Registry Operator's Proposal

For the .union global Top Level Domain

Sponsor :
International
Confederation of Trade
Unions

Registry Operator :
Poptel Ltd

Volume 1 of 7
Heads of agreement
Signed application form
Signed confidentiality form

Registry Operator's Proposal

For the .union global Top Level Domain

Sponsor :
International Confederation of Trade Unions

Registry Operator :
Poptel Ltd

Volume 2 of 7
Table of contents
List of appendices
Business capabilities and plan

Table of Contents

Appendices

A.   HOW THIS PROPOSAL MEETS ICANN'S PROPOSAL CRITERIA

B.   POPTEL HISTORY

C.   CLIENT REFERENCES

D.   MANAGEMENT TEAM PROFILES

E.   KEY TECHNICAL PERSONNEL PROFILES

F.   PRO-FORMA FINANCIAL PROJECTIONS

G.   ORGANISATIONAL DOCUMENTS

H.   ANNUAL REPORT

I.   PROOF OF CAPITAL

J.   PROOF OF INSURANCE

K.   REGISTRY OPERATOR'S FITNESS DISCLOSURE

Executive Summary

The Business Case

Poptel is a long-standing, UK based Internet company providing high quality services mainly to organisations in the social economy and social enterprise sectors. Trade unions and co-operatives form a large part of our existing markets.

We have an innovative, largely employee owned co-operative structure with venture capital participation. Currently we have 55 staff, and expect up to 80 by the end of this year. We are investing heavily in our technical infrastructure and were recently rated No. 1 ISP in the UK for quality of service over a six-month period. We are amongst the top 20 Internet companies in Britain by financial performance.

We are a domain registry agent and members of Nominet in the UK, and register TLDs through NSI. We are planning to become an ICANN accredited Registrar.

We were approached by two international organisations, the ICFTU and Cooperative League of the U.S.A. d/b/a National Co-operative Business Association (NCBA) supported by the International Co-operative Alliance (ICA) the world body for the co-operative sector, to be the Registry Operator for new TLD applications for .union and .co-op, proposals which we have been happy to support. Both organisations represent substantial communities of interest on the Internet – hundreds of thousands of organisations and many millions of people. In each case the TLD proposed will be a sensible addition to the existing DNS hierarchy and will aid Internet users in locating the appropriate resources they seek.

The business case set out below represents our plan for providing a Registry Operator service for the .union/.co-op TLD. The plan is not dependent on the success of the .union/.co-op TLD application.

Assuming the application is successful, during the start up phase Poptel will act as both Registry Operator and Registrar for the TLD. Working with the TLD Sponsor our intention is to locate other downstream registrars to provide the direct client facing services, thus enhancing competition for registration services within the TLD.

Our business model is based on realistic demand scenarios calculated with confidence levels of 90%, 50% and 10%. We believe that the market is there to create a viable, sustainable business helping to prove the concept of new TLDs.

We have entered into an agreement with the Sponsor to use a proportion of the revenues generated to create a Digital Divide fund supporting Internet projects in the Sponsor's constituency. We do not believe that the natural monopoly created by a Registry Operator should be exploited in any way.

The overarching aim of our technical plans as laid out below are to maintain the stability of the Internet.

In preparing this plan we have used the good offices of Nominet, the UK registrar and would like to acknowledge their help and support.

The Technical Case

Poptel has a demonstrable high level of capability in the provision of ISP services. Together our staff skill set is complementary for the provision of technical services including advanced network technologies, operating systems technologies, and systems development skills. We have already established highly available, scaleable systems architecture for providing ISP services utilising Open Source software and industry standard systems such as Windows NT.

We have assessed the business processes required for both the registry operator and registrar operations using our knowledge of the industry. We have developed an IT architecture that includes both core registry services and back office applications providing key functions such as billing, office automation, etc. The architecture utilises technology already proven in our ISP business, and which we know is highly scaleable, available and robust. The key criteria for the technology is to provide a continuous service to the Internet community and with this in mind our architecture has no single point of failure having been built with resilience as the major priority.

1 General information (D1 to D11)

D2.   Full legal name, principal address, telephone and fax numbers, and e-mail address of the registry operator.

Poptel Limited.

Registered Office: Rutherford House, Manchester Science Park, Manchester, M15 6GG, UK.

Tel: +44 161 906 3800

Fax: +44 161 906 3801

E-Mail address: info@poptel.net

D2 Addresses etc. of all other business locations of the registry operator.

London Office: 21-25 Bruges Place, London NW1 0TF, UK

Tel: +44 20 7284 6900

Fax: +44 20 7284 6951

D4. The registry operator's type of business entity.

Limited company (limited by shares) registered in England and Wales

D5. URL of the registry operator's principle web site

http://www.poptel.net

D6. Dun & Bradstreet D-U-N-S number

238764331

D7. Number of employees.

55

D8. Registry operator's total revenue (in US dollars) in the last ended fiscal year.

Poptel Limited was formed in October 1999 with business operations commencing on 1st December 1999. Prior to that the Poptel service was operated by Soft Solution Limited a company formed in 1985. Soft Solution Ltd received $2.25m of venture capital funding in December 1999 hence the creation of Poptel Ltd and the transfer of the business, assets and liabilities. Soft Solution Ltd remains in existence holding the majority shareholding of Poptel Ltd.

Soft Solution Ltd's fiscal year runs from June to May. Revenue to 31st May 1999, the last set of audited accounts was $1,162,500.

Annualised revenue on current monthly income is $2,250,000.

Apologies for the complexity of this answer.

D9. Full names and positions of directors, officers, managers and persons or entities owning 5% or more of the registry operator

(i) Directors and (ii) Officers and (iii) Managers:

Shaun Fensom, Chair and Founder (of Soft Solution Ltd and Poptel Ltd)

Stuart Marsden, Managing Director

Yoram Amiga, Vice Chair, and Founder

Malcolm Corbett, Vice Chair, and Corporate Affairs Director

Gabrielle Kagan, Director

Roseni Dearden, Director

Kenneth Holder, Chair of Soft Solution Employee Benefit Trust

Stephen Herman, Sales & Marketing Director

Jeff Roberts, acting Technical Director

Lucy Brotherston, Professional Services Manager

Cazz Ward, Technical Team Manager

Sheila Collins, Customer Services & Operations Manager

Dominic Search, Product Development Manager

John Corker, Helpdesk Manager

Paul Evans, acting Sales Manager

Tracy Tarrant, Personnel Manager

(iv) Persons or entities owning 5% or more of registry operator:

Poptel Worldwide Ltd.

D10. Contact person for this proposal

Malcolm Corbett.

Tel: +44 20 7284 6900,

Fax: +44 207 284 6951,

E-mail Malcolm.Corbett@poptel.net

2 Business Capabilities and Plan

2.1 Current Capabilities

2.1.1 Who we are

2.1.1.1 Company information and Formal Alliances

2.1.1.1.1 Company information

Poptel Limited was formed on 28th October 1999 for the transfer of assets and business operations from Soft Solution Limited the predecessor company. Soft Solution Limited continues in existence as the majority shareholder of Poptel Limited on behalf of the employees of the company. The reason for this transfer of business was an injection of £1.5m venture capital funding on 1st December 1999.

Poptel Limited is a company limited by shares registered in England and Wales.

Soft Solution Limited is a company limited by guarantee with no share capital registered in England and Wales. It was formed on 27th August 1985. Poptel was a trade mark of Soft Solution Ltd (now transferred to Poptel Ltd), and for many years its sole business activity.

There was complete continuity of business operations, management, staffing etc. between Soft Solution Ltd and Poptel Ltd.

Poptel has two locations:

- Manchester Science Park – the network and technical operations centre, helpdesk, accounts and administration.

- London, Bruges Place in Camden – professional services, sales and marketing.

Poptel currently has 55 staff.

2.1.1.1.2 Formal alliances and ownership structure

A minority stake Poptel is owned by Poptel Worldwide Ltd, set up as a holding company between Soft Solution Ltd and our venture capital partners Sum International. Poptel Worldwide now has stakes in other Internet companies with whom business alliances are being built. Companies involved in Poptel Worldwide include:

- The Phone Co-op, a consumer co-operative offering low cost telephony services with whom we have developed a three-way joint venture with Sei Mitsu to develop a new industrial strength telecomms and Internet billing system – Eco Billing. Poptel are also developing a second joint venture with the Phone Co-op to offer both telephone and Internet services on a consumer co-op model.

- Sei Mitsu Solutions, a company set up to exploit the development of a software management system developed to enable the company to charge for transactional services across the Internet, in particular wholesale trading and commodity clearance of telephone minutes.

- Something4 a company that devises, develops and delivers new e-commerce and Internet businesses. Poptel have developed a joint venture with Something4 – 100lines.com a lifestyle portal aimed at membership organisations and their commercial service providers.

- Earth Summit 2002 – a comprehensive lifestyle portal with an ethical and environmentally sound slant. The portal's aim is to deliver "green" and ethical information services and e-commerce to both business and the consumer, linked to the process leading to the UN Earth Summit in 2002.

- Click4Charity – a venture building an Internet community amongst a large group of charities based on an ASP model with a range of web tracking and branding services linke to Poptel's automated donation service.

- Membership ASP being developed between Poptel, Z/Yen and Miller Technology to provide membership tracking, online income collection, virtual community facilities, information services and commercial services.

Trade References

TNS Distribution Ltd, Mile Oak Industrial Estate, Oswestry, Shropshire, SY10 8NS

Contact: Matthew Cartwright

Turnover: £186316

A L Digital Ltd, Voysey House, Barlow Mow Passage, London, W4 4GB

Contact: Claire Chaplow

Turnover: £106034

Easynet Ltd, 44 Whitfield Street, London, W1P 5RF

Contact: Chris George

Turnover: £38775

Mayflower Business Systems Ltd 2000, Unit 3, Heathgate Place, 75-87 Agincourt Road, London, NW3 2NU

Contact: Paul Rocks

Turnover: £170821

2.1.1.1.3 Insurance

Poptel has insurance cover in respect of Employers', Public and Producsts Liability. Our Products Liability insurance has a limit of indemnity of £5,000,000 for any one occurrence bu in aggregate during the period of insurance. The geographical limit is anywhere in the world. A copy of the certificate is appended below.

2.1.1.2 Background to Poptel

Poptel is an innovator, on at least three counts. Established in 1986, Poptel was one of the first Internet services providers (ISPs) in the UK (and certainly one of the first in the world to advocate the use of these technologies for the non-commercial sectors). It remains one of the largest and recently was rated best for service quality. Second, Poptel is a co-operative and the only employee-owned ISP. Third, Poptel recently obtained substantial venture capital funding - and succeeded in retaining its co-operative ethos and a recognisably co-operative structure.

Poptel operates in an innovative industry where employee participation, relationship marketing and financial innovation are all part of the business culture.

Building value in an Internet company means creating 'knowledge' and retaining that knowledge within the company. Motivating employees to create new knowledge is essential to building a company. Keeping employees is another key to retaining knowledge. Many Internet companies use a degree of employee ownership in an effort to retain and motivate employees. CMG, one of the fastest growing software companies in the UK is 30% owned by employees. Yahoo and Abode operate employee share plans. Over 80% employees of Network Solutions Inc., the world's leading Registrar of Web addresses, participate in its employee ownership plan. (Its major outside shareholder SAIC is the largest employee-owned research and engineering company in the United States.)

In Internet companies the management tends to flat structures, with direct informal relationships and use of teams. The management and ownership approach results in employees regarding the business as a collective adventure, generating

enthusiasm and dynamism. Poptel addresses these issues by involving all employees within a co-operative structure.

In the emerging Internet market place, customers are mobile as never before. Building customer loyalty requires building relationships, often based on shared values, and creating a sense of membership and identity. Web sites say hello to users by name, and track their preferences. Some e-commerce sites sign up 'members' who become 'co-buyers'. This relationship marketing fits well with a co-operative approach, in fact in builds on ideas first pioneered by co-operatives. Poptel, as a membership organisation itself, understands membership and provides services for many membership organisations: co-operatives, trade unions and the voluntary sector.

2.1.1.3   History

Poptel's founders saw the potential of a niche for an 'alternative' service aimed at organisations and individuals working and campaigning in areas such as the labour movement, human rights and development.

The 1985 'Poptel Report' saw scope for the development of on-line database and electronic mail services in particular. Key to the whole project was the idea that 'telematics' technology would become critical to organisations working in those fields where access to information and the exchange of ideas can make the difference between success and failure. Poptel saw its role as an enabler, encouraging organisations to take up the technology and providing appropriate services.

Since those early days Poptel has developed on-line services to support a variety of initiatives from trade unions creating international on-line networks, to local authorities developing services to support economic and community development, to helping co-operatives develop e-commerce and charities raise money on-line.

Poptel's story is appended. It is a story of endeavour helping organisations with a social purpose to make effective use of on-line technologies.

Today, fifteen years after the Poptel Report, we are entering the next phase of fulfilling those early ambitions. Our support for the creation of new TLDs is a reflection of our concern that communities working for social progress should be recognised on the Internet with a specific identity. How we can provide the technical support to that process is what the rest of this document sets out to demonstrate.

2.1.1.4   The mission

Poptel is a unique company with a unique history. We are first and foremost a business, but a business with strong beliefs and an innovative co-operative ownership structure.

Being a co-operative which is majority owned by its employees makes Poptel a strong company with a sense of purpose, a committed workforce and a loyal customer base

Poptel has four principle aims:

- To provide high quality and professional on-line information and communications services.

- To develop and promote services which help its customers working for progressive social and economic change.

- To provide secure, well-paid and meaningful employment, and to involve its members in the democratic formulation of company policy and objectives.

- To invest in the continuation of the business and to grow the capital value of its stakeholders.

Poptel further seeks to prove that a co-operative business can achieve these aims while adhering to the core principles of the co-operative movement. The outward facing components of Poptel's mission are summarised in our slogan - '*Connect, Inform & Empower'*.

The provision of registry services meets all of these principle aims. It is a logical step for a company with our history and the trust invested in Poptel by organisations in our key market sectors.

2.1.1.5   Ethical Policy

Poptel is run as a socially responsible business. The management and directors take proper account of the interests of all Poptel's shareholders (both employee and external owners). They also take account of the welfare of Poptel's workers; the maintenance of professional standards and ethical business practices in the provision of services; and the effect of its business activities on the community at large.

In this context Poptel considers the following as unethical: the sale and manufacture of arms, the supply of tobacco, oppressive regimes, exploitative pornography, discrimination on grounds of race, religion, gender or sexual orientation.

2.1.1.6   Our customers

Poptel serves a number of market sectors broadly in the 'social economy'. These include:

- Social enterprises – co-operatives, fair trade organisations, community businesses, new public sector mutuals. Examples include the portal site for the UK Co-operative Union - umbrella organisation for the retail co-operative sector; Social Enterprise London, a leading agency promoting co-operative solutions; Oxford Swindon & Gloucester Co-op, one of the major regional retail co-ops in the UK; Greenwich Leisure a leading new mutual in the public sector. Services include website development and hosting, Internet connectivity, business development consultancy.

- Trade Unions – Many trade unions had their first e-mail and Internet services with Poptel. In the 1980s and early 90s they used Poptel to connect up international networks of affiliates. Today Poptel provides a full range of services to trade unions supporting membership development, communications, research and policy. Clients include most of the major UK unions and a number of International Trade Secretariats plus the ICFTU.

- Charitable and voluntary sector organisations – Poptel is one of the UK's leading providers of services to the charitable and voluntary organisations having worked with the sector for many years. Recent projects include a partnership with the Co-operative Bank and a group of large charities to develop a new Charity Donation portal site. In addition to the direct provision of services to charities, Poptel helps the sector innovate with consultancy and presentations at major charity conferences.

- International Development Agencies – Many International aid and development agencies had their first e-mail and on-line services with Poptel – often with the aim of connecting up remote offices around the world. Today Poptel is a major sponsor of the NGO process for the next UN Earth Summit (2002), hosts major co-location projects for organisations like Oxfam, and provides VISP services for agencies like Christian Aid.

- Local Government & economic development – Poptel was in the forefront of developing on-line services for community and economic development working with Manchester and Kirklees councils and the European Telecities project. Innovations included the Manchester Community Information Network; an online network of citizen's advice bureaux; the establishment of a group of local training centres known as 'Electronic Village Halls'; the Idea Project which provided free Internet connections and on-line services for nearly 1500 small arts, culture and music businesses.

- Think Tanks and political parties – Poptel has worked with the UK Labour Party since 1993 providing a secure email network for local constituency parties, on-line bulletin boards and mailing lists, web hosting etc. Tony Blair was the second MP

to get a Poptel e-mail address in 1993. Poptel also provides services for the Party of European Socialists. At this year's Labour Party Conference (September 2000) we launched a new service - PolicyBrief.org – with a number of leading think tanks.

2.1.1.7   Our services

Poptel has offered on-line services since 1986 originally operating the GeoNet e-mail and bulletin board hosting service, connected through the X.25 packet switched networks. In 1994 Poptel started offering full Internet services including dial-up accounts, then leased line and ISDN access services, domain name registration, web and database hosting and latterly design services.

Today our services fall into three broad categories: Technical Services, Content Services and Organisational Services.

2.1.1.7.1   Technical Services

Poptel provides fast, professional, technical Internet Services to organisations and individuals. From a variety of Internet Account packages to hosting databases, from leased lines to co-locating servers in our Network Operations Centre, we offer a comprehensive range of reliable Internet Access solutions.

At the heart of our technical operations is our Network Operations Centre (NOC) in Manchester. The core network uses 100 Mb/s Ethernet throughout and has full UPS and generator backup and 24 hour staffing. Our bandwidth is flexible and can be wound up according to need. With load balancing switches behind all our servers and full redundancy we support both Unix and NT environments, while firewalls ensure maximum security for out network.

