Soft Measures

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Volume 1, Issue 8

What's News in Metrics?

Special Interest Articles:

Individual Highlights:

IT and Project Governance are prominent topics in the IT media. Organizations are experiencing high risks and high costs for IT project development. The role of Project Governance is to balance the risk of the organizations Investment against the opportunities and benefits that the outcomes from the project will provide the business.

For IT projects it is about providing the client with the capability to monitor the project status and control the risk of the project *not* delivering the business value they require within the t*ime and* budget available.

This issue's special interest article - *Metrics Based Project Governance* looks at how metrics can play a key role in mitigating project risk.

Pam Morris at ISBSG

Contractual disputes can arise in outsourcing contracts when clients bring in external FP Counters to audit the supplier's performance metrics. Often this is done without consultation on the activities of the audit or agreement on the dispute resolution processes. Our feature article discusses the 'Terms-of-Reference' that need to be in place before an FP audit starts to ensure that the client gets what they paid for and the supplier is not unfairly assessed.

We also look at the new features in Release 1.8 of **SCOPE Project Sizing Software™** and how to convert your existing MS EXCEL® counts to **SCOPE**.

Pam Morris CEO of Total Metrics represented Australia at the recent ISBSG workshop in the Netherlands and Madrid. See overview of their planned products for 2006.

Pam Morris - Editor

Quick IFPUG Count ? - you need SCOPE V 1.8

SCOPE Project Sizing Software™ provides a world leading innovative approach to functional sizing software using IFPUG 4.2 function points.

Since its first Release in 2003, **SCOPE** has been adopted as the software of choice when - managing baseline function point counts and for its ability to size concurrent change requests in a Release.

SCOPE Version 1.8, due to be shipped late November has made counting even faster. Enabling you to import all your old MS EXCEL® counts and enjoy ongoing counting but superior reporting and configuration control.

Import your specifications, lists of Use Cases, and Data Entities, for quick counting. Cross Reference your counted functions with your specifications for easy audit control. Online, searchable Help and sorting and searching facilities further assist in speeding up your counts.

For a ***free*** training demonstration of **SCOPE** and all its features contact us at: admin@totalmetrics.com
To download an evaluation copy of **SCOPE** go to: www.totalmetrics.com

SCOPE Project Sizing Software™

Would your counts survive a Metrics Audit?

Do not get caught out in a Function Point Audit – ensure that all parties agree on what was required to be counted, to what level of accuracy and to which set of counting rules, BEFORE you start!

IFPUG is holding a Function Point Forum at their Spring Workshops in Cambridge USA where in depth topics about Function Points and Functional Size Measurement will be featured.

March 25th to 27th 2006

Visit: www.ifpug.org

Background

As part of the contract negotiation process clients and suppliers need to agree on a *framework* for the process by which the counts will be conducted, documented and reported.

Prior to agreeing to allow the function point counts to be audited, all parties need to establish the '*terms of reference*' for the audit.

The following items need to be considered and agreed prior to commencement of an audit.

Version of FSM Method Standard

Agree on the FSM Method standard (e.g. IFPUG 4.2.1, COSMIC-FFP 2.1) and any published white papers, or case studies which will be the baseline rules against which the count will be audited. I.e., the supplier and the client should have an agreed version of FSM rules by which all counts will be measured. This is usually documented in the contract. The count should be verified to apply the rules as specified by that agreed version, not by an arbitrary version prescribed by the auditors.

Viewpoint

The Viewpoint adopted will influence the way the measurement is performed. Most organizations have adopted the most commonly used and traditional approach to the "user view of business functionality delivered" as being the External business User view.

If counts are going to be consistent across all applications then the viewpoint needs to be consistent. Supplier and client need to agree on the viewpoint that is adopted for the counting and ensure that the audit is conducted from the same 'viewpoint'.

Local Interpretations of FSM Method Rules

Rules for all the FSM Methods are not definitive; many need to be interpreted for specific types of implementations. These interpretations need to be consistent. The supplier needs to have a documented standard set of resolutions to the commonly found counting issues. These interpretations need to be applied consistently by counters across all the counts. Since these interpretations are not the approved FSM Methods rules as such, they need to be agreed to by the client. Any such interpretations should be supplied to the auditor to ensure that the auditor verifies the count to the agreed interpretations and not their own interpretation of the FSM Method

The auditors may not agree with the interpretation but it should be decided how that disagreement should be dealt with prior to the audit.

