Katahdin Consulting

Business Plan

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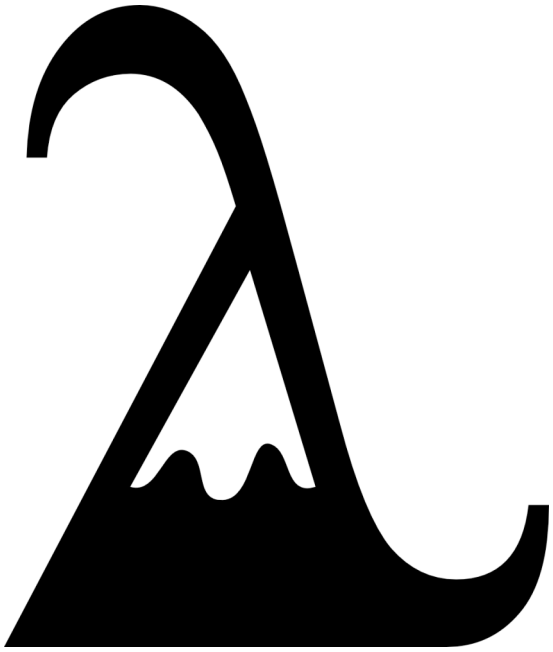

Executive Summary

Technology

Katahdin is a single runtime that allows developers to use multiple programming languages in the same program, the same file, even the same function. Instead of a different runtime for each language, *Katahdin* uses loadable language definition modules. Users can modify language definitions to add new constructs, such as operators or statements, as easily as they define new functions and classes. New language definitions can be created to allow *Katahdin* to run programs written in an existing language, or new languages can be designed from scratch.

Katahdin is a unique application of recent research into parsing theory, developed as the master's thesis of University of Bristol student Chris Seaton. A paper describing the theory behind *Katahdin* has been submitted for publication at the 2007 *Generative Programming and Component Engineering* conference.

Business Model

Using *Katahdin* lowers development costs:

- Only one runtime needs to be maintained and supported
- You can use any language for any part of the program
- Code can be reused between different languages
- Domain-specific languages can be developed as easily as writing a function library

Katahdin Consulting is the business that will be established to use this technology to lower development and maintenance costs to businesses. *Katahdin* is particularly well suited to solving problems involving:

- Legacy systems that are dependent on old or unsupported runtimes, or that don't run on modern hardware
- Programs written in languages where developers are hard to find or expensive to hire
- Systems that are written in domain-specific or obsolete languages

The *Katahdin* technology will be released as open source software and promoted as a community project to gain exposure to developers. We will encourage users to form a community to share language definitions. *Katahdin Consulting* will sell consulting services for users of *Katahdin*, and for general software systems consulting where we will apply *Katahdin*.

Opportunity

Katahdin Consulting needs an investment of **£175,000** to support operations until we are profitable, which is anticipated to be at the start of the second year. **£75,000** is needed to continue development of *Katahdin* in the first six months and establish the business. A further **£100,000** is needed in the sixth month as we start to hire employees and take on our first clients. Separate investors could fund at each stage, each receiving a share in the company.

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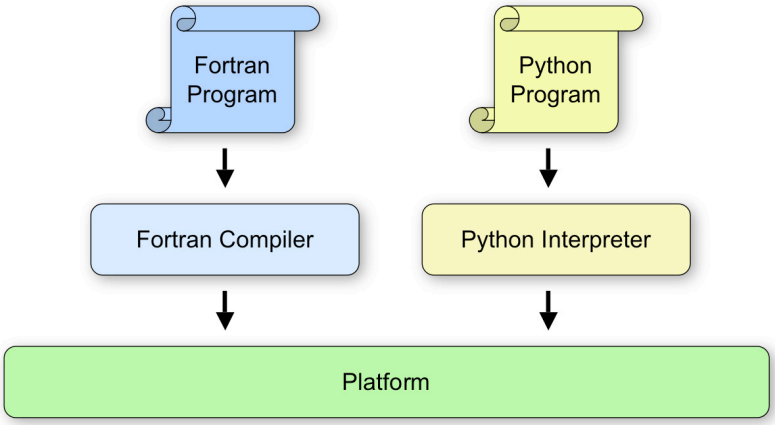
Technology

Traditional Development Tools

Software programs are written as source code text in a programming language. The program source code has to be translated before it can be run. Sometimes the developer does this, when the tool is called a compiler, or the user does it, when the tool is called an interpreter. I use the informal term runtime to refer to compilers, interpreters, and other related development tools, as they are all tools to run a program.

With a traditional development tools, you need a different runtime tool for each language that you use. If you want your programs to work together, you have to find a combination of runtimes that all work on the same platform. It is generally very hard to make programs written in different languages to communicate because the runtimes are all designed differently. Generally the only solution is to set up IO channels to pass data between the programs.

For example, if a business is using the *FORTRAN* scientific language, and the *Python* general-purpose language, they have to install, maintain and use separate runtimes for each. It is very hard to make the two programs written in different languages interoperate:



The runtime that you choose further restricts other choices. The *Microsoft Visual Basic* runtime is only available for *Windows* platforms, so if you choose to develop one part of your system in *Visual Basic* you are restricted to using only runtimes that are available for *Windows*, or else to set up complicated cross platform communication.

If the language you use on a project was specially developed for your business, the runtime that you have is the only one available. If you wanted to use your software on a different platform such as a different type of computer, you would have to bear the cost of porting the entire runtime.

Katahdin's Approach

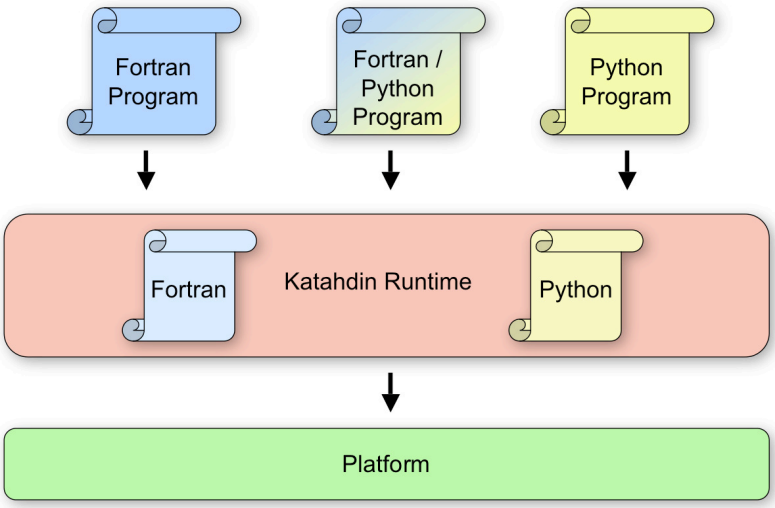
Traditional runtimes accept a fixed language according to a data structure known as the language grammar. In *Katahdin* the grammar is a mutable, or changeable, data structure. The grammar can be modified to be the grammar of any programming language that you want. Modifications to the grammar are stored in language definition modules, which are written very much like traditional function libraries. *Katahdin* can run any language you provide a definition module for.