There is no single point of failure in our network.

The quality of our Technical Services is matched with a wide range of in-house skills. From our network and system administrators to the highly motivated client support staff, our teams monitor and maintain our operations constantly and are ready to provide assistance when required.

Our Technical Services include:

- Domain Name Registration

- Web Hosting

- Database Hosting

- Internet Access Packages

- Global Roaming

- Leased Lines

- ADSL

- BT Surftime

- Server Co-Location

- Network Consultancy

- Onsite Installation Service

2.1.1.7.2 Content Services

Poptel's customers benefit from our unrivalled experience of designing and maintaining websites for organisations with a social purpose in the public, voluntary, community and membership sectors.

Our clients place a premium on high-value, up to date content delivered in a professional, well-structured manner. Designed with this in mind Poptel's range of dynamic database-driven content management tools ensures that clients can add new information to their websites without the need for web design skills.

Our suite of add-on web modules including a documents database, press office and our online newsroom, allow clients to easily add complex additional functionality, interactivity and real content control to their websites.

For additional support clients can rely on our consultancy services, "website-health-checks" and a special range of maintenance contracts. We can also help with site traffic analysis, membership tracking, personalisation, virtual community management and bespoke e-commerce applications.

Clients can also take advantage of our ethical e-commerce payments system to combine lower transaction charges with peace of mind for themselves and their users.

Our Content Services include:

- Web-site Design

- WAP design

- Database design

- Bespoke Programming

- Online Newsroom Module

- Online Press Office Module

- Documents Database Module

- E-commerce Module

- Discussion Forums

- Mailing Lists

- CD ROM design

- Consultancy

- Website Health-Checks

- Maintenance Contracts

2.1.1.7.3 Organisational Services

Poptel is the UK's leading specialist in providing Internet and Application Services to charities, membership organisations, campaigning and policy based groups and co-operatives. We work closely with our clients to ensure that our proven membership and e-commerce solutions and services match their exact requirements and enhance their organisational strengths.

With our unique experience, Poptel is the partner of choice in marrying membership databases with secure online id verification systems to provide true personalisation and member tracking. Poptel also operates various affinity schemes including branded free Internet offerings – so-called 'Virtual ISP' services.

For larger e-commerce projects Poptel provides a full integration programme, coupling bespoke shopping baskets with back-end database design and our own ethical payment facilities.

We aim to help our clients to make the most of their relationship with members and supporters and to fully embrace the Internet's potential for their organisation.

We register domain names on behalf of clients enabling them to promote their identity, services and specific projects on the Internet.

To support our clients' organisational systems we offer guaranteed dedicated bandwidth and flexible co-location facilities with a range of advanced options such as load balancing and hourly backups.

Poptel's expert technical teams also provide a range of consultancy advice, as well as onsite services for organisations including installation and maintenance contracts.

Our Organisational Services include:

- Domain Registration

- Group accounts

- Free Internet schemes

- ID Verifications Systems

- Member Tracking

- Bespoke e-commerce solutions

- Leased Lines and Firewall solutions

- Server Co-location

- Intranet solutions

- Network client services

- Systems Integration

- Anti-virus strategies

- Security Consultancy

2.1.1.8 How we provide the services

We aim at all times to maintain a professional relationship with our clients with account managers looking after key sectors and organisations. In many cases we help clients to work out how best to develop their use of the Internet in relation to their own operations, their members, customers and supporters.

Our customer services operation is highly effective with 24x7 cover for key technical services like co-location projects, leased lines etc. Telephone and e-mail support for individual clients operates from 0800 to 2200 Monday to Friday and 1000 to 2200 at weekends.

We provide service level agreements for all core services guaranteeing availability, load balancing, bandwidth levels etc.

In the trade union, non-profit and co-operative sectors we are well known for providing high level strategic input through keynote speeches at conferences and articles in sector-specific journals.

Poptel sells its services both directly and through reseller channels. We work with two types of reseller: umbrella organisations within a market sector e.g. National Housing Federation for the social housing sector; and businesses with a presence in particular sectors who wish to add Poptel services to their range of offerings. Currently channel programmes tend to be based on direct one-on-one relationships between Poptel and the reseller, however this is under review by the Marketing Department.

2.1.1.9 Our resources

2.1.1.9.1 Poptel Management

Poptel has a highly qualified and experienced management team. Summary biographies are appended.

- Managing Director, Stuart Marsden, has a strong background in the development of Internet applications in the financial services industry.

- Sales & Marketing Director, Stephen Herman, was previously a board level director of one of the largest technical outsourcing companies in the UK.

- Acting Technical Director, Jeff Roberts (co-ordinator of this proposal), was previously IT director of the largest independent travel/tour operator in Europe.

- Founder and chair, Shaun Fensom, is recognised as a major figure in the Internet Service Providers industry in the UK.

- Corporate Affairs Director, Malcolm Corbett, is one of the leading Internet figures in the trade union, co-operative and social enterprise sectors in Europe.

- Customer Services Manager, Sheila Collins, has a strong systems background with many years' experience in industry and the public sector.

- Professional Services Manager, Lucy Brotherston has over ten years experience delivering community and business information projects, and is a founding member of the Manchester Community Information Network.

- Product Development Manager, Dominic Search has a strong technical background in networking and the Internet. Currently he is responsible for the planning and introduction of new products and services.

- Technical Team Manager, Cazz Ward, has a strong technical background coupled with the ability to effectively manage the technical team responsible for Poptel's network infrastructure and services.

2.1.1.9.2 Poptel Staff

Poptel currently has a rapidly growing and dedicated staff complement of 55 people. This is nearly a threefold growth in the past nine months. By the end of 2000 we expect to be employing 80 people. Following a six month probationary period all staff are invited to join the co-operative and become co-owners of the business.

Poptel hires staff through open recruitment and operates an equal opportunities policy. As an employee owned company staff benefits and career development are important issues for us. All staff are encouraged to undertake training relevant to their career aspirations at company expense. Poptel's employment policies are subject to UK employment legislation.

Poptel operates two offices in London and Manchester. London is the location of our sales, marketing, customer services and professional services departments. Manchester is the location of our Network Operation Centre in the Manchester Telecity Internet Exchange in which major ISPs and Telcos operate co-location and peering services. Manchester also houses our

Technical Department, Accounts and Helpdesk. In both London and Manchester Poptel has reserved additional space to accommodate extra staffing.

2.1.2 How we have achieved success

2.1.2.1 Our growth

Poptel has grown from a four-person company in the mid-1980s to a company, which is projected to employ 80 people by the end of this year. Our early development was achieved using small-scale loan capital, retained profits and project based grant income. At the end of 1999 we successfully raised £1.5m from venture capital sources and a further £1m in September 2000. Remarkably, this was achieved without compromising our co-operative business status. Details of the approach we took form the basis of a submission to the UK Co-operative Commission and can be found on Poptel's website.

Poptel's turnover in the year to May-99 was £700,000. Our accounting year has changed to December. In the period since December 1999 we have achieved our revenue targets aiming for growth to £1.3m, and to be in profit by the end of the first quarter of 2001.

With the injection of capital Poptel has been able to develop a whole range of new services, particularly web and database development, membership services and e-commerce needed by our client base. As they invest more in their Internet presence, they now have the confidence in Poptel to invest it with us. And we have been able to revamp our customer services operations and strengthen management.

We believe that they key to our success is our co-operative ownership structure and the participatory yet professional style of management that we have developed.

2.1.2.2 Key achievements

There have been many milestones in the development of Poptel. Our history is appended. However since the injection of capital we have had our most exciting period ever.

- Over the past nine months we have nearly trebled the size of Poptel's staff complement – and we have not lost a single person in the process

- We are consistently meeting tough revenue targets set at the start of this year.

- We were nominated No. 1 ISP in the UK for the quality of our services over a six-month period by PCPlus magazine (one of the UK's main PC magazines).

- We are winning some of the largest contracts awarded in our market sectors – e.g. hosting all of Oxfam's Internet services.

- We have the resources to sponsor important and socially valuable services – like the website for NGOs participating in the process to create the next UN Earth Summit in 2002.

2.1.2.3   Related experience

All of the forgoing information demonstrates Poptel's longstanding experience in running Internet services including domain registration and database development and operation. We provide services to many of the most significant organisations in our market sectors in the UK and internationally. We have the technical capability, the human and financial resources, and the business partnerships to be highly competent at running a TLD Registry Operation.

2.2 Business Plan

2.2.1 The market

2.2.1.1   Profile of a target customer

A target customer for the .union TLD is an independent trade union organisation as defined by the International Confederation of Free Trade Unions (ICFTU) Sponsor's Application. Trade unions may wish to register multiple names in the TLD taking account of particular projects. For instance the British public sector union Unison holds the domains unison.org.uk and troubleatwork.org.uk – their latest campaign.

The ICFTU estimate that there are approximately 200,000 trade unions who would potentially want to register in the .union TLD. The ICFTU itself is an international trade union organisation, which represents "the free and democratic trade unions of the world". ICFTU has 216 affiliated organisations in 145 countries and territories, and represents 123 million workers. Most ICFTU affiliates are national trade union centres with their own affiliated member unions.

The proposal for a .union TLD is being made by the apex organisation for the sector with the political support of the membership. Although many unions in developing countries have limited Internet access, those in the developed world are making increasing use of the Internet to support their organisational activities (often helped by Poptel). It would be a reasonable assumption to predict substantial take up of the .union TLD over time with a migration of web site and e-mail addresses to the new TLD.

One of the purposes of the .union TLD would be to use a proportion of the income derived to support projects tacking digital divide issues in the constituency.

2.2.1.1.1 Downstream Registrars

Poptel will act as both Registry Operator and Registrar in the first instance. However it is intended to locate downstream registrars who are likely to be ISPs and other Internet related organisations, or possibly organisations working in the sector who add registration activities to their core competencies. The actual selection of downstream registrars will be in the competence of the Sponsoring Organisation with advice from Poptel.

At this stage it is difficult to gauge how many downstream registrars there will be. At least one potential registrar has been identified in the United States – the National Rural Telecommunications Co-operatives, a substantial organisation offering ISP and telecomms services. Other registrars will be sought during the start up phase of TLD operations.

Our plans assume that Poptel's share of the Registrar market will decline from 100% to 10% from the start of the third year of operation.

2.2.1.2 Services demanded by customer

The key services demanded by registrants will be for an efficient and reliable service to hold their domain in the TLD. With agreement from the Sponsoring Organisation other value added services can be offered by registrars, for instance web site development, e-commerce, membership services etc.

Additionally Poptel acting as Registry Operator will seek to develop value added services such as building a public LDAP compliant directory service that can be used to locate the domain name of any organisation in the Registry.

2.2.2 The services

2.2.2.1 Core registry services

- Operation of the TLD technical services (see below).

- Provision of SLDs in agreement with sponsors.

- Provision of domain names in the TLD through registrars.

- Whois lookup service.

- Verification of uniqueness of requested domain names.

- A system to move domain names between registrars when requested.

- Provide assistance in the resolution of domain name disputes in collaboration with registrars and sponsors.

- Maintain a separation between the registry and registrar operations.

- Ensure that the services do not adversely affect the quality or integrity of the domain name system and the Internet in general.

2.2.2.2   Registrar services

Poptel will provide the following services as a Registrar:

- Register domains on behalf of customers.

- Transfer domains on behalf of customers.

- Maintain a separation between the registry and registrar operations.

- Advise on appropriate names, names that are not available, general policies of the TLD.

- Advise customers on how to migrate from existing domain names to the new names.

- Advise on issues such as aliasing to web sites and mail servers, domain multi parking etc.

- Advise customers on how to transfer their domain names to Poptel or other registrars.

- Maintain the customer relationship including informing customers about developments in the TLD.

- Charge the customer for domain registration and collect debt.

- Advise customers on renewal of their domain names.

2.2.2.3   Value added services

Development of a directory service to enable Internet users to locate organisations and their domain names (as opposed to a whois service in which the user needs to know the domain name to find the organisation).

Poptel, acting as a Registrar will offer its range of technical, content and organisational services as value added services. See above for details.

2.2.3 Selling and marketing the services

2.2.3.1 Proposed cost of services

2.2.3.1.1 Pricing Policy

A variable pricing policy has been adopted for both registry operator and prices recommended to registrars which conforms to ICFTU's policy of variable pricing for affiliations based on a banding system which works according to country GNP. Band A contains the richest 50 countries, Band B contains fifteen countries, Band C, 50 countries and Band D the 70 poorest countries.

The proposed annual charges for each band are as follows:

Table 1: Banded Annual Charges

	Band A	Band B	Band C	Band D
Registry Operator Fee ($)	53	30	23	17
Recommended Registrar Fee ($)	88	50	38	28

These prices have been chosen to meet the following criteria agreed with ICFTU:

- The .union TLD proposal should be viable and sustainable by itself.

- The Registry Operator alone should be viable and sustainable on the 90% confidence level projections – i.e. the lowest projected take-up – but should not abuse its monopoly position.

- The business of being a registrar should be attractive enough for us to be able to recruit them. Registrar prices are recommended but not mandatory.

- The ICFTU banding principles should be followed.

- Price discounts for domain multi parking and other facilities have not been considered at this time.

The Registry Operator will need to:

- Re-coup the initial investment of approx $450k over three years

- Have further annual income of $300k to cover its running costs

The Registrars will need a reasonable margin - we have assumed around $20 average.

2.2.3.1.2 Profit from registry services

It is accepted and agreed between ICFTU and Poptel that it is in the best interests of the community served by the TLD and of the Internet community as a whole that the registry operation is effective, efficient and sustainable.

It is therefore agreed that the revenue generated by the registry operation should be deployed to the following purposes in the order shown:

- Firstly to cover the reasonable costs incurred by Poptel in the setting up and operation of the registry.

- Secondly to cover the reasonable costs incurred by ICFTU in performing its duties according to the agreement.

- Thirdly to provide Poptel with funds to invest in the efficient, effective and sustainable operation of the registry.

- Fourthly to refund the costs incurred by ICFTU and Poptel in making the application.

- Fifthly to provide a fair and reasonable return on investment to Poptel for the costs in setting up the registry operation, the rate of return to be agreed between the parties.

Any surplus remaining after these priorities have been satisfied shall be shared (in a proportion to be agreed) between Poptel (as a further return on its investment in the registry operation) and a Digital Divide Fund (to be established and administered by ICFTU the purpose of which shall be to assist trade unions to make effective use of the Internet).

Poptel and ICFTU shall take such reasonable steps as are necessary to be able to provide a fair and reasonably accurate account of revenues and expenditures pertaining to the operation of the registry.

The Registry Operator will need to:

- Re-coup the initial investment of $800 plus over three years

- Have sufficient annual income to cover its running costs

The Registrars will need a reasonable margin for business viability.

2.2.3.2 Demand scenarios

The demand profile has been calculated taking into account the following factors:

- ICFTU estimate that the total market for the .union TLD is around 200,000 organisations. These include national, regional and local union organisations.

- ICFTU banding following GNP statistics in the World Development Indicators published by the World Bank. Band A corresponds to the richest group of countries, Band D the poorest.

- Band A – most of the first world unions, clearly defined number according to ICFTU statistics. Smaller number of larger and more consolidated unions than in developing countries. Demand could be significantly boosted if locals register at the top level rather and second or third. There is current evidence that this would be the case, but it not taken into account in the demand scenarios.

- Band B is the smallest group of countries with a total of 15.

- Band C and Band D have the largest groups of countries, and the largest number of unions. However these are the least connected countries and will be the slowest in take-up of the .union TLD.

- The possibility of registrations in reserved second level domains has been discussed with ICFTU but does not form part of the demand calculations.

Table 2: Market Penetration

Market Penetration					
Scenario	Year 1	Year 2	Year 3	Year 4	Total Penetration
1 – 10% confidence	3%	20%	40%	46%	109%
2 – 50% confidence	1%	10%	20%	23%	54%
3 – 90% confidence	1%	4%	8%	9%	22%

Demand has been estimated at three confidence levels:

- Scenario 1 - 10% - demand is nine times less likely to be exceeded as not met, (i.e. the highest market penetration). In this scenario multiple registrations by a small proportion of the market been taken into account, leading to a demand level of 109% of the total market size (i.e. number of organisations). The overall rate of growth in this scenario approximates to that experienced by Nominet for .uk domain registrations.

