3. Reasons for research

It is clear from the memorandum by Stine that research serves more than one function. In another early study on basic research in industry, Berthold (1968, pp. 175 et seq.) collects quotations from U.S. and German research managers who stress the importance of keeping pace with their scientific environment and to make good use of its results, on top of developing innovative ideas. Nokia AB describes ten functions for Nokia Central Research:

"Explore and develop

1. new technologies and their innovative applications and solutions for products,
2. new system and product concepts based on new or emerging technologies, including those falling between/outside the scope of current business units,
3. international patent rights and inputs to key standardization activities,
4. methods, tools and process know-how for enhancing the speed, productivity and manageability of the business units' products / processes,
5. key 'next best' alternatives and 'second opinions'.
6. Offer business units' product development subcontracting and consultancy by providing means for technology transfer, leverage competencies in critical product development tasks, being a vehicle for interaction that builds mutual understanding and trust.
7. Provide an environment for the exploration of new business opportunities (including those falling outside the scope of current business units).
8. Present insight and learning on new technologies for the business units.
9. Provide skilled personnel to business units' R&D-units."
10. Manage Nokia's interface to international R&D cooperations.*

This is a very demanding list, and it raises the question of the degree to which it might be considered generic. Therefore, attempts were made to identify these functions more systematically. Members of a working group of the European Industrial Research Management Association pointed to six reasons for performing basic research in industry:

1. It leads to new developments,
2. It helps in understanding of processes and products,
3. It is necessary to remain informed,
4. It maintains scientific and technological standards,
5. It motivates researchers,

This list reflects the ranking order of importance of the items. Item 4 may have two different meanings: here, it is interpreted as firms being enabled by their basic research to conform better to standards that may be set by "society" and that are communicated and perhaps even multiplied by the media. This is the only item in the list that was not addressed in the empirical studies that follow. The long lead times of basic research will most likely reduce its applicability in presenting quick solutions to problems that might be voiced by society and media. At Alcoa, the rationale for establishing the first research laboratory was "the need for an independent technical authority to set corporate product and process standards and to mediate in the increasingly acrimonious disputes between the different Alcoa works over the quality of the materials that passed between them" (Graham, Pruitt, 1995, pp. 73, 101).

The ten functions presented in Figure 4 were identified on the basis of case research (Rosenbloom, Kantrow, 1982).

On the one hand, it is interesting to note that some functions, particularly those providing corporate services, do not follow from the specific characteristics of research as identified above. The question remains, whether further functions might be identified. On the other hand, some other functions following from the characteristics outlined above remain unmentioned. Furthermore, no information is available as to the importance of these functions, except scattered evidence collected in a limited number of interviews.

* From interviews, June 6, 1995.