IMPLEMENTATION OF THE CAPITAL ACCORD FOR OPERATIONAL RISK

ORIAG Working Paper

January 2003

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1. EXECUTIVE SUMMARY

1.1 The objective of this working paper is to set out a record of the discussions and findings of a group of operational risk industry experts and regulators. The Operational Risk Implementation Advisory Group ("ORIAG"), chaired by The Financial Services Authority, met between May and December 2002. ORIAG was established by the FSA to provide guidance on the UK implementation of the New Basel Capital Accord and Directive on Risk based Capital Requirements for credit institutions and investment firms (referred to in this document as the "Capital Accord"). The group has focused primarily on the draft Basel proposals rather than that of the European Commission and this paper does not fully reflect the differences between the two proposals.

1.2 This paper is intended to enhance continued discussion of this topic rather than to present a comprehensive account of the issues or a set of agreed conclusions. It reports the discussions of the group, but it should not be read as representing either the formal positions of the member institutions or of the FSA. No remark attributed to the FSA or another particular organisation should be read as representing the formal position of that organisation. Discussion of the Capital Accord itself is of course continuing in Basel and Europe. The FSA's implementation proposals will be subject to consultation in the normal way.

1.3 The Capital Accord proposals outline three methods of increasing sophistication for calculating minimum regulatory capital for operational risk. Entry level is the Basic Indicator Approach ("BIA"). A firm which wants to use either the Standardised Approach ("TSA") or Advanced Measurement Approaches ("AMA") must meet defined entry criteria. ORIAG noted that these consisted of Qualitative Criteria on the assessment and management of operational risk internally by a firm; Quantitative Criteria for the modelling and measurement of minimum regulatory capital requirements; and Validation Criteria that enabled the regulatory authorities to obtain assurance on the firm's compliance with the entry criteria and assess the consistency of their application between firms.

1.4 ORIAG discussed issues both of application of the criteria (such as how they may apply to groups and the scope for partial use of the three methods) and of interpretation (of the qualitative, quantitative and validation criteria).

1.5 On issues of application, ORIAG discussed the following issues:

- *Groups* – the Capital Accord will require firms to assess minimum capital requirements on both a solo and consolidated basis. Under the AMA, firms have considerable flexibility in their model framework and should be free to calculate capital using the AMA at legal entity level, group-wide, or any other intermediate level provided that they can demonstrate the credibility and robustness of solo and consolidated operational risk capital numbers;

- *Partial Use* – the partial use of the different methods by firms would allow flexibility and could help to incentivise risk management. However, there may be potential constraints on partial use including concerns over regulatory arbitrage, while the Capital Accord proposals may allow partial use of the Basic Indicator Approach only in limited circumstances;

- *Boundary with Credit / Market Risk* – ORIAG noted the absence of industry consensus on how credit and market risk losses caused or exacerbated by operational failures should be treated. While the Capital Accord proposals require these losses to be included as part of the data set for the credit / market model but 'tracked' as operational losses, ORIAG would prefer flexibility for each firm to choose how to treat these events; and

- *Cross-Border issues* – the group supported international regulatory efforts to ensure consistency of approach between national regulators and to avoid duplication of regulatory approval processes.

1.6 On issues of interpretation, ORIAG discussed:

- *Qualitative Criteria* – the group prepared standards on the governance and management of OR (in particular the need for an independent risk management process), management information systems, monitoring and escalation processes for both the TSA and AMA qualitative criteria. Additionally for the AMA, internal capital allocation was essential for appropriate risk incentivisation;

- *Quantitative Criteria* – this paper records discussions in ORIAG on AMA models and the quantitative criteria; however, it was felt to be too early to establish standards while industry and regulators' thinking continued to develop; and

- *Validation Criteria* – the 'use test' was noted as being important to validate the AMA. However, there was little discussion of the validation of an AMA model, as this was dependent on the development of the quantitative criteria.

1.7 Annex 2 provides a high level comparison of the entry criteria for the different capital computation methodologies.

1.8 While this paper is being issued as a record of discussion in ORIAG and not for consultation, comments may be sent to Fagun Shah at the FSA.

2. INTRODUCTION

Scope, Purpose and Limitations

2.1 The New Basel Capital Accord and Directive on risk based capital requirements for credit institutions and investment firms (cumulatively referred to in this document as the "Capital Accord") will outline prudential capital requirements for operational risk ("OR"). All firms affected by the Capital Accord will be subject to a Pillar 1 minimum regulatory capital requirement for OR. This is computed under one of three approaches: the Basic Indicator Approach ("BIA"), the Standardised Approach ("TSA") and/or Advanced Measurement Approaches ("AMA"), if it meets the entry criteria for that stage[1].

2.2 As part of its Basel Firm Specific Implementation Project, the FSA established an Operational Risk Implementation Advisory Group ("ORIAG") in May 2002 to provide feedback and guidance on the interpretation and application of the entry criteria in a UK-specific context (see Annex 1 for Terms of Reference and Membership). The discussions in ORIAG have informed deliberations within the industry, the FSA, and the Basel Committee's Risk Management Group ("RMG") on the implementation of the Capital Accord.

2.3 This paper summarises the discussions in ORIAG subgroup and group meetings between May and December 2002. It is intended to enhance continued discussion of this topic rather than to present a comprehensive account of the issues or a set of agreed conclusions. It should not be read as representing either the formal positions of the member institutions or of the FSA. No remark attributed to the FSA or another particular organisation should be read as representing the formal position of that organisation. Discussion of the Capital Accord itself is of course continuing in Basel and Europe. The FSA's implementation proposals will be subject to consultation in the normal way.

Other relevant documents

Working Document of the Commission Services on Capital requirements for credit institutions and investment firms[2]

2.4 The European Commission's *Working Document* forms the basis of a period of enhanced dialogue until the end of January 2003 with representative bodies and trade associations from the financial services and other sectors by the Commission Services and the FSA. As the Working Document was issued in November 2002, it has not formed a significant part of the ORIAG discussions to date.

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[1] The most recently published draft of these entry criteria is incorporated in the QIS3 Technical Guidance (*Para 588-618* and *Annexes 5-6*) – see http://www.bis.org/bcbs/qis/qis3tech.pdf

[2] See http://europa.eu.int/comm/internal_market/en/finances/capitaladequacy/index.htm

Discussion Paper 13 UK implementation of the new Basel and EU capital adequacy standards[3]

2.5 Discussion Paper 13 ("DP13") outlines the FSA's approach to the implementation of the Capital Accord, including the timetable, broad principles, and particular issues of implementation.

Consultation Paper 142 Operational Risk Systems and Controls[4]

2.6 Consultation paper 142 ("CP142") outlines the FSA's proposed OR systems and controls policy for the Handbook (to take effect in 2004). This draft policy covers:

- *SYSC 3A Operational Risk: Systems and Controls* – guidance on some general OR issues on internal processes, people, and systems and external events, that firms should consider in managing its underlying OR exposures; and

- *PRU 6.1 Operational Risk: Prudential Systems and Controls* – guidance on issues that a firm should consider in establishing and maintaining a framework for the identification, assessment, monitoring and control of OR.

2.7 SYSC 3A and PRU 6.1 will be applicable to all firms impacted by the Capital Accord, and the guidance in these documents is relevant *as guidance* irrespective of whether a firm is on the BIA, TSA or AMA.

Consultation Paper 136 Individual Capital Adequacy Standards[5]

2.8 Consultation Paper 136 ("CP136") outlines the FSA's proposed framework for individual capital adequacy standard ("ICAS"), and proposes two key components

- *Internal Capital Assessment ("ICA")* – a self-assessment of capital requirements (by some firms) to address business and systems and controls risks not adequately captured in the minimum capital requirements in the Prudential Sourcebook (i.e. in this context, under the Capital Accord); and

- *Supplementary Capital Assessment ("SCA")* – an additional Pillar 2 capital requirement that could be required (of any firm) by supervisors in response to specific systems and controls related concerns, or to business risks not adequately captured by its ICA.

2.9 The ICAS framework is still under discussion in the light of comments to the consultation paper, and it is recognised that the ICAS regime must be consistent with the requirements under the Capital Accord.

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[3] See http://www.fsa.gov.uk/pubs/discussion/13/index.html

[4] See http://www.fsa.gov.uk/pubs/cp/142/index.html

[5] See http://www.fsa.gov.uk/pubs/cp/135/index.html

Sound Practices for the Management and Supervision of Operational Risk[6]

2.10 The Basel Committee's *Sound Practices* paper outlines some general principles (with explanatory guidance) on Operational Risk Management applicable to internationally active banks. The high-level principles identified in the Sound Practices paper have been incorporated into the draft guidance in SYSC 3A and PRU 6.1 to the extent that they are relevant to all financial institutions.

3. UNDERLYING FUNDAMENTALS

Objectives from the Capital Accord

3.1 In developing the framework for the Capital Accord, ORIAG noted two underlying objectives:

- to ensure that firms held adequate capital for high-impact unexpected (but not catastrophic) OR events; and
- to incentivise good OR management practices by reducing regulatory capital requirements as firms adopted more advanced risk management practices.

3.2 It was noted that there was potential for conflict between the two objectives as the reduction of capital under the second objective would result in less capital to cover the unexpected events in the first objective. It could be argued that as a firm's risk management practices improve, it would be less susceptible to high-impact unexpected OR events, other factors remaining equal. However, in considering the calibration and entry criteria for the stages, an appropriate balance needed to be maintained between the two objectives.

3.3 The issue of appropriate calibration to incentivise firms to move from the BIA to the TSA and ultimately the AMA was recognised, but was outside the scope of ORIAG discussions. ORIAG noted that overall, firms would have not only regulatory capital but also other incentives (such as reduction in OR exposures and losses) to enhance their OR management practices. In this context, it was important that the interpretation and application of the entry criteria was consistent with internal risk management requirements.

Principles

3.4 In considering the application of the entry criteria in a UK-specific context, the following overarching principles were identified:

- the setting of super-equivalent standards only where there was a material risk of the standards otherwise being too low to help meet the FSA's regulatory objectives;

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[6] See http://www.bis.org/publ/bcbs91.pdf

- flexibility in the choice of approaches that a firm could use (both between BIA, TSA and AMA, and within the AMA); and

- consistency and transparency in the application of the entry criteria between firms. There was also a need to ensure consistency of approach with the market and credit risk frameworks.

3.5 Again, it was recognised that there was the potential for conflict between the principles of flexibility, consistency and transparency, and an appropriate balance was required in allowing flexibility whilst maintaining consistency and transparency.

Entry Criteria

3.6 ORIAG noted that the entry criteria that a firm would need to comply with could be separated into 3 main categories:

- Qualitative Criteria on the assessment and management of OR internally by a firm;

- Quantitative Criteria for the modelling and measurement of minimum regulatory capital requirements; and

- Validation Criteria that enabled the regulatory authorities to obtain assurance on the firm's compliance with the entry criteria and assess the consistency of their application between firms.

3.7 It was recognised that in order to allow flexibility in implementation, the entry criteria outlined principles (rather than standards) on OR management and measurement. There was some reliance on national implementation to ensure that the detailed standards were applied consistently with the Capital Accord principles.

3.8 These criteria are discussed further in Sections 4–6 of this paper. However, the table below summarises the impact of the criteria on the three stages, and Annex 2 provides a high level comparison of the entry criteria for the different capital computation methodologies.

	BIA	**TSA**	**AMA**
Qualitative Criteria	No	Yes	Yes
Quantitative Criteria	No	Limited	Yes
Validation Criteria	No[7]	Yes	Yes

[7] As the minimum regulatory capital requirement will be based on the gross income number, any Validation Criteria deemed necessary would be limited to verification of the accuracy of the gross income and capital computation.