The standard library will include definition modules for many popular languages, with users free to develop and share new modules. Even a developer untrained in language development should be able to write a module.

With the modules, *Katahdin* becomes a single runtime that can run any language. With all your programs running together, they can easily share data. For example, if a *FORTRAN* program defines a function, your *Python* program will be able to call it as if it were defined in *Python* code.

As language definitions are data structures in *Katahdin*, they can be manipulated at runtime. *Katahdin* can compose two or more language definitions to enable you to use more than one language in the same program, the same file, even the function.

For example, if the business in the example on the previous page switched to *Katahdin* they would use only the *Katahdin* runtime. *Katahdin* would use the appropriate language definition module for each program. If the business wanted to use both *FORTRAN* and *Python* in a single program, *Katahdin* would use both language modules, composing them:



Developers already want to do this: *SQL* statements are often embedded in programs written in other languages by writing them in string constants. In *Katahdin* you can compose the *SQL* language definition with the language that you are using and use *SQL* statements as if they were part of your language. Errors such as *SQL* injection, or poisoning, attacks are eliminated because the user is no longer clumsily forming *SQL* query strings using user input.

Katahdin is developed on top of *Novell Mono*, an open source implementation of the *Microsoft .NET* platform. It is developed on the *Mac OS X* and *Linux* operating systems, but should also run on

Microsoft Windows and could very easily be ported to run to on top of the *Sun Java* platform or a platform built from scratch. With these three ports of the *Katahdin* runtime we could target any operating system or device.

Current Status

Katahdin has been in development since summer 2006. Two prototypes were developed to explore how the theory could be applied. A working implementation has now been created that will continue to be developed to production quality. *Katahdin* is ready to be demonstrated to a technical audience today.

The current focus of development is error handling, optimising performance and developing language definition modules for existing languages. Proof-of-concept language definitions for *FORTRAN* and *Python* are part of the *Katahdin* standard library. We hope to extend this to include *Java*, *COBOL*, *Visual Basic* and other such languages common in the industry.

Business Strategy

Katahdin Consulting will use the *Katahdin* technology to provide business consulting and software development services. As the *Katahdin* technology will take time to mature, in our first year of operation we will take on general clients and provide solutions using traditional development tools. By the second year, *Katahdin* will be ready for production use in clients' projects.

Almost all language runtimes are freely available, with the developers' business model being to sell related tools, support and training. Charging for licenses for *Katahdin* would therefore be counterproductive. *Katahdin* will be available for free and under an open source / free software license. It is our strategy to encourage a community of users to use *Katahdin* on their own and to share language modules.

As *Katahdin* becomes better known in the industry we anticipate users coming to us specifically for services related to *Katahdin* instead of general consulting. We would market and promote *Katahdin* to businesses and developers as a standard general-purpose development tool. *Katahdin Consulting* would be uniquely placed to provide this support.

Timeline

Business strategy timeline

Year 1	• Continue development of technology • Based in *SETSquared Business Accelerator*, Bristol for first six months • Move into rented business premises in third quarter • Hire two developers, community and business managers • Total staff of five • Establish website and community • Take on first general clients in third quarter • Revenue £64,000
Year 2	• Hire four more developers, another business manager, receptionist • Total staff of ten – director, six developers, community manager and two business managers • Take on more general clients • Start to use Katahdin on clients' projects • Continue development of technology • Revenue £792,000

Year 3	• Hire two more developers, another business manager • Total staff of thirteen – director, eight developers, community manager and three business managers • Start consulting for businesses that are using *Katahdin* in their own projects • Continue development of technology • Revenue £1,368,000
Year 4	• Continue growth in staff and clients • Concentrate on supporting *Katahdin* and marketing it to the whole industry
Year 5	• Continue growth in staff and clients • Start to consider new directions in language and systems technology
Long Term	• Continue to grow • Continue to use technology to gain a business advantage in the IT industry

Services

Software Consulting

Software consulting is providing skills to businesses that do not have them within their own resources. Advising on the choice of systems, their installation and management are all examples of software consultancy services. *Katahdin* is a unique solution to the problems of:

- Systems integration
- Unsupported languages and runtimes

For example businesses may come to us for advice on:

- How to integrate old applications with new
- How to run old systems on new hardware or software platforms
- How to update unsupported development tools

When *Katahdin* is ready for production use our consulting developers will help businesses use *Katahdin* to solve these problems, until then we can advise on the use of traditional development tools.

Bespoke Software Development

Bespoke software development is developing a software system specifically for one business's purposes. Client's requirements are established by a systems analyst, in our case the consulting developers. *Katahdin* would make us competitive in software development for:

- New software that has to work with legacy systems
- Domain-specific languages
- General purpose application development on the desktop, server and embedded devices

We would particularly focus on developing domain specific languages, which are heavily used by many industries including:

- Hardware development and testing (for example, *VHDL* and *Verilog* hardware description languages)
- Financial systems (for example, the *RISLA* interest rate language used by bank *Fortis MeesPierson*)
- Graphics software (for example, the *MEL* scripting language built into the *Maya* modelling tool)

Before *Katahdin* is ready for production use, in the first year or so, we will provide the same bespoke software development services using traditional development tools.

Katahdin Support

With *Katahdin* available freely from our website and a community of users providing language modules and informal support, businesses will be able to experiment with *Katahdin* on their own. As we are confident in the power and value of the software to businesses, we anticipate that they will start to use *Katahdin* in their systems. At this point *Katahdin Consulting* can start to offer support to *Katahdin*. This would include:

- Advising on the use of *Katahdin*
- Fixing bugs in *Katahdin*
- Porting *Katahdin* to new platforms
- Preparing *Katahdin* for certification for security criteria such as *ISO Common Criteria*, as required by some businesses and government users

Fees

£100 an hour is the minimum that would be charged to businesses for these kind services. The government will not pay more than about £50 for the same services. All consultants charge different rates depending on the client and the job and so do not publish fees, and instead give a quote after meeting with the client.

