



# ARBITRATION PROCEEDINGS

**PROVISION OF EXPERT EVIDENCE IN  
CONSTRUCTION AND ENGINEERING  
DISPUTES... AN EXPERT VIEW**

Arbitration rules and requirements,  
Independence and skills, The process  
of producing evidence or strategy



## PREAMBLE

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In order to share its experience in arbitration proceedings, FTI Consulting France proposes to regularly produce booklets summarizing the essential elements of a particular facet of these proceedings. They are written for the attention of experts, whether appointed by the Parties or the Tribunal, advisors, arbitrators and lawyers. The “Provision of expert evidence in construction and engineering disputes” is the first in a series launched this year. It intends to explain the main roles and expectations of experts in the arbitration proceedings. It was written by Vincent Lefeuvre, Senior Director at FTI Consulting France and Technical, Delay and Quantum Expert.

The first booklet relates to the quality of expert evidence and the way in which it is produced because this ultimately represents the core of the expert’s work. Whether they are called to testify or not, the role of experts in construction project arbitration proceedings has become increasingly extensive over the years due to the financial stakes in the disputes, often valued in hundreds of millions of euros, their growing technical

complexity and scale and the overwhelming number of documents they generate. The diversity of dispute resolution proceedings and the responsibilities of experts only compound these difficulties.


In arbitration proceedings, the role of the expert invariably arises from a need to produce, from the tangible evidence available, expert opinion according to a process framed by the rules of the Arbitration Chamber appointed by the Parties.

This booklet gives a general overview of the stages that different types of experts have to go through in order to produce what is expected of them in arbitration proceedings, from the phase of investigation of the available evidence to oral testimony. It includes a phase of constructing their opinions that are ultimately to be received as evidence by the Tribunal, the production of their reports and a phase of where their opinions are confronted by other experts involved in the proceedings. Finally, it shows how these services can benefit the Parties and the Tribunals, and their limitations and constraints.

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## 1. Introduction: No black and white, everything is grey

Historians, who are asked to describe and record history as it has unfolded, are experts about the past. They did not witness it. Their mission is to analyse and explain past facts and to draw certain conclusions aimed at understanding them as a whole.

A historian's conclusions come from his or her ability to analyse and interpret facts and give them an overall coherence that is supposed to represent reality. Their conclusions are then published and each of us understands or perceives them in a certain way and, through his or her free will, has the possibility of accepting them, or not. We are either convinced by their conclusion or not and build our own judgments.

This may be due to the fact that history is never black or white, but always a shade of grey. Two different historians, competent, honest and unbiased, will often not relate history or a part of history in the same way. Available facts are sometimes incomprehensible, imperceptible, uninterpretable or even incoherent. Each person may understand them differently to anyone else. Even for those who have lived history, and thus witnessed it, the facts are not perceived in the same way.

The facts, removed from their context, even considered in their entirety are never more than

“photographs” of the real film which actually took place. What happened outside the camera focus? Isn't the photo misleading? Do all the photos of the same event, taken from a different angle, all show the same thing? Is there enough in the photo to clearly describe the scene?

The past, told by the historian, inevitably includes assumptions and interpretations arising from the lack or inaccuracy of the “photographs”.

*“If you take a group of historians working on the same problem, writing at different times and in different places — even if they all use their evidence in a scrupulous, honest, critical and informed way — the conclusions they reach may differ.”* [1]

*“This is not in contradiction to saying that historians aim at truth. What sort of truth we might achieve is debatable.”* [1]

The expert in construction project arbitration proceedings is not fundamentally different to the historian. The complexity of projects, the nature and the quality of the facts that he or

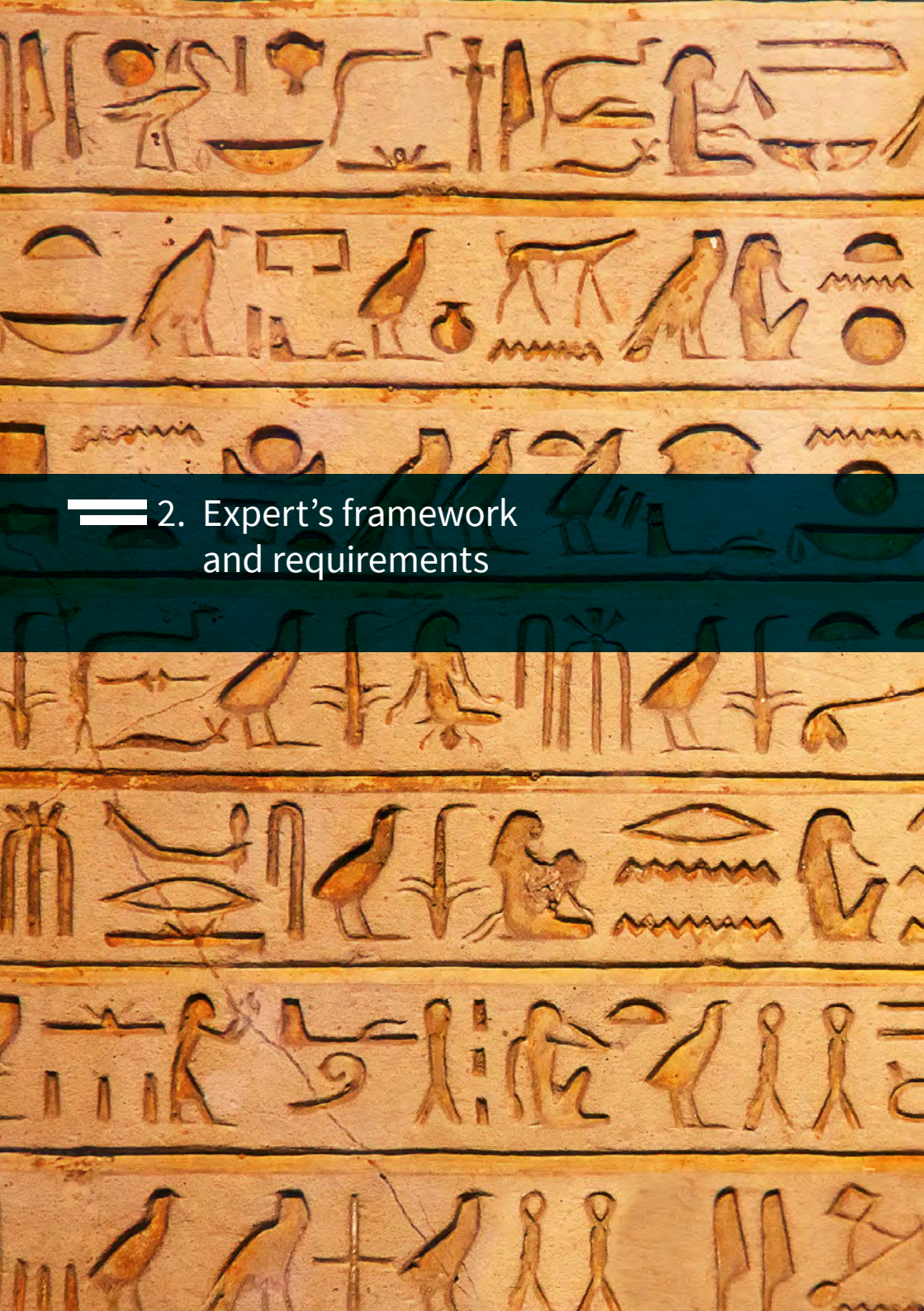
she is called upon to analyse may lead him or her to draw, at least in the first instance and in good faith, different conclusions from those of another expert. This is not abnormal and should not necessarily be regarded as bias or defective work. However, the mere fact that such missing information and inaccuracies exist and that the conclusions of the experts directly and inevitably rely on them, legitimises the Tribunal in asking how to benefit from the technical knowledge of an expert. This is critical to the outcome of the case. At the same time it is essential to completely

eradicate the risks of receiving scientifically false or biased information from the experts.