Approval Process

3.9 ORIAG noted that the processes by which a firm could obtain approval to use the TSA or AMA (including transitional processes during the initial implementation period for the Capital Accord) were being considered within the FSA. Taking into account the complexity and capital impact of the advanced approaches, and the need for efficient and effective use of resource, the FSA was considering:

- a process of self-certification / self-assessment by firms that they complied with the TSA entry requirements; and
- a more comprehensive waiver and model approval process for the AMA.

3.10 As a result there would need to be even greater clarity and transparency in the standards for those entry criteria that would be assessed through self-certification rather than through FSA review. It was recognised that this was particularly difficult where flexibility was required in the standards to allow for the differences in scale and complexity of firms and their business operating structures.

3.11 ORIAG noted that as outlined in DP13[8], the FSA was proposing to allow freedom of choice to firms (irrespective of size and complexity) on which capital computation methodology (i.e. BIA, TSA, or AMA) they use.

Groups

3.12 ORIAG highlighted that within a group context, an institution's OR exposures from processes, people and systems would follow its organisational management structures (its "management business lines"). Therefore OR would also be fundamentally managed on a management business line basis, potentially across both legal-entity structures and regulatory jurisdictions. It would therefore be apt for capital to be calculated and held in a manner consistent with management business lines.

3.13 However, jurisdictional and statutory issues (for example, the limited liability of companies and administration / bankruptcy protections) could mean that access to this capital was overly restricted when needed. To ensure adequate capitalisation of legal entities to meet regulatory concerns, the FSA noted that there would be solo (i.e. individual legal entity) as well as group level capital requirements. These concerns were recognised in the Capital Accord, which proposed the application of the Accord, on a consolidated basis, at every tier within the group[9].

[8] Para 3.12 DP13

[9] Para 1-4 QIS3 Technical Guidance

3.14 Under the UK regulatory regime, it was individual firms that were authorised and required to comply with the threshold conditions including those for adequate resources. The concept of integrated groups where capital could be held on a consolidated basis was recognised by the FSA[10]. However, the requirements on solo and group capital were also likely to be affected by the Financial Groups Directive[11].

3.15 Setting aside partial use considerations (see Para 3.19–3.33 below), ORIAG noted that the distinction between legal entity and management business lines had no impact on the capital computation methodology under the BIA and TSA.

3.16 For the AMA, two model specific issues were identified:

- the extent to which the capital assessment model should be for individual firms rather than group-wide; and
- the extent to which data from another location or legal entity in the group should be used in the capital assessment model.

3.17 ORIAG noted that under the AMA, it was up to the institution to develop a consistent and coherent methodology for the measurement of its OR capital requirements. Hence, an institution should have flexibility in choosing whether its AMA model was run at legal entity level, group-wide or at any other intermediate level so long as it was able to compute / allocate minimum regulatory capital requirements at individual legal entity and group level (and demonstrate their credibility and robustness).

3.18 In developing its OR model framework, an institution should consider the relevance (and hence inclusion or exclusion) of all data inputs (for internal and external data, environmental and internal control factors, and scenario analysis) available to it. Irrespective of what level an institution ran its model, data from another location or legal entity might be relevant, and therefore require inclusion in the model.

Partial Use

3.19 Partial Use refers to the use of more than one capital computation methodology (i.e. BIA, TSA, AMA) by an institution[12]. ORIAG noted that this *partiality* had several dimensions:

- between different legal entities within the same institution;

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[10] Proposals on the treatment of integrated groups were originally published in CP97 (*Para 5.16-5.22* and *Appendix 3 PRAG2*) – see http://www.fsa.gov.uk/pubs/cp/97/index.html

[11] The FSA intends to issue a CP on the implementation of the directive into handbook policy in 2003. However for an overview see http://www.fsa.gov.uk/industry/conglomerates_conference-jul02.html

[12] Para 591 QIS3 Technical Guidance

- between different *regulatory business lines*[13]; or

- within a regulatory business line (for example, in order to follow *management business lines*).

3.20 One proposal that was put forward was for partial use between loss event types (as per QIS3). However, the BIA and TSA did not compute capital using the event types, and under the AMA firms were free to choose their own loss categories[14]. Therefore this was not considered an appropriate or feasible proposal.

3.21 ORIAG noted that in order to allow flexibility and to incentivise good OR management practices, a relatively liberal approach to partiality should be taken. For example, it might not be feasible for an institution to meet the TSA / AMA entry criteria immediately, or for all its business activities. Partial use, here would allow institutions to make incremental progress towards higher OR management standards (rather than having to take a "big bang" approach that could take years to achieve), and ensure that incentives existed for standards to be raised within the institution.

3.22 Furthermore, there might be occasions where partial use was required as a result of a corporate activity (for example, a merger / acquisition or demerger / restructuring) where it was not feasible for the restructured organisation(s) to meet the TSA / AMA standards for all business activities.

3.23 However, adhering to the Qualitative Criteria under the TSA / AMA required a comprehensive and systematic approach to OR management – both in its revenue earning and support functions. ORIAG recognised that allowing partial use would potentially make it harder for firms to deliver, and the FSA to assess compliance with, the Qualitative Criteria within the institution.

3.24 Partial use could also invariably give opportunity for regulatory arbitrage – particularly between the BIA and TSA due to the differences between the BIA (the alpha) and the TSA (the betas).

3.25 To some extent concerns over regulatory arbitrage might be exaggerated – some institutions would still want the TSA / AMA for their own risk management purposes (and to demonstrate to the market that they controlled OR well). In addition, it was noted that the calibration of both the BIA / TSA charge was based on 12% of existing aggregate regulatory capital. So the systemic problem of 'cherry picking' could be less significant for OR than for credit risk (where aggregate capital was much higher).

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[13] A distinction is made in this paper between *regulatory business lines* and *management business lines* – regulatory business lines refers to the Basel business line mapping as outlined in Annex 5 QIS3 Technical Guidance; management business lines refers to internal organisational structures within an institution.

[14] Para 592-597, 613 & Annex 6 QIS3 Technical Guidance

3.26 One option to address this could be (as currently for market risk) to set a target for critical mass. For example, if over a certain percentage of gross income was taken out via the AMA, then the institution could be required to model all its business on the AMA. However, in addition to being arbitrary, corporate / cost centres would not be included under the above example. Furthermore, there were concerns in ORIAG that it might not be possible to credibly model all management or regulatory business lines.

3.27 Alternatively, the institution could be required to outline its strategy for the rollout of the TSA / AMA as part of the approval process. The FSA could then use remedial actions (under Pillar 2) if there appeared to regulatory arbitrage. Where the strategy was to permanently leave some business activities on the BIA / TSA this would need to be justified.

3.28 Whilst the current Capital Accord proposals could be interpreted more flexibly, a FSA member of ORIAG highlighted that:

- the final Capital Accord was unlikely to allow partial use between the BIA and TSA (and within a group context, this would be applied to the whole group);
- the option of partial use between the BIA and AMA was likely to be allowed only for those jurisdictions that did not intend to implement the TSA; and
- partial use would be allowed between the TSA and AMA both for given regulatory business lines and within regulatory business lines, and for separate legal entities, reflecting the overall flexibility of the AMA[15].

3.29 It was expected that future drafts of the Capital Accord proposals would further outline the position on Partial Use. It was noted that where firms disagreed with this position, a more appropriate forum to highlight objections would be through responses to the Basel and EU consultation papers.

3.30 ORIAG noted that if partial use was not allowed between the BIA and TSA / AMA, a number of issues would need to be addressed, including:

- how to deal with corporate activity such as mergers and acquisitions where one institution was on the BIA and the other on the TSA; and
- how to deal with the cross-border issue of institutions operating in jurisdictions that did not implement the TSA, for whatever reason.

3.31 One technically correct solution for the first issue could be for the FSA to require the entire institution to be on the BIA until it met the TSA criteria. Another more pragmatic approach could be to allow the merged entity a period of time in which to attain compliance.

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[15] Para 591 QIS3 Technical Guidance

3.32 On the second issue, the FSA could require institutions to demonstrate that they met the TSA criteria (although this could raise extra-territorial concerns that would need to be addressed). A more flexible approach could be to allow partial use in these specific circumstances.

3.33 A May 2002 discussion paper by the Institute of International Finance ("IIF") on *Partial Use of Regulatory Capital Calcualtions for Operational Risk within a Legal Entity and Background Briefing on issues within a Group* was considered during discussions on this topic.

Boundary with Credit and Market Risk

3.34 ORIAG noted that the *boundary* between market and credit risks and operational risks was an area where there was difficulty in achieving consensus. The entry criteria proposals were:

- under the OR rules – a firm was required to track the OR losses related to its market and credit activities, but was not required to model these losses (as this could result in double counting)[16]; whilst

- under the credit risk rules, there was no explicit reference to the boundary although it was intrinsic to the way in which the internal ratings based approach was built (for example on the probability of defaults of borrower in a grade and the loss given default for each exposure[17]). Within the model data requirements, there were no allowances made for the exclusion of defaults or losses caused by operational shortcomings as opposed to any other cause.

3.35 Within the industry it was perceived that there were two approaches:

- to continue to classify losses as credit or market risk losses based on their current definitions for risk measurement (and regulatory capital) purposes. However, it should be acknowledged that for risk management purposes a closer analysis of the causes of loss, and in particular the OR element, was necessary, and that appropriate amendment of processes, systems and controls and management action should occur as a result of this analysis; and

[16] Para 604 & 613 QIS Technical Guidance

[17] Para 244-245 QIS Technical Guidance

- to allocate the credit/market/operational component of loss events for both measurement and management purposes, perhaps for losses above a particular threshold (suggestions ranged here from $1million to $25 million). This allocation process could be done either on a subjective, qualitative basis or on a quantitative basis using sanctioned credit/market risk limits. A further variant of this could be to include the event in both loss databases (for management purposes) but to allocate losses for regulatory calculation purposes. At a later date, once more experience was acquired, it could then be possible to allocate losses more accurately.

3.36 ORIAG believed that both approaches could be consistent with the 'Operational Risk' entry criteria, by placing a different emphasis on the word 'track'. The first approach tracked OR by flagging those credit/market risk losses that had an OR component and taking appropriate management action. The second approach tracked OR by allocating a portion of losses from individual events to an OR data set. It was also highlighted that there were proponents for both these viewpoints within the OR management sphere, and did not represent a credit/market risk view of the issue vs. an OR view.

3.37 A simple but non-exhaustive summary of the pros and cons is noted below:

Approach 1	**Approach 2**
Pros: ▪ Simple, practical and hence consistent ▪ Economical to implement and less risk of double counting ▪ Compatibility with existing databases and calibration of credit side of Basel Accord	Pros ▪ Intellectual soundness ▪ Enhanced focus on OR measurement ▪ Potentially better focus on causes of losses
Cons ▪ 'Pollution' of loss databases/'gaps' in op risk data ▪ Full OR measurement inhibited ▪ Accurate risk mitigation inhibited	Cons ▪ Spurious accuracy in allocation process/double counting ▪ Complexity/resource implications and potential lack of consistent treatment of similar events ▪ Incompatibility with existing data sets and could require recalibration of Basel credit parameters (LGD)

3.38 In view of the current lack of consensus on this issue (and limited prospects for agreement in the near term), ORIAG discussed whether the FSA could preserve any of the flexibility they felt was inherent in the Basel Accord wording when drafting its standards. Firms would then be free to adopt an approach consistent with either of the two schools of though outlined above.

3.39 In return for this flexibility, the FSA could expect the approach adopted by an institution to be consistent, transparent and verifiable, as below:

Consistency: ▪ an institution's approach to the boundary must be consistent across business units that adopt AMA / Standardised Approach; and ▪ an institution's approach to the boundary must be sufficiently clear, well documented and communicated so that similar loss events are treated in a consistent fashion.