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Metrics Based Project Governance

"As metrics consultants we had been confusing the measure with the goal. Key objectives should not be the measurement results but successful software development projects."

"The act of measuring provides quantitative assessments of the quality and status of a project that is rarely seen by others and the measures we take give insights that can provide real benefits to the project team beyond just monitoring their productivity."

Making Metrics Relevant

Our experience as Software Measurement consultants has taught us that knowledge gained in the act of measurement can be as valuable to project managers, as their actual use of our measurement results.

For example, as part of our measurement role we are often asked to functionally size a project early in its lifecycle for input into estimation models. In order to perform the functional size measurement we need to dissect the functional requirements for the project, model them and individually catalogue and quantify each base functional component. In doing so we make observations about the status of the project and the quality of both the requirements and the specifications. Based on our experience with similar projects, we are able to make predictions on the likelihood of the project's success.

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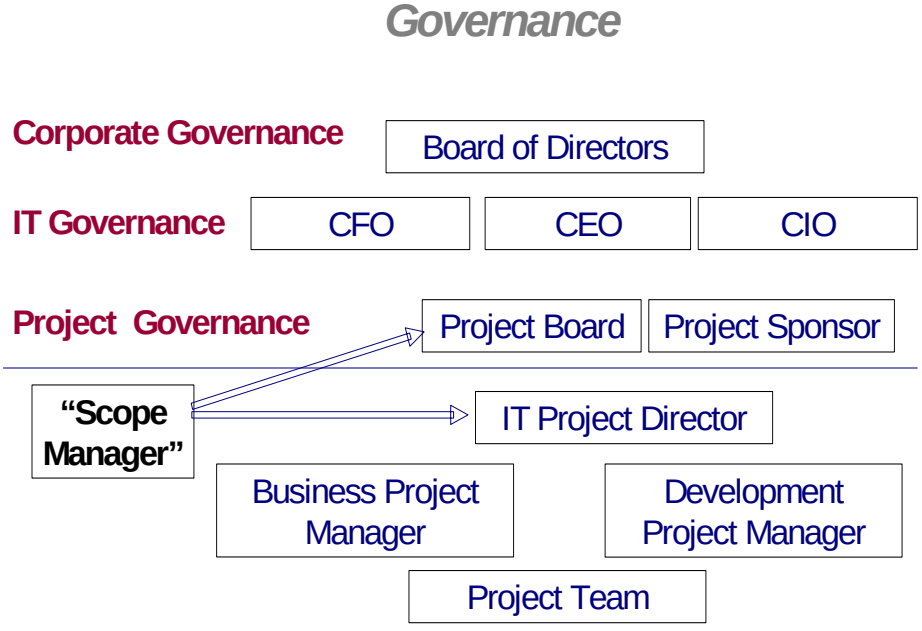

Diagram 1 – Scope Manager Reporting Level

With time, as our predictions have become reality, we have begun to recognise that our observations, if reported, could have provided valuable input into the overall management of the project and if heeded could have prevented numerous project failures.

The act of measuring provides quantitative assessments of the quality and status of a project that is rarely seen by others and the measures we take give insights that can provide real benefits to the project team beyond just monitoring their productivity.

This realisation has caused us to change our approach and to focus on using the role of measuring to provide ongoing advice to the project whilst it is progressing. We use the measurements to quantify our observations so our recommendations are now a critical part of the project decision making. Metrics experts observe and measure without any vested interest and as such provide unbiased and independent assessment of the project risk, quality and status. The measurement results support these observations.

As metrics consultants we had been confusing the *measure* with the *goal*. Key objectives should not be the measurement results but successful software development projects. Delivery on time and on budget with the right functionality is the true measure of the worth of 'metrics' to a project. To make measurement an integral part of the software development process we first have to make it relevant to the project's success.

Continued…..

Metrics Based Project Governance .....Continued

What is a "Scope Manager?"

This change of emphasis has meant that we are now perceived by our clients as providing project governance through the act of measurement and called "Scope Managers" not "Metrics Consultants". We have shifted the perception of the project team from seeing us as just another project overheard, to being someone that can assist project teams to better manage and control their risk and optimise their chances of success.