- Scenario 2 - 50% - demand at this level is as likely to be exceeded as not met;

- Scenario 3 - 90% - demand is nine times as likely to be exceeded as not met, take up is nine times more likely at this level (i.e. lowest market penetration),

Demand estimates have been made for four years, the term of the TLD sponsor's agreement with Poptel acting as Registry Operator.
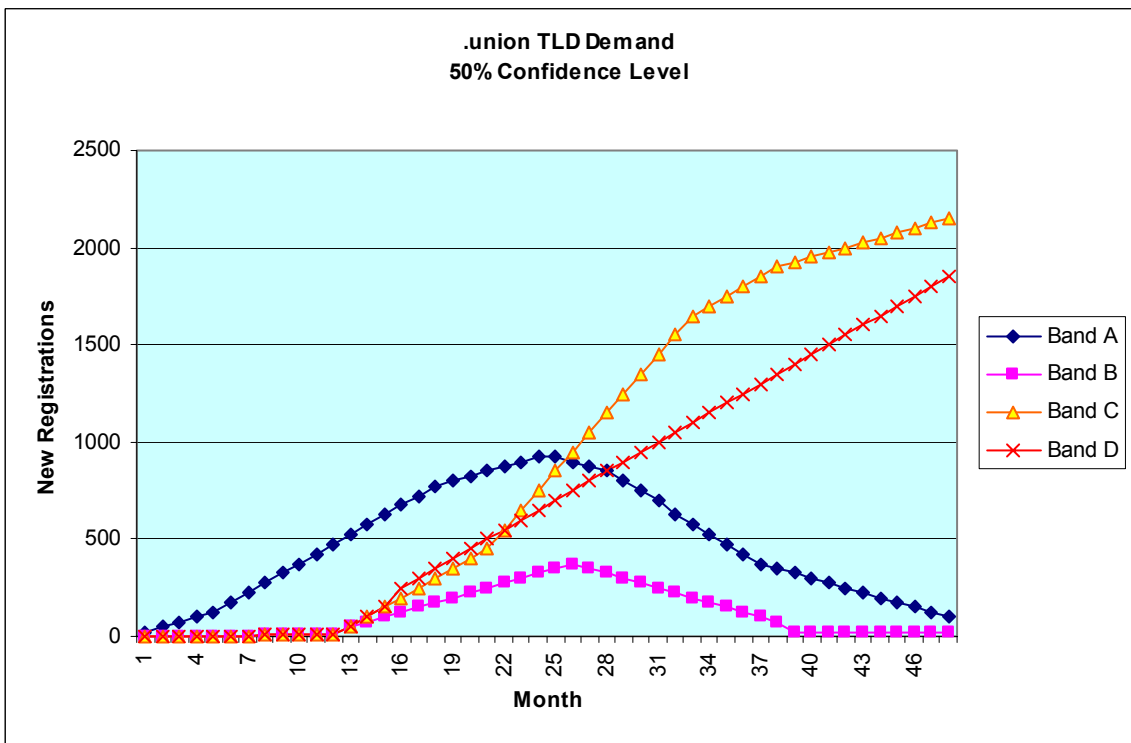
Figure 2 : TLD Demand by Band
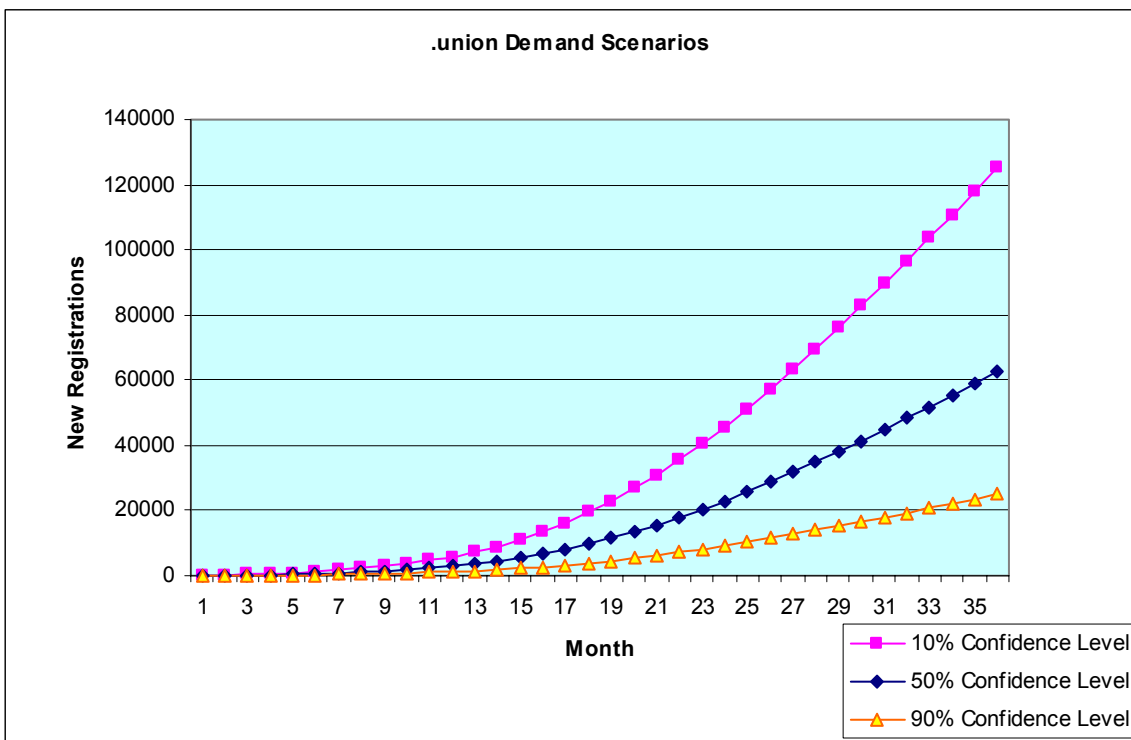
Figure 1: Demand by Confidence Level

2.2.3.3 Marketing Strategy

2.2.3.3.1 Key Marketing Objectives

- To work with and through the Sponsors to communicate the benefits of the new restricted TLD to the target audience – organisations within the sponsor's constituency.

- To manage a planned uptake of the new TLD.

- To establish relationships with downstream registrars accredited by the TLD sponsor.

The broad Communications Strategy is a combination of Internet 'viral' marketing, working with the Sponsors to inform key parts of their constituencies, coupled with a territory focused media campaign aimed at both key newspapers and IT publications most likely to be read by IT and communications staff in target organisations.

2.2.3.3.2 Communicating the Message

The centrepiece of the Communications Strategy for the start up period is joint activity with the TLD sponsor, ICFTU to communicate the benefits of the new TLD to key opinion formers within the constituency.

2.2.3.3.3 Start Up Period

The ICFTU is an affiliate organisation with over 200 national trade union centres in membership. ICFTU collaborates closely with the International Trade Secretariats which in turn have an affiliate structure of unions operating in the same trade sector. This initial group of around 2500 organisations forms the core group for the start up period of the TLD operation. Many of these organisations are expected to register at the TLD level both their organisational names and specific campaigns and projects.

Key officers in the affiliate organisations have relationships with the ICFTU and the relevant ITS's. Poptel, as Registry Operator and initial Registrar already has longstanding relationships with ITS's and many of their members.

For this core initial group promotion of the benefits will take place through:

- specific briefings at international and national events;

- direct communications with IT and Communications departments;

- FAQs explaining the benefits and how to migrate from existing .org and .cc addresses etc.

- Capturing the major unions, mainly in the developed world, will establish credibility for the .union TLD.

During this start up period relationships with downstream registrars will be established to promote the new TLD to the wider group of smaller unions, estimated to total nearly 200,000. They will act as the main channel to market in their geographic areas.

2.2.3.3.4 Media

During the start up period PR will be undertaken with key media in the sector internationally and regionally to explain the benefits of the new TLD. Media used will include both paper-based journals, web sites and Internet mailing lists.

The PR campaign will be rolled out by geographic territory concentrating on those with the most significant target audiences. The PR campaign will work together with, and in support of, the activities of downstream registrars as they become accredited.

2.2.3.3.5 Poptel Acting as Registrar

In the Start up period Poptel will act as the sole registrar for the .union TLD. The start up period will restrict the number of registrations to around 2500 unions with a direct association with ICFTU either as affiliates, or affiliated to other international trade union bodies.

Poptel will market registration services to this audience in collaboration with the ICFTU.

Following the start up period Poptel will continue to act as a Registrar aiming to operate in defined geographic markets – principally the UK and Europe. In the UK Poptel is the major supplier of Internet services (including domain registration) to the union sector. Additionally we have longstanding relationships with many European trade unions and national trade union centres.

The benefits of registering in the .union TLD will be marketed through the following channels:

- PR in trade press and through appropriate Internet channels and communities of interest (e.g. the Labournet and Labourstart services).

- Direct marketing to union communications and IT departments.

2.2.3.3.6 Downstream Registrars

During the start up period a detailed programme for locating and accrediting downstream registrars will be established in collaboration with the ICFTU. It is expected that these will mainly be existing Internet companies, and likely that they will already have (or be developing) relationships with the .union TLD constituency in their regions. Since they essentially act as a reseller channel for the TLD, an appropriate channel programme will be developed.

Downstream Registrars will be provided with web based materials to support their marketing efforts alongside guidance on Dispute Resolution procedures and web forms for the registration fulfilment procedure. Effectively this will become part of the accreditation mechanism for the registrars in the TLD.

The strategy will provide opportunities for Registrars to communicate the benefits of value added services (web design, e-commerce etc.) to their target markets.

2.2.4 Building the business operation

2.2.4.1 Business processes

2.2.4.1.1 High-level processes

The following diagram shows the high-level business processes that are key to a Registry Operator and Registrar business (as Poptel will establish both operations and there are synergies between the processes, both sets have been shown together). Several processes concern the lifecycle of services, from concept through to delivery, which underpin the service-orientated nature of the business. In addition to developing and supplying services, the business needs to fulfil its obligations to the Internet community, including implementing the Sponsor's policies, maintaining service levels, guaranteeing availability and ensuring the integrity of the systems and data. In common with all businesses, there are processes to set and review the strategy, and co-ordinate activities across the business.

Set and review strategy	Co-ordinate and manage	Market registry / registrar services
		Develop registry / registrar services
		Sell registry / registrar services
		Deliver registry / registrar services
		Operate and administer services

Figure 3: High-level business processes

2.2.4.1.2 Sub-processes

In order to understand how the high-level processes will be resourced by people and supported by systems, the following table describes each process in more detail. Against each process are the objectives, information and systems that are critical to the successful execution of the process. The information and systems that are deemed critical form part of the applications and database architecture described in the Technical Plan.

Notes on the table:

Frequently a system or database is shown as critical to more than one business process. However, there will not be more than one logical version of the same system / database within the Registry Operator / Registrar business.

Not all of the processes in the diagram are relevant to both the Registry Operator and Registrar business operations. The 'Registry Op or Registrar' column shows to which business the process refers.

Table 3: Description of business processes

High-level process title	Sub-process title	Registry Op (RO) or Registrar (R)?	Business process description	Critical objectives and information / systems that are key to the process
Market registry / registrar services	Identify service opportunities	RO	Working with the Sponsor, the Registry Operator (RO) will identify new services that have the potential to enhance the RO service to its customers (e.g. Registrars)	Understanding the requirements of the domain members. Understanding the possible impact on the Sponsor's domain, RO 's business and the RO's customers who are Registrars. Communications between RO and Sponsor.
		R	Working with its selected partners, the Registrar will identify new services to enhance its commercial standing. If necessary the Registrar will request additional services from the RO that will facilitate the implementation of the new services.	Understanding the requirements of its customer base. Assessing the possible impact on the Registrar's business.
	Determine how each service will be sold and the pricing structure	RO / R	Working with key partners the RO / Registrar will determine the value of services to its customers and the commercially driven price.	Understanding the requirements of its customer base. Access to competitive market information.
	Identify potential customers	RO	Working with the Sponsor, the RO will identify new customers to approach to join the domain (e.g.	Knowledge of organizations that are eligible to join the domain.

			join the domain (e.g. Registrars).	Understanding the requirements of potential domain members. Communications between RO and Sponsor. A database of current domain members.
		R	Working with its selected partners, the Registrar will identify new customers to approach.	Knowledge of organizations that are eligible to join the domain. Understanding the requirements of potential domain members. A customer database that is able to handle up to 950,000 customers and marketing tools to build profiles of target customers.
	Exploit customer and domain name information to market services	R	The Registrar will utilise its customer information to offer value added services, etc.	A customer database that is able to handle 950,000 customers and marketing tools to build targeted campaigns. Separation of RO information from Registrar information to avoid unfair competition and misuse of data.
	Identify and prompt existing customers to renew domain names	RO / R	The RO / Registrar will proactively monitor the expiry date of domain names and contact customers to renew.	A domain name database to know when the RO / Registrar customers' domain names expire. Separation of RO information from Registrar information to avoid unfair competition and misuse of data.
Develop registry / registrar services	Systems development lifecycle processes	RO / R	The RO / Registrar will design, build and implement systems to provide the services.	Systems development tools and lifecycle methodology
Sell registry / registrar services	Display services appropriately	RO / R	The RO / Registrar will determine the most appropriate medium and style for offering services to the customer.	A Web server and web tools (e.g. authoring, content management and deployment). An e-commerce system that uses industry standard functionality (e.g. shopping basket) to offer products.
	Advise customers on services at Point of Sale (POS)	RO / R	The RO / R will provide advice on the optimum way to acquire and utilise domain names. Primarily, the RO's customers will be Registrars and the Registrar's customers will be ISPs and end users.	Knowledge of the domain's restrictions. Knowledge of legal issues. A database to look-up potential domain names against known trademarks A system to record the details of the customer, their

				request and the outcome.
	Identify additional services to customers at POS	R	At the point a customer purchases or uses a specific service or combination of services, the Registrar will offer complementary services to the customer.	Context sensitive personalisation tools that determine the services offered to a customer from their previous and current purchases. A database of service offerings.
	Capture information about the customers at POS	RO / R	At the point of sale, the preferences of the customer will be recorded by the RO / Registrar and the customer might be asked to provide additional information. Primarily, the RO's customers will be Registrars and the Registrar's customers will be ISPs and end users.	A database to record customers' purchases, preferences and information that is able to handle 950,000 customers.
	Determine cost of services purchased / used	RO / R	At the point of sale, the services purchased by the customer will be calculated. Different services and combinations of services will be sold at a price determined by the market. There will be no flat charge.	A database of service offerings and prices.
	Execute sales transaction	RO / R	The payment method and schedule are determined for each customer transaction, based on the standing of the customer with the RO / Registrar and the services they are purchasing. Both direct credit card and invoice-based payments are handled.	Secure and scalable e-commerce payment system. Links to a mainstream credit card authorisation service. Scalable accounts and billing systems.
Deliver registry / registrar services	Advise customers on purchased services post sale	RO / R	Part of the fulfilment of a service is providing after sales support. This will be provided on-line through emails and by telephone through a helpdesk.	A system to record the details of the customer, their request and the outcome. Scalable accounts and billing systems. A database to record customers' purchases, preferences and information. Call handling system.
	Educate customers about domain names	RO / R	A key service customers will seek is advice on the most appropriate usage of domain names, restrictions on names within the domain, and so forth. This service will be delivered in the form of a Frequently Asked Questions on-line document, on-line utilities and telephone support.	Knowledge of the domain's restrictions. Knowledge of legal issues. A database to look-up potential domain names against known trademarks. A system to record the details of the customer, their request and the outcome.
	Verify the format and	RO / R	A key service ROs and Registrars are obliged to	A record of all registered domain names within the

	uniqueness of requested domain names		provide is the verification of domain names. This will be implemented prior to the registration of domain names against a particular customer.	domains managed by the RO / Registrar. Knowledge of the domain's restrictions. Knowledge of legal issues. A database to look-up potential domain names against known trademarks.
	Assign domain names to customers	RO / R	If the transaction has been completed and the domain name verified, then register the requested domain names to the customer. In some instances this will include second level domains. Primarily, the RO's customers will be Registrars and the Registrar's customers will be ISPs and end users.	A domain name registration system. Shared registry system.
	Move accounts to other Registrars, ISPs, etc. on request	R	A key service Registrars will have to provide in a competitive domain space is the movement of domain name registrations from one Registrar to another. Additionally end-users may change ISPs necessitating a change to the domain's name-servers.	A domain name registration system. Standard interfaces to other Registrars etc.
	Modify domain name information	RO / R	The RO and Registrar must be able to alter the domain name information for their customers (and only their customers). Primarily, the RO's customers will be Registrars and the Registrar's customers will be ISPs and end users.	Domain name database. A scalable domain name registration system.
	Respond to Whois queries	RO / R	Provision of a standard Whois service. RO's will return details about name-servers and responsible Registrars. R's will return details about end-users.	A scalable Whois system that is able to handle 0.5M queries per day.
	Implement other services for customers	RO / R	In addition to the key services described above the RO / Registrar will deliver other services to the customer.	
Operate and administer services	Manage the quality and integrity of the domain name system	RO / R		Capacity planning procedures. System and network management tools including configuration, performance and problem management. Security policy and secure systems.

Provide assistance in the resolution of domain name disputes	RO / R		A domain name registration system. Interfaces to Registrars.
Support the Sponsor in the development of the domain name space	RO		Produce metrics and key performance indicators for the domain name market and system.

2.2.4.2 People

A review of the business processes above and of the operations of similar existing organisations shows that the functions described below will be required to run the Registry Operator and Registrar businesses. To determine the headcount of each business function, we have used as benchmarks the levels of transactions per month (including new registrations and renewals) and the total number of registrations within the year. The number of staff per transaction is, we believe, in line with industry standards.

The headcount for each the three demand scenarios (i.e. 10%, 50% and 90% confidence) are shown through year 1 to year 4.