As our business model is that we can provide the same technology at a lower cost employing our technology, our fees are set to the lower end of the range that we could charge. Each client would be quoted an individually determined figure, but the fee used in the financial projections is an average of **£100 an hour in the first year**, rising to **£150 an hour in the second year and third years**, for each hour of consulting developer's time. We can charge a higher fee as we become larger and more experienced, and have businesses specifically requesting our services when *Katahdin* becomes well known.

If we have a longer contract with a business, the fee can be set for a time span of a week, a month or other time period, with us estimating how many developer hours it will take us to complete the project.

The security of such engagements means that we can charge a lower hourly rate. Shorter engagements are charged at a higher rate, so if a developer were required literally for a single hour, the fee would be well above £100. The hourly rates set above are a conservative average for the range of contracts.

Staff

Chris Seaton will function as director of the company, concentrating on development of *Katahdin* and business direction. He will recruit other members of staff for the first couple of years.

The business manager will interface with clients and administrate the business. They should have the experience in business necessarily to present a professional face and conduct negotiations for the business. The consulting developers will work as systems analysts and developers. They will meet with clients and develop solutions for their needs. Consulting developers work on projects in groups of varying size, depending on the projects, and possibly on more than one project at a time. Clients are charged an hourly rate for each consulting developer working on their project.

The community manager will develop the web site and head the effort to build a community. They will also deal with marketing. The receptionist will be hired when we have permanent office space and are dealing with clients in the second year.

Beyond staff salaries and national insurance contributions, we have budgeted a further £5,000 pa for each member of staff to cover other expenses such as recruitment, training, maternity and paternity leave and so on.

Staff positions, salaries and requirements

Director	• Development of *Katahdin* • Developer training • Business direction • £35,000 pa (£20,000 pa in the first two quarters)
Consulting Developer	• Systems analysis and development of clients' projects • Development of *Katahdin* • Training of junior developers • Should be graduates or developers with industry experience • £40,000 – £45,000 pa depending on experience (financial projections based on average of £42,500)

Community Manager	• Web site development • Community relations • Should have experience of the open source community • Should have experience of creating and administrating a website, technical writing, basic graphic design and good business skills • £35,000 pa
Business Manager	• Client relations • Business administration • Should have both business and technical skills, such as computer science graduate who has complete a business masters • Should be experienced • £45,000 pa
Receptionist	• Minor business administration • Client relations • Need not have technical or formal business skills • £18,000 pa

Recruitment

Recruitment efforts will initially be targeted at computer science or other technical degree graduates at local universities. As we become established we will hire developers experienced in consulting for industries from where we are finding business. Our developer salary is very competitive and we hope to attract energetic graduates excited about working on a new technology. The salary for developers is variable so that we can spend more on attracting people that we really want. With our relatively large team of developers early on we will be able to hire developers with a range of skills who can work together to build a technically strong team.

The business manager needs technical as well as business skills to thoroughly understand what our company does but should have some kind of business training such as a business graduate degree or genuine experience in a business role. The community manager will be developing a website and so will also need technical skills.

Premises

Start Up Phase

In the first six months of operation where the director is the only employee, we hope to be based at *SETSquared Business Acceleration*. With an existing relationship to the *University of Bristol* where Chris Seaton is finishing his master's degree, *SETSquared* is designed to accommodate businesses in their start up phase, providing a workstation and business facilities such as a reception and telecommunications. *SETSquared* allows a business to present a professional front, which would be essential for recruiting.

Facilities for a single employee in *SETSquared* are charged at **£100** a month. We would be based there for six months before we hire the first developers and managers, and move into rented office space.

Operational Phase

As a consulting business, *Katahdin Consulting* will need professional premises for developers to work and meet with clients. Hired private office space is essential for meeting with clients – a virtual office, developers working from home, or space in a shared office would not be appropriate. We would hire a receptionist to welcome clients and always be available to answer telephones.

Location

Although in the start up phase the business would be based in Bristol with *SETSquared*, it would be possible to move location before the first employees are hired. Other cities to consider establishing in are London, the capital and business centre of the country, and Oxford and Cambridge with their large and varied community of high technology businesses.

The amounts quoted for office space includes utilities such as water, energy and cleaning.

Bristol

- Office space £30 ft^2 pa (£81,000 2nd year total)
- Lots of big, high technology companies
- Can recruit from Bristol and Bath universities, including university graduates the director already knows
- Links with university and *SETSquared*
- Doesn't require moving after first six months

London

- Office space £60 ft^2 pa (£162,000 2nd year total)
- Highest number and variety of clients
- Extremely high cost of living – will have to pay developers more
- Can recruit from whole country – graduates expect to move to London
- No contacts in London

Cambridge

- Office space £20 ft^2 pa (£54,000 2nd year total)
- Can recruit from Cambridge and Anglia Ruskin universities
- Lots of big, high technology companies, but also smaller start-ups
- No contacts in Cambridge

Oxford

- Office space £20 ft^2 pa (£54,000 2nd year total)
- Can recruit from Oxford university

- Like Cambridge, lots of big, high technology companies but also smaller start-ups
- No contacts in Oxford

I think the most practical option is to base the company in **Bristol** for at least the first few years. Cambridge and Oxford offer similar advantages to Bristol, but the business will have no contacts there. London has an extremely high cost of living that will make recruitment harder based on the salaries we are offering.

Space

Estimates for the amount of office space needed run as follows:

- Office space for each employee – 150ft^2
- Meeting room suitable for 10 people – 300ft^2
- Reception space – 300ft^2
- Communal space for staff kitchen, rest areas – 400ft^2
- Space for servers and general storage – 200ft^2

We will move offices every year as our developer base increases. Although moving costs time and energy, renting wasted space would be too expensive in the first few years.

Office space required each year

Year 1	Year 2	Year 3
1,950ft^2	2,700ft^2	3,450ft^2

Marketing

Katahdin Consulting will approach marketing from two angles – a community of *Katahdin* users built around a website and advertising in industry publications.

Community Website

The *Katahdin* technology community website will be distinct from the *Katahdin Consulting* business site. The website will fill several functions:

- Distribute *Katahdin* software
- Access online documentation
- Access to our version control and bug tracking systems
- A *SourceForge* style system for developing and sharing language modules
- A forum and mailing list
- Links to *Katahdin Consulting's* commercial website

This separate technology community and business website is similar to the setup used by companies such as *MySQL AB*, *Red Hat Inc.*, and *Novell*.