The role of the Scope Manager in Project Governance

Project governance is about understanding the business opportunities that the project can deliver, but also appreciating the consequences of failure and putting in place strategies to minimise the risk and optimise the investment so that business goals are achieved.

The Scope Manager provides metrics based project governance.

We have found this approach to be very successful in objectively quantifying key project attributes to enable informed decision making with respect to project estimates and project risk.

The Scope Manager is typically a metrics specialist who has excellent skills in business analysis, project estimation and functional size measurement. They need to be independent of the project team and not be connected to either the IT developers or the business client. They have to be able to report the status of the project objectively without bias, to a management level that has the authority to proceed, change direction or cancel the project.

The Scope Manager provides a key role in that their reports can provide early warning of project failure. In the past it was often not until major project milestones were missed that senior management had an indication that their investment was at risk. The following sections describe the role of the Scope Manager over the life cycle of the project and how they use metrics as a basis for their recommendations.

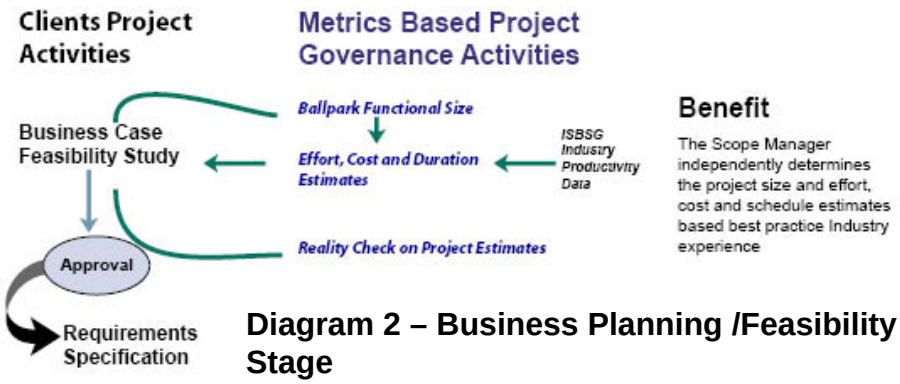

Diagram 2 – Business Planning /Feasibility Stage

Role of the Scope Manager during the Project Life Cycle

Business Planning / Feasibility

The Scope Manager can be involved in the project as early as the business case stage where they assess the high-level business requirements to provide an estimated functional size of the proposed project. The functional size combined with a productivity rate for the planned development environment can be used to establish a ballpark range of predicted project effort, cost and likely duration.

If the organisation has its own internal productivity data then this can be used for the estimates. Alternatively, industry data for productivity rates are available from the International Software Benchmarking Standards Group (ISBSG) [www.ISBSG.org]. The ISBSG's data provides industry productivity data for a wide range of development platforms, languages and environments.

The project estimates can be used as a 'reality check' against the planned budget and required delivery dates. If delivery time is constrained, then the Scope Manager can use ISBSG's regression equations to demonstrate the trade-offs between compressing the schedule and the cost of adding more people on the project. For example, industry data shows that doubling the speed of project delivery requires up to four times the number of people. Large teams have a significant negative impact on an individual's productivity rate

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Metrics Based Project Governance - continued

and consequently an overall increased cost of the project to deliver the same product.

If the estimated cost and duration exceeds the planned budget or schedule then the functionality may need to be reduced. Other governance processes need to be in place to ensure that the reduced functionality still delivers the planned business benefits.

Project risk of failure increases exponentially with project size. Early quantification of the size of the proposed software product enables evaluation of potential risk. The Scope Manager provides quantitative input for the business to make objective decisions as to the development strategy to minimise risk, whether to proceed to the next step of building a requirements specification or to cancel the project.