Table 4: Staff for 10% confidence scenario

Year	Reg Op / Registrar	Business Manager	Legal	Marketing	Reg Admin	Customer Support	Technical	Finance	Total
Year 1	Registry Operator	0.25		0	0.25		0.25	0.25	1
	Registrar	0.25		0.25	0.25		0.5	0.25	1.5
Year 2	Registry Operator	0.25	0.25	0.25	0.25	0.25	0.75	0.25	2.25
	Registrar	0.25	0.25	1	0.75	0.5	1.25	0.5	4.5
Year 3	Registry Operator	0.25	0.25	0.5	1	0.5	1	0.5	4
	Registrar	0.25	0.25	1	1.5	1	1.5	0.5	6
Year 4	Registry Operator	0.25	0.25	1	1	1	1	0.5	5
	Registrar	0.25	0.25	1	2	2	2	0.5	8

Table 5: Staff for 50% confidence scenario

Year	Reg Op / Registrar	Business Manager	Legal	Marketing	Reg Admin	Customer Support	Technical	Finance	Total
Year 1	Registry Operator	0.25			0.25		0.25	0.25	1
	Registrar	0.25		0.25	0.25		0.5	0.25	1.5
Year 2	Registry Operator	0.25	0.25	0.25	0.25		0.5	0.25	1.75
	Registrar	0.25	0.25	0.25	0.75		1	0.25	2.75
Year 3	Registry Operator	0.25	0.25	0.5	0.5	0.5	0.5	0.5	3
	Registrar	0.25	0.25	0.5	0.5	0.5	1.5	0.5	4
Year 4	Registry Operator	0.25	0.25	0.5	1	0.5	1	0.5	4
	Registrar	0.25	0.25	1	1	0.5	1.5	0.5	5

Table 6: Staff for 90% confidence scenario

Year	Reg Op / Registrar	Business Manager	Legal	Marketing	Reg Admin	Customer Support	Technical	Finance	Total
Year 1	Registry Operator	0.25					0.25	0.25	0.75
	Registrar	0.25			0.25		0.5	0.25	1.25
Year 2	Registry Operator	0.25		0.25	0.25		0.5	0.25	1.5
	Registrar	0.25		0.25	0.25		1	0.25	2
Year 3	Registry Operator	0.25	0.25	0.25	0.25	0.25	0.5	0.25	2
	Registrar	0.25	0.25	0.25	0.25	0.25	1	0.25	2.5
Year 4	Registry Operator	0.25	0.25	0.25	0.25	0.25	0.5	0.25	2
	Registrar	0.25	0.25	0.25	0.25	0.25	1	0.25	2.5

The anticipated growth rate means that the planned level of staff acquisition is well within practical limits. If necessary organisations with which Poptel already has working relationships will be used for interim services, including management, professional and technical.

2.2.4.3   Systems

The systems described in the Technical Plan will be built using a combination of bespoke development, package selection and third party services. The manner in which in system will be built

is described in more detail in the Technical Plan. In summary, the main systems will be built as follows.

- Registration system.

There are few packages of this type available on the market. Discussions will continue with candidate suppliers with the aim of assessing packages. In the interim, bespoke development of the system, in partnership with key industry operators, is planned.

- Billing system

This will be provided by one of Poptel's key partners, Sei-Mitsu. Please refer to the Billing and Collection section for more detail.

- E-commerce (shopping and payments)

This will be provided by Poptel's E-commerce system.

- Core DNS service and network

Poptel using internal resources and specialist service providers will implement this.

2.2.4.4 Facilities

The facilities required by Poptel's Registry Operator and Registrar businesses would be identical to those currently used by Poptel's ISP business. Space will be acquired in the existing environment and in addition an alternative Network Operations Centre will be established in the first year. Please see the Technical Plan for more details.

2.2.5 Investment appraisal

2.2.5.1 Summary Illustrative Financial Forecasts

Below are the summary illustrative financial forecasts by demand scenario. The 90% confidence level indicates the lowest market penetration, the 50% confidence level indicates demand in the scenario is as likely to be met as not met and the 10% confidence level indicates the highest level of market penetration. In general, the business plan has been constructed to be viable within the investment available at the lowest levels of penetration.

There is a clear intention on the part of the sponsors and Poptel to make the TLD a success and thus create a fund to support initiatives to tackle the digital divide issues within the TLD constituency.

Capital expenditure, overheads and costs of sales have been calculated according to the operational and technical plans described in subsequent sections.

Please refer to the appendix for further detail. The spreadsheets upon which the calculations have been based can be made available upon request.

Table 7: Scenario 1 – 10% Confidence Level

	Year 1	Year 2	Year 3	Year 4
New Registrations	5,780	39,750	79,450	92,600
Turnover ($US ,000)	1.771	4.706	5.604	6.219
Gross Profit ($US ,000)	1.714	4.540	5.358	5.947
Net Profit ($US ,000)	1.426	3.947	4.636	5.069
Maximum Cash Requirement ($US ,000)	-0.904			
Capital Expenditure ($US ,000)	0.813	0.256	0.134	0.018

Table 8: Scenario 2 – 50% Confidence Level

	Year 1	Year 2	Year 3	Year 4
New Registrations	2,890	19,875	39,725	46,300
Turnover ($US ,000)	0.827	2.353	2.802	2.940
Gross Profit ($US ,000)	0.776	2.227	2.636	2.761
Net Profit ($US ,000)	0.488	1.745	2.048	2.138
Maximum Cash Requirement ($US ,000)	-0.910	-0.600		
Capital Expenditure ($US ,000)	0.810	0.250	0.131	0.012

Table 9: Scenario 3– 90 Confidence Level

	Year 1	Year 2	Year 3	Year 4
New Registrations	1,156	7,950	15,890	18,520
Turnover ($US ,000)	0.354	0.941	1.121	1.244
Gross Profit ($US ,000)	0.306	0.839	1.002	1.120
Net Profit ($US ,000)	0.046	0.413	0.524	0.625
Maximum Cash Requirement ($US ,000)	-0.927	-1.164	-0.845	-0.320
Capital Expenditure ($US ,000)	0.810	0.247	0.128	0.005

2.2.6 Risk management

2.2.6.1   Risk analysis

The table below identifies key risks that the Registry Operator, in particular, faces. For each risk the probability of it occurring and

the impact of such an event on the business has been assessed as high, medium or low. The risks are ordered within in each risk area (i.e. technical, operational and demand) by impact then probability. Against each risk we have identified how we are proposing to reduce the risk of occurring. Against each high impact risk we have described our contingency arrangements.

Table 10 : Assessment of Risks

Area of risk	Description of risk	Probability	Impact	Measures to manage risk avoidance	Contingency (for high priority risks)
Technical	Security infringement leading to loss or corruption of data	Medium	High	Security policies defined and implemented. Firewalls and user authentication systems implemented. Audit trails.	Regular data backups. Data held off-site and in escrow.
	Security infringement leading to loss of service	Medium	High	Security policies defined and implemented. Firewalls and user authentication systems implemented. Audit trails.	Alternate Network Operations Centre implemented and on standby.
	Critical failure of Registry Operator's main systems	Low	High	Proactive systems management. No single point of failure (clustering and secondary systems implemented).	Alternate Network Operations Centre implemented and on standby. Data held off site and in escrow.
	Systems unable to handle level of transactions	Low	High	Demand models have driven choice of systems. Load balancing included in infrastructure. Performance of systems continually monitored. The architecture is scalable.	Upgrade systems or increase network capacity. In short term, provide reduced level of service.
	Unable to obtain or build effective registry management system	Low	High	Identified leading packages available or under development.	Work in partnership with leading registry operations (e.g. Nominet) to secure an appropriate system.

				Have access to skilled and experienced development staff.	
	Failure of a single key system	High	Low	No single point of failure (clustering and secondary systems implemented).	Spares held on site. Support agreements in place.
Operational	Domain name disputes	Medium	Medium	Registrants must be adhere to Sponsor's conditions and complete detailed, signed application form. Names compared against a list of known trademarks. Details of registrants checked (primarily by the registrar) prior to approval. Sponsor approves names prior to allocation, in early stages of operation.	
	Cybersquatting	Low	Medium	Frequently review status of domain names, including whether connected to a web site, contact details and so forth. See above.	
	Helpdesk languages	Low	Low	Poptel staff currently have bi-lingual capabilities in English, French, German, Spanish Chinese, Japanese, Malay, Ibo (Nigeria). Encourage the growth of locally based Registrars.	
Demand	Very low demand	Medium	High	Careful monitoring of	Following start up phase adjust

	demand			monitoring of uptake during start up phase.	phase adjust recruitment plans for operational staff. Use existing operational capacity instead. Adjust marketing plans in conjunction with sponsors – aiming to boost demand, short or long term.
	Very high demand	Medium	High	Careful monitoring of uptake during start up phase. Technical systems developed to be highly scaleable Manage demand through Sponsors	Increase rate of recruitment of operational staff. Consider outsourcing of some service elements e.g. helpdesk functions (in the context of Poptel's overall activity)

2.2.6.2   Provisions for registry failure

Poptel understands the serious consequences of a registry failure upon its customer base and the Internet community, whether caused by commercial, technical or other factors. Given the seriousness of such failure Poptel will adopt industry best practice by developing a business continuity plan to re-establish core business functions and technical services following a catastrophic loss of its resources.

A practical and comprehensive business continuity plan takes significant resources and time to produce. The business continuity plan will be developed with specialists and industry partners during the start-up period described in the business plan. The partners will include other members of Poptel Worldwide (e.g. Sei-Mitsu) and candidate registrars (e.g. the National Rural Telecommunications Co-operative)

The Technical Plan includes several provisions for system resilience from the outset, including the two following provisions below.

- An alternative Network Operations Centre is planned, where standby systems will be located.

- The important servers and network components will be implemented as clusters to provide redundancy and load balancing.

Registry Operator's Proposal

For the .union global Top Level Domain

Sponsor :
International Confederation of Trade Unions

Registry Operator :
Poptel Ltd

Volume 3 of 7
Technical capabilities and plan

3 Technical Capabilities and Plan

3.1 Current Capabilities

3.1.1 Current IT Architecture

3.1.1.1 Systems

3.1.1.1.1 General

Poptel's Network Operation Centre (NOC) has been designed from the outset with the key objective of ultra high availability. It is located in a purpose built suite in Telecity Manchester (http://www.telecity.co.uk/), a facilities managed data operations centre specifically targeted at ISP's and Telco's. Consultants to the project included the A L Digital Group (http://www.aldigital.co.uk/) one of the UK's leading experts on high-availability Open Source architectures.

Poptel is currently planning a new London based NOC in partnership with Sei-Mitsu (http://www.sei-mitsu.com/), another member of the Poptel World Wide group. Poptel will be managing the network, and will use it to replicate core services for data-centre redundancy, as well as offering customer co-location facilities. Sei-Mitsu will be using the facility for routing Voice Over IP traffic between the Internet and the UK PSTN network, which requires ultra-reliable high-bandwidth at very low latencies.

Through work on our Manchester and forthcoming London NOC's, we are creating an "Application Service Provider in a box" solution that can be rapidly deployed in any lights-out environment across the globe. Poptel has relationships with other data-centre operators and co-location partners within Europe and North America.

3.1.1.1.2 High-Availability Servers

In order to ensure both high availability and high performance, all our servers sit in clusters behind load balancing switches. By distributing the requests within a cluster, performance can easily be scaled by adding more servers. The switches automatically perform health checks and re-route requests if a server fails. If any one server goes down, there is always at least two others still available to ensure no loss of service.

The majority of our server hardware is Intel x86 based, and because of our load-balanced cluster architecture, we make use

of generic interchangeable servers.   When individual server performance or reliability is mission-critical, we use the IBM Netfinity range.

Our Unix servers use the FreeBSD operating system, one of the most stable and secure operating systems in the world used by some of the largest Internet sites, such as Microsoft's http://www.hotmail.com/ service and http://www.cdrom.com/. We make additional use of Redhat Linux where required, and have system administration skills for Sun Solaris servers. We also run an application-specific Compaq VMS system.

Our Microsoft servers use Windows NT4 and IIS4. Working with Compaq UK, we have built a highly-available NT cluster for Microsoft SQL Server 7 database services.

3.1.1.1.3   Content Replication

Poptel's high-availability Unix server clusters uses the Coda distributed file system to do content replication across servers that are being load balanced together. Using read-write replicated Coda volumes on all servers that need to share the same data volumes achieves this. Changes to the volume on one server are automatically replicated to the others; so individual server failures won't cause the data to be unavailable. Replication takes place over a private administration network to reduce loading on the public network.

Poptel's high-availability NT server clusters use front-end proxies to serve up content, but not to hold the actual web or database data. Two backend servers are used that connect to a shared external RAID array. One of the servers provides the primary SQL data, whilst the other acts as the primary file server for the web data. If one server fails, the other takes over the faulty servers task. Since the data is held in one place (a shared RAID array), no content replication is required.

3.1.1.2   Network

3.1.1.2.1   General

The network uses 100Mb/s Ethernet throughout. The routers (http://www.cisco.com/) and switches (http://www.foundrynetworks.com/) are all upgradeable to 1Gb/s Ethernet or ATM as needed. Using two redundant high performance load-balancing switches on the public side of our network has eliminated single points of failure. Every server has two independent routes to the gateway routers. The two gateway routers have two independent backbone connections to the Internet, providing full redundancy in the event of failure. A separate private network is used for server administration, data backup, and data replication services.

3.1.1.2.2 Backup

Poptel uses AMANDA (Advanced Maryland Automated Network Disk Archiver), which is an Open Source utility developed at the University of Maryland. It can handle multiple UNIX and NT servers simultaneously. It uses a single master backup server to back multiple hosts to a single collection of backup devices – currently Breece Hill Q2.15 with 2x DLT drives, 15 slots and a capacity of 300GB. The device itself can scale to 4x DLT drives for improved throughput, and the backup server can contain 10 devices for increased capacity. All tapes are changed daily and held in offsite storage. AMANDA controls the scheduling of dumps. They are scattered through the dump cycle to balance the amount of data backed up each run.

3.1.1.2.3 Bandwidth

Poptel currently takes a redundant pair of feeds from Concentric Networks (http://www.uk.concentric.com/) via 100Mb/s Ethernet, choked by traffic shaping at Concentric's end. Our NOC is located within Telecity Manchester, a major bandwidth peering point. We are in negotiations with a number of providers for additional independent feeds, with the aim of bringing our aggregated bandwidth to 34Mb/s the end of the year. Our network architecture will scale to around 1Gb/s of aggregated Internet feeds. The new London NOC will be based on similar architecture, located at a major peering point, and will have its own independent feeds in addition to dual high-speed links to the Manchester NOC.

We offer our customers a choice of bandwidth models – traffic usage with a shared bandwidth ceiling, or guaranteed bandwidth with a dedicated burstable ceiling. We therefore continually monitor traffic utilisation for billing purposes, and bandwidth utilisation for guaranteeing customer SLA's. We are able to fine tune our upstream requirements, with a supplier turn-around of under 24 hours.

3.1.1.2.4 Security

Poptel is currently working towards BS7799 - the British Standards Institute, standard in Information Security Management. To that end Poptel has a cross-organisation information-security working group to coordinate good information security practices across the whole organisation. In line with the standard we are currently defining the scope and controls used for our Information Security Management System. When this process is completed we will seek certification from a third party accreditation body.

In addition Poptel is currently in negotiation with a number of third party computer security companies to provide a monthly scan of our networks to check for security problems. This is in addition to the usual monitoring of security mailing lists for security problems in the operating systems and applications that

we use, that is performed by our system administrators. Poptel also uses SNORT (http://www.snort.org/) an Open Source network intrusion detection system, with weekly updates of intrusion signatures to monitor suspicious network traffic.

Poptel filters connections through the NOC using ACLs on both the border routers and the Ethernet switches. We use NAT from private and non-routable IP numbers to public VIPS that only map onto particular IP services. An IDS (intrusion detection system) forms part of the Bandwidth Monitoring servers (see section 3.1.3.1.3). IDS checks all packets flowing in or out of the NOC for suspicious activity based on attack signatures such as overflow code or common worms. A rule-set is used to identify events that warrant SMS and email alerts to the security officer.

All our UNIX servers run their own filtering rules based on kernel level firewall code. All our NT servers have been locked down according to Microsoft and Compaq recommendations. For mission-critical security we deploy Firewall 1, which is used to protect the office networks, and to provide a secure bridge between the public and private networks so that system administrators can use the Internet. Additionally we supply and manage Firewall 1 as an optional part of our customer co-location products.
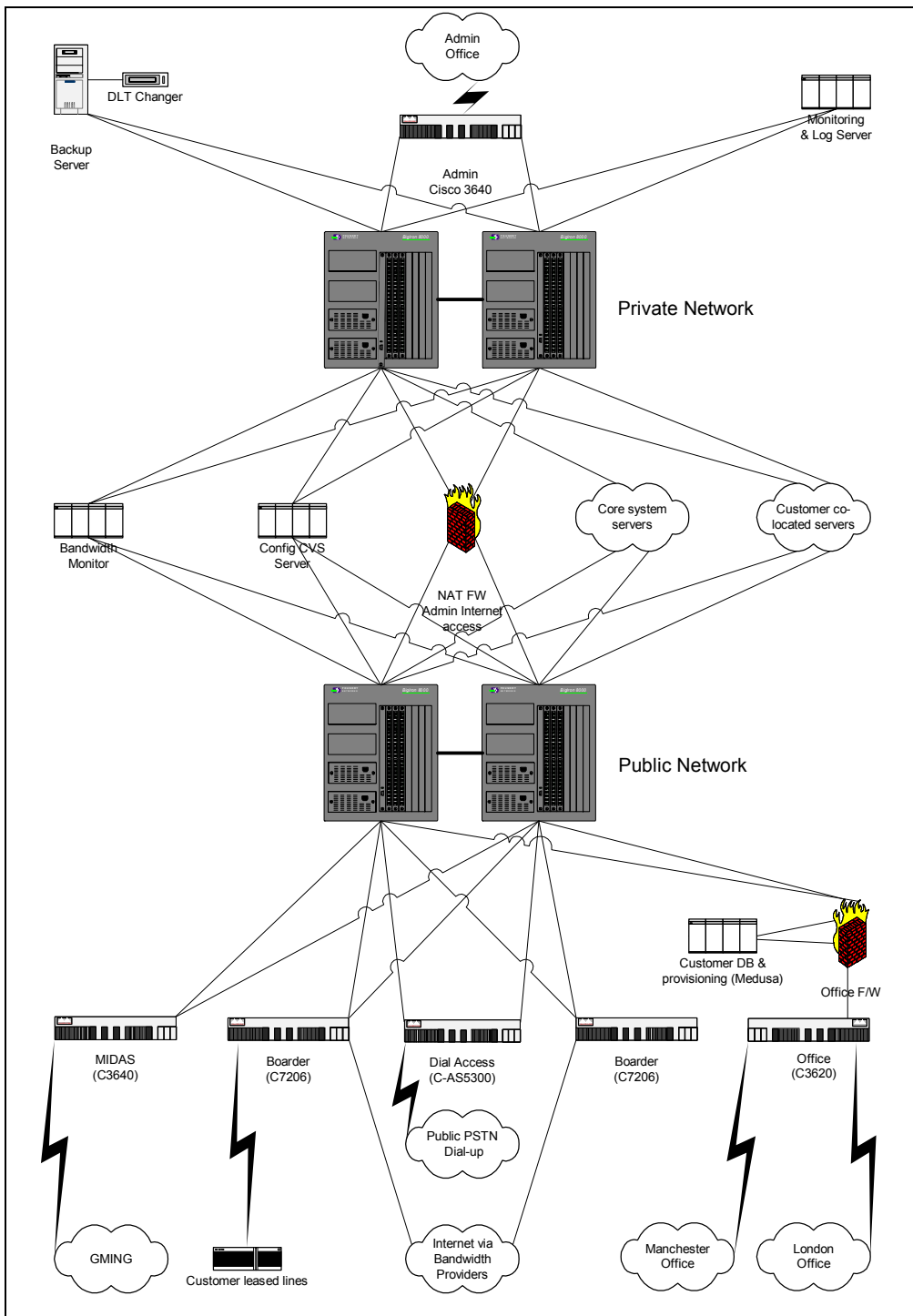
Figure 4 - Overview of Poptel's Network Operations Centre

3.1.2 Current Organisation

3.1.2.1 Key IT teams

3.1.2.1.1 Internal IT

This team is responsible for all IT systems within Poptel, ranging from the office networks to the operation of the NOC. There is currently 11 staff in the team entirely based in Manchester. The team designed and built the NOC with the aid of external consultancy, a process that has given them become enormous experience of highly available Open Source systems.

