management processes were being employed to identify and assess OR-IR boundary risks.

40-50%

Capital modelling

The roundtable also reflected the view that insurance firms, which model operational risk, should employ measures to prevent over or under-estimation of risk capital through double-counting or omission.

Views expressed included that it is possible to:

- double-count losses (i.e. the same event is included in both operational risk and insurance risk capital models), thus possibly inflating overall capital requirements
- not take account of some losses (i.e. an event is not included in either the operational risk or insurance risk capital models), thus possibly under-estimating overall capital requirements

Boundary management

To reduce these two possibilities, firms should be clear and consistent in how they allocate boundary risk events to a risk category so that the relevant event data is modelled. To that end, there is a need for a clear definition for OR-IR boundary events and a reliable method for identifying them. The research therefore highlighted a role for ORX to take a lead with its Members in proposing and implementing a definition for OR-IR boundary events together with an approach with examples for how they can be identified.

Conclusions

- The research shows that the OR-IR boundary affects a significant proportion of operational risk events – estimated by operational risk expert practitioners possibly being as high as 40% to 50% of operational risk events.
- The identification of OR-IR boundary events should over the long-term improve risk management. In the view of the expert practitioners a better understanding of OR-IR boundary risk events, their underlying causes and impacts should help reduce avoidable losses.
- Flagging OR-IR boundary events can help avoid over or under-estimating the operational and insurance components of insurers' risk capital models.
- To achieve these benefits in risk management and risk measurement, a standard definition of the OR-IR boundary should be agreed, so that risk events can be identified and categorised consistently, at least within individual firms and possibly more widely.

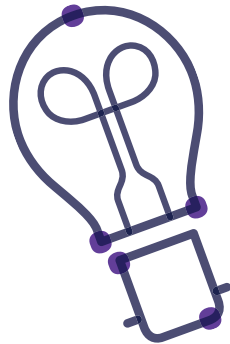
4 Definitions

Aim

Risk definitions are essential tools used in identifying and categorising different risk categories and in designating the boundaries between them. The research sought to understand the degree of consistency in the operational risk, insurance risk and boundary definitions in use across the Industry.

“Half of the insurers surveyed had a definition for an OR-IR boundary event.”

Source: OR-IR Survey
(September 2015)



Operational and insurance risk definitions

The survey invited respondents to submit the definition their firms used for operational risk, insurance risk and their sub-categories. This revealed:

- Operational Risk. A Basel II/Solvency II definition of operational risk is widely used by insurers (see Figure 1, Illustration A below):

Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk but excludes strategic and reputational risk.

In contrast, there was less consistency in the definition of operational risk sub-categories (see Figure 1, Illustration B below). This was mainly driven by an ORX Member - non-ORX Member split. ORX Members use the ORX Insurance Operational Risk Reporting Standards, which clearly define sub-categories, but are not yet used across the insurance industry. As there is less regulation and guidance on how insurers should sub-categorise operational risk, there is less consistency of operational risk sub-category definitions between firms.

- Insurance Risk. The survey observed similarities in the definitions of insurance risk used by firms; the most predominant was a reference to loss and adverse change in the value of insurance liabilities:

Insurance risk is defined as the risk of loss or of adverse change in the value of insurance liabilities (whether life or general insurance), due to inadequate pricing and provisioning assumptions.

However similar to operational risk, there was little evidence of consistency in the definitions of the sub-categories of insurance risk (see illustrations C and D in Figure 1 right).

Figure 1 – Illustration of key themes within risk category definitions



A definition of the OR-IR boundary depends on the definitions of operational risk and insurance risk. Inconsistency in how insurance risk, for example, is defined can undermine consistency in what is identified as an OR-IR boundary event. This, we believe, led to some of the inconsistency seen in the responses received to the case studies scenarios (see Section 7). Differences between firms in their risk terminology and definition of sub-category scope will inevitably result in inconsistency in the identification of boundary events across the insurance industry.

Boundary risk definition

Half of the 16 firms participating in the survey had their own definition for an OR-IR boundary event, which suggests there are different levels of maturity in boundary event management. Within the boundary definitions submitted, the following themes were identified:

- Events occurring in operational processes can be relevant to insurance risk
- Operational risk events can exacerbate losses in other categories of risk
- Risk event impacts can be realised in another type of risk
- Operational risk impacts can be modelled as part of insurance risk capital calculations

In the roundtable there was a consensus that the Insurance Industry would benefit from a consistent definition of a boundary risk event. To be effective, a definition would have to be easily understood by staff in the business and used by them to facilitate at least a consistent categorisation of events to risk categories within firms and understanding what a boundary event is and what its impacts are.

It was pointed out that if insurers can get the OR-IR boundary event definition agreed early on, they would avoid one of the main difficulties, as observed by ORX, in work carried out in the banking sector to define standard practice for the credit risk - operational risk boundary. The following operational risk boundary event definition was proposed at the Roundtable:

“An operational risk boundary event is an operational risk event which triggers a consequence (e.g. financial loss) in another risk category.”

Building on this definition

“An insurance risk /operational risk boundary event is an operational risk event that triggers an insurance risk consequence (e.g. a financial loss).”

Source: Roundtable discussion
(18 November 2015)

A methodology, supported by examples, was viewed by the expert practitioners at the Roundtable to be essential for an effective and efficient implementation of a boundary risk definition.

Conclusions

- Our survey shows there was consistency in how insurers define operational risk, but less consistency in how insurance risk is defined. Inconsistency between insurance firms in the definition of operational and insurance risk is likely to result in inconsistency between firms in the identification of OR-IR boundary events.
- Any inconsistency in terminology relating to sub-categories of operational risk or insurance risk will lead to difficulties in defining boundary events. This might result in an inconsistent understanding between insurers when reference is made to risk types relevant to the OR-IR boundary.
- Around half the respondent insurers have a definition for an OR-IR boundary event, so practice across the Insurance Industry is not yet mature. If insurers can get the OR-IR boundary event definition agreed early, they can avoid one of the difficulties encountered when work was done on operational risk – credit risk boundary events in the banking sector.
- The roundtable resulted in a proposed boundary definition: “An operational risk boundary event is an operational risk event which triggers a consequence (e.g. financial loss) in another risk category”.

Note: A “risk category” is defined here as one of the categories of risk to which insurance firms are exposed (e.g. insurance risk, market risk, credit risk etc.)