Requirements Specification Stage

As part of the functional sizing process, the User's Requirements need to be decomposed into individual functions within a functional model. Each function (process and data group) is identified, catalogued and sized. The cataloguing and modelling process often highlights gaps in the Requirements Specification i.e., where functions have failed to be specified, or have been specified inadequately, inconsistently or ambiguously. The Scope Manager is in a unique independent position to view the project how the external developers may see it. The Scope Manager's experience with sizing functional specifications enables them to identify areas that may have been overlooked by the project team and provide objective feedback on the quality of the specification.
For example, they can mark up the functional model for functionality that has been explicitly specified or only implicitly specified and quantify the percentage of each. The functional size is still only an estimated 'range' as the complexity of many functions can often not be evaluated at this stage; it is usually anticipated that the project will grow further. The Users may also prioritise their Requirements as those that they consider to be Core functionality and mandatory to be delivered versus those that they consider to be extended or for future consideration. The Scope Manager can determine the size and estimate of each alternative.

High-level project resource estimates are revised based on the selected platform and the predicted size range. Once the project team have updated the specification to fix ambiguities, inconsistencies and missing functionality, the refined Requirements Specification is ready to be used as the basis for input into the Functional Specification. In an outsourcing situation the Requirements Specification would be provided as part of the Request for Tender (RFT). The functional sizing model along with its list of individual identified quantified functions and their associated priority for delivery is distributed as part of the RFT. This becomes the baseline Requirements document with which the business can evaluate whether the completed project has delivered their required functionality.

If the method of quotation by the suppliers is to be via a '*fixed $ price per function point*' as identified within the SouthernSCOPE methodology, then the tendering suppliers need a clear indication of which of the Users Requirements would be considered to be included or excluded from the fixed price.

The Scope Manager identifies which of the User's Requirements will consume effort (and therefore costs) that are proportional to the overall functional size and which will not, and thus be excluded from the fixed price. For example, documentation of Project Deliverables is proportional to functional size and would be included within the fixed price per function point. In comparison, research and acquisition of hardware is not, and should be quoted separately.

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Diagram 3 – Requirements Specification Stage

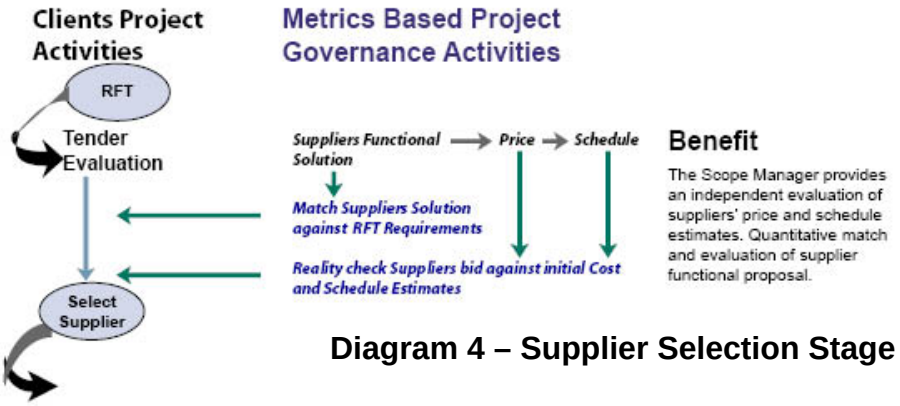

Diagram 4 – Supplier Selection Stage

Supplier Selection Stage

The early ballpark estimates of projected effort, duration and cost based on functional size enable the client to objectively evaluate the 'reasonableness' of the supplier's proposed quotation and solution. This mitigates the risk of selecting the supplier based on the lowest price and promised fastest delivery who would potentially have the greatest risk of failing to deliver the project.

The Scope Manager uses the functional size model to quantify the 'fit' of each supplier's proposed solution to the original requirements enabling full objective evaluation of the supplier's solution by the quantification of the proportion of extra functionality, functionality omitted, functionality delivered by a package or functionality that needs to be customised or built.

Functional Specification Stage

The Scope Manager revises the functional size based on the Functional Specification and quantitatively maps the functional requirements to the original RFT Requirement's Specification to provide a percentage match of the RFT to the proposed solution. Any omissions, ambiguities or inconsistencies in the Functional Specification are highlighted for revision before proceeding with the build. If at this stage the functional size indicates that the project will cost more, or be delivered later than planned, then non-core functionality is selectively removed from the project until the project size indicates that it can be delivered within the allocated budget and delivery dates.