This question is not new and has been widely debated for years. It revolves the neutrality and the competence of the expert called upon to produce an opinion deemed to be received as evidence by the Tribunals.

So how can the expert provide the Tribunal with the evidence they need to make their decision and award?





## 2. Expert's framework and requirements

### Background

The use of experts and the admissibility of their opinions as evidence has developed over the past 250 years. The concept of allowing an expert to issue his or her opinion on technical matters was allowed, in particular, by Lord Mansfield in the *Folkes vs. Chadd* case in July 1782, in a trial relating to the actual deterioration of the tidal harbour of the town of Wells, in United Kingdom.

To put the case in context, it should be remembered that at the end of the 18th century the Norfolk harbours shipped more grain than the rest of the English harbours combined. One of these was the tidal harbour in the town of Wells. Wells's harbour was not situated at the mouth of a river as usual but had been created naturally by the ebb and flow of the North Sea tides which had eroded hundreds of acres of land and drained away the silt that concentrated there daily, providing sufficient depth of water to establish a harbour.

However, the harbour gradually deteriorated due to the accumulation of silt.

Wells town merchants and shipowners blamed the deterioration of the harbour on some local landowners, who, in order to increase the extent

of their plantations, backfilled large tracts of land on both sides of the harbour's main channel to the North Sea. From the perspective of the inhabitants of Wells, these embankments considerably worsened the ebb and flow of the sea in the harbour and its access channel and increased the difficulty of maintenance and natural dredging of the harbour.

A trial began in August 1781, at the Norwich Summer Assizes. The question put to the jury was whether or not the said backfill contributed to the degradation of the harbour and whether or not the damage justified their partial or total removal.

During the three rounds of the trial, several experts, including Mr. Smeaton, Fellow of the Royal Society and a civil engineer who was considered the foremost authority on harbours in

the kingdom, were called to the bar to give their opinions on the causes of the deterioration of the harbour.

One of the salient issues at trial was whether an expert's opinion could be accepted as evidence or whether the outcome of the trial should be based only on facts. Ultimately Mr. Smeaton was allowed to express his opinion, and this was taken into account by the Judge Lord Mansfield in his award although Mr. Smeaton's opinion was not based solely on facts but also on reasoning:

- Mr Smeaton's opinion was deduced from facts that were not disputed: the geometry of the dykes, the magnitude and frequency of the tides, the direction of the prevailing winds and the dynamics of the sandbanks;
- Mr. Smeaton was a highly respected expert in the related field of activity;
- Mr. Smeaton had observed the facts of the Wells harbour case directly and in their entirety;
- The facts fell within his area of expertise, thus constituting an appropriate subject for his expert opinion.

In the end, it was acknowledged that Mr. Smeaton's opinion, based on tangible facts, was indeed proper evidence. Lord Mansfield's decision has long served as a model to explain the origin of the escalation of partisan expert testimony in the modern Anglo-American legal system.

### The two kinds of experts who can produce evidence in arbitration proceedings

Since then, it appears that the mission of experts is significantly influenced by the tradition of the Tribunals for which they act. Depending on the circumstances of the case, arbitration rules or interest of the Parties, there are two different kinds of experts: Tribunal-appointed experts and Party-appointed experts.

*"The great division, with regard to the use of experts in arbitration proceedings is between party-appointed experts and tribunal-appointed experts, the former being more properly termed "expert witnesses")" [2].*

Originally, in common law jurisdictions, the party-appointed expert was expected to put forward arguments favourable to the appointing party, whereas in civil law jurisdictions, as the expert was appointed by the Tribunal, absolute independence was required. In the first case, the Tribunal had to synthesise the views of the experts of both Parties, whereas in the second case this synthesis was not necessary.

Both traditions have their advantages and disadvantages, of course. In the first case, one would expect the Parties to go into more detail and consider all the arguments, favouring the Party that appointed them. The disadvantage is that this leads to an 'arms race' of experts producing a large number of reports that are not necessarily consistent with each other. In the second case, the presumed neutrality of the expert does not guarantee a truthful result and the Parties may become frustrated that the expert appointed by the Tribunal did not take into account all the relevant facts or did not understand their case.

The differences between these two cultures are tending to diminish and the main International Arbitration Chambers have each developed their own rules, albeit deeply inspired by civil and Anglo-Saxon traditions, as suggested by the IBA in its document "Taking of Evidence in International Arbitration", adopted by a resolution of the IBA Council on 29 May 2010, in Articles 5 and 6, which proposes the rules to be adopted when the expert evidence presented at trial is made by a Party-appointed or Tribunal-appointed expert. [3]

The convergence of these two traditions is also clearly expressed in the UNCITRAL Notes on the organisation of arbitral proceedings.

*"A frequent solution is that the arbitral tribunal has the power to appoint an expert to report on issues determined by the tribunal; in addition, the parties may be permitted to present expert witnesses on points at issue. In other cases, it is for the parties to present expert testimony, and it is not expected that the arbitral tribunal will appoint an expert". [4]*

Nowadays, although experts called upon to give an opinion before an international arbitration tribunal do not necessarily act in the same way, they all have a similar role, which is to enlighten the tribunal in understanding the technical issues of the case so that it can make a fair decision as to the dispute between the Parties. **This includes, firstly, the attribution of responsibility for the causes of the loss of project performance and, secondly, the assessment of the loss of project performance suffered by the aggrieved party.** Or in other words, establishing and explaining in a simple manner the sequence of adverse events and then assessing their consequences for the outcome of the project. In this case, one of the roles of the expert witness is in fact

*"to enlighten the court in their assessment of complex facts which make up the case before them." [6]*

However, the weight of tradition still suggests some differences in this area. In common law countries with an Anglo-Saxon tradition, the opinion of an expert is intended to be accepted as evidence. Experts are almost inevitably appointed by the Parties who retain control over them throughout the arbitration process. Clearly, each party tends to put forward those aspects of the case that are favourable to it and present them in the most effective way.

*"the experts reporting to or appearing before the court are termed and treated as witnesses, with examination-in-chief, cross-examination and re-examination as the case may be, on questions asked by the opposing counsels. The court would*

*act as a sort of umpire, refraining from directly questioning the expert witnesses and issuing its decision based on which one has put forward the better case." [2]*

In Tribunals with a civil tradition, experts are more conventionally appointed by the Tribunal, which generally retains responsibility for establishing the facts.

### The role of the Expert deemed to produce evidence

**Arbitrators or judges involved in cases involving complex technical issues may need assistance in reaching their conclusions. This necessary assistance is expected to come from expert witnesses or experts appointed by the Tribunal.**

*"The general role of expert witnesses, whether they be appointed by the parties or the tribunal, is to assist the tribunal in its decision making by providing relevant and independent evidence in their area of expertise." [6]*

Disputes often arise because each party has a one-sided view and opinion of the project. Each party is convinced that it has good reason to be compensated for certain losses, rightly or wrongly, and tries to build its case around these divergent views.

In this context, the Tribunal is likely to be convinced of the evidence provided by the expert only if it represents, as far as possible, an **objective reality**. To this end, the subjective vision and opinion of each of the parties, their confrontation and comparative analysis on the basis of similar projects (benchmarking), should be considered in their entirety in order to reinforce the demonstration of his or her neutrality and expertise.

The role of the expert, whether appointed by the Tribunal or by the Parties, should therefore logically be limited to: (i) deciphering the facts of the project which are available in **written**



evidence and explaining them in a simple manner to the Tribunal and (ii) drawing numerical conclusions on a particular cause or on all the causes which affected the project performance.

