

ICC COMMISSION REPORT

INFORMATION TECHNOLOGY IN INTERNATIONAL ARBITRATION

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An Updated Overview of Issues to Consider when Using Information Technology in International Arbitration

Report of the ICC Commission on Arbitration and ADR Task Force on the Use of Information Technology in International Arbitration

INTRODUCTION

The concept of information technology (“IT”¹) is broad enough to encompass all electronic means to produce, modify, capture, store, transmit, and display information. In international arbitration, the use of IT can include, for example, (i) email² and other electronic communications between and among the parties, the arbitrator or arbitrators (the “tribunal”), and the administering body; (ii) storage of information for access by the parties and the tribunal using portable or fixed storage media (e.g. flash drives,³ DVDs,⁴ hard drives, and cloud-based storage); (iii) software and media used to present the parties’ respective cases in an electronic format, rather than a paper format; and (iv) hearing room technologies (e.g. videoconferencing,⁵ multimedia presentations, translations, and “real time” electronic transcripts). When used – and especially when used effectively – IT can help the parties in international arbitration to save time and costs and to ensure that the arbitration is managed and conducted efficiently. On the other hand, if poorly managed, IT can increase time and costs, or – in the worst case – even result in unfair treatment of a party.

Since the ICC Commission on Arbitration and ADR’s Task Force on the Use of Information Technology in International Arbitration first reported on this subject in 2004,⁶ the use and

acceptance of IT in international arbitration has substantially increased, and advances in technology have led to solutions that previously were not readily available or technically mature. For example, in 2004, although correspondence among the parties, the tribunal, and the administering body was exchanged by email, duplicate correspondence often was sent by post or overnight courier service. Today, once the tribunal has been constituted, written communication takes place predominantly, if not exclusively, in electronic format. As predicted in 2004, PDF is the electronic format generally used for written submissions.⁷ In 2004, parties rarely used file transfer protocol (“FTP”⁸) servers (whether controlled by a party or a commercial third party service) to transfer large submissions to the other parties and the tribunal, principally because setting up the required environment was too demanding. Today, transferring information via readily-available bulk file hosting services⁹ using the FTP protocol (e.g. Dropbox; Google Drive) is more common.¹⁰

In 2004, users in international arbitration seemed to place much more emphasis on having a secure, confidential, flexible online “virtual data room” (e.g. a dedicated online file repository) with complex additional functionalities where the parties, arbitrators, and (if involved) arbitral institution could access all pleadings, correspondence and other submissions continuously and in real time, much as the ICC envisioned when it launched its innovative case management product, “NetCase”, in 2005. Today, while the ICC is working to develop an updated internet-based case management product, some parties use general purpose services, such as Google Documents and similar services, to exchange and store documents. Although often

1 See https://en.wikipedia.org/wiki/Information_technology. References in this report to Wikipedia are for the readers’ convenience, but should not be regarded as confirming the reliability of information contained on Wikipedia webpages. In the experience of the report’s authors, the Wikipedia pages cited provide adequate definitions to help understand the technical terms used in the report. Further reading and research is advised for a fuller understanding of those terms.

2 See <https://en.wikipedia.org/wiki/Email>.

3 See https://en.wikipedia.org/wiki/Flash_drive.

4 See <https://en.wikipedia.org/wiki/DVD>.

5 See <https://en.wikipedia.org/wiki/Videoconferencing>.

6 The Task Force on the Use of IT in International Arbitration was formed in 2002 and produced four documents in 2004: “Issues to be Considered when Using IT in International Arbitration”, “Operating Standards for Using IT in International Arbitration (‘The Standards’), “Explanatory Notes on the Standards” and “IT in Arbitration: The Work of the ICC Task Force”. This report updates the first of these four documents, “Issues to be Considered when Using IT in International Arbitration”.

7 See http://en.wikipedia.org/wiki/Portable_Document_Format.

8 See https://en.wikipedia.org/wiki/File_Transfer_Protocol.

9 See https://en.wikipedia.org/wiki/File_hosting_service.

10 See http://en.wikipedia.org/wiki/File_Transfer_Protocol; http://en.wikipedia.org/wiki/File_hosting_service; http://en.wikipedia.org/wiki/Dropbox_%28service%29.

free, these services are subject to acceptance of certain general terms and conditions that give the service provider many rights of use and analysis.

Either users of these products are unaware of these terms and conditions, or concerns about confidentiality, security and data integrity are less important to them than ease of accessibility and simplicity of use.

As work on this report progressed, the lack of reliable and statistically significant information concerning the frequency and sophistication of IT use in international arbitration became apparent. Despite the availability of “war stories” and anecdotes (which are often interesting but might have been shared to show that the arbitrator or lawyer who shared them is “IT savvy”), “hard” data was scarce. Ironically, this dearth of information is probably good news. Given that bad experiences are often reported immediately to the arbitration community, the absence of negative data and anecdotes in relation to IT use suggests that IT is not disruptive and has not created new procedural hurdles or difficulties that would be worth mentioning. Indeed, some issues that were identified in the 2004 report have thus turned out to be merely potential issues, without much impact in the “real world”. These issues still exist, but they have materialised less often and – seemingly – with lesser impact than might have been the case. Other issues, such as the fully enforceable, fully electronic award, remain as barriers still to be conquered.¹¹

With this background in mind, this report is intended to provide arbitrators, outside counsel, and in-house counsel with an updated overview of issues that may arise when using IT in international arbitration and how those issues might be addressed. The Task Force enthusiastically recommends the use of IT in international arbitration whenever appropriate. At least based on anecdotal evidence, our sense is that generally-available IT solutions probably are not used to save time and costs as effectively as they could be. For example, despite the advent of readily available means of videoconferencing (e.g. Skype; FaceTime), some tribunals and parties remain reluctant even for minor witnesses to testify by video. Accordingly, we hope that this report will encourage arbitrators and counsel to analyse, as a matter of routine and not exception, whether and how IT might be used.

At the same time, we acknowledge that use of specific IT is a matter for the parties and the tribunal to decide. The ICC Rules of Arbitration (the “ICC Rules”), like virtually all other arbitration rules, do not require, forbid, or address the use of IT. Whether and how IT may be appropriate to a particular case will depend on many factors, including, for example, communication and storage security requirements, the parties’

agreements and preferences, the tribunal’s preferences, the amount in dispute, the parties’ respective budgets, the disputed issues in the case, and the technology available to the parties and the tribunal. Thus, the Task Force does not suggest whether, when, or how IT should be applied in any particular case, and this report does not attempt to define “rules” concerning IT.

Rather, the goal of the report is to provide an analytical framework that we hope will assist parties, counsel and arbitrators when they evaluate whether a particular form of IT should be used and (if so) how it can be used in a cost-effective, fair and efficient manner.¹² Where we believe that a particular approach may be helpful we say so, but we encourage (and would be delighted to see) readers of this report improve upon the Task Force’s suggestions and develop even better “best” practices.

Along with the report, we have provided an appendix with sample language concerning IT use that might be included in procedural orders. This sample language is for purposes of illustration only, and is intended to highlight the sorts of issues that are discussed in this report. Any procedural order necessarily must be tailored to the needs of the particular case.

Although the Task Force tried here and in its previous report to articulate principles that we believe will continue to apply as IT continues to change, we undoubtedly have not envisioned every scenario that may arise, especially as technology progresses. In this regard, we ask not only for your patience, but also for your comments and suggestions regarding additional issues to consider. Please feel free to contact the Commission’s Secretariat (arbitration.commission@iccwbo.org).

Finally, we would like to extend special thanks to Mirèze Philippe, Anne Secomb, Hélène van Lith, the Secretariat of the ICC International Court of Arbitration, Chris Newmark, our colleagues on the ICC Commission on Arbitration and ADR, and all Task Force members for their input, support and assistance in connection with this project.

*Erik G.W. Schäfer and David B. Wilson
Co-Chairs, Task Force on the Use of Information
Technology in International Arbitration*

11 Today, true digital copies of awards are sent to the parties in certain instances. A bitmap facsimile may not comply with the formal legal requirements concerning the recognition and enforcement of arbitral awards, however.

12 Readers are also referred to a separate report entitled “Techniques for Managing Electronic Document Production When it is Permitted or Required in International Arbitration” (“Managing E-Document Production”), which was produced by the ICC Commission on Arbitration and ADR’s Task Force on the Production of Electronic Documents in International Arbitration and is available at <http://www.iccwbo.org/Advocacy-Codes-and-Rules/Document-centre/2012/ICC-Arbitration-Commission-Report-on-Managing-E-Document-Production/> and in the ICC Dispute Resolution Library (<http://www.iccdri.com>). The IT Task Force’s report does not attempt to address issues regarding the management of electronic document production, except in relation to the storage of and access to pleadings, exhibits and other materials.

1. AGREEING TO USE IT

1.1 Agreement to arbitrate

May the agreement to arbitrate provide for the use of IT?

Yes, although this would be unusual and impractical in most cases because actual requirements are not known in sufficient detail at this stage and because technology is likely to continue to evolve between the date of the parties' agreement and the commencement of the arbitration. Thus, whether such an agreement would be prudent depends in part on whether its provisions still would be useful when the dispute arises. For example, when the dispute arises, will a better IT solution be available than the solution referenced in the agreement? Will the parties continue to have access to the resources necessary to implement their agreement? Would a different solution be more appropriate given the issues and amount in dispute?

How detailed should the agreement be?

If the parties choose to provide for the use of IT in their arbitration agreement, the agreement should¹³ not be too specific. It goes without saying that IT will continue to change over time. Thus, IT that is "state of the art" today may become obsolete or unavailable between the date of the parties' agreement and the date of the arbitration. Also, specific IT requirements may not become clear until after the dispute arises. Some aspects of the parties' agreement might be impractical or even impossible to implement in the context of a particular dispute, due to the nature of the dispute, the tribunal's comfort and familiarity with the technology, or the costs involved.

Thus, in most instances, it probably makes the most sense for the parties and arbitrators to agree to specific uses of IT after the dispute arises. In ICC arbitrations, this could be done, for example, in the context of the case management conference held pursuant to Article 24 of the ICC Rules.

1.2 After the dispute has arisen

In what circumstances should use of IT be considered?

The parties and the tribunal always should consider how IT could be used to help move the arbitration forward efficiently and to help the parties save time and costs. Ideally, the parties and the tribunal should have a good understanding of available solutions and how they can best be implemented to increase efficiency, save costs, and enhance the tribunal's understanding of the parties' cases.

When should use of IT be addressed?

The parties should try to agree on the use of appropriate IT at or near the beginning of the arbitration. In ICC arbitrations, the parties should try to agree in anticipation of the initial case management conference, or in connection with the Terms of Reference, first procedural order, and procedural timetable. If the parties cannot agree, they should present their respective approaches to the tribunal, which then can give appropriate directions. Once the parties have exchanged substantial written submissions, agreeing on large-scale use of IT may be less efficient and cost-effective because it could require the parties to redo work previously performed.