5 Management of OR-IR boundary events

Aim

One of the aims of the research was to identify and understand if firms were using the same or different approaches, tools and techniques for managing OR-IR boundary events.

“ Within the companies surveyed, a range of operational risk management approaches, tools and techniques is used to identify OR-IR boundary events. However, only a few of them routinely quantify the proportion of losses attributable to OR-IR boundary events. ”

Source: Roundtable discussion
(18 November 2015)



Survey findings

Responses to the survey show there were two groups of insurers when it comes to OR-IR boundary events; those that have no approach for the definition and identification of these boundary events and those that do, noting that none of the respondents thought their practice was fully developed. This was evident in the responses to questions on boundary management processes, governance and capital modelling.

Process

The survey shows that firms have a number of approaches for identifying boundary events:

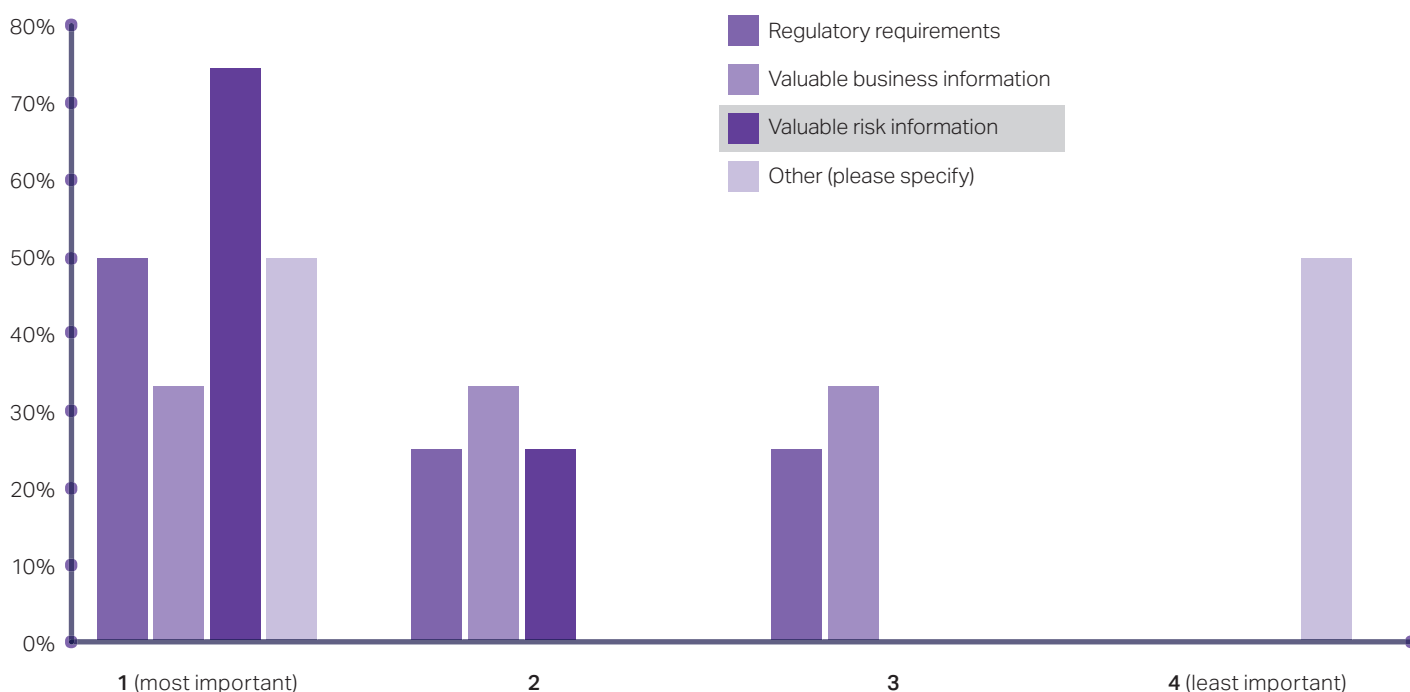
- Categorisation using the firm's risk taxonomy
- Scenario analysis and risk-mapping
- Loss data capture
- Input the event on the OR system
- Flag as a boundary event
- Quantify the risk and confirm it is material
- Check with risk managers that an event is not a duplicate
- Quality assurance by the operational risk function

Most respondents reported that they did not routinely quantify the proportion of losses attributable to OR-IR boundary events.

Flagging boundary events

Of the 16 respondents surveyed, half (all those that said they had an OR-IR boundary event definition) stated that they flag or tag OR-IR boundary events primarily because these events require additional investigation, as they could reveal valuable information about how risk could be managed better. Reasons given for flagging or tagging events as OR-IR boundary events, in order of their importance, are summarised in Figure 2:

Figure 2 – Importance of reasons to flag OR-IR boundary events



These same firms also provided their loss event threshold, above which they have to flag OR-IR boundary events. The results were:

Threshold (€)	Respondents
10,000	1
13,000	1
50,000	3
500,000	1
1,000,000	2

The range of thresholds (€10,000 to €1,000,000) was explored during the roundtable. There was a consensus that thresholds should be set by firms according to the size and nature of their business. For benchmarking purposes a common minimum threshold would be a great benefit.

It was pointed out that large volumes of similar low-value events, whose individual impacts are below the threshold for a single event, should not necessarily be excluded from investigation if their aggregate impact was above the threshold.

