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Quality management system design: A visionary approach

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ABSTRACT *The quality management systems of many large companies have evolved by default rather than by design. Retrieving this situation to produce an effective and efficient quality management system (QMS) is never easy—there always seem to be too many other priorities. This paper addresses this difficult issue by discussing the process devised by the author that is being used to transform the QMS used by BAE SYSTEMS, Aircraft Programmes. The process uses the derivation of an agreed QMS vision as the basis for establishing 'what's in it for me' statements that are used to gain senior management desire/commitment for/to the proposed change. Selecting the appropriate time to propose such a change can have a significant enabling effect on the ability to gain agreement. With this mandate, cross-functional QMS users (sufferers) and quality professionals jointly agree change objectives and produce a detailed design for review and agreement amongst key stakeholders. Prime QMS users are involved throughout to maintain ownership and to provide confirmation that the changes will indeed realize the estimated benefits. Critically, throughout the development communication and training programmes are concurrently provided so that when the new QMS is launched, information owners and users can implement the change with familiarity and confidence. Post implementation activities provide initial intensive support to overcome any learning curve difficulties, measurement to confirm successful implementation and the establishment of an easy mechanism for users to propose further improvements.*

Introduction

In common with many large organizations BAE SYSTEMS has evolved significantly over recent years, merging companies such as British Aerospace, Marconi Electronic Systems and the AES part of Lockheed Martin into a single financial entity. A common consequence of any such development is the decision how best to reconcile different working practices—either to implement a single common approach, to allow different parts of the business to adopt practices best suited to their own particular needs or to adopt part common solutions. In the author's experience, developing the quality management system (QMS) in response to such changes is rarely seen as a priority. Resolving this situation is not easy: there always seem to be other priorities that have a more direct impact on the business bottom line. And yet an effective QMS should be the key enabler to more effective and hence more profitable working. This paper discusses the structured approach being adopted within the Aircraft Programme's part of BAE SYSTEMS to address this issue so that the full business potential of the QMS can be realized.

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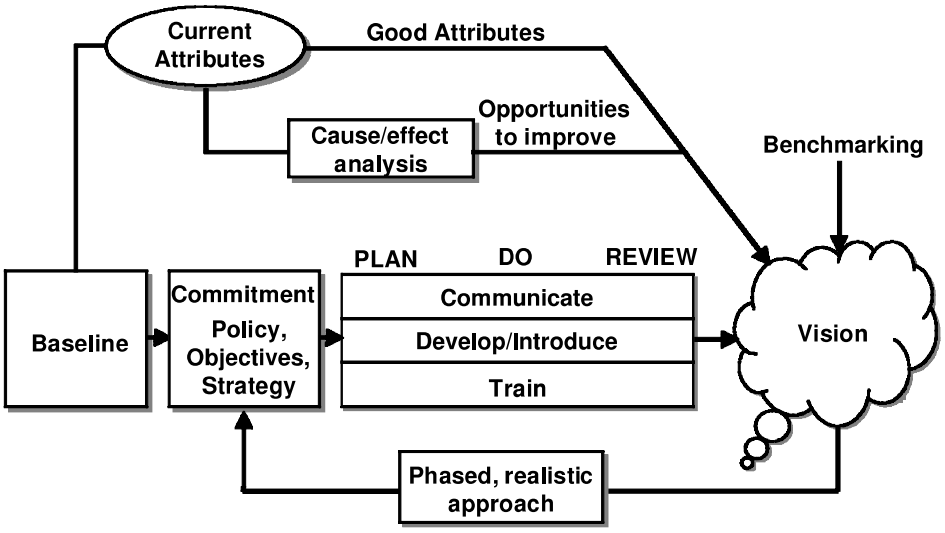

Figure 1. *Development process.*

The development process

It is vital that a visible, planned approach is adopted in order to succeed, see Fig. 1.

Baseline

Establishing a QMS baseline is critical to justify the need and create the desire for change. This will include establishing attributes of the baseline and identifying with whom this baseline should be agreed. Two aspects should be addressed when creating the baseline: factual attributes of the existing QMS and subjective opinions of its business value.

Survey is a useful way to identify factual evidence identifying, for example, the number of QMS documents, maintenance costs, information latency, review frequency, ownership accountabilities, QMS effectiveness and staff awareness.

One effective method of identifying subjective opinion (whilst also gaining more widespread support for potential change) is brainstorming. Initially a brainstorming session should be held with managers who 'own' parts of the QMS (and hence have expectations of what the QMS should achieve). This will be followed by reviews with key stakeholders—individuals who use the system on a regular basis and who can identify reality—the good and not so good attributes of the QMS. Understanding reality is key to identifying a practical, realistic and beneficial set of future requirements for reality provides the feedback to identify whether or not managerial QMS expectations are being realized.