What issues should be addressed?

The issues described in this report (and any other case-specific issues) should be considered, but not those that are irrelevant to the particular situation. Relevant IT-related issues are those that need to be resolved in order for the arbitration to proceed efficiently.

What if the parties disagree?

If the parties do not agree, the tribunal will need to give appropriate directions.¹⁴ The tribunal is under no obligation to adopt a particular approach, whether or not proposed by the parties, and may have its own views on how IT should or should not be used.

How can the parties and the tribunal provide flexibility for resolving problems arising from the use of IT during the arbitration?

Despite any prior agreement or decision, the parties or the tribunal may encounter difficulties when using IT during the arbitration. For example, the IT may not work as expected or a party or tribunal member may have trouble viewing certain electronically-stored information. This may be because, for example, the viewer's computer operating system or software environment is different from that of the party that provided the information; the viewer is using a different version of the necessary software or hardware; the viewer lacks sufficient internet bandwidth, or for more mundane reasons, such lack of a necessary password. Difficulties may also arise as a result of varying degrees of internet access in different parts of the world. If the parties are unable to resolve the problem within a reasonable time, the tribunal usually will intervene to issue directions.

¹³ In this report, the term "should" is not intended to imply a (legal) rule. Rather, it refers to what the Task Force believes a reasonable and knowledgeable person would suggest that a colleague might consider doing, not what he or she must do.

¹⁴ The Task Force assumes that IT use is a "procedural issue" that the arbitral tribunal typically will address as part of case management. In ICC arbitration, the tribunal's power to provide directions on IT flows from Articles 19, 22, and 24 of the ICC Rules.

How should an agreement regarding IT use be formalised?

An agreement between the parties on the use of IT should be recorded in writing (e.g. through an exchange of emails between counsel) and in sufficient detail. In many, if not most, instances, the parties' agreement also will need to be acceptable to the tribunal. For example, although the parties might prefer that a certain witness should testify by videoconference, the tribunal might prefer that all witnesses testify in person. (It can be debated whether the tribunal would have the authority to overrule the parties' agreement in this regard; but as a practical matter, many parties would acquiesce to the tribunal's wishes.) Likewise, the tribunal may have its own views on how and in what form exhibits and other written submissions should be exchanged. Thus, regardless of the parties' preferences, the tribunal may address specific uses of IT in a procedural order or (less commonly) in the Terms of Reference. To maintain flexibility, it probably would be best to address the issues in a procedural order, rather than the Terms of Reference, or (alternatively) to ensure that the Terms of Reference give the arbitrators sufficient flexibility to adapt to changing circumstances.

Using certain types of IT may be very expensive. Should the tribunal exclude those solutions? May the parties agree on how IT-related costs will be borne?

Tribunals usually will allow a party to use whatever IT the party believes is appropriate to fully present its case. In certain circumstances, tribunals may require specific IT solutions to be used to make it possible or easier for the tribunal to understand and manage the case (e.g. requiring exhibits to be produced in a readable electronic format). Tribunals might also forbid the use of certain IT if it would be overly cumbersome or unreasonably increase time and costs (e.g. software subject to a disproportionately expensive licence fee).

The level of specific guidance that the tribunal will need to provide will depend on the case's factual and legal complexity. For example, a large construction case with multiple claims and a large volume of evidence likely will be managed differently from a commercial case where the main issue in dispute concerns the proper interpretation of the contract.

When a party or the tribunal contemplates using a particular IT solution, any increased convenience should be balanced against increased costs needed to implement the IT in the specific arbitration. Although IT can help the parties to save time and costs, certain IT can have the opposite effect. For example, pre-hearing disclosure of electronic documents and other electronically-stored information¹⁵ can substantially increase costs. Briefs with embedded electronic links to cited exhibits,

testimony and legal authorities ("ebriefs"), as well as linked indices, exhibit lists and similar documents, have become increasingly common in international arbitration. They can make it more efficient for the tribunal to learn about and evaluate the case (if the tribunal reviews files on a computer screen) and also can be used to expedite the retrieval of documents at the hearing. At the same time, ebriefs and similar electronically-linked documents tend to be time-consuming and expensive for the parties to prepare. Thus, the tribunal may wish to undertake a rough cost-benefit analysis before ordering or assenting to the presentation of ebriefs or similar documents. Although ebriefs may be appropriate and perhaps even expected or required for a case where the amount in dispute is US\$ 10 million, would they be equally warranted in a case where the amount in dispute is only US\$ 500,000? Should a tribunal require ebriefs in a smaller case without considering the time and money the parties would have to spend to comply with its directions?

If the tribunal requires an IT solution (e.g. a secure internet-based electronic document repository) to be used, the reasonable costs incurred to comply with the tribunal's directions should be recoverable from the losing party as part of the costs of the arbitration, unless the parties agree or applicable rules provide otherwise.¹⁶

Whether the cost of every IT solution that a winning party uses to present its case should automatically be borne by the losing party is another question. To answer this question, the concept of *proportionality*¹⁷ should apply. Thus, IT that may be appropriate where the amount in controversy is US\$ 50 million or US\$ 10 million may not be appropriate where only US\$ 5 million or US\$ 500,000 is in controversy. Also, the confidentiality or sensitivity of the information presented may dictate the solutions that are needed to manage that information. If the information is not commercially-sensitive, a different solution might be used from the solution that would be needed in a case that involves, for example, trade secrets.

15 See "Managing E-Document Production", *supra* note 12.

16 The vast and sometimes controversial subject of costs in international arbitration has been studied by the ICC Commission on Arbitration and ADR's Task Force on Decisions as to Costs. This Task Force's report, "Decisions On Costs In International Arbitration", was published in the ICC Dispute Resolution Bulletin 2015 – Issue 2, and can be downloaded at <http://www.iccwbo.org/Advocacy-Codes-and-Rules/Document-centre/2015/Decisions-on-Costs-in-International-Arbitration-ICC-Arbitration-and-ADR-Commission-Report/>. Readers are encouraged to consult that report, given that most issues regarding the allocation of costs are beyond the scope of this one.

17 See "Managing E-Document Production", *supra* note 12, §§ 5.20–5.23.

The parties may prefer to agree early in the proceedings on how certain costs should be borne. In general, the tribunal should always encourage agreement before or at the initial case management conference. Otherwise, the tribunal will decide as early as possible in the proceedings. For example, if one party wishes to use real-time court reporting with immediately displayed transcripts at the hearing, should this expense be part of the costs of the arbitration? The parties might agree that it should not. Ideally, any such agreement should be presented to the tribunal and incorporated in an appropriate procedural order or in the Terms of Reference.

What factors might the tribunal consider regarding IT use, especially in a small or medium-sized case?

A general assumption that IT always will lead to greater efficiency and less expense and thus ultimately decrease the cost of the proceedings is not justified. In reality, efficiency and costs in a particular case will depend on various factors, such as the IT solutions selected, when and how they are implemented, the associated costs, and the IT sophistication and experience of the tribunal, the parties, and other relevant IT users involved in the arbitration.

IT can be used effectively in both smaller and larger cases. Regardless of the size of the case, it is not uncommon for the tribunal to ask the parties to agree on IT use and implementation that go beyond mere email communication. Sometimes the tribunal will intervene only to ensure that the tribunal's needs or preferences regarding file management are addressed. Nonetheless, the tribunal is ultimately responsible for the efficiency and integrity of the proceedings, and may wish proactively to encourage the parties to think more fully about the costs and benefits of the proposed IT and whether those costs and benefits would be proportionate to the value in dispute. If the parties do not agree on the IT that one party proposes to use, the tribunal should consider the costs, benefits, and proportionality of the proposed IT solution and whether the case is large, small, or somewhere in-between.

What if the parties have materially disparate resources to bear the cost of IT use?

The tribunal should keep in mind fundamental principles of fairness to all parties. Although each party should have a full and fair opportunity to present its case, no party should be allowed to insist on a particular IT solution in order to make the proceedings more difficult or expensive for another party. Thus, the tribunal might deny a request for directions to use a specific form of IT if it finds that the requesting party's preference for that solution is motivated by a desire to cause the other party to incur unreasonable costs or where the tribunal concludes that a less expensive solution would work just as well – both for the parties and the tribunal. Conversely, the tribunal also would condemn a party's attempt to complicate or obstruct the proceedings by unjustifiably resisting IT use.

1.3 IT and the selection of arbitrators

Should the tribunal be competent to use specific forms of IT?

The level of IT literacy that the tribunal should possess depends on the parties and the specific case.

Not every arbitrator is comfortable with and able to use every type of IT. This can be due to inadequate training, a lack of access to the necessary software or hardware, or inadequate internet bandwidth. For example, although the use of email is now almost universal, arbitrators may be unfamiliar with or lack the software necessary to view certain file types (e.g. Microsoft Project or Computer Assisted Design ("CAD") files). Also, although it is common for parties to submit memorials, witness statements, exhibits and legal authorities in electronic form, some arbitrators may prefer not to work in a completely paperless environment, and thus may require a combination of electronic and hard-copy submissions.

Should a party that is contemplating the nomination of a particular arbitrator consider whether the nominee is familiar with, or willing to learn how to use, particular kinds of IT?

Yes. When nominating an arbitrator or when seeking to agree with the other party on a joint nominee, consider asking the candidate about his or her familiarity with and ability to use the specific IT that you may wish to implement.

If an arbitrator needs IT equipment, training or technical support, who will provide this and, if so, who will bear the costs?

The parties should consider these issues before agreeing to use a particular form of IT. If the parties are unable to agree on the sole arbitrator or tribunal president (where the arbitration agreement provides for a joint nomination), each party should provide sufficient information to the appointing authority (e.g. ICC) or the co-arbitrators about the need for the tribunal to be able to accommodate the parties' expected IT needs.

If the parties cannot agree to share costs for equipment, training or technical support, the tribunal will need to decide.

As in any case that involves a technical issue, if the arbitrators need training, the tribunal should schedule a tutorial session or sessions before the merits hearing. The trainers could be counsel, other representatives of the parties, or a third party. The third party could be someone whom the parties recommend, or an expert whom the tribunal appoints pursuant to Article 25(4) of the ICC Rules.

2. ISSUES DURING ARBITRAL PROCEEDINGS

2.1 Role of the parties

May the parties initiate the use of IT after the arbitration has moved beyond its initial stages?

Yes, but they should consult the tribunal and seek instructions if the tribunal is also expected to use the IT.

What about use of IT by only one party?

IT use for a party's internal purposes is always possible. For example, counsel's use of a software program to catalogue documents or otherwise help counsel analyse the issues and prepare for the hearing should not be the opposing party's or the tribunal's concern. Indeed, normally the parties would not use exactly the same software or other IT solutions.