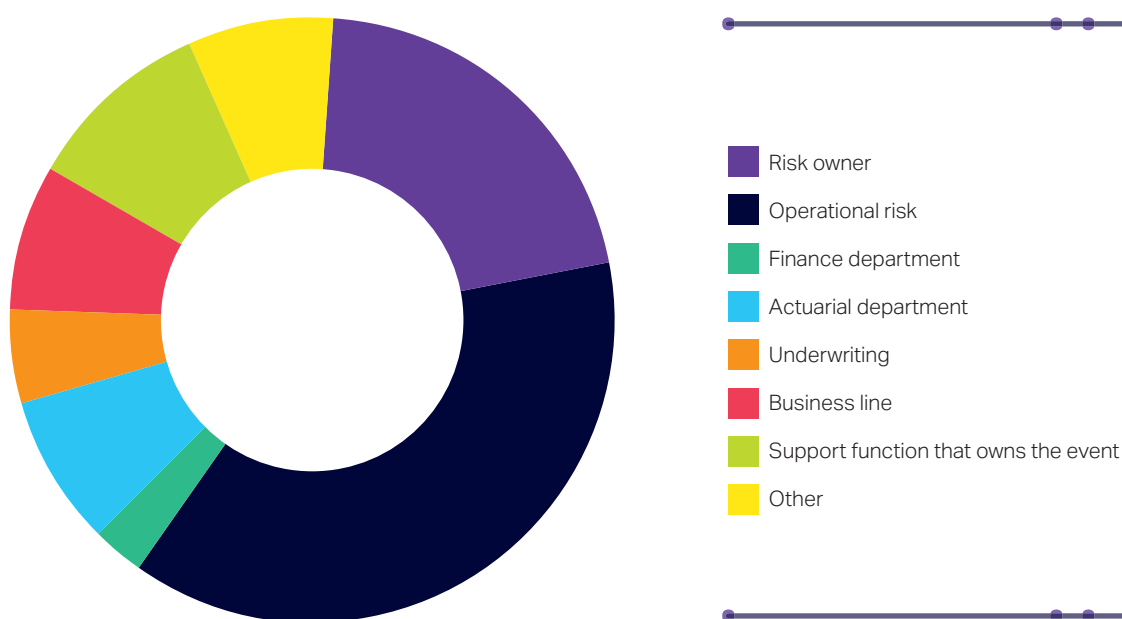
Policy

Less than half the survey respondents stated they had a documented policy or standard relating to the management of OR-IR boundary events. For those with a policy, ownership is spread between group risk management and group operational risk functions.

Responsibility for identifying boundary events

Responsibility for identifying OR-IR boundary events is also widely distributed, though predominately it resides with operational risk functions and with risk owners:

Figure 3 – Distribution of responsibility for identifying OR-IR boundary events (by number of responses)

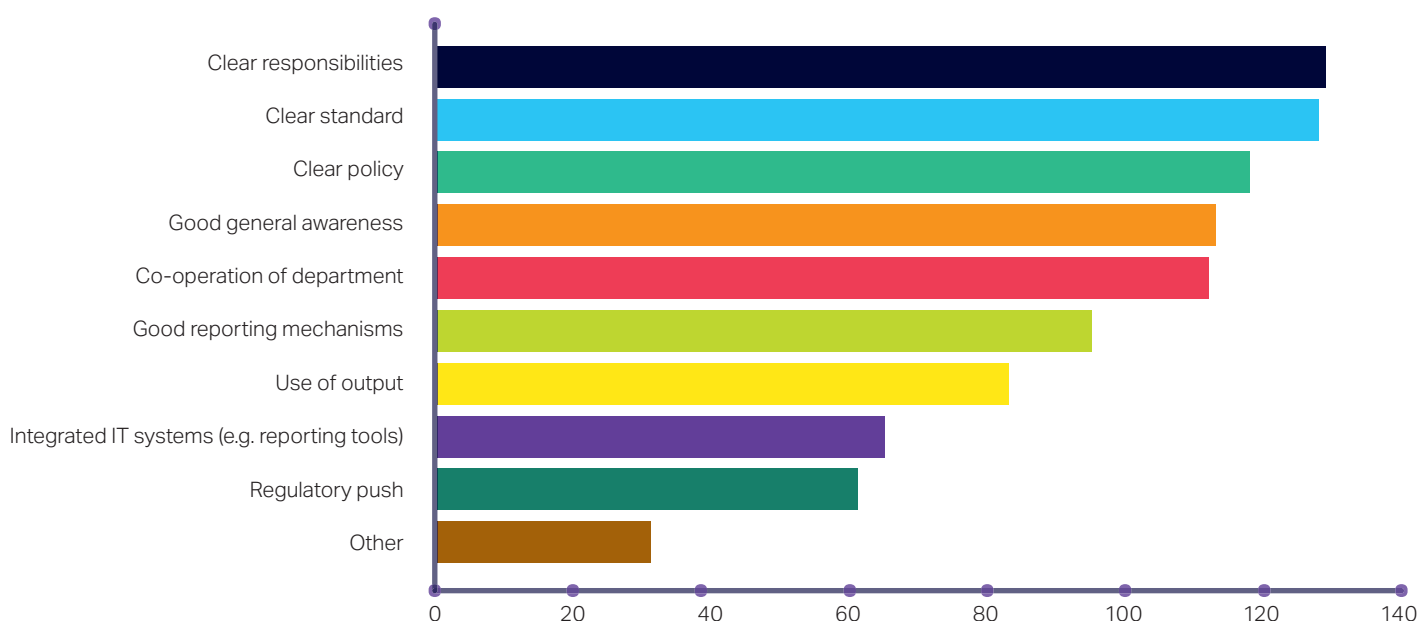


The operational risk function (mentioned in 15 or 94% of the responses) and the risk owner (mentioned in eight or 50% of the responses) were the roles most noted for being responsible for identifying OR-IR boundary events. While most risk owners are in the business and have first-hand knowledge of the events, they are probably unable to identify consistently when an event is a boundary event due to the complexity of applying the definition. Operational risk functions on the other hand, with their more detailed knowledge of the boundary definition, are well placed to identify boundary events. But as the capacities of operational risk functions are limited, a solution would be to enable risk owners to identify and assess boundary events.

Factors in collecting boundary risk information

Survey respondents were asked to rank, in order of importance, factors they believed would most improve the collection of OR-IR boundary risk event information. As illustrated in figure 4 below, clear responsibilities and standards were considered to be the most important factors:

Figure 4 - Ranking of factors important to improving the collection of OR-IR boundary events (by weighted score)



(The "Other" factor responses above included the availability of data and the ability to derive information from the profit and loss (P&L) account.)

Conversely the survey produced a list of possible challenges firms might experience in the collection of OR-IR boundary event data, as illustrated in figure 5 right:



Figure 5 - Challenges experienced in the collection of OR-IR boundary event data

The roundtable considered the challenges in improving OR-IR boundary event management. The following four themes were identified:

- Sufficient time is needed to understand an event thoroughly, identify if it is a boundary event and to explain that decision. There may be a resource capacity issue within operational risk teams that limits the extent they can manage boundary events, which is a factor contributing to the wide range of thresholds for flagging boundary events
- A lack of understanding by the business (i.e. first line of defence) about why boundary events are worth managing. If there is a good business case, departments would be incentivised to participate and question events
- The OR-IR boundary issue is complicated and sometimes it is difficult to identify the “right expert” to assist in understanding the boundary event and deciding how to treat them
- Some risk management systems do not capture all the data required to facilitate the assessment of boundary events

It was also noted that because considerations about whether or not an event is a boundary event can be complex, there is a general acceptance that boundary risk categorisation should be dealt with by the risk function. However, if the identification of boundary events starts to impact the levels of capital, then other departments may need to contribute.