Transparency:
▪ an institution's approach to the boundary must be documented, and exception procedures established;
▪ the mechanism by which the approach may be altered must be documented; and
▪ significant alterations to the approach must be communicated to the FSA, with a discussion of:
  ▪ the rationale for the alteration;
  ▪ a draft text of the new policy/approach;
  ▪ the impact of the change on the relevance and treatment of loss data history (for credit/market/operational risk data history as appropriate); and
  ▪ an illustration of the likely impact of the change (in terms of loss allocation and capital).

Verification: ▪ an institution (either through independent internal functions or through third parties) should verify that its approach to the boundary is adhered to; and ▪ the supervisor may wish to review this verification process (rather than duplicate it) as part of the on-going supervisory process.

3.40 A FSA member of ORIAG noted that the current Capital Accord proposals required that operational related credit continued to be included as part of the data set for the credit model, and it believed that the first approach was more consistent with the Basel proposals. ORIAG felt that this was an issue that needed further discussion and should be raised to the FSA's overall Basel Advisory Group.

Cross Border

3.41 ORIAG recognised that operating under different supervisory regimes was not a new experience for firms who had presence in more than one jurisdiction. Under the Capital Accord, there was potential for a firm to be subject to multiple validation and approval work on the same OR model. It was clear that unnecessary duplication between home and host supervisors would be costly both to firms and supervisors. From this perspective it was something which supervisors should seek to avoid when implementing the requirements. Nevertheless, ORIAG noted that all supervisors, whether in a home or a host capacity would still retain responsibility for authorised firms within their jurisdiction, including appropriate allocation of capital at 'local' level.

3.42 One possible approach which could help supervisors to meet both the aims of minimising duplication whilst ensuring that supervisors continued to discharge their statutory responsibilities would be one where the lead supervisors took a significant role in the co-ordination of the model approval process. In order to further minimise duplication, there could be cases where the host supervisor would choose to rely on the information provided by the home supervisor or that the home/lead supervisor might be able to rely on approval work undertaken by the host supervisor in its jurisdiction. Clearly any approach that relied on co-operation between supervisors would need, at the very least, bilateral but preferably multilateral agreement between supervisors. ORIAG noted that this issue was under discussion in the Basel Committee's Accord Implementation Group ("AIG").

Pillar 2 Supervisory Review

3.43 ORIAG noted that the FSA's approach to Pillar 2, and in particular the ICAS framework (see CP136), was being considered within the FSA. During its discussions, ORIAG identified a number of areas (such as dealing with capital arbitrage, allowing partial use, and ensuring consistency between firms' AMA models) where supervisory review could play an important role.

Pillar 3 Market Discipline

3.44 Pillar 3 relates to the use of disclosure to incentivise good OR management. Whilst Pillar 3 was recognised as a mechanism to enhance transparency and alleviate "level-playing field" concerns, there currently appeared to be little understanding in the market of OR models, or market pressure for further OR disclosure.

3.45 The minimum Pillar 3 disclosure requirements (within a group, at the highest consolidated level of the group) could include as mentioned in the latest Basel Committee publication[18]:

- the approach(es) for OR capital assessment that the institution qualified for;
- a description of the advanced measurement approach, if used by the institution; and
- the OR capital charge per regulatory business line (if available).

3.46 Overall it was felt that Pillar 3 was an area for further development, and that the industry trade associations and market participants rather than regulators should continue to take the lead in increasing awareness on this topic for the time being. In particular, the high level requirements proposed above were felt sufficient at this point in time and there were concerns that more detailed regulatory disclosure requirements for the AMA could act as a further disincentive for firms to adopt this approach.

[18] Para 33 Working Paper on Pillar 3 – Market Disclosure – see http://www.bis.org/publ/bcbs_wp7.pdf

4. BASIC INDICATOR APPROACH

4.1 Since the BIA is the minimum approach firms can adopt, there are no Qualitative or Quantitative Criteria for the BIA[19]. However, ORIAG recognised that firms would need to meet the minimum threshold conditions for authorisation and comply with the systems and controls provisions in the Handbook (see Para 2.6–2.7 & 2.10).

4.2 As the minimum regulatory capital requirement would be based on the gross income number, any Validation Criteria deemed necessary would be limited to verification of the accuracy of the gross income and capital computation.

5. STANDARDISED APPROACH

5.1 The capital computation methodologies were intended to be a continuum of increasing sophistication and risk sensitivity, and firms were encouraged to move along this spectrum as they adopted more sophisticated OR practices[20]. It is assumed that the entry criteria are additive in nature, with firms expected to enhance both their risk management processes and the control of underlying OR exposures as they progressed from the BIA to the TSA and AMA.

5.2 In respect of OR management, ORIAG noted that a distinction could be drawn between the BIA and TSA (increased qualitative sophistication) and between the TSA and AMA (increased quantitative sophistication and risk sensitivity in the minimum regulatory capital requirement). However, under the current capital measurement proposals, the calibration of the BIA and TSA did not provide a universal capital incentive to move from the BIA to the TSA (although it could do so for firms' individual circumstances)[21].

Qualitative Criteria

5.3 ORIAG noted that the qualitative distinction between the BIA, TSA and AMA could be drawn in a number of places, for example:

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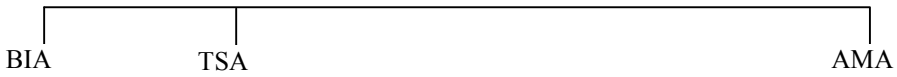
[19] Para 594 QIS3 Technical Guidance

20 Para 589-590 QIS3 Technical Guidance

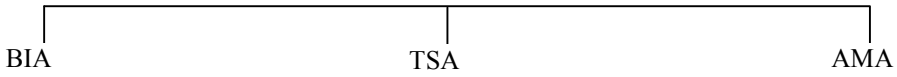
[21] Para 592 & 597 QIS3 Technical Guidance

Option 1



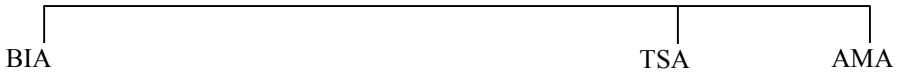
- the TSA qualitative standards could be very low. This would recognise that the capital computation methods of the BIA and TSA were similar with little risk sensitivity. However, ORIAG recognised that the adoption of this option would raise questions as to the purpose of the TSA – particularly as the firm's choice between BIA and TSA would be largely influenced by which option gave it a lower capital charge;

Option 2



- the TSA qualitative criteria could be a half-way house to the AMA. This would allow for more sophisticated risk management practices but recognise the absence of capital incentives. However, the issue here was the difficulty in drafting meaningful and transparent self-certification requirements applicable to both small and large firms that allow flexibility but provide consistency of approach; or

Option 3



- the TSA qualitative criteria could be close to those for the AMA. This would cater for firms with sophisticated risk management practices who were either not convinced or not ready for OR measurement / modelling. However, ORIAG highlighted that assuming that calibration remains as it is, this would result in a high qualitative step-up for little or no capital reduction.

5.4 Since the initial ORIAG discussions on this topic, the Capital Accord proposals outlining the general and qualitative entry criteria for the TSA have been published[22]. This drafting of the TSA entry criteria proposed relatively tough and detailed standards that would require a comprehensive and systematic approach to the identification, assessment and monitoring of OR, and was therefore consistent with Option 3.

[22] Para 600 & 604 QIS3 Technical Guidance

5.5 Some detailed qualitative standards relating to the Qualitative Criteria for the TSA and AMA were drafted and considered within ORIAG. Whilst some of the key AMA issues are identified below, Annex 3 lists these draft qualitative standards and how these could be incorporated into the existing draft PRU6.1 policy. The Annex has been included as a record of the group's discussions, to enhance continued discussion of this topic rather than to present a comprehensive account of the issues or a set of agreed conclusions. It should not be read as representing either the formal positions of the member institutions or of the FSA.

Independent Risk Management Process

5.6 ORIAG highlighted that the governance and management framework for the TSA was highly dependent on the size, complexity, and organisational structure of the firm. It was noted that whilst there was a need for an independent OR management process for a TSA firm, this did not necessarily require an independent risk management function. However, there was recognition that a clear definition of the roles and responsibilities of different functions (such as directors, senior management, risk functions, internal audit, financial and operational control, and line management) was an integral part of the OR management framework. Furthermore, there was a need for the OR governance framework to be an integral part of the wider corporate governance framework.

5.7 The role of Internal Audit (where it existed) in OR management was specifically discussed. Whilst ORIAG felt that there should be no requirement for a TSA institution to have an Internal Audit function, it was recognised that for many firms (and in particular smaller firms), Internal Audit was an integral part of their OR management strategy. However, it was recognised that Internal Audit should not be involved in devising policy on OR management or in everyday risk management tasks, both of which were a matter for management. It was important that Internal Audit maintained their independence and objectivity, and that there was a clear demarcation of responsibilities.

5.8 ORIAG noted that general guidance on risk management roles and responsibilities would be included as part of PRAG6 of the Integrated Prudential Sourcebook, and that this policy was currently being reviewed within the FSA in the light of responses to CP97. There was recognition that further consideration was needed of acceptable and unacceptable OR governance and management structures, both for the TSA and AMA.

Management Information Systems

5.9 ORIAG noted that the entry criteria require a firm to collate appropriate MIS to enable it to identify and assess its OR exposures, including the systematic tracking of relevant OR data[23]. This would require the firm to establish processes to enable it to analyse data on internal and external OR events (that provided a more objective but historical assessment of its OR exposures), and business environment and internal control factors (that provided a relative but current assessment of exposure).

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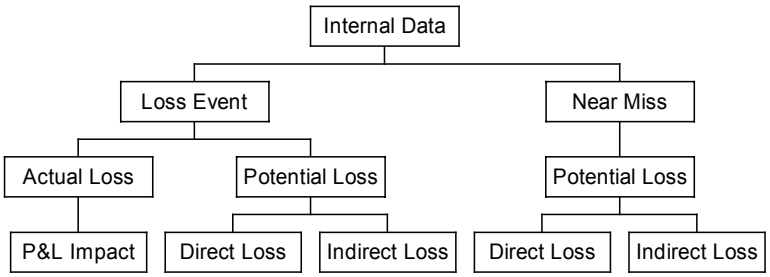
[23] Para 604(b)-(c), (e) & (g) QIS3 Technical Guidance

Internal and External Data

5.10 ORIAG recognised that internal data should be used by the firm to identify and assess the potential likelihood and impact of OR exposures; to assess its internal control environment; to enhance the internal control environment through root cause analysis or other investigations; and to validate the effectiveness of its OR management framework.

5.11 A key feature highlighted was that whilst a firm might be subject to a number of OR events, only a few of these would result in actual losses. From an OR management perspective, in addition to monitoring their actual losses firms should also be interested in understanding the causes and possible consequences of all OR events. The diagram below outlines a potential range of events that a firm might be interested in monitoring.



- *Actual Losses* – The actual (or estimated) Profit & Loss Account impact of a loss event (this could include both direct and indirect costs);

- *Potential Losses* – The potential direct or indirect loss that could have been suffered from a loss event (this could be estimated from scenario analysis or from comparison to previous events of this nature); and

- *Near Misses* – The potential direct or indirect loss that could have been suffered from a operational failure, but that was avoided, although not from normal controls (for example, an error identified by a third party).

5.12 ORIAG therefore suggested that at a minimum, firms were only required to systematically track MIS on actual losses[24], but should be encouraged to collate the wider range of internal data available.

5.13 ORIAG noted that external data should be used (particularly through scenario analysis) to identify and assess the potential likelihood and impact of OR exposures. However, as above, it was recognised that data completeness and accuracy was difficult to achieve.

