Business Case - Galileo

Request to move from pre-feasibility to feasibility.

Historical summary for this point

Basic concepts:

> An idea raised by ███████ May 1994.
> Discussions with ██████████████, Product Managers and other Sales and Marketing staff June 1994.
> Request for pre-feasibility to ████████ June 1994.
> Initial pre-feasibility work conducted by ████████████████████ ████ and further assistance from ██████.

Introduction:

Galileo seeks to produce a set of products based on questioning some of the key assumptions that have driven our product development strategy today and by exploiting our traditional strengths with our technology and by harnessing new technologies to attack and market that which has come into and out of flavour over time, i.e. that of the enthusiasts market.

Current Position:

The ability for Acorn Computers to produce a single uniprocessor based desktop computer, using ARM technology that is competitive with an Intel or Power PC based computer in performance terms, is increasingly being negated as a function of time. Our current high-end product is disadvantaged by a factor of three times when compared to that of the Pentium based machine, on integer performance and by orders of magnitude on floating point performance.

It is clear with the arrival of Chicago from Microsoft (Windows 4) that any major ease of use/functional features that RISC OS has currently will be negated by this. The seamless integration of the networking applications into the Chicago environment also negates further any competitive advantages we may have had.

Therefore a product development strategy based upon RISC OS and single ARM processors as a viable means of producing a long-term revenue stream for Acorn is implausible and will eventually result in a step change function where our revenue stream will rapidly disappear over a short period of time. (Copyright: Burroughs, Nixdorf, Honeywell, etc. in terms of moves from proprietary to open systems).

There are a number of strategies, one of which we have been pursuing to date which is to employ increasing innovation and more sophisticated presentation and marketing techniques to overcome the various limitations and Risc PC is our finest manifestation of this approach. Unfortunately, it is largely a defensive strategy and in the fullness of time must be seen as that. Today all Acorn RISC OS ARM product development strategies have been based on that key set of assumptions. Galileo seeks to challenge the current orthodoxy by focussing on a market that we know has almost a negative reaction to the mass situation as personified by Microsoft and Intel that of the enthusiast. We know from our Risc PC launch reaction that intellectually exciting technical products do stimulate a positive reaction of the enthusiast. To this end, Galileo seeks to produce an intellectually stimulating product, who has enthusiasts on a world-wide basis - its key market.

Market Requirement Statement

The market requirement calls for an intellectually, stimulating, technologically innovative product, that contains a significant number of the contemporary buzz words that enthusiasts aspire to.

From the hardware viewpoint there are a number of things that are seen as stimulating. Homogeneous/ heterogeneous multiprocessing with the ability to have up to 32 processors would be very desirable. The ability to interface existing PCI expansion cards and to use PCI chip sets for motherboard specific environments, such as disc access and networking, would be useful. Cheap, redundant disc arrays, using ID disc drives, would optimise the performance of the system. A modular case construction that uses at least the principals and philosophy of Risc PC's case design, if not the absolute existing mouldings, would prove to be very powerful and a very high performance video system, capable of producing both 1600 x 1200 desktops in 32 bits of colour and also capable of rendering 1 million polygons per second in drawing terms, would also be a very powerful selling feature.

From an operating system viewpoint the relevant buzz words are things such as, pre-emptive multitasking, micro kernel based. One of the key questions is a "chicken and egg" one of what does one use all this processing power for? Also traditional applications do not lend themselves to multiprocessor type approaches. To this end a radically new user interface is required and the "ROOMS" paradigm is the one that is suggested that we pursue further, where inside the 2D display of the CRT, the user sees a 3D representation of the real world, with the concept of rooms with furniture on them, and on for example, the desktop a computer can be physically siting and on the screen of the computer can be seen a normal 2D desktop and in this way RISC OS and Windows applications and similar types of applications can be despatched and executed from within this paradigm. One of the previous restrictions that has caused the development effort to become unrealistic has been the insistence on a 100% compatibility. In this design we are seeking that only some 80% of applications will run and that will be via a despatcher that will run a 2D RISC OS desktop within this 3D environment. Applications would have to be written in the native code or native compilers of the system, to be able to harness the full capabilities of the system.

Another key market requirement is that this machine must attempt to be seen to have the personality of the "religion" of the relevant enthusiast. We know from our initial research that enthusiasts are clustered around key beliefs be they, Power PC, Intel, ARM, Spark, MIPS etc. To this end the machine must be capable, both from a presentation viewpoint and an engineering viewpoint, to be seen as primarily the favoured host of the key religion. To this end it is suggested that, for example, an ARM 800 is soldered on to the motherboard which would be marketed as an ARM main CPU for Acorn fans but would be described simply as a system controller for other religions and in slot one of the configuration would be the processor of the preferred religion.

Target Markets for Galileo

The market opportunities for Galileo are split into three discrete camps, at least.

1.   **Enthusiasts (within this, Acorn enthusiasts)**

        It would almost be certain that a very large percentage of all Acorn enthusiasts would migrate to this product very rapidly, due to its sex and violence. It is estimated that 4/5,000 units per year minimum would accrue from this market opportunity area. From the worldwide enthusiast base, defined as those that frequently use Internet and have home computers in the £1200/1500 upwards bracket, there are 500,000 possible customers and it is estimated that something like 5% to 10% of these per year could be attracted to this design. Therefore this gives us 25/50,000 units per year from the worldwide enthusiasts market.

2. **Games developers and arcade machine providers**

This market is smaller in volume but requires very compute intensive systems and is estimated that we could sell 3,000 per year to this market.

3. **Traditional UK education buyers**

It is estimated that a percentage of the existing Acorn education would buy this machine because of its innovative and high performance capabilities. This would not equal the volumes that we have traditionally extracted from this market but could form a business of 3,000 units per year. In addition, in both tertiary education and in computer studies the innovative techniques deployed in this computer would find themselves very attracted for the use of IT. This market would form 1,000 units per year.

4. **System integration**

It is proposed that Sales and Marketing uses aggressive sales people to identify major vendors of the type such as McDonald Douglas for major system integration opportunities which are unpredictable but could be of a project size of 500 - 5000 units.

Product Development Plan

The hardware product development plan would be relevantly straight forward in terms of base motherboard design and the ARM related developments. The development of alien processors to use in the design would need to be looked at as part of the feasibility but it is possible that various OEM organisations could be sub-contracted/encouraged to developed those particular pieces.

The software development is a major development area and the project management and integration of that represents a major challenge for the project. ███████'s project will need to clearly identify the development process. A key part of the assumptions are that the product will be pre-announced and previewed and developer kits for both "proper' developers and enthusiasts will be developed using Risc PCs, with additional second processor hardware. In this way the market will be seeded and applications will be developed, ahead of the arrival of the actual final platform. This also represents a significant revenue opportunity, potentially in its own right.

Key Dates

Given the approval of the Board to proceed to feasibility, we would then start to communicate the Galileo project with almost immediate effect with the first public showing of some of the concepts at Acorn World. We need to this for a number of reasons:

1. To start software developers thinking about developing application products

2. By communicating this strategy it gives greater faith to the existing customer base to carry on their purchasing decisions with Risc PCs because of the future development plan seems assured for Acorn proprietary systems.