There was a general consensus that the way to address these challenges and to help develop a greater understanding of boundary risk events and enhancing their control environment was through:

- Increasing awareness of the boundary definition through education and training across the business and the risk function
- An understanding of the benefits that come from using the boundary definition
- Improved management awareness

Capital modelling

Three firms that took part in the research had an ad-hoc process to check for possible double-counting of risk events between insurance and operational risk and each had an internal model subject to Solvency II requirements. Another insurer operated a similar check periodically. Five respondents reported in the survey that, in their forward-looking projections of risk and capital, an allowance or adjustment is made for OR-IR boundary events. The roundtable discussion confirmed that this was done to mitigate possible double-counting, which would drive up the risk capital requirement.

Conclusions

- Overall our survey shows that there were two groups of insurance firms with regard to OR-IR boundary events: those that had no approach for the definition and identification of these boundary events and those that did, though it should be noted that none thought their practice was mature and well developed.
- A range of operational risk management processes can be used to identify OR-IR boundary events, but only a few of the survey participants routinely quantify the proportion of losses attributable to OR-IR boundary events (see Section 6).
- Around half the insurance firms represented in the survey had procedures for managing boundary events. Although the majority of all respondents, even those with procedures in place, recognised that clear standards, responsibilities and policy were key success factors in ways to improve the management of the OR-IR boundary events.
- At the same time there were recognised challenges to achieving this improvement. These include the training of staff on the issue, resource constraints and reporting system limitations. Nevertheless, it was agreed that management and awareness of the OR-IR boundary should be improved.
- For firms that model risk capital, OR-IR boundary events are important from a risk measurement perspective. The key driver for action is the need to ensure the capital requirement reflects the firm's loss history and does not miss out losses, or double-count them.



6 Internal experience of boundary events

Aim

The importance of OR-IR boundary events to insurers depends to a large extent on the nature and scale of their impact. The research therefore sought to:

- Identify which types of event were most likely to be OR-IR boundary events
- Gauge the scale that OR-IR boundary risk impacts on life and general insurers

It was anticipated that completion of the section of the survey on insurers' internal experience of boundary risks would be aspirational, as many of the respondents did not have enough information with which to answer. This was confirmed by the number of answers received.

“Operational risk practitioners estimated that perhaps 40-50% of operational risk events could be OR-IR boundary events, with the percentage being greater for general insurance lines of business.

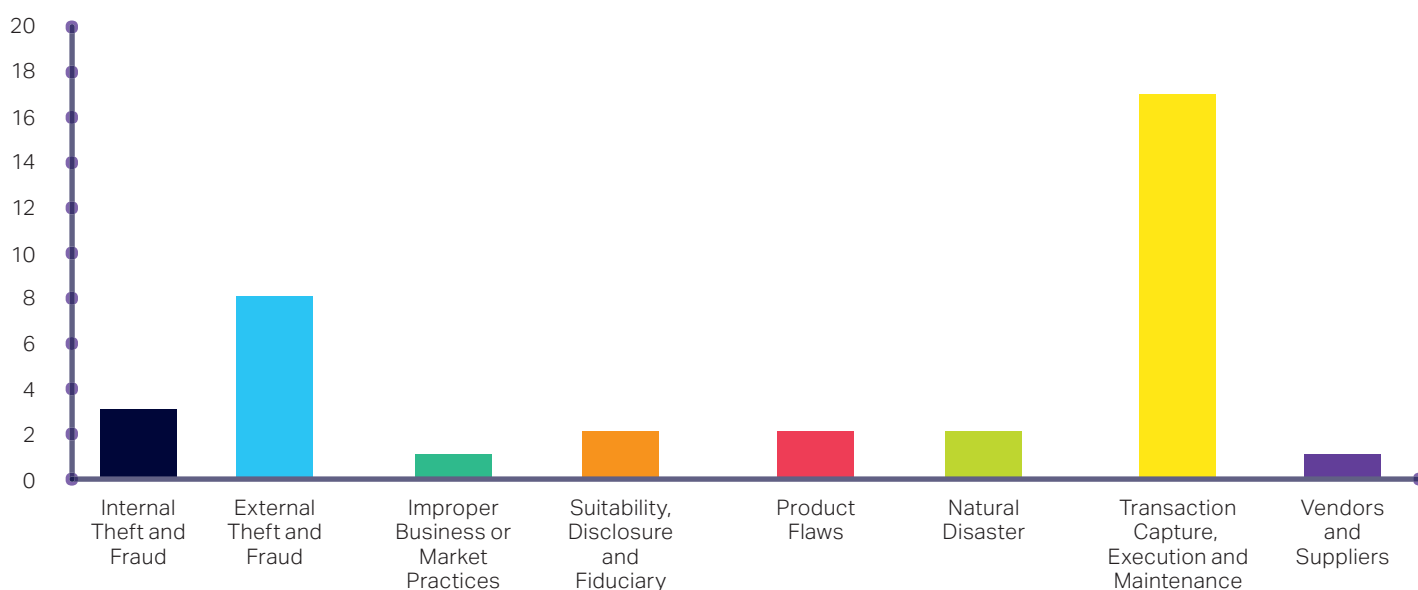
A more accurate estimate can only be achieved by first setting a clear definition for OR-IR boundary risk events and then collecting information consistently about them.