Advertising

The community website makes it easy for people interested in *Katahdin* to find out more, download the software and contact our business. To reach beyond people who hear about us from 'word of mouth' methods such as seeing another project using *Katahdin*, messages on web logs and so on, we need a way to introduce *Katahdin* to the industry.

We will take out advertisements in industry print magazines and newspapers.

Advertising rate in industry publications

Title	PC Pro	Computer Weekly	IT Week	Computing
Circulation	90,000 monthly	138,000 weekly	52,000 weekly	100,000 weekly
Full-page	£4,425	£7,140	£4,895	£6,995
¼-page		£3,120	£2,195	£3,135

I have budgeted **£18,000** each quarter for industry publications advertising. This could be spent on six quarter-page adverts in weekly newspapers; two or three full-page adverts in weekly newspapers, or four monthly full-page adverts in an industry magazine. We can spread the budget between all of these options over time, perhaps spending some of it on recruitment advertising. The community manager would produce the advertising copy and design.

Software Licensing

The *Katahdin* software will be released for no charge under a Berkley Software Distribution (BSD) style license, as used by the University of California, Berkeley and industry leading software projects such as *Apache* and *PostgreSQL*.

As open source software, *Katahdin* will attract students and developers, who can learn to use *Katahdin* without any financial support. Users will be encouraged to participate in development of *Katahdin* and to share language definitions through a community website.

Businesses see a lower total cost of ownership in open source software:

- Zero licensing cost
- Time saved from purchasing licenses and checking compliance
- No dependence on a single vendor

There are many other reasons why an open source license is appropriate for *Katahdin*:

- Most industry leading development tools are open source, such as the *GNU Compiler Collection*, *Sun Java* and *Python*.
- Many leading development tools that aren't open source are available free of charge, such as *Microsoft Visual Studio*

- *Katahdin Consulting's* asset is our expertise with the *Katahdin* software, not the software itself
- *Katahdin* has been developed using other open source software
- Proprietary software is pirated despite restrictive licenses, even by businesses

Open Source Case Studies

Red Hat, Inc.

Red Hat sells support, training and consulting services, all based around the *Red Hat Enterprise Linux* operating system. The software is all open source and freely available. *Red Hat* employees contribute to the development of the software and sponsor a community of unpaid developers.

Red Hat employs 2000 people world wide, and in 2006 had revenue of over $278 million[i] (£140 million).

MySQL AB

MySQL AB develops an open source database system. The software is freely available, which has made it one of the most popular database systems, as part of the *LAMP* stack, with 5 million installations. *MySQL AB* sells support, training and consulting services generating revenue of $40 million[ii] (£20 million).

Market Evaluation

IT Consulting Market

The UK IT consulting industry is worth almost a billion pounds[iii] each year. As every medium or large organisation now depends on IT for normal operation, the clients of the consulting industry include organisations from every part of the public and private sectors.

IT consulting is often integrated with management consulting and general business and professional services. The largest consulting firms operating in the UK, including *LogicaCMG* and *PricewaterhouseCoopers*, all offer some form of IT services. Other firms focused on IT offer off the shelf business software and consult for its use in the business and customisation, a form of bespoke software development. Examples of these businesses include *SAP* and *Oracle*.

Developer Tools Market

Almost all mainstream language runtimes are freely available. The *GNU Compiler Collection*, *Sun Java* and *Microsoft Visual Studio*[iv] and *Python* are all freely available and cover a lot of general-purpose development needs. All of those are also open source / free software, apart from *Visual Studio*.

Some more specific runtimes are charged for. For example, the *Intel FORTRAN* compiler starts at $699 (£353). It promises higher performance on *Intel* hardware, as they understand the platform better than anyone else. The *Intel* compiler would only be used by businesses with very specific requirements for performance.

As our technology is a general-purpose runtime, *Katahdin Consulting* will fit into the market with the same approach as *Sun* and *Microsoft* – producing a developer tool that we will release for free, and using it to supply other business services.

Businesses with freely available developer tools and their business models

Business	Freely available runtime	Business Model
Sun Microsystems	*Java*	Other products built on *Java*, commercial support
Microsoft	*Visual C++*, *Basic*, *C#*	Encourage developers for their operating system, commercial support
Katahdin Consulting	*Katahdin*	Other services using *Katahdin*, commercial support

Strengths, Weaknesses, Opportunities and Threats

Summary of strengths, weaknesses, opportunities and threats

Strengths	Opportunities
• Targets users of any combination of language and platform • Can adapt very quickly to new language developments • Unique technology	• Industry shift to managed runtimes • Increase in mobile and embedded devices requiring ported runtimes • Increase in offshore software development
Weaknesses	**Threats**
• Technology is not ready for use yet • Any consulting business could use *Katahdin* as we are • Inexperience	• Unable to support languages covered by patents • Compilers targeting *Java* or *.NET* • *Microsoft's* dynamic language runtime

Strengths

Katahdin Consulting can **target clients using any combination of languages and platforms**. We aim to build a library of language modules, and where a new language is required for a client's project it is an investment for us to develop the new module.

Katahdin uses a modular language definition technology, so we **can adapt very quickly to any new language developments**. For example, version 1.5 of *Sun Java* included a new *for-each* construct. If developers wanted to use it they had to get their system administrators had to upgrade the installed *Java* compilers and runtimes. With *Katahdin*, the feature could be implemented in a new module and distributed to users to include in their libraries, with no update of the *Katahdin* runtime. Where language developments are published before software release, as with *Java*, we can release our modules at the same time or before the original vendor.

Katahdin is a **unique application of recent and very active research**. There are no other products that give you the same power as *Katahdin*. The only comparable technologies are static systems, intended as developer tools for creating new languages that are then shipped as yet another stand-alone runtime. The dynamic language runtime from *Microsoft*, described below, could threaten this.

Opportunities

The **software development industry is generally shifting towards managed runtimes**. That is, runtimes which are halfway between an interpreter and a compiler, executing an intermediate form of the program. This is as opposed to unmanaged runtimes such as *C* compilers where the program is translated to lowest level machine instructions for execution by the hardware. *Katahdin* is a managed runtime and before the very widespread adoption of *Java* and *.NET* this would have been a barrier due to perceptions about suitability for enterprise and production software.