The next stage is to validate this baseline and gain influential support for the development (assuming that it justifies development). Within most organizations individuals exist who are well respected and whose knowledge, experience, charisma and (usually but not always) position give them significant influence in establishing key facts and gaining agreement to a change. These 'gatekeepers' (so-called because they provide access to and can influence decision-makers) should be encouraged to become involved with the proposed change. Achieving their support will involve convincing them of the benefits such a change can offer; highlighting personal benefits (for example, where the change can make the gatekeepers' own jobs easier or more successful) can often help gain their active support.

Table 1. *Identifying vision requirements*

Baseline QMS	QMS vision
Not focused on achieving customer satisfaction. Does not define achieving key product/process characteristics	Helps me delight my customers
Expensive and difficult to maintain. Usually (approximately) 6 months out of date	Cost-effective and easy to maintain. Always up to date. Flexible

Establishing a change vision

Before any change can commence the change requirement must be established for without a clearly understood and agreed requirement confusion and disappointment are almost inevitable. Establishing a change vision is the first step towards this aim. The vision presents the idealized situation—the perfect future state assuming there are no constraints on what is possible. So often change is constrained too early by what is currently possible only to find later that change controls have relaxed. Whilst the traditional approach to requirement definition introduces constraints from the onset, the visionary approach only introduces constraints at the planning stage. This allows the change team to plan a staged approach that satisfies as near as possible the idealized outcome whilst maintaining a focus on the ultimate vision throughout.

There are three sources that should be considered when creating the vision. Firstly, assuming an evolutionary rather than revolutionary approach, some attributes of the existing QMS might be preserved—not only to ease the transfer between the old and new QMS's but also to maintain a degree of user familiarity. Secondly, some attributes of the existing QMS may need to be improved. These vision requirements can be identified either through cause/effect analysis or by stating the requirement as the inverse of the problem, see Table 1.

Thirdly, benchmarking can be used to identify further improvement opportunities, not only from external sources but also (particularly within large companies) from sources internal to the business.

Having gathered all potential requirements a compatibility review should be held with gatekeepers and key stakeholders to ensure that the collated vision is coherent and consistent. To gain support for the proposed change all requirements should be written defining the benefits that would be available to the end user should the changes be made.

Identifying a phased realistic approach

The next step is to introduce a degree of realism by planning with the gatekeepers which vision requirements would be cost-effective to introduce and would also gain decision-maker support. If possible, cost benefits for all development options should be provided to allow the decision-makers the opportunity to personalize their requirement selection, further increasing ownership of the change.

In many cases a phased approach will be appropriate in line with affordability and risk, particularly when major changes are required. A development maturity matrix can be used to structure development logically against the vision; it can also be used to monitor the changes made. A small part of an example QMS maturity matrix is shown in Table 2.

Commitment

It is now possible to present the resulting QMS development case to the company decision-makers. Timing this approach might be important, particularly if the organization uses an

Table 2. *Phased development: QMS usage*

Learning	Developing	Performing	Contender	World class
Focused on passing external audit	Primarily focused on compliance	Business process based. Used to encourage improvement	Used to communicate business change	Records experience, learning and best practice

annual estimating/budget-setting process. It may also be helpful to present the case when decision-makers are suffering problems that can be resolved, even partly, by the proposed changes—in effect providing a 'what's in it for me' solution. Where multiple approvals are required it is often better to present the case to each decision-maker individually, progressively gaining support, commitment and change inertia. Unless unavoidable, the appropriate gatekeeper should lead these discussions supported by the change initiator—usually the Quality Manager.

Policy, objectives and strategy

Assuming adequate senior level commitment is forthcoming, the next step is to identify:

- The policy for the resulting QMS (usually a summary of the key points contained within the agreed part of the vision).
- SMART objectives for the development (so that progress/success can be measured).
- The implementation strategy, particularly when the change is complex.

Communicate, develop/introduce, train

In a survey carried out during 1998 across 500 companies world-wide, Price-Waterhouse found that in general change was not managed well and, in particular, two of the biggest barriers to change were people and project management issues. Often they found that change was imposed rather than introduced and that the planned change benefits were not realized as expected (Price-Waterhouse, 1988). In Fletcher (1997), the point is made that staff perceptions and attitudes to change are generally based on the way in which they are invited to contribute to the change. Against this background BAE SYSTEMS evolved an integrated approach to managing operational change that identified the need to address simultaneously a number of change levers and, in particular, to involve stakeholders throughout (Addey, 1999). Whilst this approach was primarily aimed at major operational change, its principles can also be applied to smaller scale change (Addey, 2000).

Figure 2 shows three particularly important change levers that must be simultaneously managed to gain a successful outcome.

During the 'plan' phase, key stakeholders will be identified and their involvement in the development planned. In many cases these individuals will already have been involved, either as gatekeepers or as contributors to the new QMS vision, but this process step allows this involvement to be reviewed and expanded to involve *all* who will be directly affected and/or involved in the resulting change. For the QMS, theoretically, this should include the whole business; consequently, representatives will be requested from each area to focus the views and involvement of their part of business. This involvement is essential, not only to ensure that all views and potential problems are aired and addressed before the change is made, but also to achieve the degree and depth of ownership needed for change success.