[24] Para 604(g) QIS3 Technical Guidance

Business Environment and Internal Control Factors

5.14 ORIAG noted that the assessment of the internal control environment should include MIS from both periodic control risk assessments, as well as ongoing key risk indicators.

Monitoring and Escalation

5.15 ORIAG considered that at a minimum, a firm should establish a monitoring and escalation process that enabled changes in the firm's OR profile to be escalated to the appropriate level of management. This would require the firm to outline formal escalation parameters and/or thresholds and those to whom responsibility for assessing and monitoring MIS lay.

5.16 Furthermore, the firm should ensure that the monitoring and escalation process adequately covered all OR exposures at both a business activity and firm-wide level.

Quantitative Criteria

Business Line Mapping

5.17 In order to compute its regulatory capital requirement, ORIAG noted that a firm must map its gross income into the Regulatory Business Lines[25]. A potential issue identified was that although the regulatory business lines had been developed in Basel for internationally active banks, the EU intended to apply it more widely to investment firms and the proposed regulatory business lines might not offer sufficient granularity for investment firms.

5.18 ORIAG considered that when allocating gross income across business lines, institutions might be permitted to use established internal pricing methods to allocate gross income to specific business lines provided that total gross income for the institution (as recorded under the BIA) was equal to the sum of gross income for the eight regulatory business lines.

Validation Criteria

Accuracy of Capital Calculation

5.19 As the minimum regulatory capital requirement would be based on the regulatory business line mapping of gross income, ORIAG noted that any Validation Criteria of the capital computation would be limited to verification of the integrity of the business line mapping, accuracy of the gross income numbers, and capital computation.

[25] Para 595-597, 605 & Annex 5 QIS3 Technical Guidance

Compliance with Entry Criteria

5.20 ORIAG recognised that there must be a validation process to evaluate routinely the firm's compliance with the entry criteria. Within a self-certification framework, this was likely to require some form of independent review within the firm by a function such as Internal Audit.

Data to enable comparisons by Regulatory Authorities

5.21 The TSA entry criteria require firms to systematically begin to track internal loss data by regulatory business line[26]. ORIAG recognised that one important use for this data was to enable Regulatory Authorities to review the calibration of the BIA and TSA.

5.22 Whilst there was no requirement for this internal loss data to be mapped to the Loss Event Type Matrix, ORIAG considered that firms may wish to establish processes to do so, particularly if they wished to apply for the AMA in the future.

6. ADVANCED MEASUREMENT APPROACHES

Qualitative Criteria

6.1 Some detailed qualitative standards relating to the Qualitative Criteria for the TSA and AMA were drafted and considered within ORIAG. Whilst some of the key AMA issues are identified below, Annex 3 lists these draft qualitative standards and how these could be incorporated into the existing draft PRU6.1 policy. The Annex has been included as a record of the group's discussions, to enhance continued discussion of this topic rather than to present a comprehensive account of the issues or a set of agreed conclusions. It should not be read as representing either the formal positions of the member institutions or of the FSA.

Governance & Management Framework

6.2 The AMA entry criteria require an appropriate governance and management framework but do not specify in any level of detail what this should consist of[27]. However, ORIAG noted that in order to meet the Qualitative Criteria, some detailed standards on the role of senior management, risk management, and line management might need to be defined – some of these standards are considered in Annex 3.

6.3 As for the TSA, it was important to have a clear definition of the roles and responsibilities of different functions (such as directors, senior management, risk functions, internal audit, financial and operational control, and line management). However, there was recognition that further consideration was needed of acceptable and unacceptable OR governance and management structures, both for the TSA and AMA.

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[26] Para 604(g) & 613 QIS3 Technical Guidance

[27] Para 600 & 606(a)-(b)&(d) QIS3 Technical Guidance

Internal Capital Allocation

6.4 A key entry criteria requirement was to integrate the firm's risk measurement system into the day-to-day risk management processes[28]. In particular, this would require the firm to allocate capital internally for OR in order to incentivise risk management (this is sometimes described as "economic capital"). It was important for the firm's economic capital and AMA models to be comparable. Hence ORIAG considered that any differences between these models (for example, to take account of reputational impact or to provide incentives for risk management) should be justified and documented.

Quantitative Criteria

6.5 The AMA entry criteria specify that internal data, external data, scenario analysis, and business environment and internal control factors should be data input elements to a firm's AMA model[29]. ORIAG noted that whilst the entry criteria in respect of internal losses were relatively detailed, there was little guidance as yet on how the other elements should be used, and it was considered that this was an area where firms could influence the future development of the entry criteria. However, ORIAG felt that the rules and standards in this area should not be overly prescriptive.

6.6 Whilst considerable discussion was held on the Quantitative Criteria in ORIAG group and subgroup meetings, ORIAG recognised that AMA models would need to be considerably more advanced beforeany consideration of the appropriateness of issuing detailed quantitative standards could be carried out. Para 6.8–6.63 below summarise the ORIAG discussions, and identify some of the issues that need to be resolved in order to define standards for AMA models.

6.7 One method in which progress could be made on this topic would be through the development of stylised AMA models (outlining a number of theoretical frameworks, and the progress made by firms in the practical implementation of this theory) and an AMA Roadmap (outlining the key common components of an AMA model) – see Para 7.1–7.3.

Expected, Unexpected and Catastrophic OR Events

6.8 The rules languauge refers to expected, unexpected and catastrophic OR losses and events, although these terms are not defined[30]. However, ORIAG highlighted that this was an area with potential for significant misunderstanding, as these terms had different meanings depending on whether they were used in a statistical or layman context.

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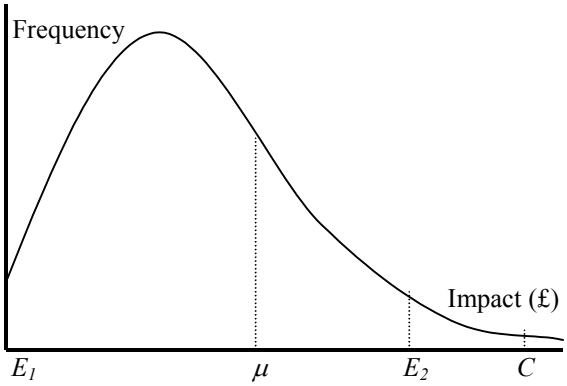
[28] Para 606(c) QIS3 Technical Guidance

[29] Para 609(d) QIS3 Technical Guidance

[30] Para 607 & 609(a)



- *expected losses / events* – in statistical terms, expected loss was defined as the mean of a distribution (μ); however, the term was also commonly used in a more idiomatic, layman's sense to represent a band of losses (for example, $E_1 - E_2$)[31]. ORIAG considered that the second interpretation was preferable.

- *unexpected losses / events* – in statistical terms, unexpected losses were those greater than the mean (i.e. to the right of μ); however, in layman's terms this was more likely to refer to those losses greater than the band (i.e. to the right of E_2).

- *catastrophic losses / events* – this term was not generally used statistically, although it could be interpreted as meaning those losses greater than C (i.e. to the right of C).

6.9 ORIAG noted that the capital calculation should be based upon expected and unexpected losses, unless it could be demonstrated that expected losses were adequately captured in a firm's internal business processes, raised a number of specific issues including[32]:

- How could a firm demonstrate that it was adequately capturing expected losses in its internal business practices?

- Were unexpected losses to the right of μ or E_2 (and where should be E_2 set)?

- What did 'based on unexpected losses' actually mean (an extreme viewpoint could be to remove all 'expected' data points from the data set for the AMA model, although the more accepted approach was to include them, but adjust the calculated capital amount downwards to deduct expected losses)? Did the term need to be defined? How could this concept be incorporated within the qualitative elements?

6.10 A May 2002 paper by the International Swaps and Derivatives Association ("ISDA") on *Further Proposals for Regulatory Treatment of Operational Risk Losses* was considered during discussions on this topic.

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[31] In statistical terms this could be represented by x number of standard deviations from the mean ($\mu \pm x\sigma$).

[32] Para 609(a) QIS3 Technical Guidance

6.11 In considering catastrophic events (for which there was no agreed definition, but which could for example be classed as those greater than one year, 99.9% confidence), it was noted that this boundary was very subjective and sensitive to the *tail* events in the model data set (and hence the inclusion or exclusion of a single tail event could significantly alter the capital number)[33].

Internal Data[34]

6.12 Internal data was recognised by ORIAG as being an integral component to the statistical model as well as in validating the model. One area of consensus was that internal data within the AMA model should be restricted to actuarial losses (i.e. P&L impact of actual loss event) in contrast to the wider MIS definition identified in Para 5.11–5.12.

6.13 ORIAG highlighted that an issue requiring clarification was on what constituted a data point. It was recognised that there was an implicit requirement in the entry criteria that individual losses were recorded as individual data points so that common origins and/or causes could be observed. However, this issue was more complex where a number of factors could have contributed to individual large loss events in the past (or conversely that many impacts flowed from a single event). In this scenario, it was noted that there was merit in viewing such large events as a single impact (or where the impacts from a single event could be distinguished, to do so).

6.14 A related issue was the appropriate treatment of loss events with impact on more than one business line (whether management or regulatory). One suggestion was to allocate a proportion of the loss amount to each business line – although this raised further issues on the effect of this on an aggregated AMA model.

6.15 A separate issue identified was how to treat losses for an activity materialising long after an institution had ceased carrying out that activity, but still within the window of historic loss events that must be captured. This was considered by ORIAG as being an example where judgemental override should be used.

6.16 Another issue was model selection which, in part, would be driven by the quality, quality, and integrity of the data available. ORIAG recognised that institutions would need to provide clear, concise and detailed reasoning supporting the selection of a particular model.

6.17 Regardless of the exact statistical approach used, ORIAG noted that all approaches generated estimates not absolute values. This estimate would be a function of a number of variables including the holding period and confidence level. As the value was an estimate, then a degree of comfort in that number would also be required.

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[33] Para 607 QIS3 Technical Guidance

[34] Para 610-613 QIS3 Technical Guidance

6.18 Annex 4 outlines some general credibilty principles for internal (and external) data to obtain comfort on the integrity of these data inputs as a statistical component to the AMA model.

External Data[35]

6.19 Given the absence of specific guidance on the use of external data, there was some concern within ORIAG on what external data would be deemed "relevant" and how to use external data. Two main approaches for the use of external data were identified:

- as a qualitative adjustment, scenario analysis or benchmark; or
- within some form of statistical distribution.

6.20 ORIAG highlighted that the source of external data needed distinguishing – in particular whether the external data was derived from pooled loss data (also known as consortia data) or from publicly available sources.

6.21 ORIAG noted that consortium data was currently scarce, and that whilst the different consortia were putting significant effort into trying to standardise and harmonise the collection of OR data, further work was still required.

6.22 On the other hand, publicly available external data was perceived as being of limited value, as there are a number of issues concerning the data reported. Notably, that the loss amount was likely to be incorrect or uncorroborated, and the headline figure could be due to multiple events rather than a single event.

6.23 ORIAG considered that if clear and concise documented policies and procedures had been established for the collection of external data, then its use as a qualitative adjustment or benchmark should be acceptable. Of course the firm would also need to demonstrate the credibility and robustness of its benchmarking framework (and in particular, how it was to be conducted, implemented, assessed and reviewed).

6.24 On the other hand, the implantation of external data into an internal loss distribution was considered more difficult as assumptions would need to be made about compatibility in products and business activities and the internal control environment. In considering how external data could be implanted, ORIAG highlighted that issues surrounding the scaling and normalising of data by the institution had to be addressed.

6.25 Annex 4 outlines some general credibilty principles for external (and internal) data to obtain comfort on the integrity of these data inputs as a statistical component to the AMA model.