Source: Roundtable discussion (18 November 2015)

Most likely types of OR-IR boundary event

The survey invited respondents to describe their organisation's five most significant OR-IR boundary events in the previous five years. From the 11 responses received, "Transaction Capture, Execution & Maintenance" and "External Theft & Fraud" were the most common categories of boundary risk event reported as shown in figure 6 below:

Figure 6 - Distribution of OR-IR boundary events categorised at Event Type Level 2

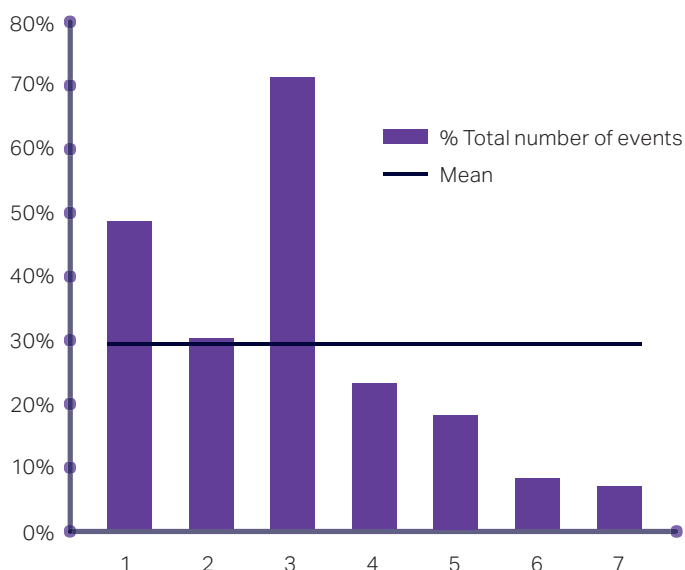


Scale of OR-IR boundary risk

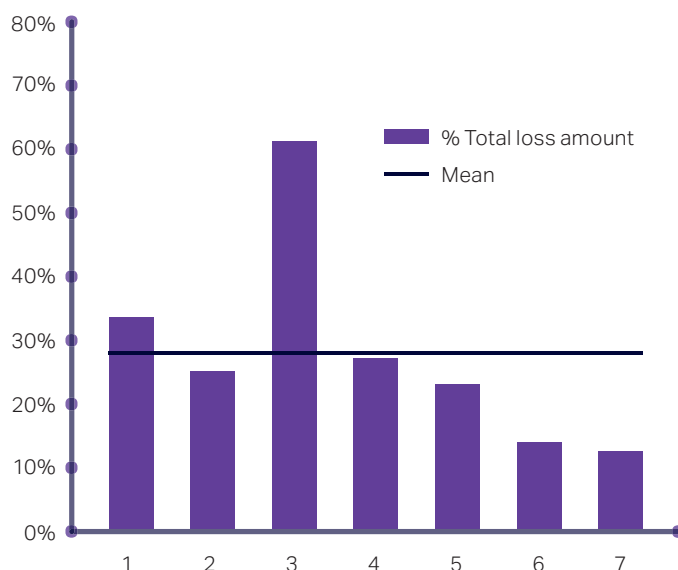
The survey also invited respondents to estimate the proportion of their operational risk losses that were categorised as OR-IR boundary events. In this small sample the results show there was consistency in the average proportion, around 29% (by number and value across both life and general insurance), however there was a broad spread across the responses as shown in figures 7 and 8 below:

Figure 7 – Results of the proportion of OR events identified as OR-IR boundary events

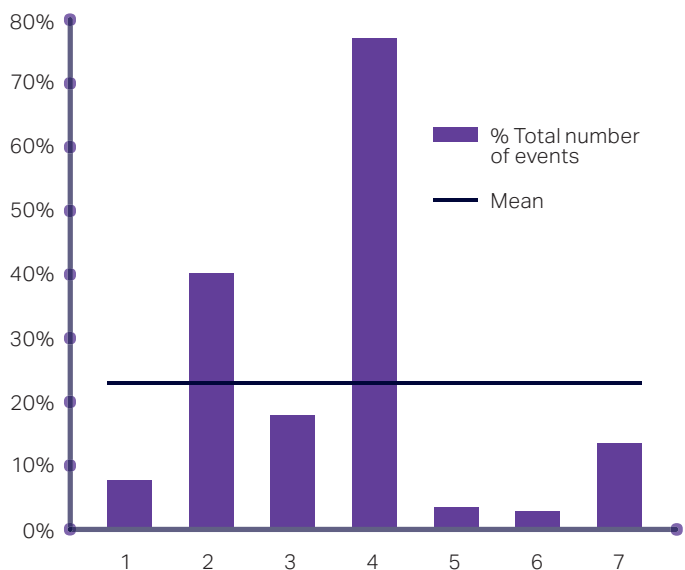
Life boundary events - % of total events



Life boundary events - % of total loss amount



Non life boundary events - % of total events



Non life boundary events - % of total loss amount

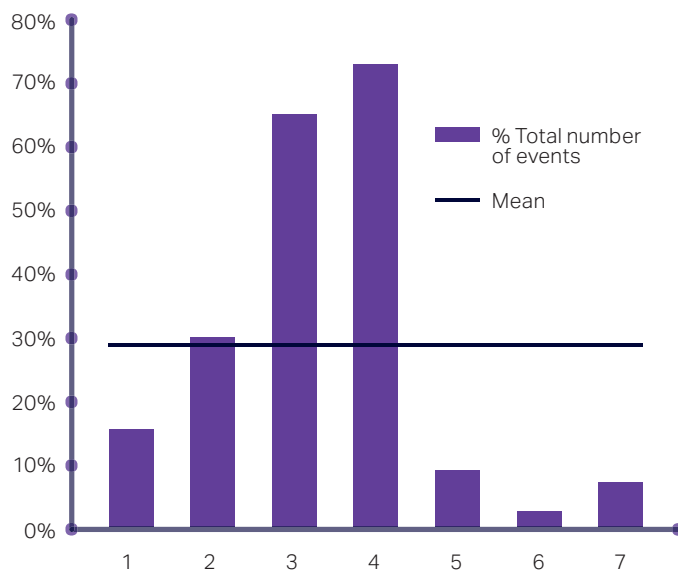


Figure 8 – Mean and range of the proportion of OR events identified as OR-IR boundary events

Level 1	Mean %	Range %
Life		
% Total loss amount	28	12 - 62%
% Total no. events	29	7 - 71%
General		
% Total loss amount	29	2 - 73%
% Total no. events	23	2 - 77%

The roundtable reviewed these results and the following observations and opinions were expressed:

- There was an expectation that the proportion of OR-IR boundary events would be higher in general insurance as compared to life insurance businesses
- The use of a broad definition for OR-IR boundary events could result in 40 to 50% of operational risk events being flagged as OR-IR boundary events. It was not clear if the reason for the wide range of results was due to the range of risk definitions used by different insurance firms
- There was insufficient experience within firms to confirm if the data gathered on total loss amount and number of events was consistent

Therefore it was concluded that a better estimate of the proportion of operational risk events on the OR-IR boundary, expected to be approximately 40% to 50%, can only be achieved by having and using a boundary event definition consistently and then improving data collection.