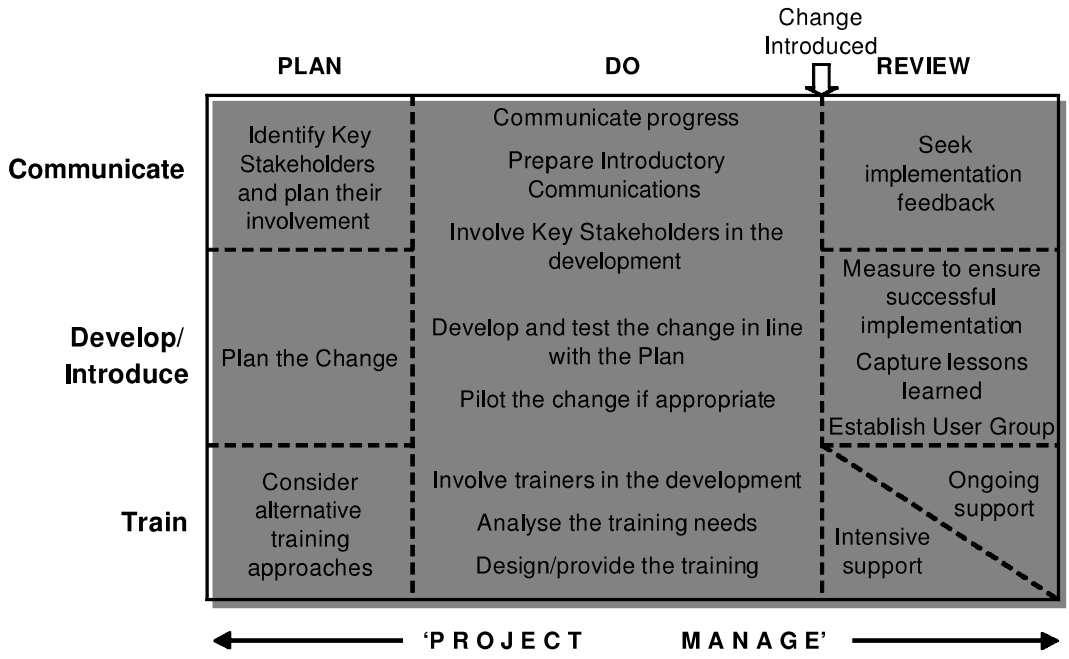

Figure 2. *Communicate, develop/introduce and train.*

Even at this early planning stage alternative training options should be considered so that training can be designed in parallel with the development and can be provided to a 'critical mass' of users before the change is introduced. This planning will also investigate the options and resources available for providing intensive support/ongoing support once the change has been launched.

The 'do' phase is primarily involved with developing the change in line with the change plan to satisfy the change objectives and implement the change policy. As described above, stakeholders and trainers will be involved throughout this phase to support, review and test the developed QMS. Regular communication packs will be issued throughout the development so that all users (not just those directly involved) are aware of the impending change and have a chance to provide any comments via their nominees.

The most immediate action once the change has been introduced is to advertise and provide intensive support. Through the 'hands-on' training and involvement provided during the 'do' phase a significant number of capable users will already be scattered across the business. Consequently, the first line of user support should be through these nominees (emphasizing local ownership), with a second line of support being provided by the change team to address new/more difficult problems.

After a suitable period of usage it will be appropriate to seek user feedback and to hold a 'lessons learned' review so that development process improvements can be identified, agreed and addressed. Similarly, based on the volume of support requests, the change team can downgrade the level of implementation support offered from 'intensive' to 'ongoing' by, for example, replacing co-resident support staff with telephone help on request. Because a key QMS ownership accountability is to encourage user feedback, to identify, agree and action further QMS improvement opportunities a user group should be established. This group can be used to obtain direct user feedback on the success of the change, to provide a forum to discuss further development opportunities and to cross-fertilize good practice implementation experience.

Phased approach

As identified above, in many cases a phased development approach will be needed to introduce change at an acceptable/affordable pace and to mitigate development risk. Change objectives can be used to measure when the expected benefits from each phase have been realized so that after a suitable period of consolidation, work on the next step towards the agreed vision can commence.

Conclusion

This paper has described the approach being used by BAE SYSTEMS, Aircraft Programmes to transform their legacy QMS. The approach is based on the following key enablers:

- Agreeing a QMS vision: the ideal to which the company should aspire.
- Not moderating the idealized vision by reality until the planning phase.
- Creating a desire for change by identifying 'what's in it for me' statements that are used to sell the benefits of the proposed change.
- Identifying and involving gatekeepers—individuals whose knowledge, experience and charisma help gain essential senior management commitment.
- In parallel with developing the change, providing timely/effective communications and embedded training.
- Involving key stakeholders throughout the development, not only to gain ownership and commitment, but also to provide confidence that the resulting changes will work as expected.

Experience to date in using this approach has demonstrated that it works effectively and profitably. Based on this experience the process is now being applied more widely; it is confidently believed this wider use will also produce beneficial results.

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