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[35] Para 614 QIS3 Technical Guidance

Business Environment and Internal Control Factors[36]

6.26 Generally, this element was taken by ORIAG to cover the use of data that acts as a proxy for the causes of risk (for example, risk indicators, controls risk self assessments, and scorecards). Whilst their use was generally understood and already in place at many institutions, a number of issues surrounding the use and selection of these factors as an element to the AMA model were identified:

- What exactly was a business environment and internal control factor for the purposes of an AMA model?
- How could such factors be assessed objectively and then measured in a consistent manner?
- As such factors were meant to be forward looking and reflect more closely the business environment, how could this dynamism be reflected in a consistent yet flexible manner? and
- How could the factors selected for use within the model be validated?

Risk indicators

6.27 In a discussion on the use of risk indicators for AMA modelling, ORIAG noted three potential uses:

- *data scaling for historical losses* – for example, risk indicators could be used to scale external data to an organisation's own profile, or to scale internal data across business lines within an organisation;
- *forward/predictive views for scenario and stress tests* – for example they could also be used to stress test, given a suitable model (e.g. what happens if trade volumes double with no corresponding increase in operations capability?); and
- *cost attribution* – for example, where loss data was scarce, a soft cost could be applied to risk indicators exceeding the benchmark by a given tolerance (e.g. the cost of replacing staff could be estimated by applying a cost to the staff turnover figures).

6.28 Due to the absence of consistent products and industry-wide technology platforms, ORIAG considered that institutions should be free to select their own indicators and 'universal' indicators should not be prescribed by the regulators. However, it was recognised that whilst institutions might use a wide range of indicators across the organisation, for each management business line, activity or process, only a finite number of key indicators would be needed.

6.29 Potential difficulties identified in the use of risk indicators included:

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[36] Para 616 QIS3 Technical Guidance

- How effective would risk indicator stress tests be in gauging the unexpected loss?

- How feasible was it to back test a risk indicator model after changes in the business environment? and

- A model based on risk indicators could be overly sensitive to monthly fluctuations in the risk indicator profile of an institution (although an averaging procedure might smooth out some volatility).

6.30 ORIAG highlighted that risk indicators were primarily a management tool and there had to be flexibility to amend these from time to time. One approach would be that once risk indicators had been selected, changes should be subject to the following provisos:

- the elements of the 'new' risk indicator should already be collected so that 'experience' of use could be demonstrated; and

- the rationale for desiring the change should be clearly defined according to established policies and procedures.

6.31 One method of validating risk indicator data could be through internal audit findings (for example, audit scores or other similar metric).

Outsourcing

6.32 ORIAG was informed by a FSA member of ORIAG that outsourcing should be considered as part of the assessment of the institution's business environment and internal control factors. This was consistent with the wider concept that whilst an institution could not contract out its regulatory responsibilities, it was up to the institution to determine how it managed the outsourcing. From a model perspective ORIAG noted that there was flexibility to treat the outsourcing as either an independent third party (i.e. external risk) or as a business process (i.e. internal risk) and this would depend on the nature of individual outsourcing arrangements.

6.33 It was also recognised that any reduction (or increase) in OR exposures from outsourcing would be reflected over time in the internal loss data.

Scenario Analysis[37]

6.34 From discussions within ORIAG, two types of scenario analysis were noted:

- *tests* – assessing the effect of changes to data inputs such as the frequency and/or severity of certain occurrences or drivers (for example, considering the effect of increasing two-fold the impact of a known event); and

[37] Para 615 QIS3 Technical Guidance

- *challengers* – considering the effect of events or combinations of events that may never have occurred (for example, considering the internal impact of an external event that occurred to a competitor).

6.35 ORIAG raised the prospect of developing generic or industry wide scenarios, perhaps covering the business lines/event types in the regulatory matrix. However, as many scenarios would be unique to individual firms, the added value in adopting this route was considered to be limited.

6.36 It was noted that, while certain events may have knock-on effects, these typically followed set and identified patterns.

6.37 The role of scenarios within a qualitative adjustment framework was considered with many firms reporting use of these in connection with economic capital estimates. It was suggested that it would be anomalous for regulatory capital not to follow this lead.

Historic Observation Period for Data Input Elements

6.38 An issue highlighted by ORIAG was the lack of clarity over the required period of historic observations for the data input elements to the model. In particular, whilst the requirement for 5 years (reduced to 3 years during the transitional period) of internal loss data was specified there were no explicit expectations for the other elements[38].

6.39 ORIAG considered that the interpretation of the requirement for 5/3 years of data should allow for the changes in the use of such data where this aligns to better risk management and the evolution and enhancement of AMA methodologies. Therefore the 5/3 year rule should be interpreted as a requirement for having 'experience of' data modelling, external data, scenario analysis and business environment and internal control factors, in addition to having 5/3 years of internal operational loss data. Proper internal change control procedures (procedures, documentation and approvals) should be used when making changes and where the impact was material due to this change, then this should be done in consultation with the regulator.

Soundness Standard[39]

6.40 ORIAG recognised that from a regulatory perspective, the capital estimate derived from an institution's AMA model must be robust and credible. In this context, regulators had stipulated "a soundness standard comparable to that of the internal ratings based approach for credit risk" which was taken to mean a 99.9% confidence level and a 1 year holding period on a single tailed distribution. The very nature of OR loss events meant that the distribution was unlikely to be either Gaussian Normal or the same as the credit risk model distribution. From previous experience the distribution might even be heterogeneous.

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[38] Para 612 & 614-616 QIS3 Technical Guidance

[39] Para 607-608 QIS3 Technical Guidance

6.41 ORIAG noted that institutions had only recently begun collecting OR loss data in a systematic and robust manner, and institutions might experience difficulty achieving this demanding requirement, at least in the short term. An alternative could be to use a lower quantile than the stipulated 99.9% (for example 95%) from a firm's loss distribution and then scale up. One advantage seen from adopting this approach would be greater perceived confidence in the capital estimate.

6.42 There were similar issues concerning the holding period. In particular, as OR losses were being mapped against specific loss types[40] (e.g. fraud etc.) ORIAG questioned whether it would be possible or sensible to specify one single holding period for all types of OR.

6.43 ORIAG considered the issue of scaling up a frequency estimation. However, it was noted that whilst Poisson distributions (which are being studied by many for use in this context) could be scaled in a linear fashion (i.e. a number for weekly frequency could be multiplied by 52 to derive the annual figure), other distributions would not scale up in this way.

6.44 ORIAG considered what a good test of the reasonableness of AMA capital numbers would be. It was highlighted that if AMAs under the current soundness standard routinely generated capital charges higher than those firms would pay under the Standardised Approach, one possible implication would be that the holding period standard should be reviewed.

Correlation[41]

6.45 Two themes on correlation were identified: correlation within the OR framework, and correlation with other risks (i.e. market and credit risks). ORIAG was informed by a FSA member of ORIAG that correlation with other risks was not currently being considered by regulators, and therefore concentrated upon the former. It was also highlighted to ORIAG that regulators were likely to set tough standards on correlation.

6.46 ORIAG noted that correlation was primarily of interest to institutions with bottom-up model approaches where correlation had to be addressed in aggregating lower-level models. In principle, in a top-down model, correlations would be automatically incorporated in the dataset.

6.47 The impact of correlation could be summarised as follows:

- *positive correlation* – an OR event occurring increased the likelihood / impact of another OR event;
- *negative correlation* – an OR event occurring decreased the likelihood / impact of another OR event; and

[40] Annex 5 QIS3 Technical Guidance

[41] Para 609(c) QIS3 Technical Guidance

- *zero correlation* – there was no relationship between the two events.

6.48 Within the OR framework, correlations could occur:

- within a loss event type category (between business lines)[42] – for example OR exposures from IT, outsourcing, or business continuity planning; and

- between loss event type categories (within or between a business line).

6.49 However, it was suggested that the categorisation of OR was appropriate precisely because the event types were very different and in principle unrelated, and therefore there was greater likelihood of correlation between business lines than between event types.

6.50 It was recognised that correlation (and the related issues of dependency / co-dependency and causation) had to be considered not only in the strict 'statistical' sense but also in looser 'common sense' terms. In particular, ORIAG considered that making model assumptions on correlations purely on the basis of statistical analysis, without understanding and challenging what the numbers indicated, would be inappropriate.

6.51 ORIAG noted that the issues depended on the AMA approach selected. For example, under a Loss Distribution Approach ("LDA"), it might be feasible to address correlation through conventional statistical means; whereas for a scenario-based approach 'statistical' correlation was more problematic, and would therefore probably have to be addressed through qualitative adjustments (with supporting evidence to justify the adjustment).

'Common Sense' Correlation

6.52 It was recognised intuitively that the degree of potential correlation would depend entirely on the structure and control environment of the institution, and that differences by management business line and location could typically bring diversification over and above that brought by variety of event-type. For example, an institution with processing sites at a number of different locations would undoubtedly reduce its susceptibility to business continuity type operational exposures.

6.53 Similarly, the degree of correlation could be affected by whether or not the endogenous or exogenous factors were at work. Endogenous factors (for instance, those related to the control environment within a firm) could have the potential to lead to higher correlations than exogenous events (eg, 'acts of God').

6.54 ORIAG noted that it made sense as a preliminary matter to work out limits on causal links. In the absence of extensive data on correlation, making this assessment could be a first step to setting a sensible conservative limit on correlations.

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[42] Whilst an institution does not need to use the Business Line mapping or Loss Event Type Matrix outlined in Annexes 5-6 QIS3 Technical Guidance, it is recognised that the AMA model framework will require some internal classification by business activity and OR event type.

6.55 It was suggested that a pragmatic approach to correlation could be to assess what level of correlation between OR events a firm could withstand and then manage to that standard.

'Statistical' Correlation

6.56 Assuming a normal distribution (and only under that assumption), the expected overall impact of two possible events with individual impact equal to '1' could be anything between 0 (perfect negative correlation = -1) and 2 (perfect positive correlation = +1). If the events were statistically independent (correlation = 0), the expected impact would be 1.4. However, ORIAG noted that OR did not follow a normal distribution.

6.57 A highly conservative approach to correlation would assume perfect positive correlation (ie. correlation = +1). However, ORIAG believed that such a 'default' presumption for correlation would be inappropriate. For example, if each of the worst 10 scenarios had a 10% probability attached to it, then the chances of all 10 occurring was well beyond 99.9%, and a more realistic assumption was that 2–3 might happen. Therefore, it would be more appropriate to set an alternative (but still conservative) upper bound.

6.58 It was suggested that if capital was based on what happened in the tail (viz. the quantile targeted), then it would be in the tail that correlation effects ought, strictly speaking, to be assessed. In fact, co-dependency – the joint movement of multiple variables, rather than pairs – would normally influence the tail more than correlation, but would at the same time be virtually impossible to validate, given the inevitable sparsity of data.

6.59 Modelling based on historical loss data would implicitly embed correlations (for firms using a firm-wide LDA) and there would be no need to derive artificially a correlation number from this.

Insurance[43]

6.60 Recognition of insurance against OR was welcomed by ORIAG given its economic usefulness even though the scope would be limited to those institutions with a regulatory approved AMA (it was noted that this was an area where there were differences between the European Commission and Basel proposals). It was also noted that some institutions, for internal capital purposes, already applied 'haircuts' to their insurance cover.

6.61 There was discussion on the standards that were to apply to insurance coverage in order for it to be recognised, and about the sorts of insurance that were available in the market, how they function, and what they cover. Particular focus was placed on the class of policies that expired upon a claim, even though that claim might be for a fraction of the full amount potentially covered by the contract. It was highlighted to ORIAG by the FSA that regulators were likely to set tough standards on insurance.

[43] Para 617-618 QIS3 Technical Guidance

6.62 It was noted that insurance might be viewed as lowering the capital requirement (i.e. reducing exposure) or as increasing the amount of resources that a firm had at its disposal to deal with losses.