Conclusions

- “Transaction Capture, Execution & Maintenance” and “External Theft and Fraud” are the two categories of operational risk event most frequently identified to be on the OR-IR boundary.
- Expert opinion at the roundtable was that approximately 40% to 50% of operational risk events across the business could be boundary events, with the percentage being greater in the general insurance lines of business.
- A better estimate of this proportion can only be achieved by first establishing a definition of what an OR-IR boundary event is and then gathering data about it within firms.

7 Boundary event tests

Aim

The research considered the practicalities of identifying and categorising OR-IR boundary events by seeing how consistent the participating insurance firms were in categorising OR-IR boundary events. Understanding this would assist in the setting of guidelines that would help firms to flag and categorise OR-IR boundary events.

“Correctly classifying operational risk events is not straightforward and requires at a minimum, a set of well understood risk category and boundary definitions.”

Source: Roundtable discussion
(18 November 2015)

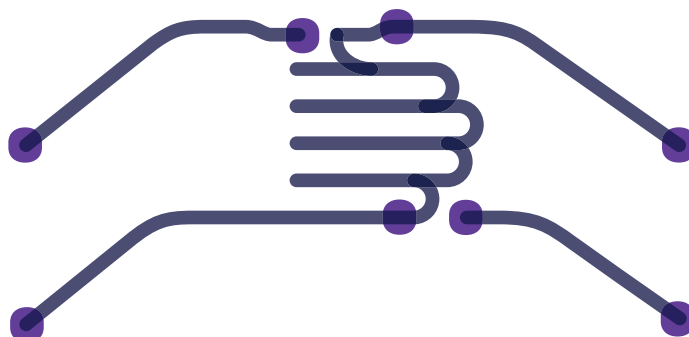
Survey

The survey invited respondents to submit the definition. The survey included a list of 24 risk event descriptions (see Appendix 1), which might be considered to be OR-IR boundary events. The descriptions were either based on real events, or on events that were viewed as plausible.

The list also covered a range of operational risk types, as categorised by ORX, both in a life and general insurance context. Survey respondents were invited to categorise each event as either an 'Operational Risk', 'Insurance Risk', 'OR-IR Boundary' or 'Other' event. Reflective of the current maturity of insurers' consideration of OR-IR boundary events, only nine of the 16 respondents completed this section of the survey, which was viewed as being sufficient to base a discussion about categorisation at the roundtable.

Roundtable

Each event was reviewed collectively by the experts who attended the roundtable and a consensus was arrived at on the correct categorisation. This included a sharing of experience of some actual events similar to those described and of how the OR-IR boundary event definition discussed earlier should be applied.



Results

One of the 24 events, Event 11 - Mis-estimation of damage pay-out, was categorised by a majority of survey respondents as an insurance risk event. This was endorsed by the roundtable. Similarly the following four scenarios were categorised as purely operational risk events by a clear majority of survey respondents and endorsed as such by the roundtable:

1. Agreed pure Operational Risk Events

Number	Event	ORX event type category (level 2)
1	Change of standards of legislation	Product flaws
14	Persistent customer service errors	Transaction capture, execution and maintenance
18	Reinsurance payment failure	Transaction capture, execution and maintenance
20	Self-insured catastrophic events	Natural disasters

The following eight events were categorised as OR-IR boundary events by both a clear majority of survey respondents and the roundtable:

2. Agreed OR-IR Boundary Events

Number	Event	ORX event type category (level 2)
3	Extensive claim amounts	External theft and fraud
9	Legal decision	Improper business or market practices
13	Mis-selling in lack of suitability	Suitability, disclosure and fiduciary
17	Product flaw	Product flaws
21	Status change monitoring error	Transaction capture, execution and maintenance
22	Unauthorised policy change	Transaction capture, execution and maintenance
23	Under-estimation of premiums	Transaction capture, execution and maintenance
24	Unit-linked product pricing error	Product flaws

However there appeared to be uncertainty surrounding the categorisation of the other 11 events (45% of the total). In the five of these, the roundtable agreed that further information would be needed to determine the categorisation:

3. Not enough detail to categorize

Number	Event	ORX event type category (level 2)
4	Failure of business partner	Transaction capture, execution and maintenance
5	False customer information	External theft and fraud
7	Fraudulent lapse	Internal theft and fraud
8	Fraudulent underwriting	Internal theft and fraud
15	Poor asset management	Advisory activities

And in the other six cases below, there was no clear majority in favour of either an 'Operational Risk' or 'OR-IR Boundary' categorisation:

4. No agreement on categorisation

Number	Event	ORX event type category (level 2)
2	Expense estimation error	Transaction capture, execution and maintenance
6	Falsification of cause of death	External theft and fraud
10	Litigation	Suitability, disclosure and fiduciary
12	Misleading product documentation	Product flaws
16	Pricing algorithm error	Transaction capture, execution and maintenance
19	Reserves modelling error	Transaction capture, execution and maintenance

Conclusions

The roundtable concluded the testing shows that the categorisation of boundary events was not easy, even for operational risk experts: for example, no event was categorised in the same way by all survey respondents. In the view of the roundtable it would be too demanding to expect the business to categorise boundary events consistently within their firm and the task would be even more challenging without a common set of risk definitions.

Having undertaken this exercise, the roundtable expressed a view that the identification of boundary events and management's awareness of them would be improved by an agreed set of examples illustrating the various boundary event definitions. These illustrations, or case studies, would be enhanced and refined over time as the Insurance Industry learnt from its experience.

An example of a well-described boundary event was shared during the roundtable. It concerned an insurance product, whose design made it vulnerable to fraud, which was driving up expense risk. Examination of the detail of the product's operational losses revealed what action could be taken by the insurance firm to improve the product and reduce instances of fraud. If fraud had been properly considered as a manageable factor driving insurance risk, then remedial action might not have been required.

Finally, the roundtable suggested the following types of loss should be included in a set of examples explaining the OR-IR boundary risk event definition: internal and external fraud, mis-pricing, product flaws and changes in legislation (i.e. retrospective changes in law or regulation, not a difference in their interpretation).