- (i) **Written evidence** is considered here to be all written material, photographs, videos, raw data of all kinds and testimonies, produced during the life cycle of the project up to the trial. It is the starting point for any forensic examination.
- (ii) Losses of project performance are considered here as any deterioration in the financial profitability of the project compared with what was established or foreseen by the contract signed by the Parties. Indeed, the losses in project performance, for which compensation is claimed through arbitration, are always ultimately expressed in financial terms.

Losses in project performance can be the result of a variety of root causes that are not necessarily financial. They can be attributed to, among other things, changes in the scope of work or construction methods, insufficient resources and/or a fall in their productivity. These causes are generated by so-called **adverse events** in the sense that they jeopardise the planned progress of the work and were unforeseeable at the time the contract was signed. They are documented in technical terms that are more or less faithful to reality: disruption, mismanagement, intrusion, delays, loss of productivity, reduction in the quality of the work or its efficiency, failure to meet technical performance targets for the product, etc., and therefore cannot be directly and merely interpreted in terms of additional costs.

As the processes of demonstrating the link between adverse events and their financial consequences on the project can be complex for a non-scientist, the Tribunals are willing to rely on the experts' skills to

access and understand the ins and outs of the case in order to make a clear and fair judgement.

### Affirmation or expert opinion?

The question of how the experts' opinions can be accommodated by the Tribunal must be analysed in the light of what is expected of them during the arbitration proceedings.

The orientation of the Tribunal towards a clear understanding of the real technical issues of the dispute is usually done in two steps:

- Establish the existence of a causal relationship between a set of adverse events and their consequences for project performance; and
- Evaluate these consequences in financial terms.

If the approach applied to achieve this is based primarily on (i) rigorous scientific demonstrations of causal relationships and (ii) applicable models or calculation methods, the expert will be able to **assert** that the calculated loss of project performance is the effect of the identified adverse events.

The demonstrative approach (i) implies that the assumptions and postulates used by the expert are satisfied and that the approach and reasoning are consistent. It should be noted that in the context of a formal demonstration, the assumptions and postulates taken into account must be clearly, explicitly and completely described in the thesis to be demonstrated.

*“The right method, which would demonstrate the highest excellence, if it were possible to achieve it, would consist of two main things: one, to use no term whose meaning had not been previously explained; the other, never to advance any position that was not demonstrated by truths already known; that is to say, in a word, to define all terms and prove all propositions.” [8]*

Free translation

**Consequently, it is important to understand that a demonstration only serves to prove that one's thesis is true when its assumptions and postulates are true.** Before using a theorem, a scientific or industrial rule, one must therefore always start by checking that the underlying assumptions are indeed satisfied and that the methods used are applicable to the thesis being defended.

However, in real life, circumstances do not always allow for a rigorous scientific demonstration. Indeed, the initial assumptions and postulates on which the expert has no choice but to rely and which are substantiated by the written evidence of the project are not always readily observable but are often subject to interpretation, or simply do not exist.

The very use of models and methods for calculating project performance losses (delay analysis models, quantum models) (ii) are more or less robust and, in any case, themselves subject to assumptions about their applicability.

As a result, the expert's **opinion** is not always based on the conclusions of a rigorous scientific demonstration. Put differently, it may be based on

a scientific demonstration that must be tempered by the impact of interpretations and assumptions.

The interpretation of written evidence and the use of assumptions must therefore be made by the expert with the utmost care, impartiality and precision in order to arrive at a reliable assessment.

The difference between an expert's **assertion** and an expert's **opinion**, each of which is potentially admissible as evidence by the Tribunal, provided that it is understandable to a layman, therefore lies in the fact that the assertion is based on a formal demonstration, i.e. where all the assumptions and the applicable scope of the demonstrative model have been proven. Opinion, as in *Folkes vs Chadd*, is the result of hypothesis-based reasoning by a scientist who has sufficient knowledge of the technical issue at stake, having examined all the available facts. He thus independently states, through experience and knowledge of the subject, that hypotheses which cannot be effectively verified, due to lack of or imprecise written evidence, are ultimately nevertheless considered to be satisfied.

<sup>1</sup> « La véritable méthode, qui formerait les démonstrations de la plus haute excellence, s'il était possible d'y arriver, consisterait en deux choses principales : l'une de n'employer aucun terme dont on n'eût auparavant expliqué le sens ; l'autre, de n'avancer jamais aucune position qu'on ne démontrât par des vérités déjà connues ; c'est à dire, en un mot, à définir tous les termes et à prouver toutes les propositions. » [8]





### 3. The process of producing evidence

#### Introduction

Whether it is to understand the engineering problem that has led the parties to the dispute or to produce the necessary evidence to support a claim, having been instructed by the arbitrator or legal counsels, according to the arbitration rules, the expert's working process is based on skills that enable him or her to carry out the following three main steps:

- Independent analysis of actual facts;
- Cause and effect analysis and assessment of damages;
- Convergence and reconciliation of arguments.

#### Independent analysis of actual facts

The number of documents in construction disputes is overwhelming and may increase in the future with the increasing complexity of construction projects and the awareness of the parties of the relevance of documentary evidence in the event of project slippage, which could lead to arbitration.

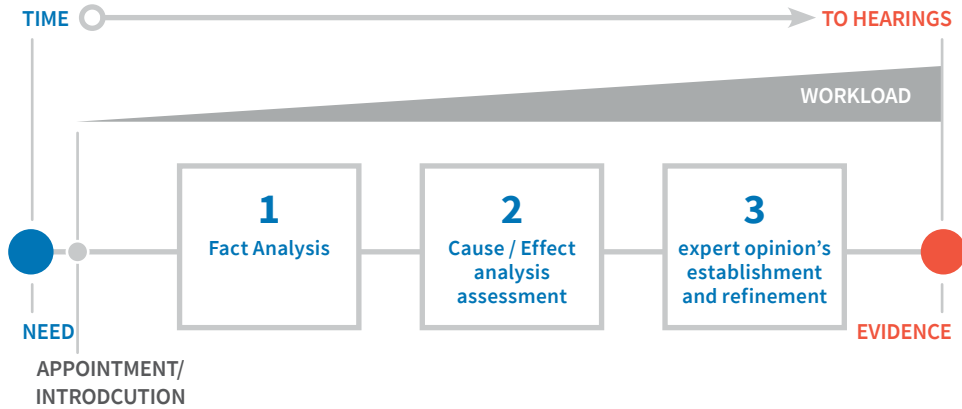
The first step is to carry out an independent search and analysis of all events that have had an impact on the part of the project that is within the scope of the expert's analysis. This includes an audit

of the completeness and accuracy of the written evidence produced by the parties during the course of the project to determine technically the level of confidence that he or her can place in it.

Written evidence is of paramount importance. Even if not accurate and detailed, it is the only source of information available for any scientific analysis. Ultimately, the Tribunal determines the merits of the claim on the basis of the factual evidence submitted. Its quality and relevance must be verified before it is interpreted, analysed and assessed.

*"In order for the expert's testimony to be credible and serve the interests of the claim, it is essential that all of the facts on which the expertise is based be proven. In addition, the expert witness may also give his opinion on facts which he has observed."* [6]

## Potential arbitration request



All relevant evidence held by a Party should be disclosed to its expert witness. The importance of providing all available evidence to the expert is highlighted by the fact that all written evidence is an imperfect “photograph” of reality. Testing pieces of written evidence against each other makes it possible to validate or invalidate them and helps the expert to interpret them objectively.

Withholding written evidence from the expert forces him or her to formulate unnecessary assumptions which may be difficult to substantiate or simply wrong. The expert appointed by the opposing Party, having access to this written evidence, can easily challenge the results of his or her analysis and potentially point out his or her lack of independence with regard to the facts.