There is an **increase in mobile and embedded devices that use hardware different from that used in servers and desktops, and will require language runtimes to be ported**. The typical solution to this problem is to write software from scratch in a language such as *C* or *Java*, languages which are generally available on these devices. *Katahdin* would allow developers to use any language that they would on the desktop, in their embedded device. *Katahdin Consulting* can make a service of porting the *Katahdin* runtime for new hardware platforms.

There is an **increase in offshore software development**, where development is outsourced to countries such as China, Russia and India. These offshore companies have to deal with lots of different languages as all programs that they work on are sent from other businesses. *Katahdin* makes it easier to develop a system in multiple languages so an offshore developer could easily work on projects designed to run on any runtime or system without worrying about managing lots of different software, reducing their costs. With this opportunity, we have to potential to take *Katahdin Consulting* to the rest of the world.

Weaknesses

Although working and demonstrable, the *Katahdin* **technology is not ready for enterprise or production use yet**. It will take another six months before the technology could be used use in a production system and it will take more time for a large library of language modules to be developed. We approach this problem by starting to take on clients, producing solutions for them using traditional development tools until *Katahdin* is ready.

As the ***Katahdin* software will be freely available, any consulting business could use it as we are**. This would reduce our advantage in bespoke software development. Other consultants could also provide bug fixing, porting and support services for *Katahdin*. We are not worried about these two weaknesses in our model because we have intricate knowledge of the software and will always be able to offer an authority on its use. If *Katahdin* becomes very popular it is possible that people will offer their own support services, as are available for the *GNU Compiler Collection*, but within a five year timeframe we can't see this weakness being realised.

A lot of consultants are experienced in the industry and part of their service is employing this experience for your business. As a new business with new technology, lead by a graduate director, **we will be seen as inexperienced**. Some potential clients may dismiss us because of our unproven technology and no projects in our portfolio in the first year. We will challenge this by hiring a proportion of more experienced developers. The IT industry is used to new face and we don't think this weakness will affect us after we become an established business.

Threats

We would be **unable to write definition modules for languages where the design, or the only reasonable implementation, has been patented**. Most general-purpose programming languages are open standards. Widely used languages including *C*, *C++*, *FORTRAN* and *COBOL* are all covered by *ANSI* or *ISO* standards. Even modern languages developed by a single vendor such as *Java* and *C#* are documented by freely available and royalty-free standards. This is a low threat, but could prevent us from implementing some very specific, little-used languages.

The ***Java* and *.NET* runtime systems have an increasing number of compilers that target them**. These are traditional, static compilers and not language modules that can be extended, composed or modified. However, they do allow you to write a library in one language that is to be consumed by a separately written program. For example, it is already possible to use *Java*, *FORTRAN* and *Python* all running on the *.NET* platform. The current problem is that these compilers are often seed as second-class citizens of the runtime and are unattractive to users who want to opt for the mainstream language of the platform. This is a medium threat to us for users of some combinations of languages, but could be seen as advantage as users will already be used to the idea of using multiple languages and our technology can realise that better than the existing runtimes.

Microsoft has recently released a dynamic language runtime (DLR) for their *.NET* platform. This will run several scripting languages that can share the same data. However, language modules are still nothing more than traditional compilers with a common runtime layer. Languages cannot be extended, composed or modified by a developer who isn't skilled. The system is targeted at small scripts and isn't designed for enterprise or systems programming. This is a medium threat if we wanted to target scripting languages specifically on the *.NET* platform.

These are all minor threats to the widespread adoption of our technology by the industry. If they are realised we would still be able to build a business applying *Katahdin* in our consulting and software development services.

Potential Clients

As every business of any size uses IT to support their day-to-day enterprise critical operations, they are all potential clients. We hope with our marketing we will get a range of clients from different industries coming to us so that our client base is wide and stable. There are areas that will particularly target. In the first and second years:

- Medium sized businesses needing custom enterprise resource planning software (stock control, payroll and so on)
- Point of sale systems for retailers
- Businesses conducting e-commerce who want to integrate old business software into languages running web frameworks
- Scientific and engineering organisations with legacy systems such as FORTRAN that they want to port

As *Katahdin* matures we will start to target:

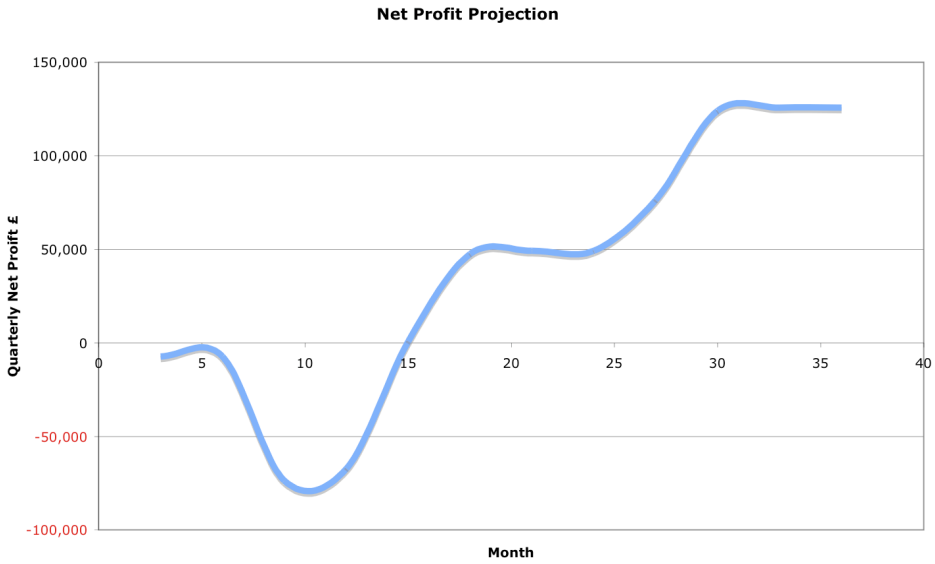
- Hardware developers who use custom languages for hardware description
- Software developers who use domain specific languages
- Software developers for mobile and embedded devices
- Business users of *Katahdin*

Financial Projections

Summary

End of year financial projection summary

	Year 1	Year 2	Year 3
Revenue	£64,000	£792,000	£1,368,000
Gross profit	£16,060	£528,330	£912,570
Net profit	- £155,102	£147,056	£452,036
Closing bank balance	£14,898	£105,043	**£373,968**



Assumptions

Office Space

Figures for office space include utilities such as water, energy and cleaning.