Conclusions

- Categorising operational events to risk categories is not straightforward and at a minimum requires a set of well-understood risk category and boundary definitions. Consistency of practice is made more difficult if there is a lack of commonality in insurance risk and operational risk definitions.
- There was demand for additional practical guidance, for example in the form of detailed case studies and a decision-tree that insurers could apply to help them identify and categorise OR-IR boundary events consistently. Consistent risk categorisation also requires complete event descriptions.
- It might be unrealistic for insurance firms to expect their front-line staff to categorise boundary events, but nevertheless examples are a good way to help explain what is or is not an OR-IR boundary risk event.
- Information about the underlying causes and impacts of OR-IR boundary events can enable management to better understand operational loss events and so help them to take action that will reduce avoidable losses and hence capital requirements.
- Understanding risk events better should lead to better remedial management action.

8 Way forward

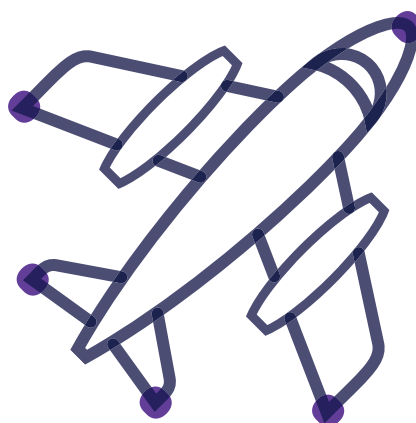
“ The OR-IR boundary deserves greater attention because it can inform action that will reduce risk and optimise capital. ”

Source: Roundtable discussion
(18 November 2015)

Actions following-on from this research were considered in the roundtable and subsequent meetings with participating insurers.

It was agreed that ORX should continue to work with insurers and specifically their operational risk contacts on the issue of OR-IR boundary events. It is therefore recommended that ORX should:

- Finalise an agreed boundary risk event definition;
- Set out a methodology for their identification and assessment; and
- Build a library of supporting examples and case studies.



Appendix 1 – Boundary event tests

Event 1: Change of standards of legislation

An insurer's regulator changes its interpretation of a current piece of legislation and decides to apply stricter standards retrospectively. The insurer is affected by this change and has to rectify policies and notify policyholders retroactively to avoid suffering reputational damage.

Allocation: Operational risk

Rationale: *Retrospective changes in law (result in a change in the policies) are considered operational risk.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
40	6.67	20	33.33	Operational risk

Event 2: Expense estimation error

In the course of updating its operating system an insurer's approach for aggregating incurred expenses is corrupted. This is only discovered after a number of years with the result that profitability is actually lower than reported and the pricing of new business has utilised inaccurate expense experience.

Allocation: OR-IR boundary

Rationale: *The process error/incorrect data is the operational risk event which has adversely impacted the insurance reserves/provisions via higher claims being paid.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
46.67	0	40	13.33	OR-IR boundary

Event 3: Extensive claim amounts

A number of medical centres are overbilled for performing routine treatments in order that medical staff receive unofficial kickbacks. Consequently, the insurer has to pay a higher average amount on claims than expected.

Allocation: OR-IR boundary

Rationale: *The fraudulent behaviour is the operational risk event which has adversely impacted the insurance reserves/provisions via higher claims being paid.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
20	0	66.67	13.33	OR-IR boundary

Event 4: Failure of business partner

An insurance broker falls into administration and its business is taken on by another intermediary that sells the insurer's products to a different type of customer.

Allocation: Unclear scenario. Insufficient information to assess

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
13.33	0	13.33	73.33	Insufficient information

Event 5: False customer information

Customers falsify personal information to get an advantageous insurance policy they would otherwise not get.

Allocation: Either OR-IR boundary or OR. As there is no consequence in the example it is difficult to clearly assess

Rationale: *The fraudulent behaviour is the operational risk event. If there is a claim, this would be OR-IR boundary as it will adversely impact the insurance reserves/provisions. If there is no claim there is no loss.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
40	6.67	33.33	20	Insufficient information

Event 6: Falsification of cause of death

Insured persons' causes of death are falsified (e.g. suicide disguised as accidental death).

Allocation: OR-IR boundary

Rationale: *The Fraudulent behaviour is the operational risk event, which has adversely impacted the insurance reserves/provisions, as claims are paid out that are invalid.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
33.33	6.67	40	20	OR-IR boundary

Event 7: Fraudulent lapse

Policy lapse is caused by agent fraud, which is aimed at increasing the agent remuneration through issuing new policies. This affects lapse rates and therefore, the calibration of lapse risk.

Allocation: Operational risk or OR-IR boundary

Rationale: *Fraudulent behaviour adversely impacts the insurance reserves/provisions. If there is a client and a false claim this is an OR-IR boundary. If fraud is included in the time series it is considered a boundary event.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
40	0	40	20	Insufficient information

Event 8: Fraudulent underwriting

An inadequate amount of premiums is collected relative to the risk exposure. This is due to fraudulent underwriting (e.g. underwriting premiums and commissions intentionally held/manipulated/stolen by internal or external parties).

Allocation: Unclear scenario. Insufficient information to assess

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
53.33	6.67	26.67	13.33	Insufficient information

Event 9: Legal decision

A jurisprudential decision is taken that impacts negatively on the entire portfolio of a marine insurer's entire portfolio of current liabilities.

Allocation: OR-IR boundary

Rationale: *Retrospective changes in law (result in a change in the policies) are considered operational risk. These changes then impact insurance provisions (reserves). An example cited was a French legislative decision which required a change in the terms of the policies.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
13.33	20	33.33	33.33	OR-IR boundary

Event 10: Litigation

Following a dispute with a claimant over the size of an insured loss, a court action is imposed on a property and casualty insurer to enforce the claimant's rights in payment of a claim. The court found that there were errors in the contract and found in favour of the claimant.

Allocation: Operational risk

Rationale: *The errors in the contract are considered an operational risk event.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
40	6.67	33.33	20	Operational risk

Event 11: Mis-estimation of damage pay-out

Pay-outs to claimants on a house insurance product are higher than expected because loss assessments are higher than was assumed would be the case.

Allocation: Insurance risk (assuming that processes were correctly defined and performed)

Rationale: *There is no evidence of a failed or inadequate process. The pay-outs adversely impact the insurance provisions (reserves).*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
6.67	46.67	26.67	20	Insurance risk

Event 12: Misleading product documentation

During a product's annual review, it is decided that several updates are needed. Due to time limitations, these revisions are not properly checked to internal standards and errors remain in the marketing materials relating to the insurance cover for accidents. In the new version of the product's marketing documents, it is implied that the policy covers all losses suffered even if the policyholder caused the accident. This was noticed by brokers/agents, but led to a marked increase in contract sales as well as a subsequent large wave of unexpected claims.