Last but not least, the choice of project performance loss assessment models generally greatly relies on the quality and kind of written evidence available. Hiding written evidence may therefore lead an expert to choose an inappropriate or unoptimized assessment model. When, and only when, a lack of facts or incorrectly reported facts occur, the expert should take

hypotheses into account to fill the gaps. The expert in this case should be able through his or her experience and skills to establish and validate the consistency of his or her hypotheses and postulates.

The hypotheses and postulates formulated by an expert should be underlined, justified and shared with the other experts involved in the arbitral proceedings whereby they can provide their comments and thus allow the Tribunal to easily compare the positions put forward by the several experts.

However, assumptions cannot replace facts. They engage the credibility of the expert and often leave room for arbitrariness. If the independence of the expert is likely to be challenged by one of the parties, it is preferable to limit the assumptions to those that are strictly necessary.

In practice, the document review and analysis process is primarily an objective filter. It aims to independently select, from a large quantity of project documents, all those but only those which are relevant to the case in question. Being relevant means that a document describes or participates in the description of an adverse

event and its consequences on the project. To participate in the assessment of the damage (the final effect), candidate adverse events must be characterised as root or subsequent causes of the damage and therefore:

- Be unforeseeable at the time of contract signature,
- Be outside reasonable control or mitigation during the execution of the project without impacting project performance,
- Represent or result from a breach of contract, and
- Have a potential impact on project performance.

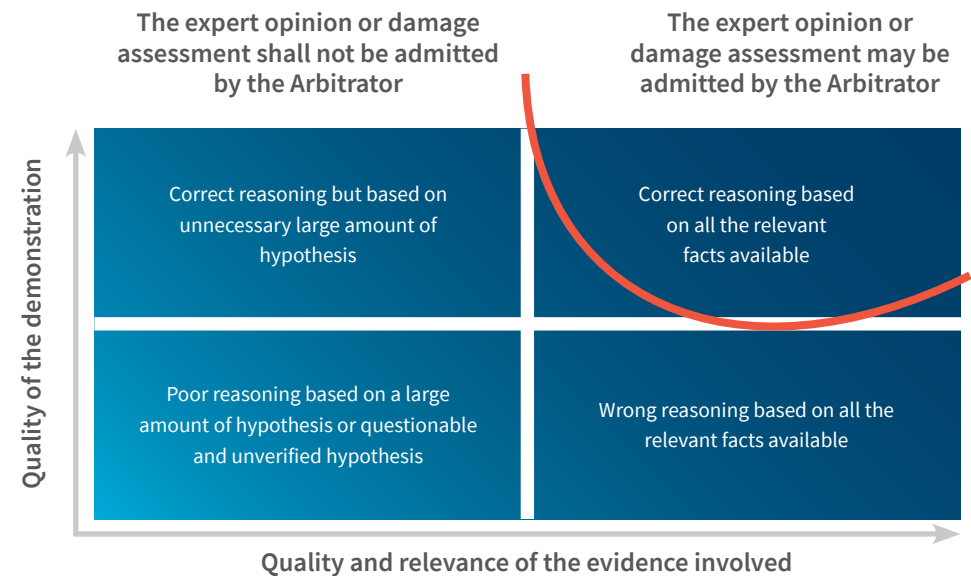
The analysis phase of the written evidence also aims to highlight whether or not it is necessary to make assumptions or interpret certain written evidence.

## Assessment of damages

After the analysis of the available written evidence, the second step is to define and enforce a suitable Cause-Effect analysis model together with related hypotheses in order to assess the damages claimed.

The adverse events identified in the documentary analysis are the input data for the various models used for the calculation of damage (e.g. delay and quantum analysis). If the input data is wrong or inaccurate, the results of the calculation will also be, even if the models used are mathematically correct. Likewise, if the assessment model is wrong or inappropriate, the results of the calculation will also be, even if the input data is correct.

Where assumptions have to be made by the valuer, due to lack of or imprecise information, the analysis should include a sensitivity analysis



wherever possible. This sensitivity analysis is necessary to take account of the imprecision, whether small or large, that is inevitably introduced into valuation models by the mere use of these assumptions.

It may be noted that in some cases the methodology to be applied in assessing damages and the type of evidence to be produced by the parties may be based on the Tribunal's instructions, requiring the expert to have extensive knowledge of the different methodologies in use in arbitration proceedings.

The fact that the Tribunal, subject to the approval of the Parties, instructs the Parties to apply a specific method of delay analysis, for example, may prevent a Party from arbitrarily choosing a biased method that gives it an unjustifiably favourable result and from spending unnecessary time discussing the methodology of the delay analysis before discussing the facts themselves.

The inclusion of these elements in expert reports provides a logical structure for discussing damages on the basis of concrete and understandable grounds. These are key elements that can assist the Tribunals in assessing the amount of compensation to be awarded to a particular Party on the basis of the points of law and contract that they consider relevant, and the facts in dispute.

### **Convergence and reconciliation of arguments**

The formalisation and expression of the expert's opinion takes place, according to the arbitration rules, subject to the agreement of the Parties, at the end of an adversarial process of confrontation and convergence of the expert opinions. It takes the form of written reports and oral testimonies.

In this process of convergence of views, the Tribunal must be certain that the opinions on the various technical issues in dispute, debated by the experts, have been tested and challenged to the utmost before they are considered as evidence. This reasoned, adversarial debate, supervised and controlled by the Tribunal, involves a confrontation of views between experts. The ultimate objective of this process is that the points of agreement and disagreement are clearly identified, justified and explained so that a layman can understand the consequences that the said adverse events have had on the project performance.

For this, according to the specific rules of each Tribunal, and subject to approval by the parties, two themes appear essential. Whether they are appointed by the Tribunal or by the Parties, the experts (i) must have access to all the reports relating to the issue dealt with by them produced by the other experts, their revisions, supplements and written evidence on which their reasonings rely and (ii) must be allowed to respond to them either through witness statements, or complementary or supplementary expert reports. They must also be copied in all correspondence between the Tribunal and the Parties and the experts, if any, appointed by the Tribunal.

During the arbitral proceedings, the Tribunal may, in addition, at its discretion and in accordance with the rules subject to the approval of the Parties, order that experts appointed by the Parties, deemed to submit expert reports on the same or related matters, meet and consult on these issues. At these meetings, the Party-appointed experts are supposed to attempt to reach agreement on matters falling within the scope of their expertise, and to record in writing all issues on which they reach agreement and any remaining areas of disagreement along with their reasons.

The last step in the convergence process takes place during the hearings. Depending on the specific rules of each Tribunal, under control of the Parties, the Tribunal-appointed experts and the Party-appointed experts may be questioned on the issues raised in their reports, either by the Tribunal or by the Counsels of the Parties, or by any other Party-appointed expert.