6.63 A May 2002 submission to the RMG by the Industry Technical Working Group ("ITWG") on *Issues relating to the recognition of the benefits of Insurance and the impact on the Operational Risk Capital Requirement* was considered during discussions on this topic.

Validation Criteria

The Use Test

6.64 ORIAG noted that there was a requirement in the entry criteria that firms must demonstrate that they use their AMA model in their internal management of OR[44] to validate the quality and effectiveness of their model. In particular, ORIAG recognised that it was important that the model was not used solely as a black box computation of a regulatory number, without any resemblance to the real OR exposures in the institution. Annex 4 outlines some general principles identified by ORIAG for the Use Test.

Accuracy of Capital Calculation

6.65 There was little discussion in ORIAG or its subgroups of the validation criteria for the capital computation. ORIAG recognised that this was an important topic, but little progress could be made in identifying standards until further progress was made in developing AMA models, and understanding the components of this model.

Compliance with Entry Criteria

6.66 ORIAG noted that there was an explicit requirement for routine validation of a firm's compliance with the entry criteria[45]. Five main mechanisms for validation were identified:

- *business management certification* – business line management self certify their compliance. This could also include independent risk model assessment by a specialist department outside (or inside) the business line;
- *internal audit certification* – internal audit provide an independent review of both qualitative attributes as well model compliance to quantitative data standards;
- *external audit certification* – this might be necessary to the extent disclosures or capital calculations form part the annual Financial Accounts upon which the external auditor opines;

[44] Para 606(c) QIS3 Technical Guidance

[45] Para 606(e)-(g) QIS3 Technical Guidance

- *third party certification* – this might could include certification by independent consultancies (other than external auditors); and

- *supervisory certification* – regulatory review through the use of specialist technical resource within the regulator or third party examiners.

Data to enable comparisons by Regulatory Authorities

6.67 The FSA noted that the entry criteria may be additive. In this case, the TSA entry criteria for firms to map their gross income into the Regulatory Business Lines would also be applicable to firms on the AMA[46].

6.68 There was also a requirement to map internal loss data into the Regulatory Business Lines and Loss Event Type Matrix[47]. ORIAG noted that this data could be used by the Regulatory Authorities to ensure consistency of approach, and to assess the calibration of the BIA and TSA as well as firms' assessment of capital under the AMA.

6.69 ORIAG noted that whilst the Loss Event Type Matrix did not map into individual firms' internal loss definitions and had certain inconsistencies and deficiencies, there was no benefit in changing the matrix, and it would be very difficult to obtain industry-wide consensus on an alternative matrix.

7. FUTURE STEPS

7.1 ORIAG generally agreed that the forum had been useful mechanism to discuss issues with the implementation of the Capital Accord, although a number of decisions depended on the final wording of the Accord. It was noted that the FSA intended to continue developing the standards for the Capital Accord in consultation with the industry, and it was intended to issue a consultation paper in the summer of 2003, once the Capital Accord proposals had been published[48]. It was recognised that whilst a number of the issues identified in this paper would be addressed by that consultation paper, further discussions would need to be held with the industry on implementation issues such as the AMA model standards.

7.2 ORIAG identified a number of activities that needed to be completed to provide additional input to the consultation paper. These included:

[46] Para 604(g) & Annex 5 QIS3 Technical Guidance

[47] Para 613 & Annexes 5-6 QIS3 Technical Guidance

[48] The FSA's timetable and consultation plans for the implementation of the Capital Accord are outlined in DP13 Chapter 4.

- *OR Discovery Visits* – The FSA has been conducting a programme of discovery visits to understand and evaluate how regulated firms currently manage OR and their plans for the future. These visits have focused primarily on the qualitative aspects of OR management, and should provide an initial benchmark as to appropriate expectations of BIA, TSA and AMA firms. The FSA intends to provide feedback to the financial services industry on the findings from this programme of visits.

- *Stylised AMA exercise* – The FSA has requested a number of institutions to outline their thoughts on the theoretical framework for the quantification of OR, and the progress being made by firms in the practical implementation of this theory. The intention is to publish as a working paper the outline of a number of generic 'stylised' AMA models to enhance debate on this topic.

- *AMA Roadmap exercise* – during discussions, ORIAG noted the benefit of completing an exercise to identify the key common components of AMA models to further outline the quantitative framework for the AMA. Richard Metcalfe (ISDA) has kindly agreed to co-ordinate an exercise (which is not restricted to ORIAG) to develop such an AMA Roadmap. It was recognised that this exercise would be best carried out after a draft of the Stylised AMA paper was circulated, but needed to be completed by April 2003.

7.3 It was agreed that a meeting should be held in Q2 2003 to discuss a draft of the FSA's proposed consultation paper on the Capital Accord.

ANNEX 1 ORIAG TERMS OF REFERENCE AND MEMBERSHIP

TERMS OF REFERENCE

Purpose of Group

To provide a forum for discussing issues relating to the implementation of the requirements under the New Basel Capital Accord and Directive on risk based capital requirements for credit institutions and investment firms (cumulatively referred to in this document as the "Capital Accord") on access to the standardised and advanced measurement approaches for OR. Issues for discussion are expected to include:

- Data standards; and
- Methods for verifying compliance with minimum standards.

To advise the FSA on standards for access to the standardised and advanced measurement approaches for OR.

To help encourage all relevant institutions, practitioner groups and trade associations to play a full part in the development of any emerging standards and in the consultation processes established by FSA.

To help the FSA to assess the overall costs and benefits for UK financial institutions of proposals related to the implementation of the requirements under the Capital Accord on access to the standardised and advanced measurement approaches for OR.

Meetings

The group will meet approximately every six weeks.

Outputs

The group will produce papers as required on specific issues relating to the implementation of the requirements under the Capital Accord on access to the standardised and advanced measurement approaches for OR. These may be used for discussion between group members and to further FSA policy development in this area.

Composition

The group will be chaired by FSA and will consist of representatives from trade bodies and firms. Secretarial support will be provided by the FSA.

Confidentiality

In general, strict confidentiality does not attach to the papers and discussions of the group. Members of the group are free to make reference to the proceedings of the group in order to take soundings in the sector from which they are drawn. It is understood that this will be done with due discretion and circumspection.

When, exceptionally, strict confidentiality is sought, the need for it will be raised explicitly.

CURRENT MEMBERSHIP[49]

Industry Bodies	
Association of Private Client Investment Managers and Stockbrokers	Mark Peate
British Bankers Association	John Thirlwell
International Swaps and Derivatives Association	Richard Metcalfe (Chair, AMA Technical Subgroup)
Investment Management Association	Altaf Cassam
London Investment Banking Association	Katharine Seal
Wholesale Markets Brokers Association	Mike Beales
Firms	
Abbey National Treasury Services	Robert Tomski
Bank of New York	Paul Nippard
Barclays Capital	Scott Cade
Citigroup	Garth Hinton (Chair, General Issues Subgroup)
Deutsche Bank	Mark Laycock
Dresdner Kleinwort Wasserstein	Jonathan Howitt
Halifax Bank of Scotland	Ammy Seth (Chair, AMA Qualitative Subgroup)
Lloyds TSB	Kevin Tidman (Chair, TSA Qualitative Subgroup)
Merrill Lynch	Steve Teather
Nationwide Building Society	Judith Mortimer Sykes
Royal & SunAlliance	Jeremy Marsden
Royal Bank of Scotland	Ralph Nash
Schroders	David Ridgway
Standard Chartered Bank	Mark Jenner
UBS Warburg	Nick Bolton
FSA	
Risk Review Department (Chair)	Jeremy Quick (until October 2002) Ian Tower (from October 2002)
Operational Risk Review (Project Manager)	Fagun Shah
Basel Accord Firm Specific Implementation Project Manager	Katy Martin
Traded Risk Review	Ben Carr
Operational Risk Policy	Victor Dowd

[49] For the sake of practicality, representation in the main advisory group was limited to one individual from each institution. However, several institutions (including some not represented at ORIAG) contributed other staff to develop more technical thinking, particularly in the subgroup sessions.

ANNEX 2 OVERVIEW OF THE EVOLUTIONARY APPROACH

The table below provides a high level comparison of the entry criteria for the different capital computation methodologies.

	BIA	**TSA**	**AMA**
Approval Process	Default	Self-certification process	Waiver with model recognition process
Groups	Capital must be calculated at individual legal entity level	Capital must be calculated at individual legal entity level	Capital must be allocable to individual legal entity
Partial Use	None with TSA/AMA	Only with AMA	Only with TSA
Qualitative Criteria	SYSC 3A & PRU 6.1	SYSC 3A & PRU 6.1 Independent risk management process (including documented governance framework) Management Information Systems Monitoring and escalation processes	SYSC 3A & PRU 6.1 Independent risk management process (including documented governance framework) Independent OR management function Management Information Systems Monitoring and escalation processes Internal Capital Allocation
Quantitative Criteria	None	Mapping of Gross Income to Regulatory Business Lines	Model input / technical criteria
Validation Criteria	Gross Income and Capital Computation	Mapping of Gross Income to Regulatory Business Lines and Capital Computation Mapping of Internal Losses to Loss Event Type Matrix and Regulatory Business Lines Routine independent review of OR management process	Mapping of Gross Income to Regulatory Business Lines Mapping of Internal Losses to Loss Event Type Matrix and Regulatory Business Lines Routine independent review of OR management process and OR model

ANNEX 3 DRAFT QUALITATIVE STANDARDS

Some detailed qualitative standards relating to the Qualitative Criteria for the TSA and AMA were drafted and considered within ORIAG. This Annex lists these draft qualitative standards and how these could be incorporated into the existing draft PRU6.1 policy. The Annex has been included as a record of the group's discussions, to enhance continued discussion of this topic rather than to present a comprehensive account of the issues or a set of agreed conclusions. It should not be read as representing either the formal positions of the member institutions or of the FSA.

The table below lists relevant extracts from PRU 6.1 as amended in **Bold** to identify the additional TSA criteria, and ***Bold Italic*** for AMA criteria (the original CP142 wording is included in square brackets). CP142 was issued for consultation in July 2002 and much of the text in this annex reflects that paper. Due to the timing of discussions within ORIAG, comments received on CP142 have not been incorporated into this annex. References to the relevant entry criteria outlined in QIS3 Technical Guidance are also provided.

	CRITERIA (**TSA**, ***AMA***)	**QIS 3 REF**
1.	**GENERAL REQUIREMENTS**	
1.1	High level rules and guidance for prudential systems and controls including those for operational risk are set out in PRAG 6. In particular: (1) PRAG 6.8.1R requires a firm in PRU categories 1, 2, 3, 4A and 4B to take reasonable steps to ensure that the risk management systems put in place to identify, assess, monitor and control operational risk are adequate for that purpose; and (2) PRAG 6.3.3R(2) requires a firm in PRU categories 1, 2, 3, 4A and 4B to document its policy for operational risk, including its risk appetite and how it identifies, assesses, monitors and controls that risk.	600

	CRITERIA (TSA, *AMA*)	QIS 3 REF
2.	**POLICY & RECORD KEEPING** **<u>Policy & Procedures</u>**[50]	
2.1	Much of the management of operational risk is about identifying, assessing, monitoring and controlling failures or inadequacies in a firm's systems and controls. As such a firm may often find that there is no clear boundary between its risk management systems for operational risk and all its other systems and controls. When drafting its operational risk policy a firm should try to distinguish between its systems and controls for credit, market, liquidity and insurance risk and its systems and controls for operational risk. Where such a distinction is not possible a firm should still try to identify those systems and controls that are used in the management of operational risk, even when they have other purposes as well.	
2.2	A firm should document its policy for managing operational risk. This policy should outline a firm's strategy and objectives for operational risk management and the processes that it intends to adopt to achieve these objectives. In complying with PRAG 6.3.3 R(2) the documented operational risk policy of a firm should include: (1) an analysis of the firm's operational risk profile, including where relevant some consideration of the effects that operational risk may have on the firm and its clients; (2) the operational risks that the firm is prepared to accept and those that it is not prepared to accept, including where relevant some consideration of its appetite or tolerance for specific operational risks; (3) how the firm intends to identify, assess, monitor, and control its operational risks, including an overview of the people, processes and systems that are used; and (4) where assessments of the firm's risk exposures are used for internal capital allocation purposes, a description of how operational risk is incorporated into this methodology.	604(e) 606(e)

[50] The high level guidance on the contents of a firm's operational risk policy and procedures documentation do not differ for the BIA, TSA, or AMA. However, as a firm's OR management framework becomes more sophisticated, its policy and procedures documentation should reflect this.