3.1.2.1.2 Professional Services

This team is responsible for all bespoke development for clients, including web design and build, web applications, and onsite management of client IT systems. There is currently 12 staff in the team, mainly based in London. The team is building up a portfolio of in-house dynamic web modules that are deployed on customer web sites. The Client-Side team provides on-site network services to organisations, such as the installation and maintenance of routers, LAN mail systems, and Intranets.

3.1.2.1.3 Product

This team is responsible for research, development, and deployment of Poptel's product range. There is currently 3 staff in the team mainly based in London, and recruitment is under way for a further 3. Poptel aims to be the leading supplier of Internet products to its customer base, and the team focuses particularly on the needs of Internet enabled organisations.

3.1.2.1.4 Customer Services

Our Customer Services Department consist of two teams each dedicated to a specific aspect of customer care.

Firstly we have a team of five staff based in London who are employed to process the technical aspects of customer orders. This team is particularly experienced in domain registration and transfer. The team deals with both the customer registering or transferring a domain, with the domain registries and, in the case of transfers, with other ISPs.

In addition we also have a dedicated and highly skilled team of six, based in Manchester and working on a 24x7 basis, to respond to requests for assistance of a technical nature. This team has ready access to both specialist equipment and other staff with in-depth knowledge of particular technologies.

All calls received are logged in our database, which records all services the user subscribes to. All requests for support

received electronically are immediately acknowledged electronically and are then investigated and resolved within a four-hour period, although most are resolved within 15 minutes. Requests for support received by telephone are dealt with immediately.

Both teams are served by a digital telephone system with Computer Telephony Integration capability.

All support staff are being trained for Microsoft MCP+I certification.

3.1.2.2 Key skills and expertise

3.1.2.2.1 Internal IT Team

Poptel's technical team is grouped into the following sub teams:

Unix

- Unix administration skills.

- Expertise in TCP/IP, SMTP, POP3, HTTP, DNS, and NNTP.

- Understanding of network and system security.

- Expertise in administering systems such as mail, DNS, news, POP3 and web servers.

- Programming skills include PERL, C, Java, Javascript and Unix Shell.

NT

- Microsoft Certified Internet Solutions Engineer qualifications.

- NT system administration and planning skills.

- Understanding of NT domains.

- Expertise in disk configuration and use of RAID with NT.

- Expertise in Microsoft IIS web servers.

- Familiarity with NT user and group management.

- Familiarity of other NT web applications including Index Server, SQL Server, and Transaction Server.

- Experience of Microsoft Cluster Servers, and Site Server replication.

- Programming skills include Visual Basic, ASP, PERL, and HTML.

Network

- A wide knowledge of IT and networks including hubs, switches and routers.

- Expertise in Cisco routers and Foundry switches.

- Expertise in working with large IP networks.

- Experience of networking protocols both LAN and WAN including RIP, DHCP, OSPF, BGP, SNMP and Network Management applications.

- Experience of ATM, Frame Relay, and telco transmission systems including ISDN2 and E1 leased lines.

- Experience with Layer 3 switching.

- Experience of HP Openview.

- Experience of co-located and managed server services.

Applications

- Expertise in database theory and database management - including Microsoft Access, Microsoft SQL Server 7, and MySQL.

- Experience of SSADM, CASE tools, and other formal analysis and specification techniques.

- Programming skills include Visual Basic, Java, PERL, PHP, and HTLM

3.1.2.2.2   Professional Services Team

- Expertise in the following page creation and graphics packages: Pagemaker, Quark, Frontpage, Dreamweaver, Homesite, Photoshop, Flash, Director, Freehand, Illustrator and Fireworks.

- Programming skills include HTML, JavaScript, Visual Interdev for Active Server Pages (ASP), Java, PERL and PHP.

- Expertise in Web server and databases including Apache, Microsoft IIS, Microsoft SQL Server 7, and MySQL.

- Additional skills in photography, video, graphic design, cartography, music, teaching, customer support, and environmental auditing.

3.1.3   Tools

3.1.3.1   Systems management

3.1.3.1.1   Service provisioning

Poptel use a combined customer database and service provisioning system called Medusa. It has been developed in-house over a number of years using PHP, PERL, and MySQL. When a customer order is processed, it is entered into Medusa, which triggers a series of service provision scripts on NOC host

servers, and notifies the billing system of the transaction. Medusa has also been integrated into Poptel's customer-service ticketing system, based on an Open Source product called PTS.

3.1.3.1.2 Services, machines and network devices.

Poptel uses MON (http://www.kernel.org/software/mon/), a general purpose resource-monitoring system. It monitors at server-level as well as service-level (eg. http, ftp, smtp, dns, etc), and receives traps from other monitoring systems. Alerts are via email and SMS to our 24x7x52 technical support staff. Our customer SLA's for dedicated and co-located servers limits engineer response times during business hours to a maximum of 0.5 hours, and out of business hours to a maximum of 2 hours.

Additionally, Poptel uses CiscoWorks to monitor all Cisco equipment, and Foundry Monitor for all Foundry Networks equipment. We are currently working to integrate all our monitoring tools into an HP Openview environment.

3.1.3.1.3 Bandwidth Monitoring

Poptel measures traffic utilisation for billing purposes, and bandwidth utilisation for guaranteeing customer SLA's. We use monitoring servers to generate statistics that show the amount of data transferred between our core switches and our border routers. They monitor replicas of the core switches' Ethernet ports that connect to the border router. Traffic to or from any machine in our NOC and the Internet is logged by an SNMP agent called NeTraMet (Network Traffic Meter). These logs are analysed every 10 minutes, rotated every night, and stored for 45 days. From this, we can report on the number of bytes transferred, and the peek or average bandwidth over a given period (to a 10 minute granularity) for any machine/customer, or the NOC total. This can be further analysed by protocol (eg http, smtp, pop3, dns, etc).

3.1.3.1.4 Web Statistics

Poptel uses MediaHouse Statistics Server LiveStats (http://www.mediahouse.com/). This provides the ability to email customers regular raw or processed logs, as well as real-time reporting via a browser. Reports can be generated for any period. There are shortcuts to select yesterday, last week and last month, but customers can also select a period between any two dates to analyse a specific marketing campaign. LiveStats has the ability to update the reports every two minutes. The reports are designed for viewing in a browser, but a print button will convert the page to a report designed for printing. An export button allows the data on the current report to be downloaded to a local file for later importing into any database or spreadsheet.

3.1.3.2 Development

Poptel develops web sites and products for its customers as a key part of its service offering. A typical customer web site will consist of both dynamic (i.e. the information on the page changes according to business rules depending on the context and circumstances) and static web pages. The tools used are as follows:

Page creation tools: Pagemaker and Quark for text pages, Dreamweaver and Homesite for page building, Flash and Director for animation, and Freehand, Illustrator and Fireworks for graphics.

Static page tools: HTML, JavaScript.

Dynamic page tools: Visual Interdev for Active Server Pages (ASP), Java, and PHP.

Web server and database: Microsoft IIS and SQL Server on NT.

The products developed by the Professional Services team, which are served to customers through the web site, include a documents database, news feed and a press office application.

3.1.4 Key technical achievements

3.1.4.1 Poptel NOC

Poptel has implemented a new state of the art network operations centre, as described in section 3.1. This is the culmination of over 10 months of research and planning. Although traditional combinations of high performance/capacity servers in high availability fail-over configurations were considered at the beginning of the project, the end solution of using generic and easily repair/replaceable x86 servers proved to be the most elegant and cost effective solution to giving our customers a scalable and highly available service. Since the majority of the design and implementation of the final integrated solution was performed in-house, it also increased the depth of technical knowledge and skill possessed by our Internal IT team. This knowledge and confidence has given us the ability to go forward and provide more innovative technical solutions for our major clients.

3.1.4.2 GMING and the MIDAS project

MIDAS (http://www.midas.org.uk/), the Manchester Investment and Development Agency Service, provides a dedicated service to attract inward and indigenous investment into the area. This includes advice on the availability of office and industrial property, development sites and opportunities, grants, recruitment & training, and background information on

Manchester itself. To assist in providing this service, a project was set up around four years ago called Property Pilot. This is a database system allowing all local authorities in the Greater Manchester to input properties in their areas and search for properties in all areas based on selected criteria. Poptel set up the infrastructure, originally using ISDN to allow communication between the authorities and the database server located at the MIDAS offices in Trafford Park.

More recently, Poptel has moved much of the MIDAS infrastructure over to the G-MING network (http://www.g-ming.net.uk/). The Greater Manchester Internetworking Group is a Metropolitan Area Network currently linking several universities in Greater Manchester. It also links various other organizations such as teaching hospitals, public libraries, local museums, and student Halls of Residence. G-MING essentially links the individual LANs of each organization and provides gateways to the global Internet. It incorporates the latest technologies, which include ATM and multicasting, and provides opportunities for the development of new-networked services.

G-MING is also connected to Janet and Super Janet allowing all the educational establishments connected to it access to the Internet. However, because of the restrictions placed on Internet connectivity to non-academic organisations, there also needs to be a second way of accessing the Internet for G-MING users. As part of the G-MING network, Poptel is also in a position to provide subscribers to G-MING with Internet Connectivity.

3.1.4.3   Manchester Community Information Network

MCIN was the first kiosk based community information system in the UK. The Original software was developed in conjunction with KPMG and has now been replaced with a touch screen interface designed by SEMA. Poptel was a founding member of MCIN, which is now a limited company employing 5 people. http://www.mymanchester.net/

3.1.4.4   Recent Customer Projects

Poptel has set up three Freenet (branded non-subscription charge based virtual ISP) services. One in conjunction with Easynet for Unison http://www.unisonfree.net/ One for the NASUWT http://www.nasuwt.org.uk/ and one for the national housing federation http://www.fednet.org.uk/

Recent web projects include the dynamic content site for GMB at http://www.gmb.org.uk/. almost live!Trouble at Work a project for Unison providing advice about the work place via a bespoke SQL server database and mailing list system. http://www.troubleatwork.org.uk/. Co-op sites include http://www.osg-co-op.co.uk/ also the co-op millennium site at http://www.co-operatives.net/

3.2 Technical Plan

3.2.1 Underpinning the business processes with IT

3.2.1.1 Applications and information architecture

Table 11 in the Business Plan above describes how the Registry Operator and Registrar businesses will be executed in terms of the key business processes. Table 11 also shows the systems and databases needed to run the business. These are summarised below in three tables (essential, valuable and useful to the businesses). The systems and databases described in the essential table form the core part of the Registry Operator and Registrars applications and information architectures, as laid out in the business case, which has driven the selection of specific technical solutions.

In addition, the volumes and performance requirements each system will have to handle, as described in the demand scenarios in the business case, have driven the selection of specific technical solutions.

Note that the tables intentionally do not include any value-added products that might be offered by the Registry Operator or Registrar.

Table 11: Essential systems and databases

Name of application / database	Proposed technical solution	Key interfaces and issues	RO / R
Accounts	The RO and Registrar will use Sun Accounts, with each business' accounts held separately. Sun Accounts should provide the anticipated level of transactions for both businesses.	The system will have interfaces to the operational registration system and other key systems. A SQL RDBMS will be used for all key databases where possible, which will facilitate the integration of the accounts system.	RO / R
Billing	Poptel Worldwide is currently developing a new billing system for Poptel and its partners to support the Application Service Provider and Telecommunications businesses.	The billing system will integrate with the RO and Registrar accounting systems. The billing system of both the RO and Registrar will need to be updated regularly with transactions. For the RO the transactions will be derived from the shared registry system and E-commerce system. For the Registrar the transactions will be derived primarily from the E-commerce system.	RO / R
Customer database (secure)	The Registrar will use Poptel's current customer and provisioning	For R, Medusa will be modified to integrate with the RFC2832	RO / R

database (secure)	database, Medusa. The RO will have a much smaller number of direct customers and will use a cut-down but separated version of Medusa. For example, it will contain accredited registrars.	client to enable auto-provisioning of customer domain registrations. For RO, a separate instance of Medusa will be modified to integrate with the RO system	/ R
Domain name database (operational)	This is the authoritative database that will act as a distribution server for the rest of the Domain Name System (DNS). It forms a part of the RO's registration system. This will be a flat file, using the standard format for a DNS database.	As an operational database this will have a restricted number of interfaces. It will have an interface to the shared registry system.	RO
Domain name shared registry (secure)	Part of the Registration system. This holds information about Registrars and their customers' registrations. Among other things it holds information about when domain names expire. It will, for example, automatically remove DNS zone files for expired domains, and allow Registrars to renew domain expiry dates. User level authentication will be applied to restrict Registrars to their own customer information.	This will have an interface to the operational domain name database. The system will implement the RFC2832 interface. Auto-reminders will be sent to Registrars prior to expiry of their customers' domains.	RO
Domain name system	A set of high-availability publicly-visible servers will run standard DNS software (bind or variant thereof).	Zone file propagation from a distribution server will be performed using standard DNS protocols.	RO
E-Commerce system with credit card authorization and bank transfer capability	Poptel in conjunction with key partners has developed bespoke E-commerce and Payment systems for high volume businesses. The E-commerce system functionality includes product search, customer registration and shopping basket. It will be modified to handle the business specific to the RO and Registrar business. The Payment system functionality includes credit / debit card authorisation, dynamic checks of card misuse, interfaces to the common bank clearing systems and audit trails.	The E-commerce and Payment systems communicate with customers over a secure interface (128 bit SSL). The E-commerce system will record customer purchases in the customer databases and accounting system.	RO / R
Email (secure)	The RO will generate email notifications of events such as transfer requests for moving a domain between Registrars. Digital signatures will be used to prove authenticity.		
Registration system	Bespoke or package solution to handle registrations.	Provides a shared registry interface between the RO and Registry. This will be developed in partnership with or purchased from significant operators or suppliers in the Registry Operator industry (e.g.	

		Nominet, NSI, Open SRS).	

Table 12: Important systems and databases

Name of application / database	Proposed technical solution	Key interfaces and issues	RO / R
Access to Trademarks database	Need to check out standard service. Could it integrate to the Knowledge base described below?	The World Intellectual Property Organisation http://www.wipo.org/ may offer a lookup database that could be integrated.	RO / R
Customer contact tracking database	Possibly part of the customer database. Allows customer queries and how they were resolved to be recorded and tracked	Poptel uses a ticketing system for support enquires based on PTS (Open Source), which is linked to Medusa, the customer database. Both can easily be modified for Registrar services.	R
Customer purchases / preferences	Will be part of the customer database. Holds information about the customers' purchases and preferences	Part of Medusa.	R
Investment appraisal tools	Spreadsheets and business planning tools (off the shelf, desktop packages)		RO / R
Knowledge base of members, sector, domain policies, known issues and legal precedence	Lotus Notes style database or Extranet. The Sponsor and key Registrars will need to maintain the content. Could charge others for access	This will be presented a database driven informational web site built from a variety of Poptel and 3rd party products. It will share elements of similar sites that Poptel has built for its customers.	RO
KPIs and Management Information tools	Off the shelf reporting tools (e.g. Cognos) and small data warehouse. Needs a plan of what data will be obtained from the different systems		
Marketing tools	Off the shelf tools, integrated with the customer database, that allow the user to identify target customers and create marketing campaigns		R
Service offerings and pricing	Database of the RO's and Registrar's services and how much they cost for different combinations of services, during specific periods and so on. This would be read when determining the cost of services used by a customer. This would benefit from an interface to the marketing and business planning tools	Poptel is currently implementing an E-commerce system to deliver its product catalogue, and extending Medusa to allow real-time service provision at the POS. The sales prospecting database will also be fully integrated with Medusa.	
Web tools	Includes packages for authoring, content management, personalization and content deployment. Need to determine the level of integration we need	The Professional Services Team uses a range of web tools. Further tool and skill requirements will be identified as more detail is added to the system specifications.	