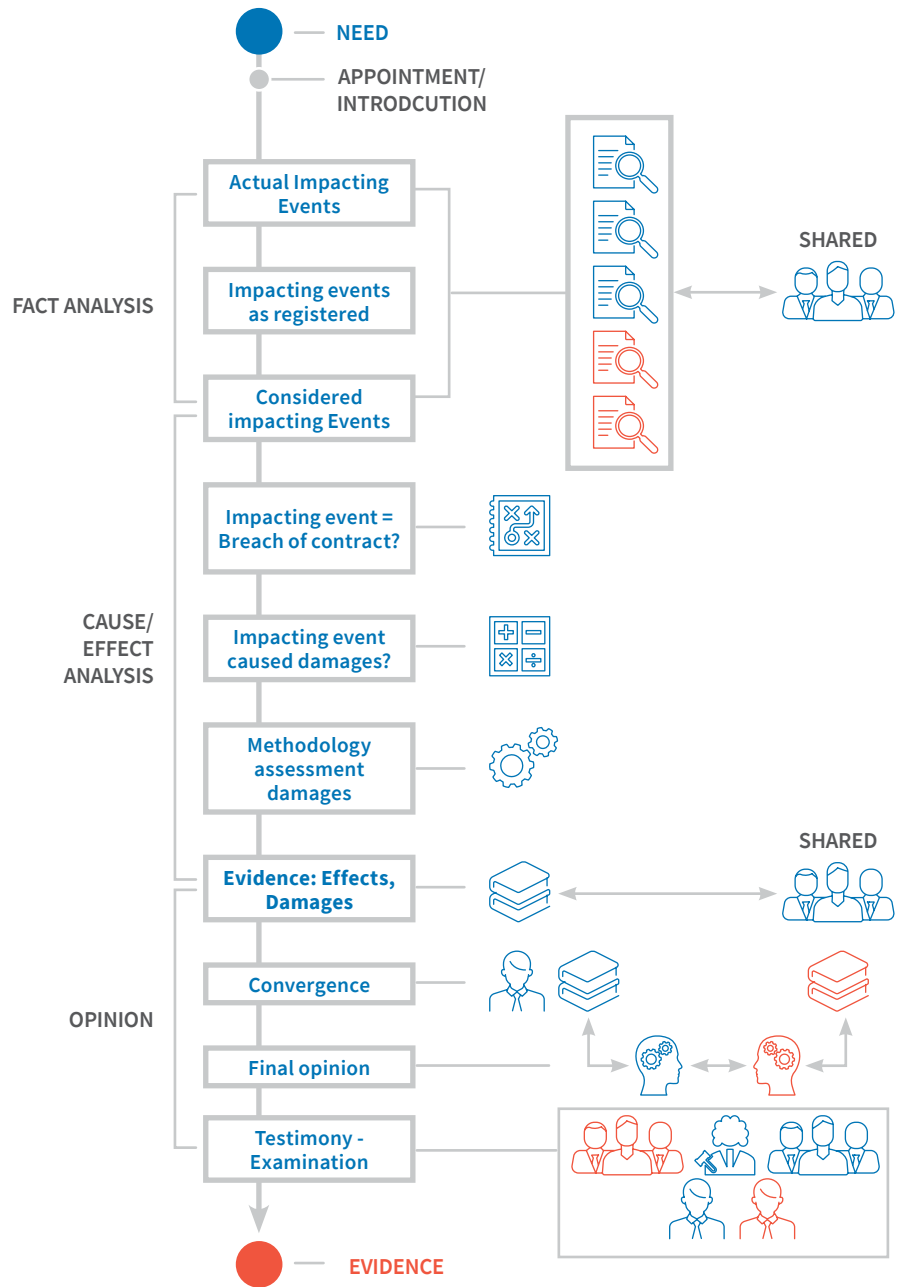
If an expert appointed by the parties whose appearance has been requested does not appear without a valid reason to testify at the hearings, the Tribunal may in principle ignore, in a whole or in part, the conclusions of his or her report.


If the appearance of an expert appointed by one Party has not been requested by the other, neither Party should be deemed to have accepted the accuracy of its expert report, and the Parties shall record in writing all issues on which they reach an agreement and any remaining points of disagreement along with their reasons.

Finally, following hearings, a preliminary assessment of the Tribunal may be submitted for examination by the experts in order to remove any remaining doubts or correct a misinterpretation by the Tribunal on the experts' testimonies.



# Standard evidence production process





## 4. Independence of the Tribunal-appointed expert and the expert witness

### The expert's duty of independence

The requirement that either the Tribunal-appointed experts or the Party-appointed experts be and remain independent and impartial during the arbitration proceedings, tends to predominate.

The trend which has developed in the practice of international arbitration has spread in the successive editions of the rules of international arbitration, requiring a strict attitude of independence and impartiality also towards the use of experts appointed by the Parties, in line with the principle according to which **the duty of the expert witness towards the Tribunal prevails over any duty towards its client.**

*“(...) it could be said that, as between party-appointed expert and tribunal-appointed expert, at the primary level there would be no difference in the nature and scope of the expert's duty and to whom it is owed. At the secondary level, however, the party-appointed expert indeed owes a duty to his client but, comparably, the tribunal-appointed expert, in advising the tribunal, must no less be bound by*

*such provisions of the arbitration agreement or Lex Arbitri, thereby implying a duty towards the respective parties. Thus the respective positions of the tribunal-appointed expert and the party-appointed expert were, or rather should be, very similar indeed.” [9]*

The rules of the main arbitration chambers are constantly evolving, with the aim of ensuring that expert testimonies meet the expectations of the Tribunals. That is, they must represent admissible evidence for them to rely on and establish a fair judgment. This requires the certainty that the expert called to testify is honest and independent on the one hand and has the technical skills necessary for the analysis of the facts on the other. The expert's skill will be discussed in the following chapters.

*“We have detected a trend in rules, guidelines and codes of conduct, to harmonize the approach to be followed by both tribunal-appointed experts and party-appointed experts, requiring the latter to satisfy the standards of independence, impartiality and neutrality expected from the former.” [9]*

In order to be able to rely on an expert opinion, it must therefore appear to the Tribunal as relevant to the case in question. It must be impartial and independent on the one hand and scientifically correct on the other.

*“Two qualities of equal value are expected from an expert witness: their skills in a determinate technical area and their independence of mind vis-à-vis the facts.” [7]*

That said, even if, a priori, an expert testimony should be regarded as unbiased, honest, and technically fair, circumstances may lead an expert to, voluntarily or not, act as a staunch defender of one of the Parties. The bias is made possible by the fact that the written evidence at his or her disposal, as for the historian, **is not always clear data with which to establish a formal scientific demonstration. Such evidence may not allow him or her to make assertions, but only to propose an opinion, based on the fact that he or she is the holder of a critical technical knowledge for the outcome of the trial and that he or she has an ability to analyse facts difficult to dispute by a layman.**

### **How can Expert opinion be compromised? The devil is in the detail**

How is it possible for an expert to slip away and, voluntarily or not, depart from the very scientific demonstrative framework of the production of evidence?

To understand this, it is useful to come back to the genesis of his or her work and take into account the fact that the written evidence of the

project, supposed to enlighten him or her on the root causes that have affected the project performances, is neither fully clear nor impartial. There are likely to be gaps in the evidence.

In the absence of any doubt as to the facts available and their effects, a demonstration on which the expert's opinion is based could in theory only be “true” or “false” but in no case “biased”

However, the lack of written evidence describing the events that marked out the project or the fact that these events were transcribed by the Parties themselves means that the expert is often in a situation where he or she has to **interpret** the evidence to fill in the gaps or make **assumptions** before giving an opinion.

The main source of bias is therefore related to the incorrect use of hypothesis or postulates, whether it is done intentionally or not. To be able to make sensible and consistent assumptions, the expert must have the required skills, and must also use them objectively.

The arbitrary interpretation of the facts, the formulation of questionable assumptions and the misuse of the assumptions taken into account may affect three main areas. These are the demonstration of the causal relationship between the adverse events identified their effects on the project performance and the calculation of the project performance losses.

1. When the starting assumptions of the demonstration and the input data of the calculation models of the project performance losses are wrong, the result of the demonstration is systematically false even if the expert's reasoning and chosen calculation model is correct.

In addition, false or unverified starting assumptions may totally invalidate the causal relationship between events and effects established by the expert.

This may be the case when an expert considers only a part of the available project documents without comparing their content with others, supposed to represent the same reality.

A schedule, letters exchanged between the Parties and monthly progress reports may describe the same facts in a different way. Promoting the use of one type of document to the detriment of others without substantiating their accuracy may bring erroneous input data to the demonstration.