	CRITERIA (**TSA**, ***AMA***)	**QIS 3 REF**
	Record Keeping[51]	
2.3	The FSA's high level rules and guidance for record keeping are outlined in SYSC 3.2.20R (Records). Additional rules and guidance in relation to the prudential context are set out in PRAG 6.11 (Records). In complying with these rules and all associated guidance a firm should retain an appropriate record of its operational risk management activities. This [may, for example, include] **should** include records of: (1) the results of risk identification, measurementassessment, and monitoring activities; (2) actions taken to control identified risks; (3) where relevant, any exposure thresholds that have been set for identified operational risks; (4) an assessment of the effectiveness of the risk control tools that are used; and (5) actual exposures against stated risk appetite or tolerance.	

[51] Specific Record Keeping requirements for the TSA and AMA will emerge as the Capital Accord is finalised and implemented. However, as a firm's OR management framework becomes more sophisticated, it should maintain appropriate records to evidence this.

	CRITERIA (TSA, *AMA*)	QIS 3 REF
3.	**GOVERNANCE & RESOURCING**[52]	
	Accountabilities framework	
3.1	**The board of directors and senior management, as appropriate, must be actively involved in the oversight of the operational risk management process. As a minimum, the Board should:** **(1) set the definition and overall scope of the operational risk framework;** **(2) decide how the firm-wide operational risk framework is to be structured;** **(3) allocate specific responsibilities for implementation of the operational risk framework to senior management; and** **(4) formally define its operational risk tolerance/ appetite, within an overall risk management framework.**	600 606(b)
3.2	**The Board may wish to delegate certain responsibilities for the oversight of the operational risk management process to a Risk Committee (or equivalent). Where such a committee exists, it should be chaired by a person of appropriate seniority appointed by the Board with senior representatives with risk responsibilities from each of the management business lines. The terms of reference in respect to operational risk must be clear and unambiguous, the Committee must meet with appropriate frequency, and it must have the mandate to escalate issues to the Board.**	

[52] The FSA's policy on Prudential Systems and controls (PRU 1.6), which includes policy on risk management governance and resourcing is currently being reviewed. This wording should be amended to reflect any revised changes in due course.

	CRITERIA (**TSA**, ***AMA***)	**QIS 3 REF**
3.3	**There must be an accountabilities framework, approved by the Board or Risk Committee, that:** **(1) addresses the operational risk responsibilities of staff at all levels, including the OR Management Function (if it exists), business area operational risk specialists, and line management;** **(2) defines the terms of reference of, and relationships between, the key committees with responsibility for aspects of the operational risk management process across the broad scope of operational risk;** **(3) defines the role of operational risk functions, distinguishing the overview responsibilities from any other responsibilities that may exist for risk;** **(4) addresses how operational risk information relating to the business units flows to the Operational Risk Management Function (if it exists); and** ***(5)* outlines how operational risks associated with proposed new businesses/ new products are identified and managed in advance of any business commitments.**	
	Operational Risk Management Function	
3.4	***There must be a central independent Operational Risk Management Function whose responsibilities include:*** ***(1) defining policies, procedures, and standards for the identification, assessment / measurement, monitoring and control of operational risk throughout the firm;*** ***(2) escalation and alerting senior management where operational risk standards are not being met;*** ***(3) appropriate day-to-day engagement with the executive management of the firm; and*** ***(4) regular reporting to the Board or an appropriate delegated committee.***	606(a)
3.5	***There must be demonstrated regular interaction between risk market functions (eg. credit, market and operational), and an appropriate flow of information, to ensure an adequate overview of all risks.***	
3.6	***The Operational Risk Management Function must be independent of other financial and operations control functions, including Internal Audit and Compliance.***	

	CRITERIA (**TSA**, *AMA*)	**QIS 3 REF**
	Business and support areas	
3.7	***There should be appropriate resource assigned to each of the material business areas, with primary responsibility for the overview of operational risks.***	
3.8	***There should be regular reporting from these functions to business area management and also the OR Management Function that incorporates a "state of health" assessment of control systems***	
3.9	***There should be demonstrated day-to-day engagement with the executive management of that business area***	
3.10	***There should be a demonstrated process whereby the executive management of each business area appropriately consider the operational risks of the business and plan appropriate mitigation action.***	
3.11	***In addition to day-to-day operational risk management the business area should also have primary responsibility for developing and implementing processes that ensure compliance with the Firm's operational risk policy, procedures and standards.***	
4.	**IDENTIFICATION**	
4.1	In order to understand its operational risk profile, a firm should identify the types of operational risk that it is exposed to as far as reasonably possible. This [might] **must** include, but is not limited to, consideration of: (1) the nature of a firm's customers, products and activities, including sources of business, distribution mechanisms, and the complexity and volumes of transactions; (2) the design, implementation, and operation of the processes and systems used in the end-to-end operating cycle for a firm's products and activities; (3) the risk culture and human resource management practices at a firm; and (4) the business operating environment, including political, legal, socio-demographic, technological, and economic factors as well as the competitive environment and market structure.	604(a)
4.2	When identifying its operational risks in a prudential context a firm should consider the full range of operational risk events that may adversely affect confidence in the financial system or the protection of its clients in relation to its ability to pay its debts as they become due.	604(b)

	CRITERIA (TSA, *AMA*)	QIS 3 REF
4.3	A firm should recognise that it may face significant operational exposures from a product or activity that may not be material to its business strategy. A firm should consider the appropriate level of detail at which risk identification is to take place, and may wish to manage the operational risks that it faces in risk categories that are appropriate to its organisational and legal structures.	
5.	**ASSESSMENT / MEASUREMENT**	
5.1	In order to understand the effects of its operational exposures a firm should assess its operational risks on a continuing basis. This [might] **must** include, but is not limited to, **systematic** consideration of:[53] (1) actual operational losses that have occurred within a firm, and other events that could have resulted in significant operational losses, but were avoided (for example, the waiving of financial penalties by a third party as a gesture of goodwill or where by chance the firm realised profits) **by regulatory business line**; (2) internal assessment of risks inherent in its operations and the effectiveness of controls implemented to reduce these risks (through activities such as self-assessment or stress and scenario testing); (3) other risk indicators, such as customer complaints, processing volumes, employee turnover, large numbers of reconciling items, process or system failures, fragmented systems, systems subject to a high degree of manual intervention and transactions processed outside a firm's mainstream systems; (4) reported external (peer) operational losses and events; and (5) changes in its business operating environment.	604(g)
5.2	When assessing its operational risks a firm [may be able to] **should** differentiate between expected and unexpected operational losses.	604(b)

[53] There is an implicit requirement for appropriate processes for the collation of loss data, KRI, etc.

	CRITERIA (TSA, *AMA*)	QIS 3 REF
5.3	**In establishing and maintaining appropriate processes for recording and collating internal event data, the firm should consider:** **(1) what events (including thresholds) are to be formally recorded;** **(2) the data required to be recorded for each event (including the requirement for data consistency and quality);** **(3) the timeliness in which event data is recorded;** **(4) the independent overview of the causes of the event;** **(5) amendments to event records; and** **(6) data storage and archive.**	
5.4	**In considering the definition and scope of internal events and data, , the firm should have regard to:** **(1) those instances where:** **(a) loss has crystallised, above a defined level;** **(b) loss from an incident awaits crystallisation, but the potential loss is above a defined level;** **(c) loss from an incident has crystallised below the defined monetary level (above), but the incident meets defined qualitative criteria. Examples of such qualitative criteria may include breakdowns in major controls, or external threats of significant severity;** **(2) any variations in definition or scope across business units, so as to be appropriate to their circumstances;** **(3) whether/ how incidental costs incurred to fix are included, and also whether/ how opportunity costs are estimated;** **(4) how losses that are budgeted are to be handled, as well as those losses that are unbudgeted;** **(5) how losses that are potentially subject to insurance (or other risk transfer contract) claims are to be handled; and** **(6) how events that overlap into other risk categories, such as credit or market risk, are to be analysed. This should include the analysis of loss between that attributable to external factors and that attributable to deficiencies in internal processes.**	

	CRITERIA (TSA, *AMA*)	QIS 3 REF
5.5	**In establishing and maintaining appropriate processes for recording and collating external event data, the firm may wish to consider sources of data such as data pooling, external databases, and/or press stories.**	
5.6	**In establishing and maintaining appropriate processes for assessment of risks and effectiveness of controls, the firm should consider the role self assessment, scenario analysis, and stress testing in monitoring its expected and unexpected operational exposures (including budgeting and accounting for expected losses).**	
5.7	**In establishing and maintaining appropriate risk indicators, the firm should consider:** **(1) the appropriateness of the risk indicators as an indicator of operational risk and the effectiveness of key controls** **(2) the relationship of the risk indicators to tolerance for specific operational risk exposures (in particular, tolerances should be set, where appropriate, to focus the investigation of trends);**	
5.8	***A firm must establish and maintain a firm-wide Economic Capital model that covers all material risks. Operational Risk Benchmarks that feed into the firm-wide Economic Capital model must be an overall embedded part of business unit evaluation.***	602
5.9	***In establishing and maintaining the operational risk elements of its Economic Capital model, the firm should:*** ***(1) have a clear definition of what it means by Operational Risk Economic Capital;*** ***(2) outline any factors that result in significant differences between its Operational Risk Economic Capital and AMA Operational Risk Regulatory Capital models;*** ***(3) outline how Operational Risk Economic Capital is allocated to business units;*** ***(4) establish processes for the regular review of economic capital arising from operational risks. This should be in the context of events that have occurred and expectations as to future events. It should also consider developments in Operational Risk Economic Capital methodologies;*** ***(5) address how information on Operational Risk Economic Capital is communicated to external audiences and, more generally, the external disclosure of information on operational risks;*** ***(6) address the processes for validation and verification of economic capital calculations; and*** ***(7) address the linkage to insurance, or any other forms of risk transfer contracts.***	606(c)

	CRITERIA (TSA, *AMA*)	QIS 3 REF
5.10	***For firms on partial AMA use, different levels of economic capital modelling may need to be applied across the institution.***	
6.	**MONITORING**[54]	
6.1	In monitoring its operational risks a firm [should] **must**: (1) as appropriate, regularly report to the relevant level of management its operational exposures, internal operational loss and event experience (including if possible cumulative losses), and authorised deviations from the firm's operational risk policy; (2) engage in exception-based escalation to management of: (a) unauthorised deviations to the firm's operational risk policy; (b) where set, likely or actual breaches in predefined thresholds for operational exposures and losses; and (c) significant increases in the firm's exposure to operational risk or alterations to its operational risk profile.	604(d) 606(d)
6.2	**The firm must define and document how it uses the operational risk data from its assessment framework to monitor its operational exposures, and how this assessment contributes to the control of its operational exposures.**	604(c)

[54] *Further guidance is required on the use of, for monitoring purposes, of internal data, assessment of risks and controls, risk indicators, external data, and business environment factors.*