Equipment

A desktop computer system costs around **£750** including the base unit, a monitor, keyboard and mouse. A server computer system suitable for about 10 clients running applications such as file storage, version control, compilation and testing costs around **£1,000**. Other office appliances such as a phone and shared faxes, printers and so on, cost around **£150** per person.

Advertising

Placing a full-page advert in a magazine or industry newspaper costs around **£6,000**.

Web Hosting and Email

Professional web hosting and email services including domain name, sufficient disk space and network transfer, email and developer access costs around **£20** a month.

Developer Time

Each consulting developer cannot be gainfully employed on a client's project all of the time. There are several reasons why a developer would not be working billable hours:

- Lack of work
- Time being trained by senior developers
- Time training junior developers
- Time developing the Katahdin technology
- Time at conferences and trade-shows
- Sick-leave and other unforeseen circumstances

My financial projections are based on the assumption that each developer will only be working billable hours a **third** of the time in the first year and **half** of the time in the second and third years. These are conservative, worst-case estimates.

Tax

Employers pay a National Insurance Contribution. All of our employees fall into Class 1 above the Earning Threshold so our contribution is **12.8%** of their gross pay.

Corporation Tax is levied at **20%** for net profit up to £300,000 and **30%** for net profit above £1,500,000. Profit between those bands is taxed on a scale between 20% and 30%. Only one band is applied – it is not 20% of the first £300,000, but 20% if the entire profit is up to that figure. Corporation Tax is paid at the end of the financial year in reality, but has been taken quarterly in my projections.

Margins and Contingency

A large float is needed to allow for unexpected expenses, late payment of fees and so on. This is accommodated by always allowing for a large positive sum in the bank balance. In my projections the bank balance does not fall below **£10,000**.

References

[i] RedHat, Inc. Corporate Facts

[ii] CNET report, April 2006

[iii] Management Consultancies Association, UK Consulting Industry Reports

[iv] Microsoft gives away Visual Studio for C++, Visual Basic and C# as an 'Express' version that includes the full compilers and SDKs. Businesses can use these versions for commercial development.

Profit and Loss Projection, Years 1 and 2

Year	Year 1					Year 2				
Quarter	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
Service fees	**0**	**0**	**32,000**	**32,000**	**64,000**	**144,000**	**216,000**	**216,000**	**216,000**	**792,000**
Developer payroll	0	0	21,250	21,250	42,500	42,500	63,750	63,750	63,750	233,750
Developer NI contribution	0	0	2,720	2,720	5,440	5,440	8,160	8,160	8,160	29,920
Developer expenses	0	0	2,500	2,500	5,000	5,000	7,500	7,500	7,500	27,500
Gross profit	**0**	**0**	**8,030**	**8,030**	**16,060**	**96,060**	**144,090**	**144,090**	**144,090**	**528,330**
Manager payroll	0	0	11,250	11,250	22,500	22,500	22,500	22,500	22,500	90,000
Community manager payroll	0	0	8,750	8,750	17,500	8,750	8,750	8,750	8,750	35,000
Director payroll	5,000	5,000	8,750	8,750	27,500	8,750	8,750	8,750	8,750	35,000
Receptionist payroll	0	0	4,500	4,500	9,000	4,500	4,500	4,500	4,500	18,000
Staff expenses[1]	1,250	1,250	5,000	5,000	12,500	6,250	6,250	6,250	6,250	25,000
Payroll NI contribution[1]	640	640	4,256	4,256	9,792	5,696	5,696	5,696	5,696	22,784
	6,890	6,890	42,506	42,506	98,792	56,446	56,446	56,446	56,446	225,784
Office space	300	300	14,625	14,625	29,850	18,000	20,250	20,250	20,250	78,750
Desktop computers	0	0	4,500	0	4,500	2,250	1,500	0	0	3,750
Server computers	0	0	1,000	0	1,000	0	0	0	0	0
Other office appliances	0	0	900	0	900	450	300	0	0	750
Telecoms	0	0	400	400	800	400	400	400	400	1,600
Office misc	50	50	100	100	300	150	150	150	150	600
	0	0	6,400	0	6,400	2,700	1,800	0	0	4,500
Web hosting and email	0	0	60	60	120	60	60	60	60	240
Magazine advertising	0	0	18,000	18,000	36,000	18,000	18,000	18,000	18,000	72,000
	0	0	18,060	18,060	36,120	18,060	18,060	18,060	18,060	72,240
Total overhead	**7,190**	**7,190**	**81,591**	**75,191**	**171,162**	**95,206**	**96,556**	**94,756**	**94,756**	**381,274**
Net profit[2]	**-7,190**	**-7,190**	**-73,561**	**-67,161**	-155,102	**854**	**47,534**	**49,334**	**49,334**	147,056
Cumulative profit	**-7,190**	**-14,380**	**-87,941**	**-155,102**		**-154,248**	**-106,714**	**-57,380**	**-8,046**	