2. Likewise, the choice of a mathematical model for calculating the project performance losses which is not applicable within the particular framework of the current arbitration or outside its definition domain, also provides erroneous outcomes, even if the input data are right.

This is the case, for instance, when an expert uses a so-called prospective delay analysis method when a retrospective analysis method is the appropriate one.

3. The reasoning leading the expert to his or her opinion may be wrong due to overconfidence or a tendentious use of the model for calculating the project performance losses or questionable interpretation of its outcomes.

This is the case, for instance, when an expert state that all the indirect excess costs incurred by one of the Parties are only and automatically linked to critical delays for which the opposing Party is accountable for.

Considering all the facts that are supposed to represent the same reality, isolating and verifying the assumptions and postulates taken into account in the demonstration, clearly explaining the demonstrative process involved, and providing

a sensibility range for the results obtained, when necessary, make it possible for the expert to show his or her independence and good faith.

Furthermore, the excessive use of assumptions and postulates, even plausible ones, when the events are clearly described, a demonstration whose starting assumptions are not verified, or the use of an inadequate mathematical model potentially suggest bias and therefore an ineligible opinion.

### **Consequence of a suspicion of bias. The road to hell is paved with good intentions**

The mere fact that the expert has no choice but to interpret the facts at his or her disposal and to consider hypotheses may therefore create a suspicion of bias. That is why the first compelling reason to involve experts is their objectivity before the facts, assuming that he or she takes this responsibility seriously and is prepared to not only point out the strong side of one Party's case, but also, if any, its weak side.

A lack of independence of an expert may potentially be identified in their report or during testimonies if he or she interprets the facts in a doubtful manner, does not consider and take into account all the available facts generated by the project, bases his or her demonstration on questionable or unsatisfied assumptions, received an excess of instructions or received instructions which led them to orient their analysis, uses a questionable methodology for calculating project performance losses and interprets the results of demonstrations in a questionable way, in short, if their report would have been significantly different if they had been the expert of the opposing Party.



An expert's suspicion of bias by the Tribunal may prove disastrous for the Party concerned. The relevance of the opinions provided by the expert is no longer established in the view of the Arbitrators who, in general and at a minimum, will not consider the expert's report and testimony. In matters of arbitration, it may be acknowledged that it is better not to consider an opinion rather than to take the risk of considering an opinion carried out by an expert, even well-intentioned, who would have connections with one of the members of the arbitral tribunal, the parties or their lawyers.

From a technical perspective, the expert, after having established his or her degree of independence vis-à-vis the tribunal, their legal

advisors and the Parties, will stick to the quality of the demonstration and the relevance of the hypotheses taken into account and to the validity of their opinion before declaring his or her genuine belief in the opinions expressed in their report.

For this, when called to testify, an expert witness must be governed by the objectivity and accuracy of their demonstration and by the relevance of the assumptions made.

Credibility and the admissibility of expert testimony is based on ability to demonstrate absolute objectivity and not to give the impression of advocating the case of one of the parties. The consideration of an expert's work depends on it.



## 5. Experts' skills and experience



### The stakes

Litigation in construction is becoming more and more frequent and complex for many reasons intrinsically related to the developments in the industry itself and the projects it implements in order to meet an insatiable need of populations to have access to current technologies.

Among the many factors that have made construction projects and, by extension, the related disputes more complex are the following: their international nature, technological challenges, the financial amounts involved and regulatory frameworks.

To understand this, it is important to be aware that to make any product, such as an airliner, the technology to be used is generally at least as complex as that of the product to be manufactured.

Any increase in the complexity of the product to be manufactured in turn, and in the same proportions, increases the complexity of the related construction project. The needs inherent in the realisation of these projects require multiple and varied skills, not necessarily available at

the place of execution of the project, as well as materials, equipment and more specialized components. This results in intensified management needs and longer volumes of preparation and implementation of the program.

The implementation of this kind of project generally takes several years and mobilizes a large number of material, financial and human resources of the companies that carry them out.

But the simple evolution of the technical complexity of the means of production does not, by itself, directly explain the growing complexity of construction projects. On a recurring basis, the programs implemented require heavy investments, which the company that carries them cannot always assume alone. The project must often involve a large number of international

partners or subcontractors from different cultures. Their interests may differ or even conflict with those of the client. The deadlines allocated to projects are increasingly tight to try to maximize profitability.

All of these new requirements and challenges give rise to new kind of risks on projects. These risks may lead to disputes which will also be as complex as the project's technical and managerial complexity.

It can be established that a project "drifts" from its objectives and begins a perilous spiral when the risks it faces are no longer reasonably controllable. When the objectives are not achieved, the project performance is said to be degraded and its economic profitability is impaired.

It is rare that these drifts are the consequence of a single cause, technical or not. In fact, the risks inherent in a project are usually intertwined. Their understanding therefore requires very different legal, technical and financial skills.

### The need for experts

In arbitration, when the need for one or more experts arises, it is because the issue which led the Parties to the dispute includes technical matters which cannot be understood and explained simply without the assistance of a professional able to understand them.

From a technical perspective, assessing the issues that have plagued the project and drawing conclusions from them may be extremely difficult and requires that the expert be familiar with the matter at hand. Beyond the purely technical aspects, in order to establish the causal relationships between an adverse event and its consequences on the project, the application of forensic techniques such as delay analysis, analysis of productivity losses among others are often necessary.

Whatever the aim of using an expert, whether it is to understand the engineering issues that led

the parties to the dispute, to understand how certain events could have impacted the project or to produce the necessary evidence to support entitlement to be compensate for incurred damages, their work is invariably based on skills enabling him or her to:

- Understand the technical issues in order to analyse and interpret the available facts with a sharp eye and make the pertinent assessments;
- Understand and express the technical issues in dispute concerning entitlements for claim;
- Make the relationships that exist between the initial causes of deviation from the contract and its consequences on project performance, if any, obvious;
- When the facts are missing, imprecise or contradictory, formulate and argue the adequate and strictly necessary hypotheses, based on his experience, knowledge or personal research, in order to formulate a reliable opinion;
- Make his or her demonstration or opinion understandable by a layman.

When causal links are established, the expert is frequently asked to assess the project performance losses caused by the identified adverse events. In this case, he or she is requested to:

- Choose the most suitable method and mathematical models applicable to the case;
- Inventory the assumptions considered in the evaluation of the project performance losses and explain the consequences they may have on the results obtained;
- Pre-evaluate the project performance losses and the uncertainty range if any assumptions had to be taken into account in the calculation;
- This usually involves preliminary technical analysis, delay assessment and impact cost calculations.

More specifically, experts are called upon to bring their technical and methodological skills to produce an accurate and technically grounded opinion directly admissible by the Tribunal as evidence to assist them in basing their award.

### Expert witness profile and behaviour

Whatever the path chosen to resolve the dispute, the experts are de facto key players in understanding the facts and the consequences at stake. They must accept this role only if their skills allow it.

International Arbitral Tribunals have their own rules to ensure that experts meet their needs. There are expressed by the IBA, in "Taking of Evidence in International Arbitration" Articles 5 and 6 [3], which suggests that Party-appointed expert reports contain a description of their background, qualifications, training and experience. Tribunal-appointed experts should, before accepting their appointment, submit a description of their qualifications to the arbitral tribunal and to the Parties.


The experts, whoever they are, must thus have practical experience of the technical and procedural aspects of litigation, of the construction contracts and of the procedures for demonstrating the damages claimed.

