# New Product Development within ABC Electronics

ABC Electronics is involved in the design and manufacture of products for the IT industry; it has core technical expertise in acoustics, electronics design and assembly and plastics moulding. Typical products include battery chargers, speaker kits, telephone handsets and remote control devices for television and hi-fi systems. The company currently employs around 700 people on several sites across the UK; turnover in 1995 was around £30m.

Founded in 1957, the company was originally involved in design and manufacture of hearing aids for the National Health Service; the link to telephone equipment was easy to make and the then national monopoly telecommunications company became a major client. Although ownership of ABC changed on several occasions it enjoyed a virtual monopoly on sales of acoustic components to these markets. However during the 1980s major changes - particularly the liberalization and subsequent privatization of British Telecommunications (BT) - meant that markets were becoming more demanding in terms of price, quality and product innovation. Profitability declined sharply and the company faced a mounting crisis; it lost its major contracts in microphone and receiver markets because of sluggishness in implementing new technology in products, and it lost an increasing number of tenders on price and product design grounds.

In 1990 the company was taken over by a Japanese group which introduced a new strategy but left the old organization largely intact. Key features of this new approach were the focus on diversifying the customer base, the focus on targeting original equipment manufacturer (OEM) markets and the move towards product families. By the mid-1990s ABC were active in four main market segments – telecommunications, mobile communications, home entertainment (TV/video/hi-fi) and fire and security – and the company began a period of accelerating growth and rising profitability. Much of this success arose from a much higher level of new product development (NPD) activity – for example, the two main product categories currently accounting for 76% of total sales to an entirely new set of customers were not even in the company's product mix in 1991.

## The Emerging NPD Crisis

Rapid growth through proliferating new products, accelerated by the speed with which many of their key sector markets (such as mobile telephones) were expanding, meant that ABC began to face a new crisis in NPD. Whereas their earlier problems were due to too little NPD activity, this new crisis resulted from too much - or rather, too much unstructured and uncontrolled NPD activity.

At the same time the company faced a series of strategic questions. What categories of products should be manufactured? What markets should be targeted? What portfolio of competencies should be built? Resolution of these questions was essential to provide the strategic umbrella under which NPD requirements could be specified. The top team undertook a strategic clarification process following the guidelines of one of the authors of this paper. This enabled the senior management group of ABC to see that NPD was a core competence and needed substantial investment of time and resource.

Late in 1994 a seminar was held for senior management to discuss the emerging 'good

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practice' model of NPD and the decision taken to implement some form of change; the requirement to appoint a new NPD manager provided an opportunity for making these changes. A diagnostic study was carried out in February/March 1995 which identified a number of problem areas within the current NPD system; these are summarized in Table 1.

**Table 1 Overview of problem issues in NPD**

- NPD process unclear.
- 'Ad hoc' approach to project selection and priority setting.
- Unclear responsibilities and lack of accountability.
- Limited teamwork.
- Lack of early involvement and subsequent downstream delays and problems.
- Lack of cross-functional involvement.
- Inter-function competition rather than cooperation.
- No clear link to company strategy in NPD decisions.
- Overloading of Product Managers, required to oversee a wide range of new products through the NPD cycle.
- All projects treated the same, no 'fast tracks' or special projects.
- No mechanisms for capturing learning from NPD experience

Further discussion with senior management led to a commitment to design and implement a new NPD system by early 1996.

The development of a new NPD system was seen (correctly in our view) as an organization development task rather than a requirement for a more elaborate and comprehensive set of procedures. The principles shaping the organizational development (OD) intervention were:

- People working the present system know most or all of problems: a way has to be found to collect these insights.
- Many problems are due to 'silo' thinking: each actor needs a commitment to helping others to win and know what this means in practice.
- Procedural change (especially elaboration) will be ineffectual unless it is understood and 'owned' by the people involved.
- A careful balance needs to be maintained between system (which tends to bring rigidity) and ad hoc processes (which can deal with opportunities of the moment). Too much, or inappropriate, systemization is as much an enemy as too little.

From these five OD principles a NPD improvement programme emerged which is summarised in Table 2; this combined inputs of external knowledge (about good practice NPD, about models used elsewhere, about other case examples, etc.) with internal development on the design and detailed elaboration of the new process - including attitudinal and behavioural changes required. It is important to emphasise that all the steps outlined in the table were not, and could not have been, defined in advance. NPD processes are (at least in part) organic and so the programme had to responsive to the developing needs of the intervention process.