If the project-charging model is based on dollars per function point delivered, the Scope Manager will work with the client and supplier to finalise the price variation model for changes that are approved during the remaining development. I.e., typically penalties are paid for any function points added, modified or deleted from this stage forwards. The dollar amount charged is usually scaled to increase as the project progresses.

The outcome from the functional sizing and mapping exercise is a traceable, auditable, quantified list of agreed functional requirements to act as a baseline for ongoing scope management

Changes introduced during the Project Build to Implementation

The Scope Manager is tasked with the quantification of Client Change Requests based on functional size of impact. This is used as a basis for pricing negotiations, enabling the client to assess the price of Change Requests prior to submission to the supplier and know they are being fairly charged for their required changes.

Ongoing Project Monitoring

The Functional Size Model provides input into the quantitative monitoring of project status using an 'earned' value type of reporting. I.e., the Scope Manager provides independent project status reports based on the amount of functionality delivered, versus functionality planned to be delivered, within each reporting period. This is an

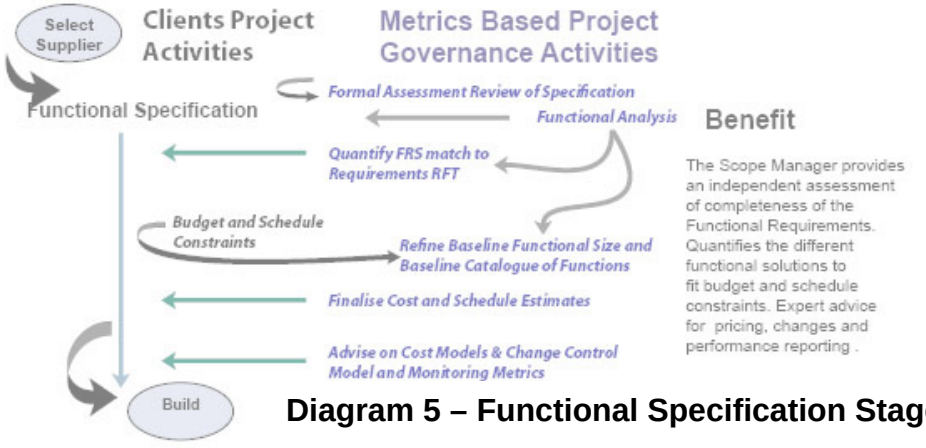

Diagram 5 – Functional Specification Stage

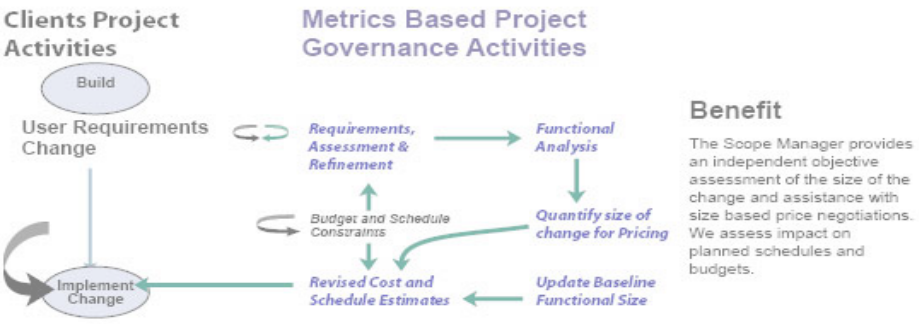

Diagram 6 – Managing Change Requests

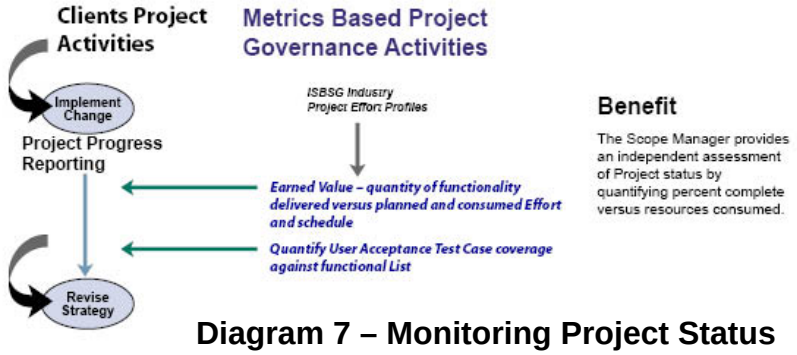

Diagram 7 – Monitoring Project Status

'output based' metric for project reporting that is more meaningful to the business client rather than an input based metrics of budget or effort consumed. I.e., status reporting is based on the amount of product delivered (function points) to each stage of completeness. This contrasts with traditional approaches of monitoring status based on resources and schedule consumed.