[1] Staff expenses and total payroll NI contribution excludes developer payroll

[2] Pre corporation tax

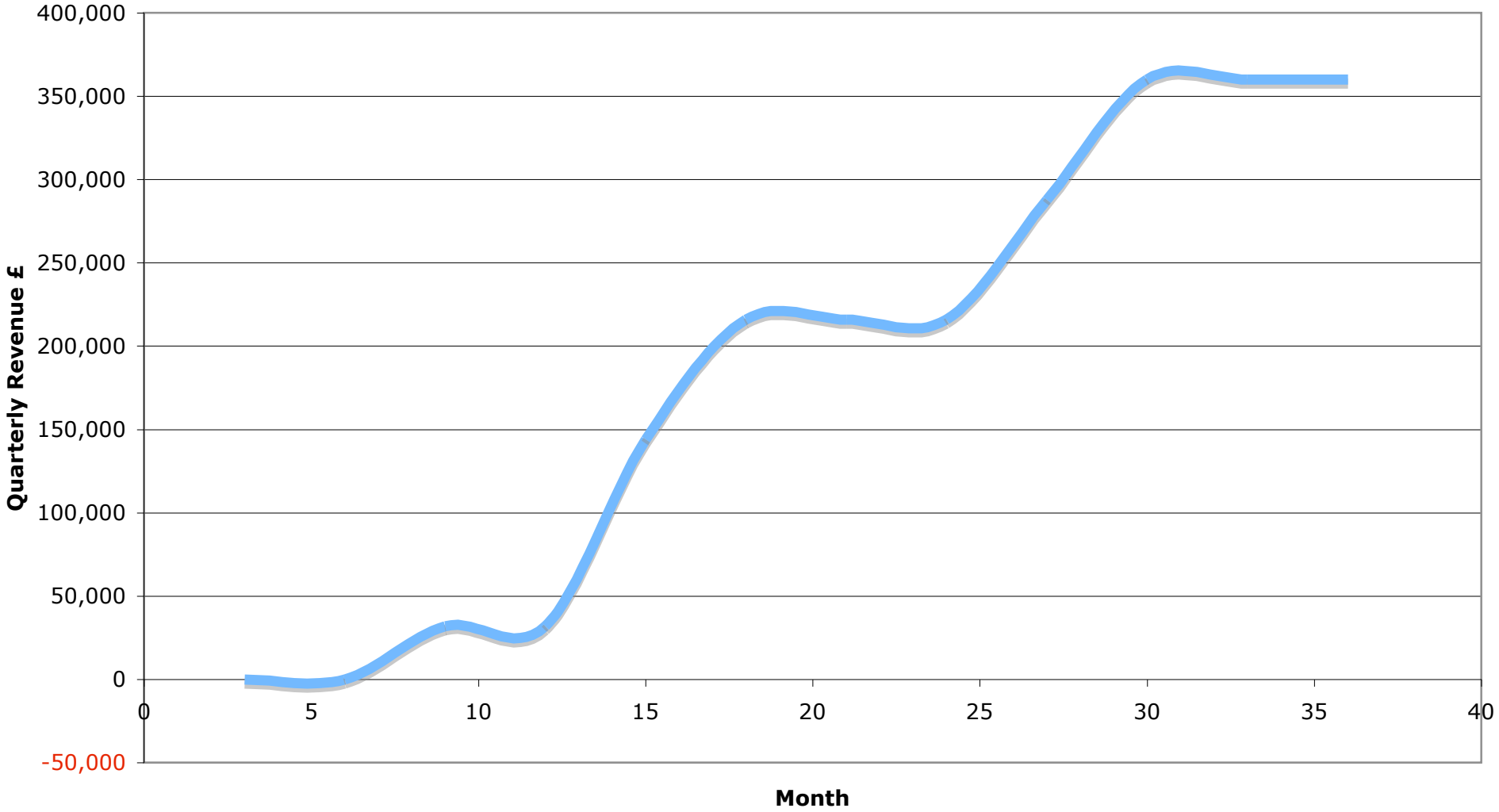
Profit and Loss Projection, Year 3

Year	Year 3					Total
Quarter	Q1	Q2	Q3	Q4	Total	
Service fees	**288,000**	**360,000**	**360,000**	**360,000**	**1,368,000**	**2,224,000**
Developer payroll	85,000	106,250	106,250	106,250	403,750	680,000
Developer NI contribution	10,880	13,600	13,600	13,600	51,680	87,040
Developer expenses	10,000	12,500	12,500	12,500	47,500	
Gross profit	**192,120**	**240,150**	**240,150**	**240,150**	**912,570**	**1,456,960**
Manager payroll	33,750	33,750	33,750	33,750	135,000	247,500
Community manager payroll	8,750	8,750	8,750	8,750	35,000	87,500
Director payroll	8,750	8,750	8,750	8,750	35,000	97,500
Receptionist payroll	4,500	4,500	4,500	4,500	18,000	45,000
Staff expenses[1]	7,500	7,500	7,500	7,500	30,000	67,500
Payroll NI contribution[1]	7,136	7,136	7,136	7,136	28,544	61,120
	70,386	70,386	70,386	70,386	281,544	606,120
Office space	23,625	25,875	25,875	25,875	101,250	209,850
Desktop computers	2,250	1,500	0	0	3,750	12,000
Server computers	1,000	0	0	0	1,000	2,000
Other office appliances	450	300	0	0	750	2,400
Telecoms	500	500	500	500	2,000	4,400
Office misc	200	200	200	200	800	1,700
	3,700	1,800	0	0	5,500	16,400
Web hosting and email	60	60	60	60	240	600
Magazine advertising	18,000	18,000	18,000	18,000	72,000	180,000
	18,060	18,060	18,060	18,060	72,240	180,600
Total overhead	**115,771**	**116,121**	**114,321**	**114,321**	**460,534**	**1,012,970**
Net profit[2]	**76,349**	**124,029**	**125,829**	**125,829**	452,036	
Cumulative profit	**68,303**	**192,332**	**318,161**	**443,990**		

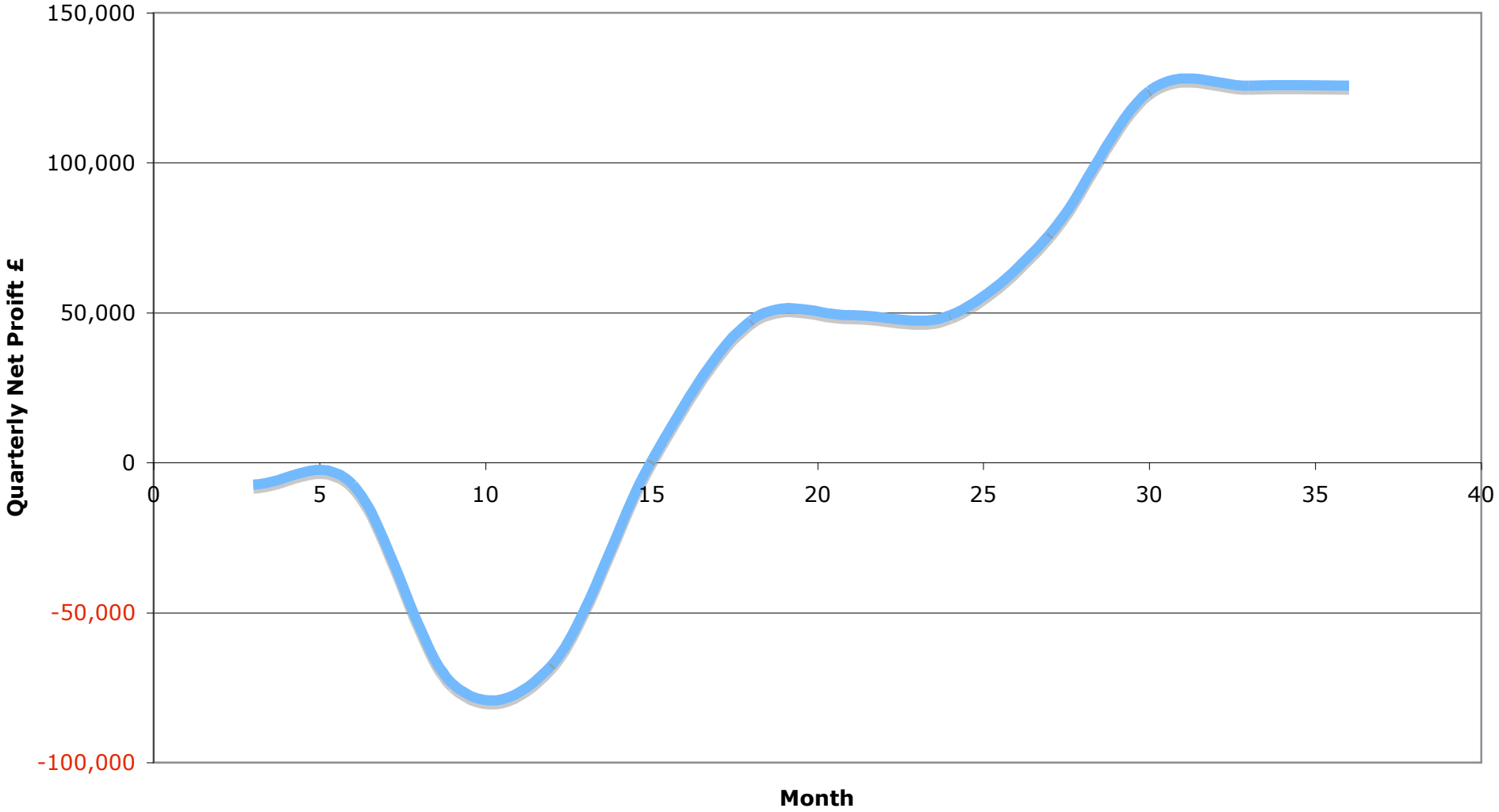
[1] Staff expenses and total payroll NI contribution excludes developer payroll