The testimony of an expert could be prejudicial to his or her Client's case if some of these criteria were not met because they would directly affect his or her credibility. During cross examinations, it is not uncommon for questions to address the technical skills of the expert, but also his or her knowledge of the rules and behaviour to be adopted. These may be used by the opposing Party in order to try to discredit the conclusions of the expert report. In particular this is likely to happen if:

- The expert's experience is not in line with the technical issue of the case;
- The opinion expressed by the expert is different from that which he had previously supported in a publication or in another dispute;
- The expert admits that the expert of the opposing party is the more qualified;
- The expert is arrogant, pretentious, inflexible, and refuses to debate his or her opinion;
- The expert stubbornly refuses to admit certain obvious weaknesses or unfavourable aspects of his or her expert report.

*"In fact, a flawless case simply doesn't exist and the expert who directly admits to a particular weakness gains credibility." [6]*



A close-up photograph of a hand moving a black chess piece on a dark board. The board is overlaid with a glowing orange and white network diagram consisting of interconnected nodes and lines. The background is dark and slightly blurred.

## 6. Defining and supporting strategy

### Expert advisors: Consultant to legal Counsel

Due to the complex technical nature and amount of facts generated by projects, lawyers often require technical assistance to build a coherent and effective line of defense. The involvement of technical experts and consultants from the early stages of the dispute allows them to more objectively assess the positions of their clients and establish a sustainable strategy.

Early on in arbitration proceedings, lawyers, the Parties themselves and even the arbitrators need to examine the heads of claim or even to get a preliminary assessment of the damages incurred.

In these first crucial moments, advisors may be key players in the preparation and presentation of claims and counterclaims by objectively evaluating the positions of the Parties, and identifying the strengths and weaknesses of their Client's case.

This diagnosis consists of providing an independent and objective preliminary assessment about:

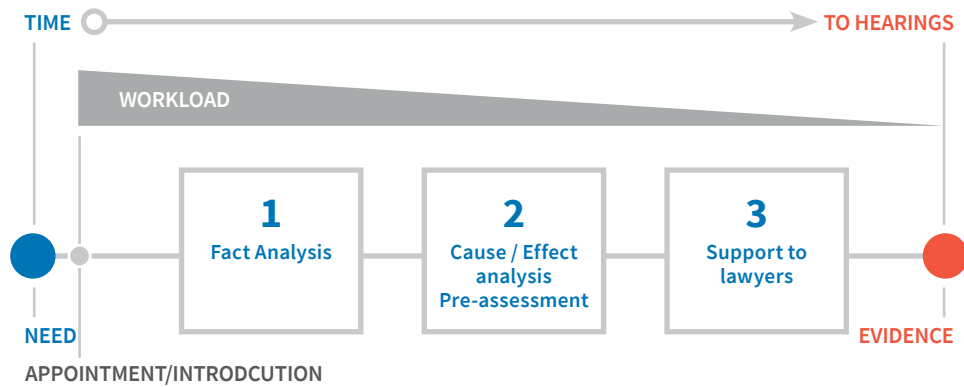
- The technical bases of the claims for damages;
- To a certain extent and only from a technical point of view, the contractual basis of the Parties required for damages to be susceptible of being awarded by the Tribunal;
- The quality and strength of written evidence on the liability for damages and, in general, of all

written evidence made available by the Parties and their relevance to the damages claimed;

- The assumptions and postulates to be presented by the Parties as the basis of their positions on damages;
- The mathematical methods to be applied to justify and assess the damages (delay analysis methods, quantum methods);
- A preliminary delay and cost estimate;
- The need for additional specific engineering expertise;
- The volume of work required during the arbitration;
- The chances of success of the claim and counterclaims based on the available facts;

At the start of arbitration proceedings, the aim of this preliminary work, for the Party calling

## From potential arbitration request



on an advisor, is therefore to obtain a clear understanding of the theoretical and technical bases of the damages to be claimed or to be counter-argued, to establish the risks of failure of the arbitration request and to establish an appropriate strategy so that all the arguments for which it wishes to be heard by the Tribunal are presented in a simple, fair and consistent manner.

### Advantage of involving Advisors

The role of an expert may therefore be restricted to that of an advisor to legal counsels. In selecting an expert, it is important to determine as early as possible whether he or she will be called to produce opinion and testify or not. An advisor may be called upon only to bring support to Clients and Counsels to understand and present the facts that have impacted a project in such a way that they are able to formulate their claim or their defence.

They also may take part in the settlement negotiations before the case or in parallel to arbitration. If the dispute goes to Tribunal, he or she may be called upon by the Clients or their Counsels in building technical argument and dealing with the Party-appointed or Tribunal-appointed experts. An advisor is in principle not required to testify. This is a Party-appointed

expert hired to advise, when it is unlikely that the Tribunal will require witness experts.

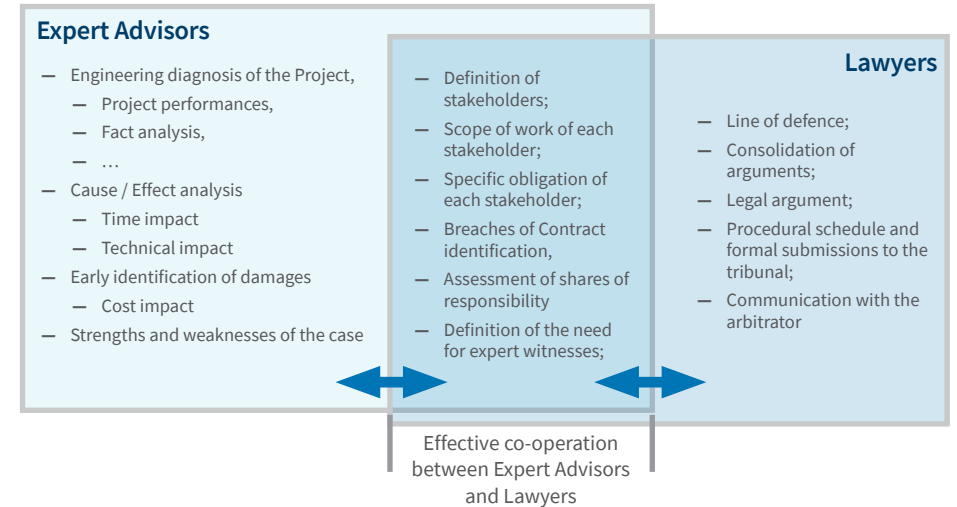
While respecting the rules of general ethics and compliance, generally not defined in the international arbitration Tribunal rules, the Parties may select whoever they wish to serve as their advisor. The advisor may be an employee, a consultant or any other individual a Party chooses to advise, support, and/or consult with them throughout the arbitration proceedings.

The advisor's scope of work may include helping to identify errors, inaccuracies, omissions and methodological issues in the various submissions to the Tribunal. The advisor may also conduct more in-depth investigation that is outside the purview of an expert witness or a Tribunal-appointed expert.

The most substantial reasons to involve Expert Advisors are:

- Their objectivity vis-à-vis the case (external consultants);
- Their knowledge of the different types of contracts and projects, their knowledge and their general skills in construction project management;
- Their skill in pointing out the strengths and the weaknesses of the case;

## Expert advisors – define and support appropriate defences



- Their capacity to extract and organize the relevant written evidence and data from an often-overwhelming documentary database;
- Their knowledge of recognized methods of evaluating the project performance and losses;
- Their knowledge of the lawyers' and Tribunal's expectations and their ability to communicate with them.
- Possibly, their ability, under certain conditions, to submit an opinion and testify as to their conclusions before the Tribunal if their neutrality is not compromised.