Project Implementation

On project completion the Scope Manager quantifies and maps the functionality implemented versus functionality contracted to be delivered, for input into final payment negotiations. This enables the client to verify, against the traceable list of requirements, which functions have been satisfactorily delivered. The quantification of the delivered functionality enables objective discussions on payments due.

International Benchmarking Standard - ISBSG Annual Workshop

The International Software Benchmarking Group (ISBSG) met in September 2005 in the Netherlands and Madrid for their annual Workshop. Thirteen countries were represented, with China and Denmark attending for the first time. Pam Morris from Total Metrics represented Australia.

The group has planned a number of Deliverables for the next 12 months including: -

- An international standard for Benchmarking Software Development based on ISO /IEC 15939
- Revised questionnaire for inputting data into their repository – to include data collection for Package Customizations
- Publishing information about their validation process
- Providing guidelines on the valid use of the ISBSG data.
- MBOK – Develop specifications for a Software Measurement Book of Knowledge

Peter Hill – CEO ISBSG
Speaking at the Madrid ISBSG Workshop

Find out more at www.isbsg.org

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About Our Organization…

Total Metrics is a leading software measurement organisation. We assist our clients world wide to better manage and control their software application environment by measuring, monitoring and benchmarking their IT performance.

Thoughts for the Month

"Growing older is mandatory. Growing up is optional. Laughing at yourself is therapeutic!"

"The more precisely you plan, the harder destiny will hit you"

"Give something a name and it will happen"

"Life is like drawing without an eraser"

"We seldom think about what we have but we always think about what we have not!"

Would your counts survive a Metrics Audit?

continued from page 2.

Agreed Level of Counting

Counts can be performed at different levels of accuracy and documentation standards. (See www.totalmetrics.com - *Levels of Counting Article)*. Most FSM Methods including IFPUG do not prescribe how a count should be documented. They do, however, indicate that each function should be identified, assessed for type and weighted accordingly and their weighted points accrued to be the total functional size. This is equivalent to what Total Metrics define as a 'Level 3' count. There are six 'levels' of counting which are commonly used in industry for different purposes. If the purpose of the counts was to provide a baseline to be later refined, then the most cost effective Level of counting for this purpose is a 'Level 4' count, which is recognised to have a counting error which is ±15%. If the auditors are not made aware of this decision to count at a lower level of accuracy then they will audit the count as per the published FSM Method standard and find the count incorrect.

Before an audit takes place all parties need to agree on the *level* of counting that is appropriate and against which the count will be validated.

Agreed Structure and Content of Audit Reports

The client and the supplier need to agree with the auditor on the detail provided in the audit report such that their results can be verified.

For example if the Auditor removes elementary processes from the count on the basis that they were redundant but do not identify which functions they were duplicating, then it makes it impossible for the counters to know if the auditors decision was valid.

Agreed Objectives for the Audit

It is recommended that the purpose of the audit be established prior to an audit occurring. Ideally the audit should have as its objective to improve the overall functional size measurement process such that the outputs from the process (counts) also improve in their quality (I.e., accuracy, repeatability and internal and external consistency). It is recommended that the scope of planned audits be extended to examine the counting process. This would then provide feedback on ways to improve the process to ensure better quality counts in future audits.

Agreed Dispute Resolution Process

The dispute resolution process needs to be agreed by all parties prior to the audit, so as to ensure a satisfactory outcome in the event that the audit results are not accepted by any of the parties.

They also need to agree on who is authorized to review reports in draft prior to them being made public such that the counters reputations are not brought into disrepute due to an unfair assessment.

Summary

Functional Size Measurement (FSM) is still not a mature process in most organizations. The FSM audit process is even less mature. However irreparable damage to client-supplier relationships can be avoided if appropriate ground rules for FSM assessment are established at start of the contract and then prior to an audit commencing.