Table 13: Useful systems and databases

Name of application / database	Proposed technical solution	Key interfaces and issues	RO / R
Call handling system	Circa 40K registrations anticipated per month (total in both domains). If we get 5% of this base as queries, then this means circa 100 queries per day, which is about 1 every 6 minutes (10 hour day).		R
Competitive market information	CD ROM monthly report from an agency covering the business domain		R

The IT infrastructure to implement the applications and databases described in the table above is described in the following section.

3.2.1.1.1 Architecture

Poptel is working with Nominet (http://www.nominet.net/) to fully define the applications architecture required for both Registry Operator and Registrar parts of the business. This is an emerging market and many of the commercially available systems have not yet reached maturity. We are exploring third party systems such as those offered by NSI and TuCows, although Poptel may determine that it is more effective to develop its own system.
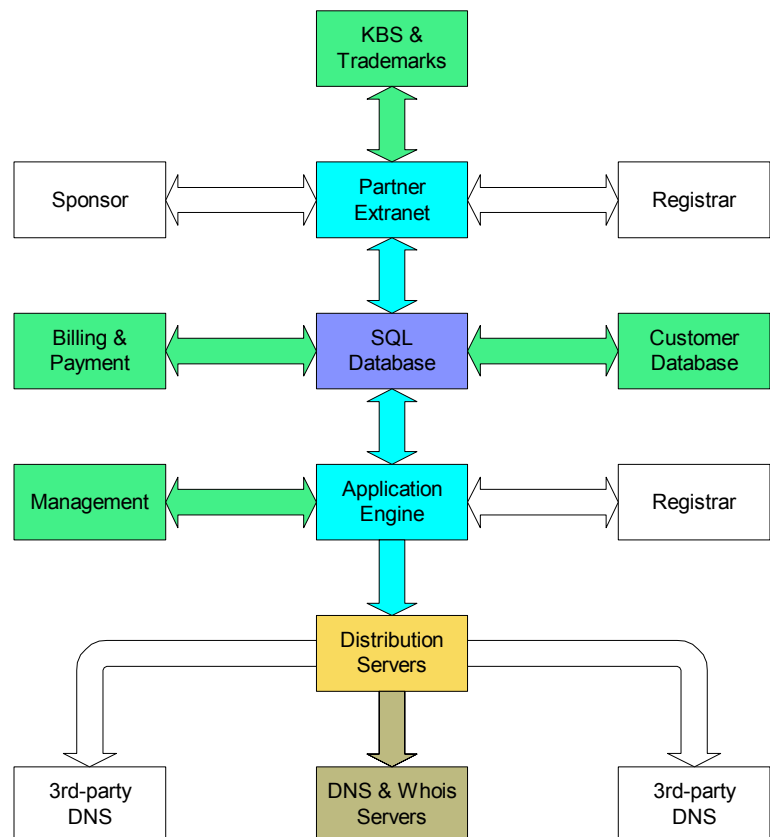
Figure 5: Registry Architecture

Figure 5 shows the basic applications and databases of the proposed Registry architecture. A SQL RDBMS underlies all Shared Registry data. It interfaces to Poptel's Billing & Payment systems, Customer Database, an Extranet service (with its own knowledge base system), and the Application Engine.

The Application Engine contains the business logic and glue systems of the Shared Registry System. Registrars communicate with the engine via an RFC2832 interface, and Registry staff perform management duties via a management interface. The engine outputs DNS zone files and a whois database, which are periodically uploaded to distribution servers before publication by pre-defined list of publicly visible TLD DNS servers, some of which may be run by trusted third parties.
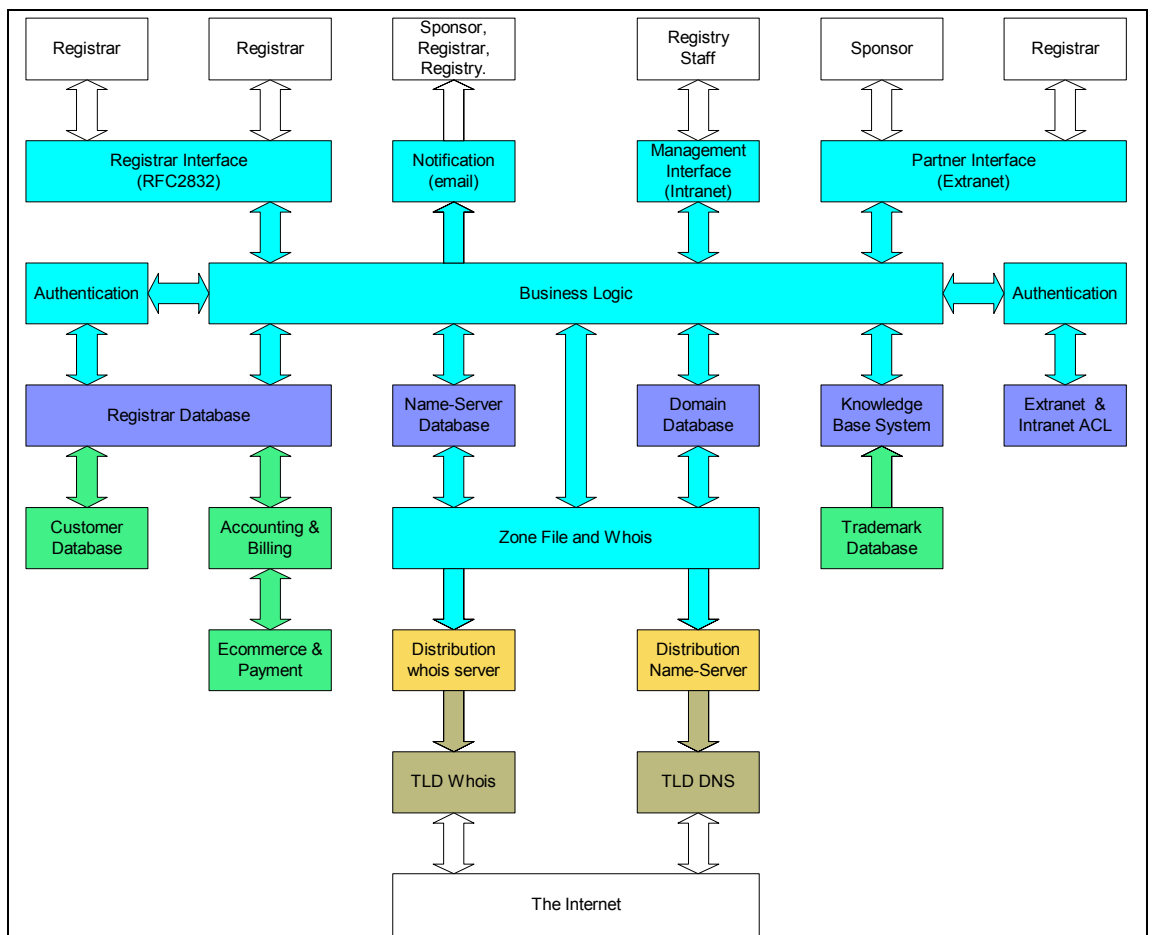
3.2.1.1.2 Functionality

Figure 6: Registry Functionality

Figure 6 shows the main functional blocks of the system. The applications and databases identified in section 3.2.1.1.1 have been expanded, retaining their colour coding – the Applications

Engine (blue), the main logical databases (purple), external systems owned or licensed by Poptel (green), and entities that interact with the system (white).

At the core is the Business Logic that executes requests and determines the rules that are applied to them. Requests for action or information are made via the Registrar Interface (RFC2832), the Management Interface, and the Partner Interface. All requests are authenticated by username/password over a mutual SSL connection against Authentication Control Lists (ACLs) that determines the level of action or information permissible.

An outgoing email function is included to notify relevant external entities of urgent events such as inter-Registrar domain transfers, misuse of the system, fault conditions, etc. The Business Logic draws on five logical databases as follows.

- The Registrar Database

This records pertinent information about all accredited Registrars including login details, permitted gTLD's, whois details, current credit, and an audit trail of activities within the system. Only the whois data is available to anyone other than the Registry and the Registrar concerned. The database is linked to an external Customer Database - to track the customer-relationship and technical support issues - and external accounting, billing and payment systems.

- The Name-Server Database

This records all name-servers known to the system, including their hostname, current IP address, date of entry, date of modification, and the Registrar responsible for the entry. This data is available within the system to all Registrars, although only the responsible Registrar can modify data within the record.

- The Domain Database

Records the domain's name, associated name-servers (which must be drawn from the Name-Server Database), responsible Registrar, registration date, renewal date, renewal term, record modification date and status information. Only the name, name-server, modification date, and responsible Registrar are available to anyone other than the Registry and the responsible Registrar. Only the Registry and the responsible Registrar may modify the record.

- The Knowledge Base

This tracks information about domain policy and other issues likely to be of interest to the Registry and its partners. Some of this may interact directly with the Business Logic, although the majority will be for use through the Partner Interface extranet. Poptel is exploring possible use of official trademark and Intellectual Property registers to enhance the knowledge base.

- The Extranet & Intranet ACL

This database is used to authenticate the use of the Partners Interface and the Management Interface, and to determine the level of activity or information retrieval permissible.

- Zone File and Whois management

This draws on the contents of the Name-Server and Domain Databases. It dynamically generates or deletes zone files and whois records. These are periodically uploaded to the Distribution Servers, where they become authoritative and may then be retrieved by the publicly visible DNS and Whois Servers. Detail of this process is covered section 3.2.3.

3.2.1.1.3   Billing and Collection

We will be using a Telco billing system called TOPS developed by Sei-Mistsu, a Poptel Worldwide company.

TOPS is an extensible, scalable message orientated infrastructure, designed for real-time integration of transaction costing and billing. TOPS is written in Java (estimated to be in excess of 1m lines of executable code), runs on Linux and uses Tuxedo as its underlying message system.

TOPS has an integrated tariff engine which can do real-time pricing and costing based on the messages received from the provisioning system.

TOPS uniquely has a real-time journal vouchering system which enables a live feed to accounting systems.

TOPS uses the security facilities provided by Linux and Tuxedo. It is currently being enhanced to provide a secure web interface for general administration.

Collections will use the inherent features of the Sun Accounting Suite.

3.2.1.2   Infrastructure

3.2.1.2.1   Function in Form

The beginning of section 3.2.1.1 (Applications and information architecture) dealt with the mapping of the business processes identified in the business case to the required IT functionality. With reference to sub-section 3.2.1.1.2, that functionality is mapped to a physical form as follows. Note that the term server is used here to represent a complete execution platform including hardware, operating system and additional features such a scaling and resilience.

3.2.1.2.1.1   Business Logic

Handles all transactions between the Registrar and the database, forming the bulk of the server's workload, which will be proportional to the uptake of domains. It is likely to be coded in a high-level object-orientated language such as C++ or Java and integrated to vendor supplied database libraries.

Runs on the Engine server.

3.2.1.2.1.2   Registrar Interface

Handles all interaction with the Registrars automated client software. RFC2832 is light-weight, handing over most tasks to the Business Logic, to which a tight coupling is desirable.

Runs on the Engine server.

3.2.1.2.1.3   Notification

Generates digitally signed RFC821 compliant notification emails in response to events that occur during Registrar transactions, and will be tightly coupled to the business logic. It will present a growing but low load to the server, especially if Poptel's main mail servers handle mail distribution.

Runs on the Engine server.

3.2.1.2.1.4   Management Interface

Provides a web-based interface for Registry staff to access system wide non-RFC2832 data and a knowledge base, parts of which may be external to the system. All routine operational tasks will be performed through the Customer Database and the Registry management console. Mutual SSL and username/passwords will be used to secure access levels. Likely to be coded in one or more of Java, ASP, PERL, and PHP, with some integration to vendor-supplied database libraries.

Runs on the Extranet server.

3.2.1.2.1.5   Partner Interface

Provides a web-based interface for partners to access additional non-RFC2832 data and a knowledge base, parts of which may be external to the system. Mutual SSL certification and username / passwords will be used to secure access levels. Likely to be coded in one or more of Java, ASP, PERL, and PHP, with some integration to vendor-supplied database libraries.

Runs on the Extranet server.

3.2.1.2.1.6   Authentication

The Business Logic and the Management/Partner interfaces will authenticate all transactions against the Extranet ACL database.

The need for a single sign-on in a heterogeneous environment makes LDAP a natural choice for such a database. Poptel has also identified some value added services that would benefit from LDAP. It will present an initially low load, but likely to grow as value added services are developed. It will run an Open Source service application.

Runs alone on the LDAP server.

3.2.1.2.1.7   Logical Databases

The Registrar, Name-Server, Domain, and to some extent the Knowledge databases are closely related by the information flow through the system. They will be based on a common high-performance, highly available SQL RDBMS platform, built from mature industry components. Oracle been chosen to ensure scalability, reliability, and ubiquity. Oracle is well supported and some of the third party Registry systems Poptel is reviewing require it.

Runs alone on the Database server.

3.2.1.2.1.8   Zone File/Whois Generation

Dynamically generates / deletes new name-server zone files and whois records that are triggered by changes to the logical Name-Server, Domain, and Registrar databases. Periodic re-writes all records will be performed to maintain proper synchronisation. Likely to be coded in C++ or Java and integrated to vendor supplied database libraries.

Runs alone on the Generation server.

3.2.1.2.1.9   Distribution

Stands as the authoritative DNS for all domains in the TLD, and acts to stabilise changes within the global DNS by taking scheduled snapshots of the current zone file and whois state on the Generation server. It will not be Internet-visible and will only accept requests from a small list of publication servers, which may query it at any time. Loading is therefore contained and will grow in proportion to the number of domains in the Registry. Will run an Open Source service application.

Runs alone on the Distribution server.

3.2.1.2.1.10   Name-Server

Acts as the Internet-visible secondary DNS for all domains in the TLD, taking Distribution as authoritative. It must be highly scaleable, highly available and likely to run an Open Source service application. Loading will be in proportion to the popularity of services provided through a URL within the TLD. High-availability will be achieved by running multiple Name-Servers in diverse locations – from both a geographic and

Internet topology perspective. Normal DNS protocols will be used for synchronisation, and a staggered update scheduled will be set to minimise the risk of accidentally propagating invalid data to all servers at once. Will run an Open Source service application.

Runs alone on multiple TLD DNS servers.

3.2.1.2.1.11   Whois

Acts as the Internet-visible Registry whois service for all domains in the TLD, taking Distribution as authoritative. It must be highly scaleable and highly available, although the service is not strictly critical to the continued operation of the Internet. Loading will be in proportion to the interest in domains within the TLD.   Will run an Open Source service application.

Runs alone on TLD Whois server.

3.2.1.2.1.12   Customer Database

This is an external system that handles all non-core Registry information concerning the business' customers. It will link to the logical Registrar database so that auto provisioning of customer accounts in the Registry can be accomplished. It will link to the logical Name-Server and Domain databases so that routine management tasks can be made and statistical data can be retrieved. It is likely the customer data will be stored in the central Database server, and accessed by an additional module within Poptel's existing Customer Database, Medusa. Security and separation of each of Poptel's business units is maintained by username / password over SSL.

Runs on existing Medusa server, with data held in the Database Server.

3.2.1.2.1.13   Accounting and Billing

These are external systems that handle customer accounting, business accounting, and customer billing. They will link to the logical Registrar database to retrieve raw activity audit trails for reconciliation into a billable service. They will link to the logical Domain database to verify the existence of domains and to generate auto-reminders for domain renewals. Poptel is planning a migration to Sun Accounts and the Sei-Mitsu billing system, and will likely also be used for the Registry Operator.

Runs on the existing Sun Accounts and billing systems.

3.2.1.2.1.14   Payment

This is an external system to collect payments from customers. Poptel has developed its own E-commerce shopping and payment systems, which will be used by the Registry Operator and Registrar businesses.

Runs on existing E-commerce shopping and payment systems.

3.2.1.2.2 Servers

Specifications for the servers identified in section 3.2.1.2.1 are given below. Poptel has complemented its expertise in highly available Open Source systems with Morse (http://www.morse.com/), the UK's largest provider of Sun solutions, to select the most appropriate server platforms for the proposed Registry systems.

In general, the issues of scalability and availability have been addressed by creating multi-machine clusters that are functionally a single execution platform. Both Poptel and Morse make extensive use of this technique; indeed both use Foundry Networks equipment to construct them.

The number of individual machines shown per cluster is the nominal day-one requirement, with more machines being added over time. In most cases clusters may contain machines of differing specification and performance; load balancing will take advantage by allocating more service requests to faster machines. The constraining factor on diversity is the ability of all machines in the cluster to run the same code over the same dataset and return the same result.

3.2.1.2.2.1 Engine

2 x Generic 1U servers in a load-balanced cluster

Hardware – Pentium III 733/133MHz, 512MB RAM, 2x 30GB IDE disk, onboard video and NIC and additional single port PCI NIC.

Operating system – Redhat Linux or FreeBSD

Software – bespoke development or 3rd party supplied.

3.2.1.2.2.2 Extranet

2 x Generic 1U servers in a load-balanced cluster

Hardware – Pentium III 733/133MHz, 512MB RAM, 2x 30GB IDE disk, onboard video and NIC and additional single port PCI NIC.

Operating system – FreeBSD, with CODA file system for content distribution

Software – Apache-SSL and a variety of modules and glue code.

3.2.1.2.2.3 LDAP

2 x Generic 1U servers in a load-balanced cluster

Hardware – Pentium III 733/133MHz, 512MB RAM, 2x 30GB IDE disk, onboard video and NIC and additional single port PCI NIC.

Operating system – FreeBSD.

Software – OpenLDAP.