To be effective, some IT solutions (e.g. using an internet-based file repository or email as the primary method of communication; electronic service of submissions by a certain time) necessarily require that all parties use these methods. Thus, the usefulness of email would be defeated if one or more intended recipients were unable to receive the email or refused to cooperate by relying on unverifiable grounds regarding, for example, confidentiality. Obstructive behaviour may be a reason for not using certain IT or abandoning the attempt to do so, if the tribunal's procedural directions are likely to be difficult to enforce. At the same time, any IT use that would deprive the tribunal or a

party from access to relevant information that is material to the proceedings must be avoided, in order to uphold basic principles of fairness and equal treatment.

If a party intends to use certain IT at the hearing, the party usually should inform the tribunal and the other party in advance and cooperate with them to avoid any disruption or unfair surprises at the hearing.

What are the parties' continuing responsibilities when using IT?

Agreements or orders concerning IT use (e.g. relating to permitted file formats and the searchability of files) must be respected throughout the proceedings, unless the tribunal directs otherwise. Further, under basic notions of fairness and professional courtesy, each party should ensure that the opposing side and the tribunal are able to use and access the IT that the party uses. For example, this means that a party introducing data into the proceedings should refrain from using IT solutions that the other party or the tribunal cannot readily access. It also means that a party should *sua sponte* promptly replace corrupted files, inoperable links, attachments that cannot be opened, and illegible copies as soon as it becomes aware of the problem and regardless of whether the tribunal or the other party has complained. These same principles should apply to any other technical issues that may arise, such as the inoperability of required software and hardware, the availability of the IT as needed during the arbitration, and the detection and remediation of other technical problems.

As necessary, the party that uses a particular form of IT may need to provide the tribunal and the other party with instructions or training on how to use it.¹⁸

2.2 The tribunal's role

When should the tribunal give directions for the use of IT?

The tribunal should strive to ensure that the use of IT during the arbitration does not interfere with the parties' rights to equal treatment and a full presentation of their respective cases.¹⁹

¹⁸ For example, in a complex construction case, a party might wish to use an online demonstrative exhibit that allows the tribunal and the opposing party to view a photograph of the project and to access other relevant exhibits pertaining to different aspects of the project by clicking on the relevant parts of the photograph or model. The party producing the demonstrative exhibit should be responsible for providing basic instructions to the tribunal and the other party on how to access and use the exhibit.

¹⁹ These rights are established in Article 22(4) of the ICC Rules.

In general, the earlier directions are agreed or given, the more likely it will be that IT can be implemented in a manner that saves time and costs and moves the arbitration forward efficiently. As noted, directions on the use of IT are often incorporated into a procedural order, and it usually is unnecessary to issue directions at an earlier stage. Any directions included in the Terms of Reference (in addition to or instead of a procedural order) should be made subject to later modification by the tribunal in consultation with the parties, as the circumstances may warrant.

Ordinarily, IT-related issues should be an agenda item for the case management conference held pursuant to Article 24 of the ICC Rules. Depending on the nature and complexity of the IT proposed and any technical issues that may arise, further conferences may be necessary. Usually, the use of IT is a point that also should be discussed when preparing for the oral hearing. Typically, however, these issues can be addressed through correspondence or by telephone, without the need for in-person meetings.

What directions should the tribunal provide regarding the use of IT?

Article 22(1) of the ICC Rules requires the tribunal and the parties to “make every effort to conduct the arbitration in an expeditious and cost-effective manner, having regard to the complexity and value of the dispute”. At the same time, under Article 22(4) of the ICC Rules, and consistent with most arbitral laws and institutional and ad hoc rules (e.g. UNCITRAL Model Law), the parties have the right to equal treatment and to present their respective cases. Any directions concerning IT should always be consistent with each of these principles.

Any directions necessarily will depend upon the nature of the parties’ dispute, the IT that the parties propose to use, and the tribunal’s preferences and abilities. As with any other issue, the directions should be agreed, if possible. Thus, the parties should exchange and discuss proposals for the use of IT ahead of the conference at which the procedural timetable is established, and inform the tribunal of any agreements reached. If the parties are unable to agree, the tribunal should issue directions that augment the general efficiency of the proceedings and respect the principles of fair and equal treatment²⁰ and proportionality.

What criteria should the tribunal apply when each party wishes to use different technology?

Where the parties propose different solutions, the tribunal (and the parties) should consider whether a single approach really is necessary. Thus, for example, if one party proposes to present electronic evidence in a particular format (e.g. TIFF files) and the other party proposes to use another format (e.g. PDF files), the tribunal may conclude that the parties’ respective approaches are not materially different and that the tribunal need not require a uniform approach. On the other hand, if one party proposes to present evidence that can only be viewed by using software that is unavailable to a party or a tribunal member, the proposing party should either propose a different approach or make the software available to everyone who will need to use it.

What should the tribunal do if one party objects to the IT that the other party proposes?

First, it is necessary to understand why the party objects. Is it because the proposed IT will materially increase costs beyond those that the objecting party reasonably wishes to bear? Or is the objection asserted for another reason?

Where the objection concerns increased time or costs, the tribunal should consider available information regarding the time and costs that would be incurred if the parties were allowed to use different technologies, the expected tangible benefits to the parties and tribunal, and whether all parties and the tribunal would be easily able to use the different IT solutions proposed.

Particularly where the tribunal considers whether to impose an IT solution over a party’s objection, the tribunal should consider the practical implications, in addition to substantive legal and procedural concerns. For example, would the use of a particular IT solution (e.g. an internet-based document repository hosted in a certain country) force a party to violate data privacy laws to which it is subject? If the parties have disparate resources, would a requirement to use a particular solution create an unfair hardship for one party?

Any directions concerning IT should always be consistent with the basic procedural principles referred to above.

²⁰ Cf. ICC Commission Report “Managing E-Document Production”, §§ 1.4, 2.3, 2.5, 3.2, 3.5, 3.11, 5.22, 5.23.

What directions should the tribunal give in relation to the cost of using IT where an agreement has not been reached between the parties?

IT-related costs are subject to the same rules and criteria as other costs that a party incurs in international arbitration.²¹ When managing the case, the tribunal should consider that IT can be expensive both to acquire and use. If the parties cannot agree on how IT costs should be borne, the tribunal may have some difficult questions to resolve. For example, where the parties' preferred IT solutions are incompatible with each other, one party may be unwilling to accept the other's solution if, for example, the objecting party must purchase a licence, undergo additional training, or acquire necessary IT support. In these circumstances, is it better to impose one system and seek to equalise the costs between the parties or to tolerate two or more incompatible systems? What if one party needs to use specific IT (e.g. software) to present certain evidence and prove its case?

Where a party, on its own initiative and for its convenience, has incurred expense to implement a specific solution (e.g. scanning and databasing documents), what, if any, costs should be allocated to the other party for using all or part of that work product (e.g. the exhibits produced on the database)? Or should these costs be borne solely by the party that initiates the use of the IT, as part of the overhead costs that are included in the legal fees that the party's attorneys charge, rather than a separate item of recoverable costs?

Where the parties choose to use different forms of IT to prepare and present their cases and one party's costs are higher than those of the other party, what should the tribunal do when awarding costs? For example, if one side seeks to recover costs attributable to using certain software, should it recover its costs against a party that has adopted a low-tech approach to present its case? Or should these costs be considered as overhead?

For better or worse, these and similar questions must be resolved on a case-by-case basis.

Should the tribunal use electronic means to communicate with the parties? Should the parties use electronic means to communicate with the tribunal?

When the Task Force issued its 2004 report, some anecdotes from arbitration practitioners suggested that there were arbitrators who refused to communicate by email or at least were reluctant to do so. Today, communication via email and other electronic means has become standard practice for nearly all parties and tribunals, as well as ICC, for routine communications and submissions.

But, under certain circumstances, should information *also* be transmitted by courier service or *exclusively* by courier service or other non-electronic means? In at least the following three circumstances, the answer is probably yes:

(i) Where there are material concerns about confidentiality. When sensitive data is transmitted, a party may have legitimate concerns that emails could be intercepted by governmental authorities or other third parties. Although encrypted emails could be a solution in most cases, a party's concerns may remain even if encryption is used. In these circumstances, the tribunal should consider giving the parties the option to transmit the sensitive information by courier or by another method (e.g. hand delivery, where feasible) that would ensure timely delivery of the submission.

(ii) Where the attached files – even if compressed – are too large to allow receipt by email because the receiving server would reject them automatically on account of their size.

In this case, tribunals routinely allow the parties to transmit data using a physically transmitted storage medium (e.g. CD, DVD, flash memory), or by uploading the information using the FTP protocol²² to a (secure) file repository on a server, often in "the cloud" (i.e. on the Internet²³), where the tribunal and the other party can retrieve (download) the files.²⁴ Similar concerns also arise if the volume of documents transmitted by email is too large for the parties or tribunal to access conveniently.

As discussed below, although third-party FTP services (e.g. Dropbox and similar services) have increased in popularity, some parties may be concerned whether the data uploaded is sufficiently confidential. Depending on the IT service provider used, it may also be technically difficult to automatically track download activities and to verify due receipt of the data.²⁵

(iii) Where there are other legitimate concerns concerning whether the electronic communications will be received. If a party's counsel is in a country where email communication is not reliable enough to ensure that emails sent to or from the country will be received by their intended recipients, email should not be used.

(iv) Where there are other legitimate legal concerns. Certain information may be subject to intellectual property-related laws or licences, data privacy laws, or other export or confidentiality restrictions, with which a party or its counsel may be required to comply. IT use should not expose the tribunal, a party, or counsel to a realistic risk of governmental sanctions.

21 See generally "Decisions on Costs in International Arbitration", *supra* note 16.

22 See http://en.wikipedia.org/wiki/Internet_protocol_suite.

23 See https://en.wikipedia.org/wiki/Cloud_computing.

24 See http://en.wikipedia.org/wiki/Cloud_computing.

25 See e.g. Articles 3(2) and 3(3) of the ICC Rules. It may be appropriate for the tribunal to give directions for tracking this process.

3. OTHER SPECIFIC ISSUES THAT MAY BE RELEVANT TO PARTIES AND TRIBUNALS AT ANY STAGE OF THE ARBITRATION

3.1 Compatibility issues

Do the parties, counsel and the tribunal have adequate and compatible hardware and software?

To share information electronically among different users, the users need compatible hardware and software. Before an IT solution is adopted, any issue regarding compatibility and interoperability should be resolved, including, without limitation, the following:

Hardware interoperability. Since the Task Force's 2004 report, hardware interoperability has greatly improved. Thus, hardware interoperability should no longer be an issue, except in unusual situations that require specialised hardware. Nevertheless, all intended users need a minimum level of processing power with adequate data storage capacity and internet connectivity with sufficient bandwidth for communication using standard interfaces.