Allocation: OR-IR boundary

Rationale: *The failure to check the revisions is the operational risk event which has adversely impacted the insurance provisions (reserves) via claims being greater than forecast.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
40	0	40	20	OR-IR boundary

Event 13: Mis-selling in lack of suitability

Sales team pursued aggressive sales tactics and sold policies to customers who may not have fitted the profile of the product. As a result, both number of claims and claims amount exceeded the assumed amount in the pricing model.

Allocation: OR-IR boundary

Rationale: Aggressive sales tactics is considered an operational risk event. This behaviour has resulted in an adverse impact on the insurance provisions (reserves) via claims being greater than forecast.

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
20	6.67	53.33	20	OR-IR boundary

Event 14: Persistent customer service errors

A life insurer's customer service operations makes numerous process errors over a long period of time and so the firm fails to provide customers with the expected level of service. Consequently, more customers than expected switch to a competitor for their life cover.

Allocation: Operational risk

Rationale: Processing errors are operational risk events, however there is no realised adverse impact on the P&L.

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
53.33	0	26.67	20	Operational risk

Event 15: Poor asset management

A life insurer's asset manager does not manage a fund effectively and its performance is markedly lower than other similar funds in the market. This poor reputation leads to a higher than expected rate of policy lapses.

Allocation: Unclear scenario. Insufficient information to assess

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
6.67	6.67	26.67	60	Insufficient information

Event 16: Pricing algorithm error

A car insurer experiences an annual cyclical peak in insurance policy renewals every September due to the start of the new vehicle registration year. The policy renewal process is compromised however by an error in the pricing algorithm. This error results in a significant volume of renewal requests being issued which are non-competitive over the period of a week. As a result of this there is a significant shift in the loss of business – approximately 5% of the total number of policies.

Allocation: OR-IR boundary (policies are in the market and sold)

Rationale: *The error in the pricing algorithm is the operational risk event which has adversely impacted the insurance provisions (reserves) via business being lost.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
40	0	40	20	OR-IR boundary

Event 17: Product flaw

Late involvement of the Actuarial/Underwriting team in approving a new creditor insurance product results in a failure to identify a technical error. This results in a flawed product being sold and hence there are subsequent losses and instances of customer detriment.

Allocation: OR-IR boundary

Rationale: *The failure to identify a technical error is the operational risk event which has adversely impacted the insurance provisions (reserves).*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
33.33	0	53.33	13.33	OR-IR boundary

Event 18: Reinsurance payment failure

A reinsurer takes on part of the risk covered under the policy issued by a life insurer. However, the premium due is not paid or is paid extremely late to the reinsurer and the reinsurer refuses to honour the reinsurance treaty.

Allocation: Operational risk

Rationale: *The failure to pay (or late payment) is a process error and therefore an operational risk. There is no impact on the insurance provisions (reserves).*

Survey Responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
53.33	0	26.67	20	Operational risk

Event 19: Reserves modelling error

A large reserves modelling error is identified (e.g. discovery of liabilities that do not feed into reserve calculations) and leads to understated liabilities, higher than anticipated pay-outs, and requires a restatement of reserves, possibly with a degree of over-compensation in the first instant.

Allocation: Operational risk

Rationale: *The modelling errors are operational risk events. This is considered a timing loss as it is reflected in the balance sheet only.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
40	13.33	13.33	13.33	Operational risk

Event 20: Self-insured catastrophic events

An insurer experiences losses connected to damages to its self-insured, physical assets that were caused by a natural disaster (e.g. earthquake, fire or flood).

Allocation: Operational risk

Rationale: *A natural disaster is an operational risk event, as this is "self-insured", the loss would impact the P&L. There is no impact on the insurance provisions (reserves).*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
46.67	13.33	13.33	26.67	Operational risk

Event 21: Status change monitoring error

An insurer sells a sickness product in which payments to the insured cease on return to work. Because checks on whether people are returning to work are not performed, claimants receive more monthly payments than they are entitled to receive.

Allocation: OR-IR boundary

Rationale: *The failure to perform the checks is the operational risk event (process failure) which has adversely impacted the insurance provisions/reserves, via higher payment.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
20	0	66.67	13.33	OR-IR boundary

Event 22: Unauthorised policy change

The branch office of a property and casualty insurer makes an unauthorised change in one of its Group product's policy conditions in order to improve its competitiveness in the local market. Unfortunately, this results in higher claims by customers.

Allocation: OR-IR boundary

Rationale: *The unauthorised change is the operational risk event which has adversely impacted the insurance provisions/reserves via higher claims.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
20	0	60	20	OR-IR boundary

Event 23: Under-estimation of premiums

An insurer under-estimates product premiums because it applies an unauthorised discount.

Allocation: OR-IR boundary (insurance model tries to address incorrect/wrong premiums)

Rationale: *The unauthorised discount is the operational risk event which has adversely impacted the insurance provisions/reserves via the under-estimated premiums.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
33.33	6.67	46.67	13.33	OR-IR boundary

Event 24: Unit-linked product pricing error

A unit-linked product was sold on a whole-life basis, but it was priced to last only 15 years. On discovering this fact, the regulator decides that the product is flawed and the life insurance company is unable to increase the product's premiums.

Allocation: OR-IR boundary

Rationale: *The product flaw is the operational risk event which has adversely impacted the insurance provisions/reserves via the under-priced premiums.*

Survey responses				Roundtable discussion conclusion
Operational risk (% responses)	Insurance risk (% responses)	OR-IR boundary (% responses)	Other (% responses)	
26.67	0	46.67	26.67	OR-IR boundary

Managing risk together

ORX believes many heads are better than one. We're here to bring the best minds of the international operational risk community together.

By pooling our resources, sharing ideas, information and experiences, we can learn how best to manage, understand and measure operational risk and become less vulnerable to losses.

We work closely with over 90 Member firms to develop a deeper understanding of the discipline and practical tools. We set the agenda, maintain industry standards, and garner fresh insights. ORX is owned and controlled, on an equal basis by its Members.

For more information about ORX, visit our website at www.orx.org

Thanks

Many thanks to those that took part in the survey. Without your input this report would not have been possible.

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