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**Table 2 Key steps in NPD organizational development programme in ABC**

| Date | Activity | Purpose | Involvement |
|---|---|---|---|
| Feb. 95 | Initial data collection and diagnostic | Provide overview feedback to company on state of NPD | University researchers |
| April 95 | Feedback to and discussion with board<br>Agreement to basic OD process for new NPD<br>Identify key participants | Obtain top management support<br>Agree parameters for NPD programme | Board (MD, Marketing Director, Manufacturing Director) plus NPD and personnel managers |
| June 95 | Senior management strategy workshop | Develop coherent business strategy to provide framework for NPD - which products should we be working on? | Senior management |
| Aug. 95 | Sensing interviews | Data collection and diagnosis | Key participants in current NPD process and likely to play a role in the development team ('the NPD task force') for a new process |
| Sep. 95 | Workshop 1<br>Awareness raising, using case studies, simulation and other exercises, etc. | Top management expression of support and commitment<br>Raise awareness of good practice and limitations in current ABC NPD process | NPD task force |
| Sep. 95 | Company-based project work reviewing problems in current NPD system | Building an awareness (with specific examples) of the limitations of NPD and surfacing frustrations and frictions associated with particular parts of the process | 12 small sub-groups of the NPD task force |
| Oct. 95 | Report back<br>Cluster key problem issues<br>Review case examples of good NPD practice elsewhere - 'informal benchmarking' | Focus on key aspects of NPD process - align ABC experience with theory regarding critical dimensions of 'good practice' - e.g. need for a stage gate system to control a high volume of product opportunities | NPD task force |
| Oct. 95 | Project team activity around key themes - project management, team working, learning, use of advanced tools, etc. | Taking major themes (cf. Table 1) and exploring their applicability in ABC | 12 sub-groups, two of each working on a particular aspect of 'good practice' in NPD |

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|---|---|---|---|
| Nov. 95 | Presentation of project team ideas about a new NPD system - the rough building blocks and design principles which could be used to configure a new process | Building from their experience of what was wrong with current system, and their awareness of generic 'good practice', to create a shared 'vision' of what could be developed | NPD task force plus senior management |
| Nov. 95 | Senior management workshop | Configuring the building blocks into a basic architecture which took account of strategic and other business concerns | Senior management |
| Nov. 95 | Workshop presentation and discussion / exploration of outline NPD system | Communicating the new NPD model framework and giving team members the chance | Whole team plus senior management |
| Dec. 95 | Mandate team work on detailed design | Elaboration of basic framework and development of maps, procedures and other aspects of the new system. The mandate team also began the integration of work done by small groups | Mandate team', a small group made up of representatives from the whole team and with the responsibility for representing their views and feeding back developments to them on a regular basis |
| Dec. 95 | Workshop and presentation of new NPD system by mandate group to rest of team plus senior management | Presentation of near-complete NPD system design, including sample documentation. Discussion and identification of fine-tuning issues | Whole team plus senior management |
| Dec. 95 | Pilot projects | Testing out aspects of new system with new product ideas coming into the company | Product managers<br>Senior management<br>Production engineers |
| Jan. 96 | Workshop and discussion, including simulation with dummy projects | Tidying up on key issues like the process for ensuring strategic fit ('stage 0'). Development of guidelines for New Product Executive decisions<br>Planning implementation, selecting implementation team, setting | Senior management<br>Product managers<br>Representatives from mandate team<br>Representatives from proposed implementation team |

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|---|---|---|---|
| Feb. 96 | Presentation workshop | Formal presentation of the new programme for NPD to all those with an involvement in new products. Mobilize commitment to help roll-out the new programme and 'sell' it on to other staff | Whole development team<br>Senior management<br>All NPD-related staff |
| Mar. 96 | Formal launch date | | |

This table provides an overview of the activities undertaken. It is more difficult to convey the passion, emotion and enthusiasm that was released by the process. From the start the Managing Director adopted the view that a participative approach was needed – the question was how to structure participation so that ideas and concerns could be released, codified and turned into a coherent set of positive routines that were comprehensive, context-sensitive and accepted.

The participative development programme involved around 35 people from across the organization and representing different levels and functions in the NPD activity. The aim was to get everyone who made a contribution to the development of new products involved as contributors.

The OD process was neither 'top-down' or 'bottom-up' – it was both. From the top came strategy, permission, leadership, recognition and terms-of-reference. From the bottom (really the middle) came critique, ideas, detail, commitment, diligence and enthusiasm.

Activities ranged from workshops for the whole group to intensive small group work on designing the new NPD system; as the programme evolved so the ownership and input from the ABC side increased. The NPD manager played a crucial role as the champion of process change; his skills as an empowered facilitator and system designer were crucial.

Managing the complexity of later stages of the project required a change of direction. It proved possible for all 35 participants to contribute to a diagnosis of the problems of the present system and generate ideas for improvement. The need to elaborate and reality-test ideas and produce an integrated synthesis of improvement proposals could not be done in the full group – the information processing task was just too big. Accordingly, for much of the later design work a representative small group was formed, with the mandate to represent the interests of all participants and report back to them.

The emerging model corresponds closely to the 'blueprint' suggested in Table 1, but elaborated in a highly-customized way for the needs of a particular firm. Figure 1 illustrates the overall framework.