Software compatibility. The operating system and specific applications (e.g. word-processing, spreadsheet programs, and other special-purpose software) as well as scanned image formats should also be compatible. If off-the-shelf standard file formats (e.g. PDF, TIFF, RTF) are used, each user may not need to have the same programs as software interoperability also has greatly improved since 2004 and problems with interoperability are today less likely to occur with the types of software generally used in a law firm's practice. Specialised software for industry sectors may pose different challenges.

Adequate technical ability. If the parties expect the tribunal to use specific IT, then each tribunal member must have sufficient technical ability and resources to transmit, receive, access, and use the data presented to them.

The same is true of counsel and their technical staff. In general, it can be assumed that counsel will have or acquire the necessary skill to use the IT (e.g. email) required to interact with the tribunal and opposing counsel. If one side proposes an IT solution with which neither the tribunal nor opposing counsel are familiar and which would result in added time and money to learn, the tribunal would be unlikely to order that solution.

A coherent and intelligible file-naming system.

This is essential when exchanging files with data during the arbitration. For example, files can be designated with an exhibit number (e.g. C-..... for one of the Claimant's exhibits and R-..... for one of the Respondent's exhibits) and also a document control number ("Bates numbers") on each page of a particular document. Many document management programs ("DMS",²⁶ e.g. Eclipse, Opus2, Ringtail) are capable of adding document control numbers automatically.

Databases may be helpful for organising and retrieving documents and other information. Counsel use databases routinely to manage documents and other information submitted in the arbitration. If the parties want to use a shared or common database to manage documents and submissions or even to communicate among themselves and with the tribunal, they may encounter the following sorts of issues:

(i) Commonality. Unless the parties can agree on (or the tribunal orders) specific protocols for the data to be uploaded (e.g. certain load files), data structures, data identifiers and standard file types for information in the database, the database may not be accessible, or searchable with the degree of reliability that the parties and the tribunal require.

(ii) Control. In an adversarial setting, the risk always exists that one side may try to create a tactical advantage through control over or access to a shared database. If one party hosts and controls the shared database, the parties and the tribunal should consider how disputes over access to that database and its quality and reliability might be avoided.

If the arbitral institution controls the database, concerns over gamesmanship should be eliminated, but the potential for quality and reliability problems remains.

(iii) Confidentiality and data security. Regardless of who hosts and controls the database, the tribunal and the parties need to be confident that the information in the database remains confidential and that information provided to the other party and the tribunal will not be accessed or extracted without authorisation or used for purposes that neither the producing party nor the tribunal authorised. In this context, the parties and the tribunal should also be aware that certain personal data may be subject to one or more data privacy laws, including laws that may prohibit or limit cross-border transmission of that data. Other data, such as technical know-how or computer programs, may be subject to export controls. These restrictions could rule out the use of a commercial internet service provider (ISP) that would host the data in a way that would violate applicable data privacy and other relevant laws.

²⁶ See https://en.wikipedia.org/wiki/Document_management_system.

ISPs may also impose terms and conditions that are incompatible with confidentiality and data protection requirements.

(iv) Data integrity. Using a joint set of data in a common data base implies access by multiple users who are authorised to add, modify, and possibly delete data. This increases the risk of unintended changes or even bad faith manipulation. The database software normally contains tools that could help to detect and prevent data corruption of this kind. It may be appropriate, however, to agree on the steps to be taken in the event such data corruption is detected or suspected.

Based on the information available to the Task Force, it appears that shared databases are not common in practice, despite their potential for creating significant synergies when used in good faith. The cooperation they presuppose is probably at odds with the adversarial spirit generally found in arbitration.

Agreed templates or conventions for describing documents. Especially in complex cases involving multiple claims and issues, agreeing on templates for the presentation of certain information or the description of documents (e.g. emails, spreadsheets, tables) in an agreed format may help the parties and the tribunal to manage certain information more efficiently and thereby save time and costs.

3.2 Electronic exchange of exhibits and other submissions

Are the parties willing to exchange some or all exhibits and other documents electronically during the proceedings?

The main advantages are convenience, reliability and speed, especially if the parties already manage their files in electronic format.

Is the tribunal willing to accept electronic exhibits and documents?

The tribunal's acceptance and use of exhibits and other documents in electronic form is common, if not routine, in international arbitration. If tribunal members lack access to the technology necessary to enable them to view and use the electronic documents, or if they simply find the lack of hard-copy documents inconvenient, however, the parties may be willing to exchange exhibits and documents only electronically between themselves, even if the tribunal requires paper copies of the exhibits also to be submitted.

Regardless of whether exhibits and other documents will be exchanged electronically, will electronic versions be used at the hearing?

Consider the following issues:

(i) Will the tribunal and the parties use electronic versions of the exhibits and other documents instead of, or in addition to, hard copies?

(ii) Will a specific software program be used to retrieve and project images of or otherwise show the exhibits at the hearing? If so, does the program have any special requirements? For example, if audio or video recordings will be played, will it also be necessary to have portable speakers so that those in attendance can hear?

(iii) May one side use electronic versions of exhibits if the other side does not wish to use electronic versions at all?

What are the basic requirements?

All parties and tribunal members need to have the hard- and software required to receive, review and store exhibits provided in electronic format. If not, it may be necessary for the party using electronic versions to provide the other parties and the tribunal with a printed version.

What categories of documents will be exchanged electronically? Only documents exchanged between the parties or also those submitted to the tribunal?

Possibilities include (a) correspondence (between counsel, among the tribunal and the counsel or the parties, among tribunal members, and with the arbitral institution); (b) pleadings; (c) exhibits and other documents disclosed; and (d) hearing briefs, witness statements, and other written submissions.

The use of email for communications among the parties, between the tribunal and the parties, and with the arbitral institution has become routine. Usually, email does not present any technical challenges, except where the size of attachments is large.

What issues arise when large volumes of data are exchanged?

Methods of sharing data include:

(i) Email. Most email systems place an arbitrary limit on the size of attachments that can be received (e.g. 50MB or even less). As a practical matter, unless attachments are sent in separate batches or compressed²⁷ into a so-called archive (e.g. ZIP,²⁸ TAR²⁹ files), this means that email is not an efficient means for sharing large volumes of data.³⁰

Accordingly, it would be prudent to clarify at the outset of the proceedings whether any party or tribunal member is subject to technical restrictions on the size of emails and email attachments that can be received. If so, the tribunal could specify a size limit for individual messages in a procedural order. In case of doubt, the sending party should take steps to verify that a given message has actually been received by the addressee.

(ii) Physical data carriers (e.g. flash memory sticks, hard disks, DVDs, CDs). As an alternative to email, large volumes of data can be conveniently and inexpensively transmitted by copying the data onto a data carrier, which one party physically delivers by courier to the other party's counsel and the tribunal. As long as a reputable courier service (e.g. FedEx, DHL) is used, the confidentiality of the contents of the shipment should not be at risk. As a safeguard, however, the stored data could be password-protected and the password transmitted separately. Using a storage medium to transmit data is not as instantaneous or inexpensive as email or file sharing, and thus may not be the first choice for some arbitration users, despite its obvious advantages with regard to confidentiality and data security.

(iii) File sharing. Large volumes of data can also be shared using FTP servers and other web-based protocols. If the server is under the physical control of the uploading party, confidentiality should not be an issue. Typically, the uploading party's attorney would provide the other party's attorney and, in the case of formal submissions, the tribunal with a link and password enabling them to download the data into their respective systems. Once the data has been downloaded, it can be removed from the FTP server.

As an alternative, some parties use generic commercial file storing and sharing services, such as DropBox, Google Docs, Microsoft One Drive, FileSwap.com, hubiC, AjaXplorer, -okeanos, Box, Firedrive, among others, which are often free of charge, at least up to a certain quantity of data stored. Although these services claim to be secure, the idea of placing commercially-sensitive information on the internet may raise concerns: Who really has access to the information? Can it be accessed by anyone without authorisation (whether through hacking or otherwise)? Once placed on the internet, can the information really ever be completely deleted or otherwise rendered inaccessible? What rights does the service provider have under its terms of use? Is the use of the online services permitted by the professional rules to which the parties' representatives and the arbitrators are subject? Similar concerns would arise if a tribunal were to create a closed social media page (e.g. LinkedIn, Facebook) and use that page to communicate with the parties or to upload and display information. Thus, if a party-controlled extranet is not available, it may well be better to use a USB stick or other physical data carrier. Alternatively, the parties and the tribunal might consider paying for a commercial file transfer service that offers a higher level of security (e.g. WeTransfer), provided that the service is sufficiently secure and otherwise satisfactory, given the nature of the information to be transferred, applicable data privacy requirements, and other relevant concerns.

(iv) Virtual data room. From a technical perspective, virtual data rooms are fundamentally no different from generic commercial file sharing services. But they tend to be customised for the needs of the legal profession and consequently offer many of the required features, such as automated upload and download notifications by email, sophisticated administration of users' rights, sub-spaces accessible only to certain categories of users (e.g. the tribunal), and search functionalities. If available, a secure virtual, data room administered by a neutral third party, such as an arbitral institution, would provide a place where the parties could upload and share all documents in the case, including correspondence, pleadings, witness statements, and other submissions, thereby avoiding the need to prepare hard copies of pleadings and evidence, if the tribunal allows. In a typical arbitration where the parties and various tribunal members are located in different countries, a virtual data room saves the cost of shipping hard copies and allows all parties and tribunal members to access submissions as soon as they are uploaded. If a dispute arises over the authenticity or integrity of electronic copies of evidence, the tribunal can still permit inspection of the original documents or metadata, just like in cases where the parties submit printed copies of exhibits. The Task Force endorses IT solutions of this kind, which answer many potential issues, such as neutrality and workable general terms of use.

27 See https://en.wikipedia.org/wiki/Data_compression.

28 See <https://en.wikipedia.org/wiki/Zip>.

29 See https://en.wikipedia.org/wiki/Tar_%28computing%29.

30 Among other techniques, files attached to emails can be sent compressed and encrypted in a password-protected ZIP archive. To enhance security, the sender might provide all recipients with a single-use password of at least eight characters, sent separately by text message to their mobile telephones or in a separate email.

As an alternative, the parties and tribunal might use a commercial fee-based service (e.g. Box) that offers a secure virtual data room. In addition to the costs of the service, the parties and tribunal should consider whether the data would be sufficiently secure and whether it truly can be deleted or otherwise rendered completely inaccessible after the arbitration is concluded.

When transmitted, how should data be organised and named?