	CRITERIA (**TSA**, ***AMA***)	**QIS 3 REF**
7.	**CONTROL**	
7.1	A firm should control its operational risks, as appropriate, through activities for the avoidance, transfer, prevention or reduction of the likelihood of occurrence or potential impact of an operational exposure. This may include, but is not limited to, consideration of: (1) adjusting a firm's risk culture and creating appropriate incentives to facilitate the implementation of its risk control strategy (see SYSC 3A.4 People); (2) adapting internal processes and systems (see SYSC 3A.5 Processes and systems); (3) transferring or changing the operational exposure through mechanisms such as outsourcing (see SYSC 3A.7 Outsourcing) and insurance (see SYSC 3A.8 Insurance); and (4) providing for expected losses and maintaining adequate financial resources against unexpected losses that may be encountered in the normal course of a firm's business activities.	604(f)
8.	**VALIDATION**	
8.1	**Internal *and external* auditors must perform regular reviews of the operational risk management processes and *measurement systems*. This review must include both the activities of the business units and of the independent Operational Risk Management Function.**	606(f)
8.2	***The validation of the operational risk measurement system by external auditors and/or supervisory authorities must include the following:*** ***(1) verifying that the internal validation processes are operating in a satisfactory manner; and*** ***(2) making sure that data flows and processes associated with the risk measurement system are transparent and accessible. In particular, it is necessary that auditors and supervisory authorities are in a position to have easy access, whenever they judge it necessary and under appropriate procedures, to the system's specifications and parameters.***	606(g)

ANNEX 4 INTERNAL / EXTERNAL DATA CREDIBILITY PRINCIPLES

Definition and Scope

The AMA Quantitative Criteria requires each firm to use internal data, external data, scenario analysis and business environment and internal control factors as data inputs for the firm's OR measurement system. Whilst Internal Data is generally recognised as being an integral part of the statistical data set for an OR model, external data can be used both as an additional or replacement data set, or more qualitatively in the scenario analysis or assessment of business environment and internal control factors.

This Annex considers the standards expected to achieve credibility in the integrity of any internal/external statistical data sets used as an input into the firm's OR measurement system. The following sections refer to both internal and external data, except where stated otherwise. It is believed that consistency in the structure of the two types of data will encourage fuller analysis between internal and external events, and also lead to more effective comparability at an industry level.

Three main sources of external data were identified in the ORIAG Subgroup:

- **Loss Consortium** – subscribing members report loss data in a required format for the compiler to analyse, aggregate and report back to the members. *(Internal confidential data)*

- **External Search Agency** – data is collected by an independent external search agency from media extracts and other external sources, and where subscribers receive analysis of this data and are also able to request specific searches on data. *(external public data)*.

- **Insurance firms** – data is already available from previous claims and external sources and can be analysed and reported on to subscribing members.

During the subgroup discussions, a number of commercial considerations for firms and third party data providers were identified. Although these are documented at the end of the Annex, they are considered to be outside the scope of regulatory interest.

Standards

The following standards are designed to ensure that there is a common and consistent element to all OR data collection exercises:

- Provision of internal data and use of external data within a user firm should be signed off at an appropriate seniority/function level in accordance with a firm's written policy.

- Use of and appropriateness of external data should be subject to periodic review. This should incorporate all uses of the data and include application to various businesses types, products etc. to ensure relevant data is used in all instances.

- Data must be collected, analysed and reported in such a way that it is regulatory compliant. i.e. Data categorised to Basel categories, regulatory business lines, geographic locations, events and institution type etc. or capable of being mapped.

- The following fields of capture for an OR event are a minimum requirement:

Event name and description	
Organisation unit name	Where the loss is reported and expensed. Any complications should be noted in the description (split accountability for the loss etc.)
Geographic region	
Loss Event Type category	As defined in Basel documentation
Regulatory Business Line category	As defined in Basel documentation
Event start date	For example, point when a fraud began or point in time when an erroneous formula in an interest calculation was first used to calculate incorrect customer payments.
Discovery date	When the event was detected
Event end date	Sometimes the same as discovery date, as is mostly the case with fraud. System and process changes can take some time to remedy.
Management actions	Any actions to control and mitigate the loss and future exposures
Event components	Track the components of the loss. For example legal fees and fines, insurance recovery, recovery of funds and assets etc. Include dates and details. Insurance components should assist in validating claim for capital relief.

- Data collected should be capable of being scaled according to activity levels. For example
    - For internal data – The use of exposure indictors could be applied against certain OR measures based on previous event history to arrive at a predicted loss level, e.g. income, headcount, assets. Volume, geographic spread, severity weighting, likelihood (how often this occurs – scale) and time period analysis could also be used.
    - For internal and external data – Existing data already recorded of a relevant nature could be scaled to another business area or institution for purposes of comparison and, in appropriate circumstances, quantitative models.
- Internal and external data used must be relevant, up to date, unbiased and accurate & authorised for release by appropriate personnel within the company or area it is derived from. This should be documented in the policies and procedures document.
- It is expected that in making the decision on which external data provider to use, an institution will have first made sure that the data is appropriate to its core business areas.
- Data validation is an important element of using external and internal OR data.
    - For external data – Third party providers should document procedures for data validation listing sources and processes. External Search Agencies should seek to reference more than one data source

per event (e.g. Bloomberg and The Financial Times) to ensure data is as accurate as possible. Data Consortiums should also document validation processes and quality checking. These suppliers are more reliant on one source of information but should ensure that internal transfer of data into different formats reflects the submitted information accurately.

- For internal data – Data received from internal sources should include reference to the individual submitting the information or a relevant contact point for instances where further information is required. Secondly, loss event data should detail where the loss has been allocated to in the general ledger (provide account details) for validation and audit trail purposes.

- Database standards must be present to ensure integrity of data, with adequate back up arrangements to ensure minimum disruption from outages etc.

- Any Third Party Data Provider must be financially stable, registered and subject to contractual agreement with the subscribers, to ensure continuance or service and consistent source of data. This should include data ownership and termination arrangements. There should be relevant Escrow arrangements in place.

- Data standards should be specified and agreed by all contributing members to third party databases (above and beyond the standards laid out in this document). These should be subject to quality assurance by both the database providers, members and an independent source, e.g. audited. This process should identify events outside the norm for further investigation/clarification.

- The categorisation of data to Regulatory Business Lines and the Loss Event Type Matrix should be completed by appropriate knowledgeable staff. It is preferable that this should be done by central teams to ensure consistency.

- Currency – Both internal and external databases will capture events in their original currency. Conversion principles to a base currency must be documented, incorporating such issues as historic information and detailing which rates to use and the source of the rates.

- Periodicity of data collation must be documented. The point at which an event is identified and reported, how it is to be identified and what the procedure is to update it should be noted.

Commercial Considerations for Third Party Suppliers of Operational Risk Data

As noted above, a number of commercial considerations for firms and third party data providers were identified. Although these are documented below, ORIAG believes these to be outside the scope of regulatory interest.

- Data Consortiums – It is expected that there will be some events that cannot be shared due to the confidentiality of internal data. Consortiums should be explicit how this issue should be dealt with. If it is accepted that nothing can be done to reflect such losses, then this should be specifically noted in the policies and procedures.

- Whether collected externally or through a core membership of subscribers, data should be representative of a sample of institutions. Data should be able to be used by and relevant to all subscribing institutions, following cleansing and analysis.

- Reporting and analysis should include data aggregation, diversification and correlation.

- Confidentiality and anonymity of data provided to and from database provider should be ensured at all times.

- The data must not be owned by a third party – each datapoint is owned by the relevant contributors. This would ensure appropriate and agreed use of data by all interested parties.

ANNEX 5 THE USE TEST

The Use Test is about the effectiveness of a firm's implementation of its OR strategy and framework, and should address both the degree of senior management involvement and participation in the qualitative and quantitative aspects of the OR framework, as well as the level of understanding among staff generally of the firm's risk policies and philosophy. It is intended to address concerns that firms may develop sophisticated methodologies and measurement techniques for OR but fail to achieve the cultural impact envisaged in terms of broad-based management buy-in. Specifically, it is designed to ensure that the OR science is applied commercially across the firm as a practical and value-added discipline rather than a corporate black box.

A firm's success in implementing its OR framework could be assessed against the following criteria:

- the level of dissemination and understanding of OR concepts and *management principles* throughout the institution;
- the existence of timely and meaningful management information on OR (*OR MIS*) at all levels throughout the institution;
- the effectiveness of review and *escalation processes* and the degree of attention given to OR issues within the business; and
- the impact of OR information in driving the processes and quality of management *decision-making and actions.*

Management Principles

A firm will be expected to have outlined, as part of its OR policy, the core management principles and governance framework it is looking to instil throughout the institution. As such it will need to be clear in defining the roles and responsibilities of key staff and functions in meeting its overall objectives. Progress should be measurable against clear goals for implementing the risk philosophy. In particular, a firm should be able to demonstrate, as a minimum, what steps it has taken and how successful it has been in establishing under its OR strategy by demonstrating:

- active senior management sponsorship;
- appropriate understanding by all staff of OR issues;
- transparency of internal information flows;
- clear organisational ownership of risks; and
- accountability for managing actions.

OR MIS

The effective management of OR depends on consistent and timely reporting of exposures to responsible management, at whatever level. The extent to which managers use the OR MIS at their disposal will depend on whether they own it and apply it in the daily running of the business. Managers should, therefore, have been involved, jointly with OR staff, in setting the specifications of internal reports and agreeing the standards for data quality and report frequency. Whilst it is recognised that senior managers may take a more strategic perspective of the firm's risk exposures than their subordinates, it is nevertheless imperative that business line managers can make the connection between the overall view and what they need to achieve on the ground.

OR MIS plays the key role in linking senior management and staff level incentives to deliver the OR strategy. Best practice, in this respect, means a single (not parallel), integrated reporting framework spanning the requirements of

all parties, external and internal. This principle applies not only to loss data, but also to other aspects of the OR discipline – risk scenarios should be credible and relevant for operational staff as well as senior executives; and meaningful risk data on business environment and internal controls should be available both at a detailed as well as an aggregate level.

Escalation Processes

Whilst there should be a single framework for OR reporting, the outputs of any given report are expected to be relevant and tailored to the audience. Nevertheless, this process should not be entirely ad hoc – there must be structure and consistency in the escalation mechanism for risk issues. The communication process should also be interactive and should take into account:

- the need to manage losses and customer complaints, not simply record them;
- the value of benchmarking, trend analysis, and service level triggers for risk data;
- the linkage between audit and risk scoring techniques, such as self-assessment; and
- the importance of formal management committees in driving the risk agenda.

A risk communication exercise and awareness programme must not be the end in itself. Alerting management to problems can only be judged effective where it subsequently influences decision-making and actions.

Decision-Making and Actions

Whilst a firm may have little direct control over some external risks, the majority of its OR exposures are *endogenous* in nature – i.e. risks are self-created and management will be able to respond promptly and in many cases control the outcome of an OR event. Firms may set aside capital for or insure against what they are less able control, but a value-added OR strategy means actively managing the business to assume or reduce risk where commercially appropriate. The OR discipline is in this respect dynamic – it must be relevant to processes for new business approval or major project expenditure. A firm's OR strategy will only be judged to have succeeded in its implementation where it supports the following commercial incentives:

- up front analysis of the merits of major business expansion or change;
- appraisal of the cost-benefits of risk mitigation or corrective actions; and
- tracking of agreed actions and follow-up by responsible area.

Successful implementation of an OR strategy requires careful thought from senior management as to how they structure and empower their OR activities. For firms looking to implement an advanced approach, it will mean staffing a dedicated function of experienced business practitioners (not academics or statisticians), with a clear management mandate from the start and sufficient system resources at their disposal. An effective rollout will be focused towards pre-emptive risk management and will, over time, achieve high levels of acceptance across both front and support areas of the business.