3.2.1.2.2.4   Database

2 x Sun E220R servers in a Solaris HA cluster

Hardware – 1x 450MHz Sparc, 1GB RAM, 2x internal 18GB 10Krpm SCSI disk, 4x external 18GB 10Krpm RAID, Dual Differential UltraSCSI, Quad Ethernet, DLT tape drive.

Operating system – Solaris 2.6, with Sun Cluster 2.2

Software – Oracle 8i Enterprise RDMS

3.2.1.2.2.5   Generation

1 x IBM Netfinity 4500R (later to be included in a load-balanced cluster). This server is chosen for its high-performance disk subsystems and proven reliability.

Hardware – 2x Pentium III 866/133MHz, 512MB RAM, 3x18GB 10Krpm hot-swap RAID5, 24X-CDROM, 2x power supplies. 24x7x52 4-hour OSM.

Operating system – Redhat Linux (to leverage IBM's RH Linux support services)

Software – bespoke development or 3rd party supplied.

3.2.1.2.2.6   Distribution

3x Generic 2U servers in a load-balanced cluster

Hardware – Pentium III 733/133MHz, 1GB RAM, 2x 30GB IDE disk, onboard video and NIC and additional single port PCI NIC.

Operating system – FreeBSD

Software – BIND, and rwhois

3.2.1.2.2.7   DNS

Two independent clusters located in Manchester and London will each have:

4x Generic 2U servers in a load-balanced cluster

Hardware – Pentium III 733/133MHz, 1GB RAM, 2x 30GB IDE disk, onboard video and NIC and additional single port PCI NIC.

Operating system – FreeBSD

Software – BIND

3.2.1.2.2.8   Whois

Two independent clusters located in Manchester and London will each have:

2x Generic 2U servers in a load-balanced cluster

Hardware – Pentium III 733/133MHz, 1GB RAM, 2x 30GB IDE disk, onboard video and NIC and additional single port PCI NIC.

Operating system – FreeBSD

Software – rwhois

3.2.1.2.3 Network

The proposed network architecture is based on one of Poptel's managed server products, the Virtual NOC. Leveraging our experience with high-availability scaleable networks, and using familiar building blocks, we will create a NOC within a NOC to host the proposed Registry Operator system. The majority will be located in our Manchester NOC, with a duplicate TLD DNS and whois clusters in our London NOC.

Figure 7 shows the server clusters for the TLD whois and name-servers, connected directly to the existing Poptel Infrastructure. These form the final output of the system, and must be both Internet-visible and highly available. Each server in a cluster has 2 independent Ethernet connections, each to a separate switch on the public network. The switches perform load balancing across all servers in that cluster.

An "Iron-clad" Firewall load-balancing cluster running Checkpoint Firewall-1 is used to protect all non Internet-visible parts of the system. This is the Foundry Networks recommended configuration for high-availability firewalls. The switch pairs are in active-standby mode, where one only becomes active if the other fails – a process that happens automatically. In contrast, the Firewall-1 servers are in active-active mode with replicated configurations and full load balancing. In this way adding more servers can scale the firewall's throughput.

The backend server clusters connect to each of the backend switches to partition them into load-balanced clusters. The network management and monitoring, at a server and operating system level, will be achieved by using VPN tunnelling protocols such as SSH, via the existing Poptel infrastructure. The majority of servers will be backed up to Poptel's central tape archive in a similar way, however the database server may be backed up to local DLT tape to enhance performance and cater for its special requirements.

3.2.1.2.3.1   Virtual NOC Firewall

2 x Generic 1U servers in a load-balanced cluster

Hardware – Pentium III 733/133MHz, 512MB RAM, 2x 30GB IDE disk, onboard video and NIC and additional single port PCI NIC.

Operating system – Windows NT4 Server

Software – Checkpoint Firewall-1

3.2.1.2.3.2   Virtual NOC Front-end Switch

2x Foundry Networks ServerIron XL

Hardware – 8-port 10/100BaseTX, 400Mhz CPU, 32MB System DRAM

3.2.1.2.3.3   Virtual NOC Back-end Switch

2x Foundry Networks ServerIron XL

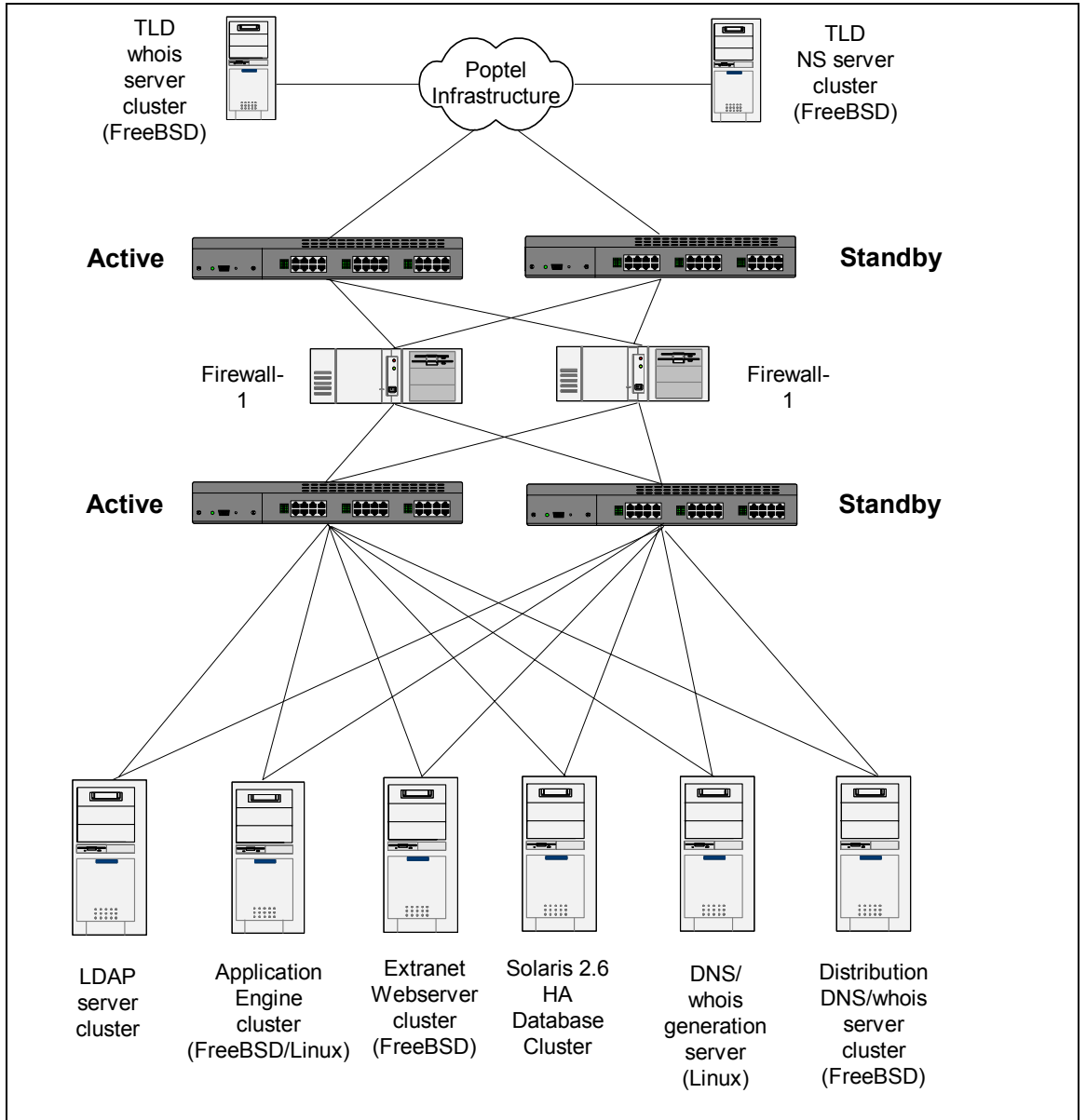Hardware – 24-port 10/100BaseTX, 800Mhz CPU, 64MB System DRAM

Figure 7 - Proposed Network Architecture

3.2.2 Managing the service

3.2.2.1 Data management

Management of the databases happens at 4 levels:

Tools and functions provided through the Customer Database to report on Registrar's customer details, registered domains, contact history, support log, etc, and to modify certain aspects of this data.

Tools and functions provided through the Accounting and Billing systems to report on financial details of a Registrar's account, and to modify certain aspects of that data.

A system wide management console running an application that interacts directly with the SQL database to perform routine housekeeping and troubleshooting tasks. Access to this console will be for Registry technical staff only.

Vendor RDBMS tools and development environments for one-off tasks such as special reporting, direct manipulation of the underlying data, and serious repair or recovery procedures. Access to this will be strictly limited to named technical database administrators and developers.

In addition, the monthly tape sets will be held in escrow along with all source code and system documentation. Poptel will select a mutually agreeable data escrow agent with the Sponsor, taking into account their physical location, quality of service, cost, reputation and security.

3.2.2.2 Capacity planning

During this gTLD application process Poptel has developed a number of models for predicting demand for domains, the growth of Registrars, size of database tables, network utilisation, DNS / whois queries, etc. These models were used to specify the type of architecture to be deployed and the required scaling over time. They will be refined, incorporated into Poptel's business and systems planning, modified in light of experience and combined with ongoing performance monitoring.

3.2.2.3 Configuration management

Poptel uses an Open Source Common Version Server to provide coherent and trackable version control of configuration data and program code.

3.2.2.4 Problem management

Poptel's existing network, service, and server monitoring tools will pick up system failures or potential problems. These are allocated to engineers and tracked through to completion

3.2.2.5 System recovery

Firstly Poptel will apply best practice techniques in preparation for system failures. For example:

- All systems, code, and configurations will be documented.

- All software, configurations, and data will be backed up daily.

- All servers with the exception of the Database server will be backed up to Poptel's central backup server.

- The Database server will be backed up to DLT locally to ensure high-performance with large data sets, and complete compatibility with Oracle.

In addition further procedures will be utilised to minimise the likelihood on failures. For example, the clustered machines will automatically be disconnected from the public network if they fail to respond to periodic health checks and clusters using content replication will auto-restore data to a clean machine, assuming it has been correctly configured; otherwise a tape restore will be performed. Failures at cluster level are critical and may require the rebuilding of the entire cluster from store items and existing infrastructure.

Recovery of machines will begin with an engineer visit and depending on circumstance, will spend no more than 30 mins attempting to fix a failed machine in-situ before it is swapped with a clean server taken from store. Poptel carries enough spares to cover expected failure rates, and failed hardware is repaired under maintenance contracts.

The most critical part of the system is the TLD DNS cluster. Great care will be taken to select a sufficiently large and diverse community of trusted third parties to manage the secondary TLD DNS.

In this way, failure at data-centre level may temporarily prevent modifications to the domain space, but the use of DNS within the domain-space would remain fully intact. System recovery would depend on the nature of the failure, and may range from restoring only highly critical systems onto basic hardware, through to re-building the systems in an alternative data centre from the contents of the material held in escrow. A catastrophic failure of Poptel's Registry Operator business will not affect the use of DNS lookups within the domain-space.

Poptel will develop a business continuity plan for the Registry Operator business that will include the speedy recovery of core systems should a catastrophic loss of key systems occur. This will utilise the facilities of the alternative Network Operation Centre to be established in the south of England.

3.2.3 Zone file management

3.2.3.1 Generation

Zone files are generated from the name-server and domain databases by the Registry application. They are stored in a holding directory, where they can be deleted if a name-server or domain is removed from the database. Periodically the content of the zone holding directory is uploaded to the distribution server, and its name-server software is re-started. At this point they become authoritative and await distribution.

3.2.3.2 Change control

Each time a zone file is created or modified by the Registry application, it is given a new serial number composed of a date string and a sequential version number that resets once a day. This information is also stored in the domain database. Modifications to database are logged enabling trace-back. The current Distribution server zone files are archived prior to any upload, enabling fast recovery.

3.2.3.3 Distribution and publication

The distribution server is considered authoritative by a pre-defined list of publicly visible TLD name-servers, which may request partial or full updates at any time. Automatic updates occur at staggered intervals after the periodic uploads to the distribution server. Some TLD name-servers may be maintained by trusted 3rd party organisations.

3.2.4 Interfacing to key partners

3.2.4.1 Sponsor

A web based extranet will be provided for the TLD Sponsor organisations. It will link to knowledge bases, pertinent information, and enable statistical querying of the Registry Operator database.

3.2.4.2 Registrars

Registrars can use a standard RFC 2832 compliant client to access the Registry services. They can also login to an extranet site to access additional services not provided by RFC 2832.

3.2.5 IT security

3.2.5.1 Network

The solution proposed by Poptel includes dual redundant firewalls to maximise performance, availability and security. The Foundry "IronClad" load-balanced Checkpoint firewalls provide a scalable, state sensitive firewall that protects the Registry Operator infrastructure while removing single points of failure. Poptel will also use its existing Intrusion Detection System and access control lists on border routers, core switches and the switches used to load balance the firewalls. All hosts have all non-essential services disabled and the operating system hardened where possible. As a matter of course all software/hardware vendor's security mailing lists are followed and any necessary patches will be applied after regression/integration testing.

3.2.5.2 User authentication

This applies to access to password-protected sections of the Registrar Interface on the Engine Server, and the Partner and Management Interface on the Extranet server. In the case of the Extranet server, username/password authentication will be performed using the LDAP verification module for Apache. The registry-registrar interface will likewise draw username/password credentials from the LDAP servers. We will also mandate client side SSL certification in addition to server side certification for all mentioned interfaces.

3.2.6 Required facilities

In common with many Internet Service Providers and Application Service Providers, Poptel has chosen to locate its Network Operation Centres (NOC) within specially constructed and environmentally managed premises. Poptel's Manchester NOC is located within TeleCity (http://www.telecity.co.uk/), a facilities-managed premises specifically targeted at the ISP, ASP, and Telephony markets. Poptel's London NOC will be located either at TeleCity or TeleHouse in London, which offer a similar service.

These facilities will be used to house the new Registry Operator's and Registrar's systems.

The following is taken from TeleCity's documentation:

"TeleCity's Internet Exchanges ('TIXs') provide customers with connectivity to the Internet via a choice of carriers, physical round-the-clock engineering support for their mission critical equipment. Operating resilient, carrier-independent TIXs to provide customers with a secure and dependable environment with a selection of connectivity options. European coverage in

most major cities. On site 24 hour, 365 day a year operations and engineering. Resilient power systems backed by UPS and generator. Air conditioning and raised floors. 24 hour, 365 days a year customer access. Comprehensive physical security. Cable management system. Choice of telcos with diverse routing into the facilities. Cabling and interconnection. Conference and meeting rooms. Deliveries and storage space. Highly trained, graduate, professional staff. Dedicated and customer focused staff. Currently obtaining ISO9000 accreditation."

Registry Operator's Proposal

For the .union global Top Level Domain

Sponsor :
International Confederation of Trade Unions

Registry Operator :
Poptel Ltd

Volume 4 of 7
Appendices A to E

A. How this proposal meets ICANN's proposal criteria

ICANN Registry Operator's Proposal	Section in Poptel Application
I General Information	1 General information (D1 to D11)
D1 – D11	1 General information (D1 to D11)
II Business Capabilities & Plan (D12)	2 Business Capabilities and Plan
D13.1 Detailed description of the registry operator's capabilities	2.1 Current Capabilities
D13.1.1 Company information	2.1.1.1 Company information and Formal Alliances
D13.1.2 Current business operations	2.1.1.5 Ethical Policy 2.1.1.7 Our services 2.1.1.8 How we provide the services
D13.1.3 Past business operations/entity history	2.1.1.2 Background to Poptel 2.1.1.3 History 2.1.1.5 Ethical Policy 2.1.1.7 Our services
D13.1.4 Registry/database/Internet related experience	2.1.2 How we have achieved success 2.1.2.3 Related experience
D13.1.5 Mission	2.1.1.4 The mission 2.1.1.5 Ethical Policy
D13.1.6 Management	2.1.1.9.1 Poptel Management
D13.1.7 Staff/employees	2.1.1.9.2 Poptel Staff
D13.1.8 Commercial general liability insurance	2.1.1.1.3 Insurance
D13.2 Business plan for the proposed registry operations	2.2 Business Plan
D13.2.1 Services to be provided	2.2.2.1 Core registry services 2.2.2.2 Registrar services 2.2.2.3 Value added services
D13.2.2 Revenue model	2.2.3 Selling and marketing the services
D13.2.3 Market	2.2.1.1 Profile of a target customer 2.2.1.2 Services demanded by customer
D13.2.4 Marketing Plan	2.2.3.3 Marketing Strategy
D13.2.5 Estimated demand for registry services in the new TLD	2.2.3.2 Demand scenarios
D13.2.6 Resources required to meet demand	2.2.4 Building the business operation D Management team profiles E Key technical personnel profiles
D13.2.7 Plans for acquiring necessary systems and facilities	2.2.4.3 Systems

facilities	2.2.4.4 Facilities
D13.2.8 Staff size/expansion capability	2.2.4.2 People
D13.2.9 Availability of additional management personnel	2.2.4.2 People
D13.2.10 Term of registry agreement	Heads of Agreement
D13.2.11 Expected costs associated with the operation of the proposed registry	2.2.5.1 Summary Illustrative Financial Forecasts F Pro-forma financial projections
D13.2.12 Expected revenue associated with the operation of the proposed registry	2.2.5.1 Summary Illustrative Financial Forecasts F Pro-forma financial projections
D13.2.13 Capital requirements	2.2.5.1 Summary Illustrative Financial Forecasts F Pro-forma financial projections
D13.2.14 Business risks and opportunities	2.2.6.1 Risk analysis
D13.2.15 Registry failure provisions	2.2.6.2 Provisions for registry failure
D13.3 Pro forma financial projections	F Pro-forma financial projections
D13.4 Supporting documentation	Appendices
D13.4.1 Registry operator's organisational documents (documents of incorporation)	G Organisational documents
D13.4.2 References	C Client References
D13.4.3 Annual Report	H Annual report
D13.4.4 Proof of Capital	I Proof of capital
D13.4.5 Proof of Insurance	J Proof of insurance
III Technical Capabilities & Plan	3 Technical Capabilities and Plan
D14 Description of the registry operator's Technical Capabilities & Plan	3 Technical Capabilities and Plan
D15.1 Detailed description of the registry operator's technical capabilities	3.1 Current Capabilities
D15.2 Technical plan for the proposed registry operations	3.2 Technical Plan
D15.2.1 General description of proposed facilities and systems	2.2.4.3 Systems 2.2.4.4 Facilities 3.2.1 Underpinning the business processes with IT
D15.2.2 Registry-registrar model & protocol	3.2.4 Interfacing to key partners
D15.2.3 Database capabilities	3.2.1.1 Applications and information architecture 3.2.1.2.1.7 Logical Databases 3.2.1.2.1.12 Customer Database
D15.2.4 Zone file generation	3.2.1.2.1.8 Zone File/Whois Generation 3.2.3.1 Generation 3.2.3.2 Change control
D15.2.5 Zone file distribution & publication	3.2.1.2.1.9 Distribution 3.2.3.3 Distribution and publication