In any situation where data is shared electronically, the parties and tribunal should agree on an appropriate numbering and naming convention that will enable the parties efficiently to identify and retrieve particular documents. If the documents are exhibits, they should be indexed and the naming convention usually would have some or all of the following elements: exhibit number, date, description, and a bates-number range.

In what format should the data be produced?

To preserve the integrity of the documents, the parties and the tribunal should use file formats that (i) guarantee that the formatting of the original document is maintained, and (ii) contain a protection against later modifications and/or facilitate tracking of any modifications.

Whether data is exchanged by email, on a physical storage medium or through common access to an extranet or website, these issues should be considered, along with the issues of transmission integrity, proof of service, and security described below.

3.3 Data integrity issues

How relevant are such issues in known practice?

Based on available anecdotal evidence, data integrity issues are rarely identified in arbitration proceedings, and usually do not cause any substantial disruption of proceedings. Nonetheless, this is a potentially critical aspect of IT use, and users need to be alerted to the possible risks, to which they sometimes surrender too readily in exchange for the ease and convenience of IT use.

How will the authenticity and integrity of the electronic version of the information be established?

Like printed information, electronically-stored information can be improperly manipulated unless certain precautions are taken. Indeed, it is much simpler to manipulate electronic records. In most cases, however, many copies of the same file exist in different places, thus allowing comparisons to be made and falsifications detected whenever suspicions arise.

To ensure that information is not altered after it has been produced in the arbitration, parties usually produce most information in a format that makes alteration more difficult, such as a Bates-numbered PDF or other graphical file format,³¹ rather than in native format. For emails and other correspondence, this technique works well.

Where the information produced is from an Excel or other spreadsheet file, however, production in TIFF or PDF format may render the information comparatively difficult to read and also limit its usefulness. This is because production in TIFF or PDF format does not preserve the functionality (e.g. formulas and interactivity) that exist in native format. For this reason, the parties often will agree or the tribunal direct that Excel and certain other files should be produced in native format, either instead of or in addition to TIFF or PDF.

To ensure that the information produced was not altered before production, commercially-available software can be used to verify an electronic "signature",³² which provides information as to whether the purported originator is the real author and whether the electronically signed file was modified after signature.

In some cases, the parties may also wish to have access to metadata (i.e. embedded data about the data and its properties)³³ that would show, for example, if and when files were altered. Unless the alteration of data is a legitimately disputed issue in the case, however, most parties will not designate metadata as part of an exhibit, and it would be unusual for a tribunal to require metadata to be disclosed, based on concerns over time, cost, and proportionality.

For documents and copies of documents that were created without an electronic signature, the use of IT raises no greater concerns in this respect than the exchange of hard-copy photocopies, which, for example, could have been made from a printout of an electronically-manipulated, scanned document. Ultimately, the parties and the tribunal must retain the right to inspect the originals of any documents whose authenticity is disputed.

31 E.g. JPEG, TIFF, BMP. See http://en.wikipedia.org/wiki/Comparison_of_graphics_file_formats.

32 See <https://en.wikipedia.org/wiki/Authentication>, https://en.wikipedia.org/wiki/Electronic_signature, https://en.wikipedia.org/wiki/Data_integrity.

33 See <http://en.wikipedia.org/wiki/Metadata>.

What directions should the tribunal give in relation to preservation of data integrity?

If all documents are exchanged on paper or as numbered electronic files in TIFF or PDF format, special directions to prevent alteration will usually not be necessary.

If the electronic images of historical printed documents are produced, the original documents should be available for inspection, especially if there are reasonable concerns that the electronic images may have been altered before production. Historical documents produced only as electronic images should be preserved at least during the arbitral proceedings and should be open to inspection as directed by the tribunal.³⁴

If there are sufficiently substantiated material concerns regarding whether information may have been altered, the parties could agree or the tribunal could provide directions on interoperable programs to be used electronically to sign and verify files and for related matters, such as the exchange of electronic trusted certificates or electronic keys required for signing and verification.³⁵ This would allow the originator of the signed file – but not necessarily of its content – to be identified and the integrity of the data to be verified as of the moment the file was electronically signed. No system is 100% secure or foolproof, however.

In the Task Force's opinion, this sort of issue is not relevant in the vast majority of cases. Normally, the level of trust between the tribunal and the parties will be sufficiently high (or concerns about proportionality will dictate) that these sorts of additional directions would be unnecessary.

3.4 Proof of service

If the information is transmitted via electronic means, how should the date of service of the document be determined and verified?

Most systems of law and many contracts set out minimum requirements for proof of delivery, increasingly also in respect to electronic communications. The relevant arbitration rules may provide specific rules for proof of delivery (e.g. in ICC arbitration, Articles 3(2) and (3) of the Rules) or they are issued by the tribunal. Under Article V.1(b) of the New York Convention (1958), these requirements affect the parties' rights to enforce the arbitral award, and thus should be verified before electronic communication is used to effect service.

Arbitral institutions often still require certain documents to be transmitted by non-electronic means. In ICC arbitration, these include, for example, the requisite number of originals of the Request for Arbitration and the Answer, the requisite number of signed originals of the Terms of Reference, and the arbitral award or awards.

Are there certain categories of documents that should be transmitted by non-electronic means?

As of the date of this report, it remains somewhat unclear whether and under what conditions an award in electronic format would be enforceable under the New York Convention in member states. The reason is that the New York Convention does not define or provide guidance on what constitutes an "original" electronic award or what would be an acceptable electronic "copy" of such an award. Nor does it define exactly what an original electronic signature is. The signature question is especially problematic, given that all visual reproductions of a physical signature in a file are by their nature copies. Thus, a qualified electronic signature³⁶ meeting the applicable legal conditions established in the member state in which recognition or enforcement is sought may be required. Moreover, in the event of proceedings for cross-border recognition or enforcement of the award, practical problems could arise if the original signed award is in file format, and the judicial authorities in the country where recognition or enforcement is sought are not adequately equipped to process the application on the basis of such a file. For all of these reasons, for the time being, original awards probably should continue to be made and signed on paper and physically served on the parties. This does not mean that electronic copies of an award or originals signed with qualified electronic signatures in accordance with the laws of the relevant country or countries could not also be communicated and used for other purposes.

How will the receipt of emails and documents be verified?

Email programs are able to generate acknowledgements of receipt, which are electronically returned to the sender if this functionality is activated. Moreover, it would be a simple matter to agree on the requirement that any recipient manually generate and send an electronic acknowledgement of receipt. Internet-based document repositories/data rooms can make it possible to track access. If this functionality is not offered by an ISP, an appropriate procedure needs to be put in place.

³⁴ The question of when any (potential) party to an arbitration should cease deleting any possibly relevant files in its IT system is complex and controversial. See "Managing E-Document Production", *supra* note 13, §§ 5.31 ff.

³⁵ See http://en.wikipedia.org/wiki/Electronic_signature, <http://en.wikipedia.org/wiki/Authentication>, http://en.wikipedia.org/wiki/Data_integrity.

³⁶ See https://en.wikipedia.org/wiki/Electronic_signature, https://en.wikipedia.org/wiki/Digital_signatures_and_law

What should be agreed or what directions should be given in relation to this issue?

Usually, the transmission and receipt of information by email will not be controversial. If necessary, directions concerning some or all of the following precautionary measures could be considered: (1) duty to check electronic mailbox or website hosting a document repository at certain intervals (e.g. daily); (2) duty to acknowledge receipt with copy to all, especially the tribunal; and (3) directions regarding what happens if receipt is not acknowledged within a certain period of time.

3.5 Confidentiality and data security

How relevant are confidentiality and data security issues known to be in practice?

Confidentiality issues regarding the use of IT pertain to whether adequate protections are in place to ensure that neither the parties nor third parties will misuse any data transmitted to them or stored by them. For example, in the case of a third-party commercial service, do the provider's terms and conditions give the service rights to the data that would be inconsistent with the parties' requirements?

"Data security" issues pertain to whether, despite the best intentions of the parties and any service provider, the data nonetheless could be accessed without permission.

From a legal perspective, due to regulatory requirements that are in place in major jurisdictions, confidentiality and data security issues arising out of IT use during the proceedings can be critical. Nonetheless, these issues often do not appear to play a significant role in the eyes of the users, even as incidents of cyberattacks generally increase. At the same time, it is common practice for them to communicate through unencrypted email with unencrypted attachments, despite knowing that these messages could easily be intercepted. If interception were to occur, it would not be directly perceived or detected by the parties and the arbitrators and could have significant commercial consequences. Despite the potential seriousness of these issues, some IT users seem unconcerned, or perhaps too willing to opt for convenience over security.³⁷

³⁷ In some jurisdictions, attorneys and the parties themselves may be required by local law to adopt certain measures regarding confidentiality or cybersecurity. The content and scope of these laws vary greatly.

How will the confidentiality and security of the information exchanged be maintained?

The parties should agree on an acceptable minimum level of security against unauthorised access by third parties. Information can be protected during transmission through encryption, which is available in Outlook and other email programs, as well as through other software that allows for digital signatures. If the parties wish to use a virtual data room or a commercial service for data transmission, they should inquire whether the service provides for secure (encrypted) transmission and storage.³⁸ They should also check whether service provider's terms and conditions regarding confidentiality and data security are acceptable to them. The parties should also verify that under those terms and conditions, the service provider does not gain any right of uncontrolled access to the contents that are uploaded and stored and cannot exercise any unilateral control over that content. The terms and conditions should never include language that grants the service provider any copyright, or other right to copy, use, license, or transfer any right concerning any data stored or the information embodied in such data.³⁹

Parties need to be aware of the risk of unintended transmittal of or access to information. Any party that is concerned about the continuing security of information it transmits to the other party or the tribunal and wishes to restrict access to that information should raise this concern as soon as possible, normally before the initial case management conference. No standard, "foolproof" solution to this risk exists.

Who will have access to information stored electronically?

Each party and tribunal member is responsible for protecting access to and the confidentiality and security of information under his, her, or its control.

Other participants (e.g. experts, third-party administrators of virtual data rooms) may be required to make appropriate commitments regarding confidentiality and data security.

³⁸ A technical measure to overcome the lack of confidentiality of online file repositories would be to encrypt the data before it is uploaded and to share the encryption key only with the other party or parties and the members of the arbitral tribunal. There are software solutions for this purpose that are convenient to use, such as the commercial version of Boxcryptor (<https://www.boxcryptor.com>) or other similar products.

³⁹ See section 3.6 below.

What directions should be agreed or given in relation to confidentiality and security?

Electronic data may be unexpectedly corrupted during storage, transmission or reading. Consider requiring recipients to check for corruption immediately upon receipt and providing for a remedy (e.g. retransmission).

What directions should be agreed or given in relation to data corruption and virus issues?