### Expert advisors — define and support appropriate defences

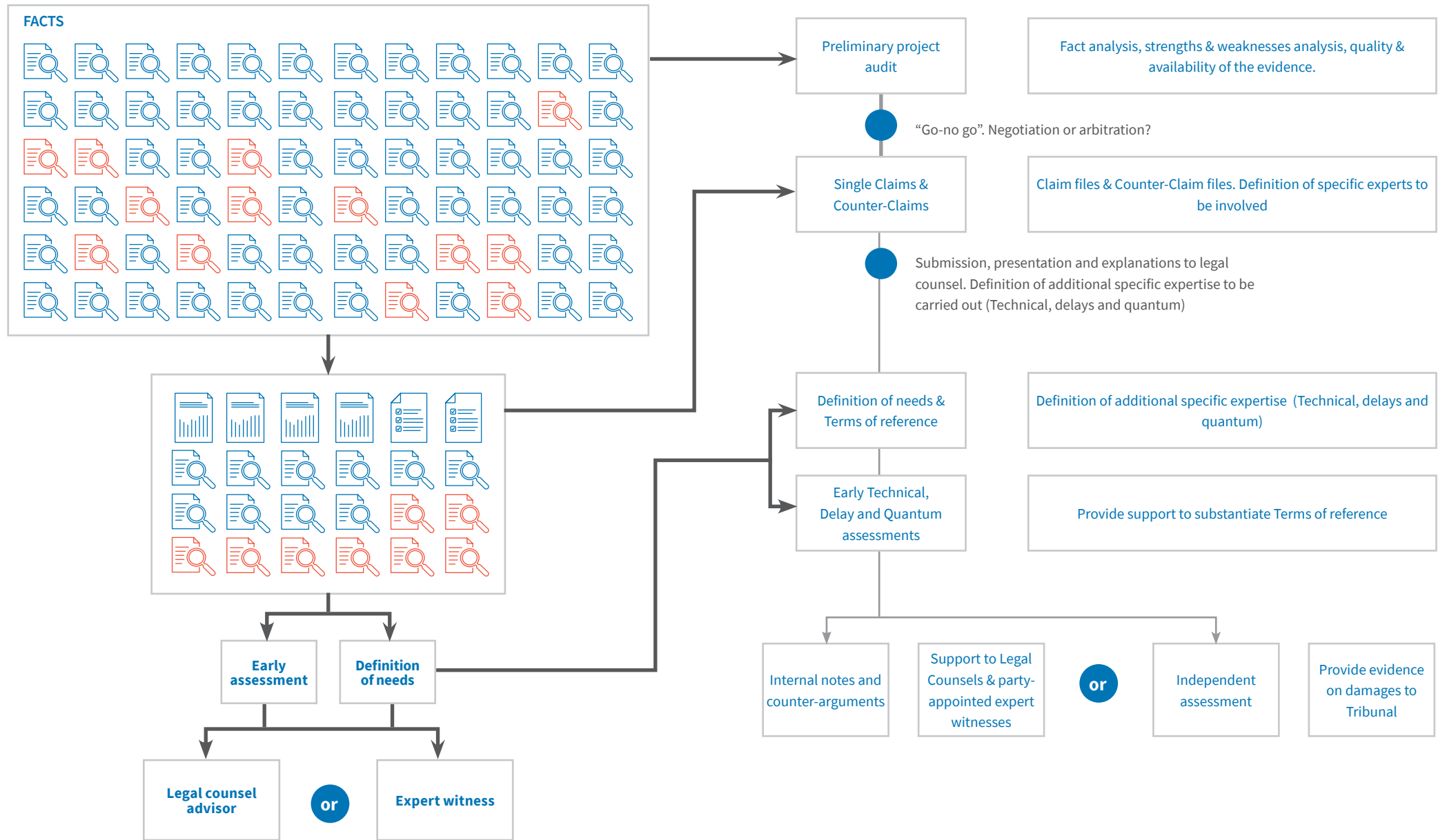
In the following phases of the arbitration proceedings, as a member of the team, the advisor's principal role is to come across, sort out and characterise the events which adversely impacted the project. The advisor must understand them and substantiate that they are materialized by written evidence, and then build one single dossier for each identified adverse event that affected the project performance. Each dossier involves:

- An analysis of the key breached contract clauses (from a technical premise);
- A formal and chronological analyse of the facts in order to demonstrate the merit of the claim or counter claim. This is the cause-and-effect analysis;
- A demonstration that the events involved in the analysis are actually based on breaches of contract and, in accordance with legal counsel's opinion, the determination of the parties' liability for those breaches;
- A preliminary demonstration of the impact of these events in terms of cost, time and technical risks.

Following the arbitral preparation phase, during the arbitration proceedings, the advisor may:

- Advise legal counsels, interface with the Tribunal-appointed expert if any and draft minutes of responses to the various technical writings of the opposing party; **or**
- Produce opinion (Technical impact, Delay and Quantum analyses) and testify under certain conditions of independence.

From potential arbitration request







## 7. Conclusion

Two types of experts may be required, those who work for the Parties, the advisors and those who work for the Tribunal, the expert witnesses or the Tribunal-appointed experts. In the choice of an expert, it is therefore important to ensure that on the one hand, his or her experience and expertise are suitable to the case and on the other, to be aware of his or her degree of independence vis-à-vis the facts, the Tribunal and the Parties.

The advisors are contracted by one Party. As “members of the team” they are consulted from the early stages of the dispute and should have the full collaboration of the team in order to consolidate its defence. They can be called upon to directly answer questions asked either by the Tribunal-appointed experts or by other experts if necessary, but is, in principle, not required to testify before the Tribunal.

Tribunal-appointed experts should be appointed to present and explain in a simple way the facts and to evaluate their consequences on project performance. These are the same facts and consequences which, consolidated and articulated by lawyers, should determine the outcome of the arbitration.

A virtuous expert is entirely unbiased and objective, for him or her, the notion of “winning”

or “losing” a case should take a back seat. An expert who advocates a case is not working in their Client’s best interest.

The biases are unfortunately made possible by the complexity of the technical matters to be explained to the Tribunal and by the fact that written evidence is often interpretable, imperfect or simply missing. So, the experts have no choice but to consider hypotheses and formulate postulates. This leads to the result that the calculation of claimed project performance losses or the simple establishment of causal relationships between identified adverse events and their consequences on project performance cannot always be scientifically demonstrated, but only based on opinion.

Experts must never appear biased and must be able to attest and demonstrate their position,

which should be based objectively on tangible and exhaustive facts and, as far as possible, formal demonstrations. For this to happen, they must have an overall vision of the case and adapted knowledge and experience of the technical issues at stake. Full knowledge of the facts and a meticulously prepared claim or counterclaim are irreplaceable.

For an expert's opinion to be clear and their contribution meaningful, they must have access to all the facts, especially those which are unfavourable to the Party by which they were appointed. They also must be consulted from the early stages of the dispute. Construction arbitrations are notoriously fact-intensive and technically complicated. Moreover, the facts may be extremely intertwined. The more time the experts have to investigate the facts and to assimilate them, the more their vision is global, clear and accurate.

The report and the testimony they provide the Tribunal with must therefore be structured in

such a way that it is possible to identify the assumptions made, their reasons and their justifications. The calculation methods and reasoning must also be clearly justified. In addition, the uncertainty generated by the mere use of assumptions should logically lead the experts to provide a sensitivity study of the results obtained.

The witness experts or the Tribunal-appointed expert should be comfortable in bringing to the attention of the Tribunal all of the strengths and weaknesses of the case. They should have communication skills, the ability to express opinions in layman's terms and be confident in the results they get. They are called to testify, and their testimony aims to represent evidence that will be given at the arbitration.

They must be able to work in close collaboration with the Tribunal and according to its rules and support and discuss their positions with other experts appointed by the opposing Party or by the Tribunal.

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This independent and mature company today  
boasts a dozen consultants and a portfolio of  
major international customers which include  
leaders in their markets.

## Endnotes

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[9] Experts and Expert Witnesses in International  
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Giovanni De Berti

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