

# Managing product development collaborations

Making the most of partnerships

Product development is inherently a collaborative activity, involving both internal groups (e.g. Engineering, Marketing, Manufacturing, Sales & Service etc) and external partners (customers, technology suppliers, material/component suppliers, co-development partners, subcontractors, contract manufacturers, sales distributors etc). Partnerships for sales and distribution, and the outsourcing of some parts of production have been common for many years now, with product development and key production processes and final assembly typically kept in-house.

## External collaboration

Nowadays, few firms have all the skills and resources to develop technologically complex products entirely in-house. Increasingly, firms choose to concentrate on core technologies and opt to collaborate with others to gain access to complementary skills and resources. As more and more operations are outsourced, these firms are becoming increasingly virtual. Others have experienced downsizing and have little choice but to outsource a number of operations. This may now include design and development activities where the design responsibility for a part or subsystem is either shared or wholly delegated to a third party.



## Supplier management

Traditionally, supplier management has been a Purchasing responsibility with adversarial or price-based relationships the norm. Increasingly, supplier involvement or partnership is being sought in an attempt to improve the performance of the supply chain. Similar partnerships are emerging in the design chain with various forms of technological collaboration in the product design and development process. Thus design collaborations arise both from the sharing of design and development tasks, and from supplier development or early supplier involvement (ESI). The distinction between these two scenarios is becoming increasingly blurred, as many of the critical issues are common to both, including a more collaborative Engineering focus and a win:win logic.

## Improving collaborative capability

External collaboration is acknowledged to be difficult, but is increasingly being seen to be a fact of life and the capacity to collaborate successfully can be considered to confer competitive advantage. It has also been observed that alliances commonly fail because operating managers do not make them work, rather than for technical or contractual reasons.

## New Workbook

A new workbook developed by the Institute for Manufacturing aims to raise the awareness of collaboration issues and to provide support in improving the success of your product development collaborations. In common with the new ISO 9004:2000 standard, it takes a process approach to the topic of collaboration with a 4 level maturity grid of key activities, covering:

- Collaboration strategy
- Structured development process
- System design and task partitioning
- Partner selection
- Getting started
- Partnership management
- Partnership evolution

|  | Level 1                                 | Level 2                         | Level 3                        | Level 4                                  |
|--|---|---------------------------------|--------------------------------|--|
| <b>Collaboration Strategy</b><br><i>"Conscious choice between internal or external sources of design and development expertise"</i>      | (Not) Invented Here!                    | Occasional ad-hoc partnering    | Established partners           | Regular review of competences            |
| <b>Structured development process</b><br><i>"A clear and well documented process to deliver new products to market"</i>                  | No formal NPI process                   | A process exists but ...        | Process used and understood    | Continuous NPI improvement               |
| <b>System design &amp; Task Partitioning</b><br><i>"Design to enable separate development and facilitate integration of modules"</i>     | Interfaces not well defined             | Intuitively consider modularity | Formal configuration planning  | Conscious Simultaneous Design            |
| <b>Partner Selection</b><br><i>"Ensuring that partners have adequate capabilities and resources"</i>                                     | Cross fingers and hold breath           | Word of mouth                   | Review of technical capability | Broad assessment of capabilities         |
| <b>Getting Started</b><br><i>"Resources committed, with a clear definition of roles and responsibilities"</i>                            | But we've already started!              | Is this a good deal?            | Agreement in place             | All ground rules agreed and communicated |
| <b>Partnership management</b><br><i>"Well defined and effective communication paths, with regular and open reviews of progress"</i>      | 'I thought you were doing that'         | Managed but not championed      | Collaboration champions        | Frequent and open communication          |
| <b>Partnership development</b><br><i>"Building a climate of trust and confidence, with the development of a dependable relationship"</i> | 'I'll be glad when this project's over' | Better the devil you know ...   | Good working relationship      | On-going, mutually beneficial            |

## Process maturity

The concepts of process maturity and capability maturity are increasingly being applied to various aspects of product development, both as a means of assessment and as part of a framework for improvement. In this context, *maturity* refers to the degree to which collaboration activities and processes are defined and managed.

Maturity grids are a way of describing the characteristics of an activity at a number of different levels of performance for each of several key process areas. At the lowest level, the performance of an activity may be rather ad-hoc, or depend on the initiative of an individual, so that the outcome is unlikely to be predictable or reproducible. As the level increases, activities are performed more systematically and are well defined and managed. At the highest level, best practices are adopted where appropriate, and subject to a continuous improvement process (although Level 4 may not be ideal in absolutely *all* cases). For activities which are repeated across the company on different projects, it is likely that there will be some form of defined process, the primary purpose of which is to ensure consistency of approach and outcome. One way to look at maturity levels is in respect of such processes. Is there a

process at all? If so, is it effective? Are people aware of it or is it ignored? Is the process itself seen as a potential source of competitive advantage, subject to periodic review and improvement? Most companies will have some form of documented NPD process for ISO 9000 purposes, but it is quite likely that issues specific to collaborative development are not explicitly covered.

## About the Workbook

The workbook helps companies to review their approach to collaborative development and provides support for those with little or no experience in managing

collaborative projects. Two primary tools are provided. A *Collaboration Maturity Audit* provides a framework for self-assessment and discussion by describing good practice (and not-so-good practice) at each of four maturity levels for seven key collaborative process areas: collaboration strategy, structured development process, system design & task partitioning, partner selection, partnership formation, partnership management and partnership development. A *Collaboration Life-cycle Analysis* tool facilitates the planning or review of a specific collaborative project by supporting a structured walkthrough to identify critical issues which might have an adverse effect on the project if not specifically managed. The workbook also contains some useful background material and a collaboration checklist of 25 key points to consider when embarking on a collaborative project.

If the capacity to collaborate is not already one of your core competences, maybe it's time to start thinking about it!

## Further information

Copies of the workbook are available from the Institute for Manufacturing.

email: [pvf20@eng.cam.ac.uk](mailto:pvf20@eng.cam.ac.uk)

## COLLABORATION STRATEGY

*"Conscious choice between internal or external sources of design and development expertise"*

### Discussion questions:

How effectively are core technological competences identified and developed?

What processes exist for identifying external sources of expertise?

### Ideally:

There is a conscious identification of those areas of technological expertise in which investment tends to be concentrated. These are referred to as *core technological competences* and are actively developed.

Processes exist for identifying external sources of expertise and these may be used to gain access to complementary expertise.

|  |                               |
|--|-------------------------------|
| <b>Level 4</b>   | Regular review of competences |
| <ul style="list-style-type: none"> <li>Investment in core technological competences</li> <li>Strategic partnering</li> <li>Capability is extended with most appropriate external resource</li> <li>External resource integrated into core team</li> </ul>  |                               |
| <b>Level 3</b>   | Established partners          |
| <ul style="list-style-type: none"> <li>Some long term partners, but not strategically managed</li> <li>Long term relationships with specific design service providers</li> <li>External design involvement is planned into the project early</li> <li>Internal skill shortages clearly recognised</li> </ul> |                               |
| <b>Level 2</b>   | Occasional ad-hoc partnering  |
| <ul style="list-style-type: none"> <li>Inconsistent use of design specialists</li> <li>No agreed firm policy</li> <li>Industrial design used late to 'tart up' pre-determined mechanics</li> </ul>   |                               |
| <b>Level 1</b>   | (Not) Invented Here!          |
| <ul style="list-style-type: none"> <li>Do most things in-house regardless of capability</li> <li>Tasks not always done by specialists</li> <li>Prone to NIH syndrome (not invented here)</li> </ul>  |                               |