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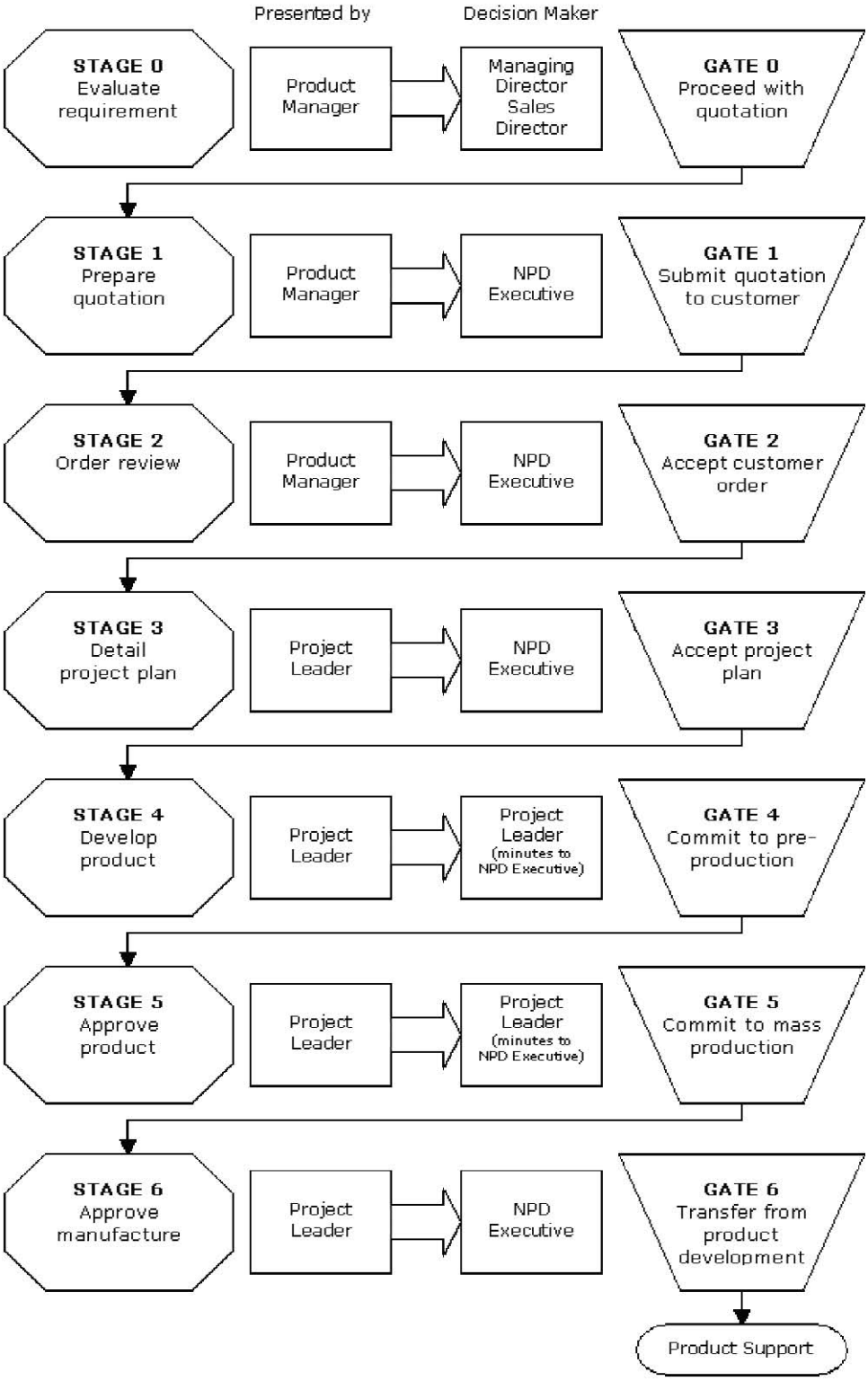


**Figure 1 NPD Process Overview**

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## Conclusions

The participative process of development of the NPD system for ABC surfaced six key design elements which add to our understanding of the behavioural preconditions needed for the successful implementation a new or upgraded process:

1. The need for a stage gate system, a shared understanding of the route through this and the criteria for 'go/no go' decisions at each stage. This provides a structure for the decision making elements in NPD and ensures that active decisions are taken when resource commitment decisions must be made.
2. The establishment of a New Product Executive (made up of relevant directors, meeting frequently and if necessary on an ad hoc basis), to make the formal approval decisions for progressing through the system. This elevates NPD to a senior level and ensures that commitment decisions are taken to support the strategic intent of the firm.
3. The identification of clear roles and responsibilities within the process, especially hand-over from product managers to project managers. This provides for the superior management of linkages – an incipient weak area in hierarchically-based organizations.
4. The need for balance between early involvement of downstream functions like production and fast-track decision making. This diminishes the burden of trying to communicate everything to everyone who could possibly be involved at all times.
5. The need for a multi-track system to cope with different kinds of new products, from simple variants on existing themes to completely radical new concepts. This provides inherent flexibility thereby reducing the risk that a demanding (and therefore costly) procedure is used for simple product enhancements which do not require an elaborate decision making process.
6. A shared understanding of the company's competitive strengths and its strategic focus. This enables NPD to be an implementation process rather than a divergent activity driven by internally-generated goals.

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