Computer viruses (malware) may destroy electronic information and programs. They may damage or destroy the data being transmitted, and that data may infect other data in the recipient's system. Accordingly, any party or arbitrator who is transmitting data electronically should use and regularly update adequate anti-virus programs. A participant who does not use up-to-date virus protection software on its system should disclose this fact. Each participant should be responsible for adequately protecting its system.

3.6 Intellectual property

Who is responsible for confirming compliance with relevant copyright and licensing requirements in relation to the transmission and use of data and computer programs?

The intellectual property (IP) rights of third parties are not subject to agreements between the parties or orders from the tribunal. Each party and tribunal member will normally remain liable towards third parties for any IP infringement.

What directions should be agreed or given in relation to this issue?

In relation to specific IP rights, consider:

Software. Parties and arbitrators should be responsible for ensuring that the software they are use is duly licensed. If it is envisaged that software will be shared, the parties will need to discuss and agree on who should make the required licensing agreements and how the associated costs should be allocated.

Submitted data/documents. The transmission of files containing data or other information in an electronic format does not differ substantially from the submission of copyrighted materials in print form. Thus, the same principles that apply to printed material should be followed to ensure that any third-party copyrights are respected.

Consider whether the information to be exchanged concerns IP rights, trade secrets, or other technical know-how that a party has licensed from a third party or is otherwise obligated to protect. In this event, it may be appropriate to obtain commitments from parties, witnesses, experts, and perhaps even the tribunal, to maintain secrecy and not to use the information for purposes other than the arbitral proceedings.

4. ISSUES RELEVANT TO THE HEARINGS

If IT is to be used at the hearing, what issues should be addressed?

Whenever a party intends to use IT during oral hearings, it should allow enough time to prepare and test the IT so that any technical problems can be identified and corrected before the hearing begins. The tribunal and the other party or parties should be informed of the planned use of IT before the hearing.

What directions should be agreed or given in relation to this issue?

If only one party intends to use electronic means to present exhibits at the hearing, there normally should be no concerns. Nonetheless, if another party objects, the tribunal will need to provide directions.

Electronic documents may be displayed from one PC running the retrieval software, and either displayed to each participant via a local network of individual screens or projected onto a large screen for collective viewing.

As with printed exhibits, to increase efficiency and save time and costs, the tribunal may order the parties to eliminate duplicative exhibits and use only one version of identical exhibits at the hearing.

May a party use visual presentation software to project still or video images at the hearing?

Absent unusual circumstances, yes. Unless the parties wish to make a joint presentation on certain issues, each of them should be responsible for any arrangements required to show videos, PowerPoint slides, illustrative charts, computer graphics, and other material. Typically, the tribunal will provide directions regarding the extent to which exhibits used solely for demonstrative or illustrative purposes only must be disclosed in advance of the hearing.

When may video or telephone conferencing be used and what issues should be considered?

To save time and costs, the parties may agree or the tribunal may order that certain (or even all) witnesses may be heard by video or telephone, instead of requiring the witness to attend the hearing in person.

The emergence of commercial videoconferencing services⁴⁰ and free, ubiquitous software such as Skype, Zoom and FaceTime, and the increasing availability of the required equipment in law firms and companies mean that videoconferencing has become much more accepted, accessible and substantially less expensive than at the time of the Task Force's previous report in 2004. Although voice-conferencing is still used, videoconferencing has a greater potential to affect international arbitration practice. As yet, however, state-of-the-art videoconferencing is still more complex to organise than a telephone call, and services like Skype or FaceTime may not offer the required quality and/or functionalities. The parties should therefore seek the tribunal's guidance.

In the past, organising a videoconference required technical arrangements that needed to be delegated to professional service providers. Today, this is no longer necessary with services such as Skype and FaceTime, which have made videoconferencing much easier.

Regardless of whether the videoconference will take place using Skype, FaceTime or another service, it makes sense to confirm in advance that the technology and connections to be used are adequate for the videoconference to proceed.

If documents are to be used during the conference, they should be made available to all participants and identified in an unequivocal manner whenever they are referred to.

The tribunal and the parties will normally want to be able to verify the identity of the participants, especially witnesses, and to prevent illicit outside interference (e.g. witness coaching).

Finally, consider whether the applicable arbitration law limits or prohibits the use of telephone or videoconferencing for a hearing.

May real time transcripts or other electronic means of recording the hearing be used?

A professional service provider can usually provide real-time transcripts. Like all direct verbatim transcripts, they are expensive. Tape recordings may also be used, but are less convenient. Tapes may be transcribed later at less expense. As automated voice recognition improves, the next decade may see the advent of inexpensive, automated verbatim transcription solutions.

Who is responsible for the required hearing arrangements?

The ultimate responsibility for the hearings lies with the tribunal. The tribunal may issue directions that delegate certain organisational tasks to a party under its supervision. Directions should be issued at a preparatory conference in consultation with the parties.

40 See <http://en.wikipedia.org/wiki/Videoconferencing>; http://en.wikipedia.org/wiki/Internet_Protocol; http://en.wikipedia.org/wiki/Integrated_Services_Digital_Network.

Appendix

Examples of Wording that Might be Used for Directions for the Use of IT

Part of the beauty of international arbitration is that it is not a “one-size-fit-all” process. Rather, the tribunal will enter procedural orders and give directions that are tailored to meet the needs of the particular case. With this in mind, the Task Force thought it would be helpful to provide examples of language that arbitrators and parties might consider for use in procedural orders or other directions from the tribunal concerning the use of IT.

These examples have been kindly provided by the Task Force and members of the ICC Commission on Arbitration and ADR. Although the examples are intended to illustrate the points made in the body of the Task Force’s report and otherwise may be helpful to arbitrators and parties, they are not intended to be mandatory (or even recommended) for use in any given case. The example wording should be considered as a source of inspiration for the clauses to be drafted independently in a given case with its unique requirements.

The tribunal, as well as the parties and their counsel, will have specific preferences and needs. Thus, if one or more examples fit the needs of a particular case, they can be incorporated. If not, they should not be used. If a tribunal, parties or counsel believe that the examples can be improved, they should feel free to do so.

Given that the sample clauses are intended as examples, the language in one example may be superfluous to language in other examples. Thus, although language in one example clause can be used in conjunction with language in another example clause, redundancies should be eliminated as necessary. Also, references to parties and tribunal members may need to be adjusted depending on their number.

A. SAMPLE WORDING FOR PRE-DISPUTE AGREEMENT ON IT USE

The Parties, by an express provision in the agreement, adopt the following procedures regarding the use of information technology (“IT”). The interpretation of such provision is subject to the law of the arbitration agreement:

The Parties recognise that, in principle, the use of IT in a possible arbitration between them may result in a more cost-effective and less time-consuming proceeding. Therefore, they shall favourably consider the use of IT for this purpose and shall endeavour to discuss in good faith how to frame it in such a way as may be deemed most

suitable at the time of arbitration, taking into consideration, as may be appropriate, relevant developments that have occurred in IT, as well as any observations and suggestions that the Arbitral Tribunal may express, without prejudice to the right of the Arbitral Tribunal to issue directions for case management.

Comment: See Section 1.1 of the Report.

B. SAMPLE WORDING FOR TERMS OF REFERENCE

1. The Parties recognise that the use of information technology (“IT”) may result in a more cost-effective and less time-consuming proceeding. Thus, they favourably consider this use, and undertake to negotiate in good faith between them regarding how such technologies may best be utilised in the present arbitration and to take into account any observations and suggestions that the Tribunal may express, without prejudice to the right of the Tribunal to issue directions for case management.
2. General Use of IT
 - (a) The Tribunal may issue directions regarding the use of appropriate IT:
 - (i) at any presentation to or conference with all Parties; or
 - (ii) at any hearing before the Tribunal unless a Party reasonably objects.
 - (b) The Party using IT shall deploy commercially reasonable efforts to ensure that the IT functions properly at all relevant times and does not impair the progress of the arbitration.
 - (c) If a Party does not comply with the preceding requirements, the Tribunal retains full discretion to take appropriate action and issue appropriate directions, including adverse cost findings. In this regard, the Tribunal shall place particular weight on whether that Party acted in good faith.
3. Communications
 - (a) *[General provisions regarding notifications and communications can be inserted here]*
 - (b) Specific directions on the means of communication for the filing of written submissions and the observance of time limits in connection with such filings are set out in Procedural Order No. 1.

- (c) All other notifications and communications by the Parties and by the Tribunal (except for awards) shall be made by email or by any other means of telecommunication that provides a record of the sending thereof.

Comments: *As described in the main body of the report, in general detailed wording regarding IT use should be included, if at all, in Terms of Reference only in cases where there is a high degree of cooperation among the parties. In most cases, it is preferable to include directions for IT use in a (first) procedural order. The arbitral tribunal should consult with the parties and (to the extent possible) secure their cooperation in implementing the directions before the directions are issued in the order.*

C. SAMPLE WORDING FOR FIRST PROCEDURAL ORDERS

1. Communications between the parties and the tribunal

Example 1 – Communications

Except where specified otherwise below, the Parties agree, and the Tribunal directs, that all submissions and other communications shall be submitted via email directly to the Arbitral Tribunal, provided that each Party's counsel and the ICC Secretariat are also copied. All notifications and communications shall be considered validly made provided that they are made simultaneously to each of the following: (a) to the Tribunal member[s] at their respective email addresses; (b) to the Parties, by communication to their respective legal representatives at their respective email addresses; and [in an ICC case] (c) to the ICC Secretariat at its email address. Electronic communications are deemed to be made as of the date and time sent. Where this Order provides for hand-delivery or delivery by mail or courier service, the notification or communication must (in the case of hand-delivery) reach the addressees by the relevant deadline, or, if a postal or courier service is used, be handed to the courier before expiration of the relevant deadline. [Where the addressees are members of an arbitral tribunal, receipt by the tribunal president determines whether the deadline is met.] For deliveries to the Tribunal by mail or courier service, please use the following addresses:
[List addresses]

Example 2 – Electronic submissions

- (a) All submissions shall be sent: (i) via email to all Parties and the Tribunal; (ii) where the Parties agree, via a case management website or other service provider; or (iii) via any other means agreed by the Parties. [Any [describe document] shall also be submitted via courier or hand-delivery enclosed on [a] [USB/ flash drive(s)], within <??> business days of the original deadline.]

- (b) Submissions are deemed submitted upon receipt – not opening or reading – of an email in the [Tribunal President's / Sole Arbitrator's] email server that: (a) contains the submission, or (b) provides a "confirmation of upload" if using a case management website or an external service provider. A "confirmation of upload" may be a short statement by the submitting Party's counsel sent via email, subject to the normal sanctions if such statement is materially inaccurate.