[2] Pre corporation tax

Revenue Projection



Net Profit Projection



Cash Flow Projection, Years 1 and 2

Year	Year 1					Year 2				
Quarter	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
Investment	75,000	0	100,000	0	175,000	0	0	0	0	0
Service fees	0	0	32,000	32,000	64,000	144,000	216,000	216,000	216,000	792,000
Cash in	**75,000**	**0**	**132,000**	**32,000**	**239,000**	**144,000**	**216,000**	**216,000**	**216,000**	**792,000**
Payroll	5,000	5,000	54,500	54,500	119,000	87,000	108,250	108,250	108,250	411,750
Staff expenses	1,250	1,250	7,500	7,500	17,500	11,250	13,750	13,750	13,750	52,500
NI contribution	640	640	6,976	6,976	15,232	11,136	13,856	13,856	13,856	52,704
	6,890	6,890	68,976	68,976	151,732	109,386	135,856	135,856	135,856	516,954
Office space	300	300	14,625	14,625	29,850	18,000	20,250	20,250	20,250	78,750
Desktop computers	0	0	4,500	0	4,500	2,250	1,500	0	0	3,750
Server computers	0	0	1,000	0	1,000	0	0	0	0	0
Other office appliances	0	0	900	0	900	450	300	0	0	750
Telecoms	0	0	400	400	800	400	400	400	400	1,600
Office misc	50	50	100	100	300	150	150	150	150	600
	0	0	6,400	0	6,400	2,700	1,800	0	0	4,500
Web hosting and email	0	0	60	60	120	60	60	60	60	240
Print advertising	0	0	18,000	18,000	36,000	18,000	18,000	18,000	18,000	72,000
	0	0	18,060	18,060	36,120	18,060	18,060	18,060	18,060	72,240
Net profit	-7,190	-7,190	-73,561	-67,161	-155,102	854	47,534	49,334	49,334	147,056
Corporation tax[1]	0	0	0	0	0	171	9,507	9,867	9,867	29,411
Cash out	**7,190**	**7,190**	**108,061**	**101,661**	**224,102**	**148,317**	**185,473**	**184,033**	**184,033**	**701,855**
Cash flow	**67,810**	**-7,190**	**23,939**	**-69,661**	**14,898**	**-4,317**	**30,527**	**31,967**	**31,967**	**90,145**
Opening bank balance	75,000	67,810	60,620	84,559		14,898	10,581	41,108	73,076	
Closing bank balance	**67,810**	**60,620**	**84,559**	**14,898**		**10,581**	**41,108**	**73,076**	**105,043**	

[1] Calculated quarterly in this projection but paid at the end of each tax year in reality

Cash Flow Projection, Year 3

Year	Year 3					Total
Quarter	Q1	Q2	Q3	Q4	Total	
Investment	0	0	0	0	**0**	175,000
Service fees	288,000	360,000	360,000	360,000	1,368,000	2,224,000
Cash in	**288,000**	**360,000**	**360,000**	**360,000**	**1,368,000**	**2,399,000**
Payroll	140,750	162,000	162,000	162,000	626,750	1,157,500
Staff expenses	17,500	20,000	20,000	20,000	77,500	147,500
NI contribution	18,016	20,736	20,736	20,736	80,224	148,160
	176,266	202,736	202,736	202,736	784,474	1,453,160
Office space	23,625	25,875	25,875	25,875	101,250	209,850
Desktop computers	2,250	1,500	0	0	3,750	12,000
Server computers	1,000	0	0	0	1,000	2,000
Other office appliances	450	300	0	0	750	2,400
Telecoms	500	500	500	500	2,000	4,400
Office misc	200	200	200	200	800	1,700
	3,700	1,800	0	0	5,500	16,400
Web hosting and email	60	60	60	60	240	600
Print advertising	18,000	18,000	18,000	18,000	72,000	180,000
	18,060	18,060	18,060	18,060	72,240	180,600
Net profit	76,349	124,029	125,829	125,829	452,036	443,990
Corporation tax[1]	22,905	37,209	37,749	37,749	135,611	165,022
Cash out	**244,556**	**285,680**	**284,420**	**284,420**	**1,099,075**	**2,025,032**
Cash flow	**43,444**	**74,320**	**75,580**	**75,580**	**268,925**	
Opening bank balance	105,043	148,487	222,807	298,388		
Closing bank balance	**148,487**	**222,807**	**298,388**	**373,968**		

[1] Calculated quarterly in this projection but paid at the end of each tax year in reality

Bank Balance Projection