Comments: *If a technical error occurs that prevents timely receipt in the sole arbitrator's or president's designated email server, the tribunal may need to determine when and whether the submitting party actually sent the submission. Because of issues related to firewalls and other uncertainties regarding email traffic, a "when sent" rule has certain advantages.*

- (c) Submission format and exhibits
- (i) All submissions to the Tribunal shall be (i) in the electronic format [DOC, DOCX, RTF, PDF], or (ii) any other electronic format authorised by the Tribunal.
- (ii) Such electronic format (i) must be commonly used for word processing, and (ii) must not hinder a Party's ability readily to access the information, so as not to deprive the Party of its due process rights.
- (iii) All citations or references shall hyperlink the citation or reference to the corresponding exhibit, such that clicking on the citation in the text or in the footnote will direct the reader to the first page of the exhibit in the same submission.
- (iv) Exhibits not already in electronic format shall be scanned. To the extent that an exhibit cannot be scanned and annexed or included in the [PDF, DOC, or DOCX] file, a copy shall be sent separately to the Tribunal and all Parties by [insert means here].
- (v) All submissions shall be named as follows: [insert particulars of file naming system here; party-id; document category-id, numbering-id within each category].

Comments: *The sample language allows the tribunal to accommodate any subsequent updates in technology (e.g. if DOCX upgrades to DOCX2, or some other as yet uninveted file format).*

Example 3 – Videoconferencing/teleconferencing and examination of experts and witnesses

The Arbitral Tribunal may allow a witness or expert to be examined by videoconference and will issue appropriate directions. A witness or expert whom the Arbitral Tribunal has allowed to testify by videoconference shall be considered to have appeared at the hearing.

[and/or with the following language]

(a) When to be available

(i) Hearings and/or examinations of witnesses or experts may be conducted using videoconferencing technology, which will be [insert technology name].

(ii) Hearings and/or examinations of witnesses or experts may not be conducted by telephone conference.

(b) How to be ordered

All videoconferences in which the Tribunal is a participant shall be preceded by an order from the Tribunal specifying the date and time of, the purpose of, and the participants in the videoconference (the “identified parties”).

(c) Camera placement/witness view

(i) Witnesses shall always be on-screen and on-camera, unless a recess is requested by counsel and granted by the Tribunal, which shall not grant a recess when a question is pending.

(ii) If videoconferencing, one video-camera shall always cover the entire room of the conference. It is not desirable to place a light source, such as a window, behind the witness.

(d) Identifying parties/required persons

(i) All participants shall be orally named by the representatives.

(ii) If a participant not identified in the Tribunal’s order is present, the participant must present his or her identification on camera to the Tribunal, with an identified party attesting to the veracity of the identification.

(iii) If no identified party vouches for the participant, the Tribunal, after hearing the participant, shall rule whether the conference shall proceed, and whether the participant may remain.

(iv) Parties shall also have their designated IT Point Person “on-call” for videoconferences, to troubleshoot and resolve potential technical issues.

(e) Failure

In the case of a videoconference or teleconference, if a party becomes unable to participate due to technical issues, the party shall immediately notify the Tribunal by telephone and identify the last piece of information that was transmitted to it. The Tribunal shall immediately stop proceedings, and give all parties a short description of any information that might have been exchanged after the party became unavailable and before the notification.

Example 4 – Security and confidentiality

(a) Each Party shall use its best efforts to ensure the confidentiality of the proceeding and its related communications and submissions.

(b) Every email sent regarding the proceeding shall be encrypted. The Parties shall be each responsible to ensure their emails and enclosed submissions do not contain any [virus, etc.].

(c) All electronic submissions shall be password-protected. The access passwords for all of a party’s submissions shall be the same, but different from those for access to submissions by other parties. The passwords shall not change for the duration of the Tribunal, unless security concerns require a change. The passwords shall be exchanged via [regular mail, telephone, or another non-electronic means of communication, such as in-person][via an email separate from the email containing the submission]

Comments: *In many cases, the parties and the arbitral tribunal are not very concerned about security. Convenience of use is often given a higher priority than data protection, confidentiality, and data integrity. If these sorts of issues are of sufficiently great concern, the tribunal and the parties should be aware that qualified digital signatures, password management, and encryption require complex technical procedures to be implemented effectively. One way to better address security and data integrity issues would be to use a password-protected online file repository and messaging system for all relevant communications, the security and integrity of which is supplied as a service by the chosen ISP. The sample directions should be issued only after the tribunal is satisfied that implementation will work on the technical side.*

Example 5 – Pre-hearing submissions

- (a) Written submissions (briefs or memorials, along with any witness statements and expert reports) and their fact exhibits and any legal authorities shall be sent to each member of the Arbitral Tribunal and to opposing counsel in hard copy by registered mail, courier service, overnight mail, or any other delivery service that provides a delivery record, along with a CD/DVD-ROM or memory stick containing a copy of the same submission (brief or memorial, witness statements, expert reports, fact exhibits and legal authorities). In order to meet time limits, written submissions (including witness statements and expert reports, but without fact exhibits or legal authorities) shall also be sent by email to each member of the Arbitral Tribunal, [the ICC Secretariat], and opposing counsel. Written submissions shall be timely if the email to which they are attached is sent by ([time - specify time zone]) of the day on which the relevant time limit expires. Hard copies of the written submissions, together with any witness statements, expert reports and exhibits, shall be handed to the courier, postal or other delivery service not later than [the following business day] [within two business days].
- (b) Electronic versions of written submissions (briefs, memorials, witness statements and expert reports; for fact exhibits and legal authorities, see paragraphs (c)-(e) below) shall be submitted in a fully text-searchable format – preferably PDF – and, if possible, in an ebrief version, containing hyperlinks to the witness statements, exhibits, and legal authorities cited.
- (c) Electronic versions of witness statements and exhibits shall be submitted in text-searchable (scanned or non-scanned) PDF format, together with a list describing each of the exhibits by exhibit number, date, name of the document, author and recipient (as applicable).
- (d) Legal authorities shall be submitted in electronic format only (unless a hard copy is specifically requested by the Tribunal), following the directions provided for witness statements and exhibits.
- (e) Each witness statement, exhibit or legal authority shall constitute a single electronic document. Electronic versions of exhibits shall commence with the appropriate letter and number (“C-01” or “CLA-01”, and “R-01” or “RLA-01”), so that they may be ordered consecutively in the electronic file.

Example 6 – Electronic file repository

- (a) The Parties shall cooperate with a view to setting up by [dd/mm/yyyy] a secure electronic file repository (data room) that is accessible using an internet browser with encrypted communication and user access management.
- (b) Unless otherwise allowed by the Tribunal upon agreement between the Parties, the online file repository shall be provided by a service provider with an established track record, whose terms and conditions ensure that only authorised users may access stored information and that agents or employees of the service provider will have no writing/reading/deletion rights unless the Tribunal provides written authorisation for the purposes of the individual case. The service provider must be subject to the standards governing the protection of personal data in [name of country].
- (c) The software environment within which the file repository operates must generate logs for (i) access details and (ii) read, write and delete operations concerning each user, which the Tribunal can request from the service provider at any time. Whenever a file is uploaded or downloaded, the system shall automatically send an email containing the pertinent user information to an address to be specified by the Tribunal. Any file upload shall trigger a notification email to all Parties and members of the Tribunal, with a link to the repository where file or files have been uploaded.
- (d) Each member of the Tribunal and each counsel will be assigned a personal user ID and password which only she/he may use and must keep strictly confidential.
- (e) The file repository shall have the following subdirectories:
 - (i) Arbitral Tribunal.** In this subdirectory, the Tribunal will upload all communications for the Parties, such as procedural orders and letters. Each arbitrator shall have the right to write and read files in this subdirectory. The [President/Sole Arbitrator] shall also have the right to delete files. Any Party shall have the right to read files, except those that are for the Arbitral Tribunal only, such as communications among its members.
 - (ii) Claimant.** In this subdirectory, the Claimant shall upload all of its written submissions. It may store and download but not alter or delete any files already uploaded in its section. Any deletions must be requested, and will be made only by the Tribunal. The Respondent and the Tribunal shall have the right to read and download files from this subdirectory.
 - (iii) Respondent.** In this subdirectory, the Respondent shall upload all its written submissions. It may store and download but not alter or delete any files already uploaded in its section. Any deletions must be requested, and will be made only by the Tribunal. The Claimant and the Tribunal shall have the right to read and download files from this subdirectory.

(iv) Each of the subdirectories shall include further subdirectories (to be created when a submission is made) stating in their file name the date of upload. Within each such subdirectory, the uploading party shall store the submission. Unless a different file structure is technically required for ebrieffs, files with attachments to the written submission shall be stored within that same subdirectory.

(v) Files uploaded in the repository must be in searchable PDF format unless otherwise directed by the Tribunal. The following file formats are also permitted: [insert file formats].

- (f) The access rights specified in subsection (e), (i)–(iv) above shall be implemented technically by the service provider. The Tribunal may direct the service provider to create for its internal communications a private subdirectory from which the Parties are fully excluded. The Parties hereby renounce and waive any right to be given direct or indirect access to this subdirectory in any legal proceedings. If a Party attempts to obtain such access, the members of the Tribunal shall be held harmless and shall bear no direct or indirect cost associated therewith.
- (g) Any difficulty in uploading, downloading, or accessing the file repository must be notified to the Tribunal immediately and in no event later than 48 hours after the first occurrence was noticed. The Tribunal may issue any directions to any Party or the service provider that the Tribunal deems appropriate under the circumstances. The Parties shall provide the Tribunal with the required authorisations, declarations and signatures that the Tribunal may require in order to issue instructions to the service provider.
- (h) The Parties agree that upon completion of the arbitration proceedings, the online file repository may be taken off-line and all stored files deleted from the internet server, subject to a full copy of all files in the repository having been stored on an appropriate data carrier before deletion. This includes the log files. The data carrier shall be stored for a period of [3] years from the conclusion of the proceedings with [the President of the Arbitral Tribunal / notary public / other service provider bound to observe strict confidentiality].
- (i) Costs associated with setting up and maintaining the file repository shall be paid [in equal shares / describe any other appropriate proportion of payment] by the parties and become part of the costs of the arbitration that are to be allocated in the final award. The Tribunal is authorised to issue directions in regard to the payment of costs as it deems fit. This includes an order that a specific deposit be paid for this purpose.
- (j) The Tribunal has the power to amend or change the above as it deems fit if this is required in its view by the circumstances that may arise. Before issuing such directions, the Tribunal will consult the parties.

2. IT point person

- (a) Each Party's lead representative(s) shall appoint a person technically qualified and knowledgeable in respect of matters concerning IT to serve as an IT contact (the "IT Point Person") at that representative's office.
- (b) The IT Point Person shall be reasonably available during office hours:
- (i) to troubleshoot and resolve technical errors, and
- (ii) to test and ensure the proper functioning of IT services
- in regard to the systems that are under the direct or indirect control of the concerned Party for the duration of arbitration.
- (c) The Tribunal has the authority to issue directions or queries to the IT Point Person, that in the Tribunal's opinion are required to ensure the technical implementation of IT for purposes of the arbitration. In case of continued unavailability or inefficiency of the IT Point Person, the Tribunal retains the authority to request a replacement by the Party that appointed the person.

Comments: *The appointment of a technically qualified and knowledgeable IT point person may be useful in certain cases. An alternative would be for the parties to agree on an independent IT specialist to act as a joint IT point person, which aids parties with smaller resources. This alternative is probably more "progressive" than the more adversarial requirement of each party having its own IT point person. Nonetheless, a joint IP point person may not have the required access and rights of access to the IT infrastructure of each party, which may make this alternative unworkable in practice. The tribunal should be aware that parties with larger resources can retain a law firm with its own IT department, whereas a smaller firm may not have an in-house IT department, thereby making it more difficult or expensive for the smaller firm to appoint its own IT point person. A joint IT point person who is also available for troubleshooting and helping the arbitral tribunal may in certain cases be useful, especially if sophisticated security and data integrity measures need to be defined and implemented. In those circumstances, the scope of the technical authority of the joint IT point person vis-à-vis all parties would then need to be discussed and defined.*

The IT point person should be (i) sufficiently qualified technically to resolve common technical issues (serious technical errors may be beyond the expertise of the IT point person and may require specialist expertise); and (ii) reasonably cooperative.

Example 7 – Electronic communications

- (a) All matters relating to the use of information technology (“IT”) during the arbitral proceedings should be subject to the agreement of the Parties and the Arbitral Tribunal or, failing such agreement, be determined by the Arbitral Tribunal.
- (b) Written submissions and documentary evidence in electronic format shall be submitted as follows:
- (i) Written submissions, scanned documentary evidence and evidence that was created only in electronic format shall be submitted as true digital copies, either in PDF or TIFF format.
- (ii) For the purposes of challenging authenticity and related issues, the evidence submitted in accordance with (b)(i) shall be subject to the same rules concerning the authenticity of evidence that would apply to photocopies.
- (iii) The members of the Tribunal and the other Party shall each receive from the submitting Party one physical (e.g. printed, and – in the event of letters or memorials – signed) copy of any document submitted in electronic format via ordinary mail or courier service.
- (iv) All electronic files that are submitted shall use the file naming system set forth above or – in the case of written submissions – a meaningful name (such as, for example: “ClaimantSubmission_ddmmyy” / “ClaimantLetter_ddmmyy” // “RespondentSubmission_ddmmyy” / “RespondentLetter_ddmmyy”).
- (c) Subject to all Parties and each member of the Tribunal signing the [Acceptance of ISP Terms of Usage], submissions in electronic format and/or written communications shall be made via the [name ISP file repository / cloud service] facility in accordance with the Conditions of Access and Use established by the ISP for this purpose.
- (d) When all Parties and the Tribunal have signed the form referred to above and ICC has provided access to [name ISP file repository / cloud service], each Party shall upload its prior written submissions with exhibits to [name ISP file repository / cloud service] within 14 days following the date on which it was given access thereto.
- (e) Any Party experiencing technical or other difficulties shall immediately notify the Tribunal thereof by email or any other appropriate means of communication, with a short description of the nature of the difficulty and seek instructions as to how the problem may be overcome.
- (f) If it finds it to be appropriate under the circumstances, the Tribunal may issue new directions in regard to using IT that supplement or derogate from the above provisions, after having heard the parties.

D. SAMPLE WORDING FOR PRE-HEARING ORDERS**1. Testimony via videoconference (where the Respondents have sought leave to call a specific witness via videoconference)**

- (a) During the hearing on quantum scheduled for [date] in [place], [name of witness], the Respondent’s witness, shall be examined by videoconference.
- (b) The Respondent shall be responsible for organising the videoconference and shall report to the Tribunal with an update seven days before the hearing, including details of the location for the video link in [country] where [name of witness] shall be sitting (hereinafter referred to as the “witness room”).
- (c) The Respondent shall use reliable equipment for the video link. The day before the hearing, the Respondent shall run a test between the witness room in [country] and [hearing venue]. During the examination, it shall arrange for one technician to be available in the hearing room and another in the witness room to assist in case of difficulties. Both technicians may be present in the hearing room or the witness room, as the case may be, during the examination. One person at each end of the video link shall have a telephone number (other than the one used for the video conference) by which to call the other end in case of a breakdown in the video link.
- (d) A representative of the Claimant is authorised to attend the examination in the witness room. The Claimant shall give the name of the person to the Tribunal seven days before the hearing. That person shall present the documents to the witness, if cross-examined on documents.
- (e) A representative of the Respondent is also allowed to attend if the Respondent so wishes.
- (f) [Name of witness] shall have his or her witness statement at hand (with exhibits), but no other documents.
- (g) If the video communication breaks down, the Tribunal will determine what action to take, including possibly granting the Claimant more time for cross-examination, or what inferences to draw.
- (h) [Name of witness] shall be heard first. The order of the other witnesses will be discussed at the pre-hearing telephone conference. The Respondent shall pay the costs of the videoconference, including the reasonable travel expenses of the Claimant’s representative who will be present in the witness room. The final allocation of costs is reserved for a later date.

2. Use of electronic presentation technologies

- (a) If it wishes to do so, a Party may project a true and accurate image of an exhibit onto a screen in the hearing room. The image must be visible to all counsel, the Tribunal and the witness, and must be large enough to be legible.
- (b) Any counsel who intends to examine a witness about a particular exhibit should offer to provide the witness with a paper copy of the exhibit.
- (c) If both Parties wish to project images, they should cooperate to ensure that they both have equal access to the technology and that duplicative projection equipment is not necessary.

E. OTHER SAMPLE WORDING FOR THE PROCEDURAL TIMETABLE / PROCEDURAL ORDERS

1. Written communications and pleadings

- (a) All communications and pleadings with the Arbitral Tribunal will be in [English/Mandarin].
- (b) All written communications with the Arbitral Tribunal, including the submission of pleadings and documents by the Parties in the course of these proceedings, must be made in electronic form, sent simultaneously to the Arbitral Tribunal, the other Party and the ICC Secretariat, stating the reference [xxx/xxx]. Hard copies of documents sent electronically may be submitted in addition, if a Party so wishes.
- (c) Communications from the Arbitral Tribunal to the Parties shall be sent by email [and, according to the Arbitral Tribunal's choice, by post or courier service]. Any communication sent to one Party will simultaneously be sent to the other Party and to ICC by [email/the most efficient means of communication].
- (d) Paragraphs in the Parties' pleadings and written submissions shall be numbered consecutively. The hard copies of pleadings and documents will be submitted in A4 format printed recto verso where possible. Together with their pleadings, the Parties will submit all documentary evidence in their possession supporting the factual allegations made in those pleadings.
- (e) Format for electronically submitted pleadings, communications, and documents. Electronically submitted pleadings, communications, and documents must be in searchable PDF format and, whenever practicable or requested by the [Tribunal], in processable DOC, RTF, or other equivalent format that may be processed in MS Office or Open Office. All electronically submitted material must be produced in machine searchable form (e.g. scanned documents in PDF or any other image format must allow for text search).

2. Documentary evidence (historical evidence)

- (a) Documentary evidence must be submitted as electronic true copy in bitmap format contained in a PDF file that is machine readable and searchable or as a multipage graphical file (e.g. multipage TIFF), together with an ocr'd machine readable and searchable version thereof either in DOC, RTF (or equivalent) or PDF format.
- (b) Each document shall be produced as an individual electronic file bearing the same file name as the document number (Exhibit C-001 = file: C-001.pdf).
- (c) Exhibits shall be numbered consecutively: C-001, C-002 etc. for Claimants and R-001, R-002 etc. for Respondents. Exhibits that are identical to exhibits already submitted by a party should not be resubmitted with a different file name or numbering by another party.
- (d) Legal authorities, such as case law or legal commentaries, will be submitted in accordance with 2(a) above, separately, and marked consecutively CL-001, CL-002 etc. or RL-001, RL-002 respectively. The relevant passages will be clearly marked or highlighted.
- (e) The first page of each electronic exhibit will display the exhibit name/number in the top right corner. The page numbers of each exhibit will be identified by Bates-numbering.
- (f) Along with the exhibits, the parties will submit a List of Documents in Excel or equivalent spreadsheet format organised in a table as follows (example):

Exhibit	Date of doc.	Author of doc.	Addressed to	cc
C-001	1 Jan. 2009	Mr X Claimant Ltd.	Mr Z. Respondent SA	Claimant's parent co.
C-002	5 Jan. 2009	Mr Z Respondent SA	Mr X Claimant Ltd	CEO, Respondent SA

- (g) Documents in electronic form shall be submitted to [Tribunal] either by email, on a CD-ROM or USB stick, or through an internet download.
- (h) Electronic and hard copies of documentary evidence will be considered authentic, unless a Party shows cause to consider otherwise.
- (i) Upon request or on its own initiative, the [Tribunal] may request a party to produce documentary evidence that was first created in electronic format in that format or any other electronic format that allows the appropriate inspection. The [Tribunal] may also order a forensic inspection of any such electronic file including inspection and fact finding within the system environment where copies of such electronic document may be recorded.

ICC COMMISSION ON ARBITRATION AND ADR

The ICC Commission on Arbitration and ADR is the ICC's rule-making and research body for dispute resolution services and constitutes a unique think tank on international dispute resolution. The Commission drafts and revises the various ICC rules for dispute resolution, including arbitration, mediation, dispute boards, and the proposal and appointment of experts and neutrals and administration of expert proceedings. It also produces reports and guidelines on legal, procedural and practical aspects of dispute resolution. In its research capacity, it proposes new policies aimed at ensuring efficient and cost-effective dispute resolution, and provides useful resources for the conduct of dispute resolution. The Commission's products are published regularly in print and online.

The Commission brings together experts in the field of international dispute resolution from all over the globe and from numerous jurisdictions. It currently has over 600 members from some ninety countries. The Commission holds two plenary sessions each year, at which proposed rules and other products are discussed, debated and voted upon. Between these sessions, the Commission's work is often carried out in smaller task forces.

The Commission aims to:

- Promote on a worldwide scale the settlement of international disputes by means of arbitration, mediation, expertise, dispute boards and other forms of dispute resolution.
- Provide guidance on a range of topics of current relevance to the world of international dispute resolution, with a view to improving dispute resolution services.
- Create a link among arbitrators, counsel and users to enable ICC dispute resolution to respond effectively to users' needs.

ICC Commission on Arbitration and ADR

www.iccwbo.org/policy/arbitration
arbitration.commission@iccwbo.org
T +33 (0)1 49 53 30 43
F +33 (0)1 49 53 57 19