D15.2.6 Billing & collection systems	3.2.1 Underpinning the business processes with IT 3.2.1.1.3 Billing and Collection 3.2.1.2.1.13 Accounting and Billing
D15.2.7 Data escrow & backup	3.2.1 Underpinning the business processes with IT 3.2.2.1 Data management
D15.2.8 Publicly accessible look up/Whois service	3.2.1 Underpinning the business processes with IT 3.2.1.2.1.11 Whois
D15.2.9 System security	3.2.5 IT security
D15.2.10 Peak capacities	3.2.1.2 Infrastructure 3.2.2 Managing the service
D15.2.11 System reliability	3.2.1.1 Applications and information architecture 3.2.1.2 Infrastructure
D15.2.12 System outage prevention	3.2.1.2 Infrastructure 3.2.2 Managing the service 3.2.6 Required facilities
D15.2.13 System recovery procedures	2.2.6.2 Provisions for registry failure 3.2.1.2 Infrastructure 3.2.2 Managing the service
D15.2.14 Technical & other support	2.2.4.2 People 3.1.2.1 Key IT teams
D15.3 Subcontractors	None specified

B. Poptel History

Poptel's founders wanted to create a profitable business with an appropriately modern structure. Their concerns were to create an environment that reflected a high level of shared commitment from a professional workforce with a fair share of the rewards. They resolved this by creating an employee-owned company with a flat hierarchy based on the principles of co-operation.

Early on, Poptel established itself in two markets: international labour and international non-governmental organisations. In the mid-80s and early 90s most international organisations and networks maintained contact with affiliates by post, telex and fax. Post was slow at the best of times and for some parts of the world impossibly so. Fax, whilst growing rapidly, often ran up against problems with poor telephone networks particularly in the Third World.

E-mail proved to be a boon, particularly when combined with telex and fax technology which was possible using the German GeoNet system adopted by Poptel. Poptel's international clients set about encouraging their affiliates to purchase modems and get on-line with Poptel.

As e-mail gained wider acceptance international organisations began to make use of on-line bulletin boards, posting notices, discussion documents and other information for later retrieval by affiliated groups. Others began using the existing on-line databases of news, company and scientific information for research purposes. Results were then disseminated through the electronic network. As an extension Poptel encouraged information providers to create their own on-line databases through a system that was set up for the purpose.

By the early 90s this combination of professional services and an active user base meant that Poptel had captured a significant part of the market in on-line communications for non-governmental (NGO) networks. Most of the international trade union secretariats (ITS's) - the global federations of unions - used Poptel, as did significant networks working in sustainable development, environment and human rights. Poptel had clients in over 50 countries.

In 1989 Poptel was approached by the Economic Development Department of Manchester City Council to set up a project using on-line technologies to support economic and community development. This led to the creation of the Manchester HOST, the first such project in the UK. Working with a local university, community organisations and the private sector, Poptel and the City Council set about building services to support different communities and networks. They created community based training centres - the forerunners of cyber-cafes - and a variety of projects including a trading network linking Manchester with Bangladesh and India; an on-line advice network run by the

citizens' advice bureaux; databases of Council information; information on local transport and the airport; community networks; and a project linking Manchester with other European cities developing similar ideas. Other northern local authorities took similar routes with Poptel's support.

Since then a variety of innovative projects have developed with local authorities. Today Poptel is a partner in Manchester's G-Ming project, which is building a high bandwidth metropolitan area network; to deliver the next generation of Internet based information services.

For most Poptel clients the Internet started to appear on the horizon in 1993-94. During this period Poptel added the Internet to its previous service offerings. At that time it found that the work with the early adopters started to pay dividends with much larger contracts. The local HOST projects were one example. Another was with branch and membership organisations amongst its UK client base.

Poptel soon realised that its business strategy had to focus on supplying those services, which supported specific organisational functions around the management and distribution of information. The Internet and in particular the web quickly came to play a prominent role in this. In fact Unison, working with Poptel, was the first union in the world to set up a web site, and this year became the first union to set up a free Internet service for its members through Poptel.

With the rapid spread of the Internet, Poptel deliberately chose to concentrate on organisational services rather than move into the new market for home Internet access. Today over 50% of its income is derived from its major clients and Poptel is probably the strongest provider of organisational Internet services to the non-profit sectors in the UK. Poptel supports all levels of an organisation's use of the Internet: from HQ through to regional and branch offices, the activist layer, and right down to free Internet services for members. Poptel provides the managed server-side facilities - e-mail, web sites, on-line databases, distribution lists and discussion facilities, full facilities management. It supports the user's desktop access with client software and access solutions, ranging from home dial-up access to full-scale local and wide area networks with leased line connections.

As e-commerce grows, Poptel is determined to ensure that social enterprises can unlock the same potential for the benefit of society as a whole. Poptel is translating e-commerce into s-commerce – social enterprise, trading for a social purpose. This includes working with the retail co-operative sector to develop membership and e-commerce services and with the Co-operative Bank on a new project for on-line charitable donations.

New Investment

By 1999, Poptel had successfully developed a market niche and was amongst the UK's top 20 Internet companies in terms of financial performance. Poptel was different from a typical dotcom. It was a profitable established business with a 14-year track record. It operated principally to provide organizational, as opposed to home consumer services. Nevertheless it had been apparent for two or three years that it would need to raise equity style financing in excess of £1m to develop the business.

In a highly competitive and rapidly growing industry like the Internet, companies both expand and develop or they die. Poptel's intention was to grow and continue to innovate in a rapidly changing industry. After examining many options, Poptel secured substantial venture capital investment - the first employee owned co-operative in Britain to do so. The investment partners share Poptel's vision of a company focused on membership organisations, charities, trade unions, public bodies, the co-operative sector, and progressive commercial organisations.

In the first half of 2000, Poptel received £1.5m in new equity and has raised a further £1m. With the funds, Poptel is making significant upgrades to its services in order to meet the increasing on-line demands of clients. Poptel is building a new Network Operations Centre in Manchester with top-of-the range technologies and improved connectivity and reliability. A new Professional Services Department has been created offering web and database development services. Poptel is now offering the kind of facilities that are currently only available to the most advanced sections of the commercial sector.

There has also been a significant increase in the size of Poptel's staff team to cope with the rapidly expanding growth in demand that the company is experiencing. So far 25 new jobs have been created increasing Poptel's staff to nearly 50. Poptel expects to recruit a further 30+ staff by the end of 2000. The increased staff team enables Poptel to support a number of very substantial new web based projects.

In addition, Poptel has taken a significant stake in a new company, Poptel Worldwide which is seeking investment partners from the 'social investment' sector.

With the new investment has come a new organisational structure. In the new structure, Poptel remains an employee-owned business (75% under employee control) with the employee involvement structured as a co-operative.

C. Client References

Below are listed a series of recent projects with reference sites completed by Poptel. Also enclosed are specific written references from Poptel's lawyers, Wrigleys Solicitors and Poptel's auditors Gotham Erskine, plus references from two key clients the union NASUWT and Manchester City Council.

In recent months we have completed projects for the following clients:

- Unison – Trouble at Work

- Co-operative Party Website

- Greater London Labour Party GLA election site

- Earth Summit 2002

- ASLEF

- National Centre for Volunteering

- Relate

- The Low Pay Unit

- Oxford Swindon and Gloucester Co-operative Society

Selected Client list

- United Nations Environment & Development - Earth Summit 2002 - http://www.earthsummit2002.org/

- Greater London Labour Party - http://www.london-labour.org.uk/

- Oxford Swindon Gloucester Co-op - http://www.osg-co-op.co.uk/

- NASUWT - http://www.teachersunion.org.uk/

- National Federation of Housing Associations - http://www.housing.org.uk/

- Workers Education Association - http://www.wea.org.uk/

- International Workers Education Association - http://www.ifwea.org/

- Manchester Community Information Network - http://www.mcin.net/

- NCH Action for Children - http://www.nch.org.uk/

- Social Enterprise London - http://www.sel.org.uk/

- UNISON - http://www.unison.org.uk/

- Labour Research Department - http://www.lrd.org.uk/
- Relate - http://www.relate.org.uk/

D. Management team profiles

Stuart Marsden, Managing Director

Stuart has been actively involved in the IT industry since 1975 and has been a director of information technology companies for 15 years with responsibility for technical and development issues. Stuart joined Sum International as a director in January 2000 and assumed the role of Managing Director of Poptel Ltd.

During his career he has been responsible for the introduction of new products and technologies which have been influential in turning round company fortunes. His success in this area was a key factor in influencing Silicon Graphics to purchase t2 solutions and latterly his work with AIT Group in introducing sustainable product business was a significant enabler in AIT's successful flotation on the FTSE.

Since leaving AIT in early 1999, Stuart has been in demand by a number of Blue chip organisations where he has been acting as advisor to Board Members of Ford UK, Nationwide Building Society and Marlborough Sterling a leading financial services solution provider.

Shaun Fensom, Founder & Chair

Shaun founded Soft Solution the original company that created Poptel in 1983. He authored the 'Poptel Report', explaining how 'telematics' (e-mail, bulletin boards, on-line databases) technologies could be used for socially beneficial purposes in 1985.

Shaun's background is in software engineering. As founder Shaun has had many roles at Poptel ranging from building the co-op's first accounts system, to managing the organisation. His principle responsibilities are chairing Poptel's board, and negotiating with key partners and funders. He also plays a strategic role in developing new projects and businesses under the Poptel and Poptel Worldwide umbrellas.

Malcolm Corbett, Corporate Affairs

Malcolm is the Corporate Affairs Director of Poptel. He has worked for the co-op for 12 years. His primary responsibilities are to manage strategic relationships with Poptel's major clients, key policy-makers and opinion formers, and with business partners. He has been managing an Internet business for over ten years and has over fifteen years experience in the 'new mutual' business sector.

Malcolm's background is in marketing and business development. He writes and has frequently spoken about the impact of the Internet on the social economy or third sector. He also plays an active role in the co-operative movement through ICOM, the UK federation of employee owned co-operative

businesses, and holds the Chair of Social Enterprise London, which promotes co-operative solutions in the capital. Poptel sponsors the Co-operative Party's 'New Mutualism' project seeking to promote the new, young and dynamic mutualist sector.

Stephen Herman

Stephen Herman is Sales and Marketing Director at Poptel. He co-ordinates the Sales & Marketing teams and strategies and develops new business opportunities. Trained as an Economist Stephen started his management career as head of UK sales at Reuters and then joined AP-Dow Jones/Telerate as Marketing Director for non-US territories. As Sales and Marketing Director for information and computation specialists Datastream Stephen saw the company through a flotation and two subsequent sales. He became COO of Datastream and oversaw yet further substantial growth, both organically and through acquisitions.

He left to set up his own Consulting and Interim Management business, specialising in the hi-tech sector and the burgeoning .com industry before being tempted back to the corporate world by the FI Group, where he was General Manager for the City. But the lure of the new technologies and the working style of new technology business brought him back to his own company and then on to Poptel.

Jeff Roberts, Acting Technical Director

Jeff Roberts is a highly skilled IT professional with many years of experience in systems development, blue chip IT management consultancy, and board level managerial experience.

He has experience of directing IT strategies and complex systems development within multinational companies. He was also a founder of Poptel.

Dominic Search, Product Development Manager

Dominic has a strong technical background in networking and the Internet. His responsibilities include researching and managing the development of new products and services to support Poptel's client base. Dominic's eclectic experience encompasses building the networking infra-structure for a major international charity, installing and operating a cyber-café at the Glastonbury Festival (which is to say in a field, miles from the nearest town), to helping Poptel build-out its new Network Operations Centre. His wide-ranging expertise has led to Dom having something of a technical guru status in the organisation.

Sheila Collins, Customer Services Manager

Sheila is Poptel's Customer Services Manager. With real concern to 'deliver the goods' to the customer, she is ensuring that all Poptel's customers have a positive and productive relationship with us. Combining technical expertise and business

knowledge, she is a Chartered Information Systems Practitioner and holds an MA in Business and Public Sector Strategy.

Sheila embarked on a career in IT in 1980 after graduating in Logic & Physics from Sussex University. The first ten years of her career were spent building software systems in the manufacturing and mail-order retailing. During the last ten years she has put her experience to work in the social housing sector and the trade union movement.

Lucy Brotherston, Professional Services Manager

Lucy Brotherston is Professional Services Manager at Poptel. A hands on manager not frightened of detail but able to see the broader picture, her professional experience over ten years has been focused on community and business information projects.

Lucy has been with Poptel for 6 years. She is also a founding member of the Manchester Community Information Network, now a limited company. She has also been actively involved in the IDEA digital, Electronic & Digital Arts project in Manchester.

After working on the pioneering project of the Unison FreeNet, which was the first free Internet Service to be established for Trade Union Members, she worked on other freeNet projects for the NASUWT, the National Housing Federation and IDEA. Lucy also has extensive experience in delivering complex web site development projects.

Cazz Ward, Technical Team Manager

As Poptel's technical manager, Cazz is in charge of managing the whole of the Internal IT infrastructure at Poptel, including our network operations centre, our in-house network and the internal applications team.

Cazz started as a member of the technical team at Poptel 5 years ago and brings a total of 8 years experience working in IT to her current role. Previous positions Cazz has held were include time spent at Stockport College as a computer technician and managing the network at the Women's Electronic Village Hall. She has also worked at MMU researching the uses of ISDN and video conferencing.

Paul Evans, Acting Sales Manager

Paul is a New Media Consultant for Poptel. Heading up a growing sales team, Paul works with Poptel's 'non-profit' client base to unlock the real value of their mutual and voluntary structures and move their services onto the Internet in an effective and sustainable manner.

Paul spent four years working in the European Parliament on Broadcast and Media Regulation, providing briefings to ministerial and Cabinet level. Subsequently, he devised and promoted the New Statesman New Media Awards - rewarding

best practice in public life on the Internet. He is a former Advertising Manager and Director of the New Statesman and has worked on secondment as a press officer to the Labour Party during the 1997 General Election. He also has experience as a freelance conference promoter and advertising copywriter.

With a graduate degree in Politics and Administration Paul has specialised in projects concerned with trade unions as well as the promotion of best practice in Public Policy throughout his career.

E. Key technical personnel profiles

John Corker, Technical Support Manager

Heading up Poptel's six person dedicated technical support team in our Manchester office, John has been with Poptel for a number of years. He has considerable experience in providing support and training on all applications and packages to do with the Internet. His experience as a technical trainer further helps him explain technical details to our customers in a non-complex way.

Holding a degree in Combined Studies including IT and Data Analysis from Sheffield Halem University, John has worked for two major players in the UK Internet Market before joining Poptel. As a team-leader in customer support, he also acts as a project-manager and has comprehensive experience in dealing with people at all levels.

Joski Cottee, Professional Services

Joski is one of the project managers in Poptel's Professional Services. His main responsibilities are managing web projects, and the design and building of web-sites. Joski has been with Poptel for 3 years and worked in customer services, design and CD production before starting in his current position.

Joski has a design college background as well as a long and deep interest in making and producing music.

Yamei Xu, Professional Services

Yamei is a leading web and database application developer within Poptel's Professional Services Department. Yamei sees herself as a cross-platform software engineer and is particularly interested in E-Commerce development.

Graduated from the Department of Computer Science of Manchester University, Yamei has a sound background in programming and system design. Before joining Poptel, she has worked in computing at Manchester University for three years, designed and implemented a very sophisticated electronic journal for a group of leading publishers and has worked with the Ford Credit Europe Bank, playing a leading role in designing an online automobile financing system.

Pete Dorsey, Unix Team Leader & Chief Security Officer

Pete has formal training and 8 years of experience in Unix systems administration, security and system programming. He is a highly capable internal ops system manager with a wide experience of different flavours of Unix. Working with Dominic and Jeff Pete has been responsible for developing the systems architecture in this proposal.

Steve Burns, Network Engineer

Steve is CCNA Qualified and has worked with Cisco/3com/Foundry/Olicom routers and switches, with both Ethernet (10/100) and token ring. He has installed and supported both rip and ospf networks. He has configured both load balancing and hsrp. He has installed and supported checkpoint firewall1. He is experienced with hp openview and Cisco Works, experienced with tcp/ip and structured cabling, experienced with Leased lines and dial up - both analogue and isdn.

Stuart Bowen, Systems Administrator

Stuart has formal training and five years experience in NT, Exchange, SQL. His background is in html and asp programming. Stuart's role at Poptel is to ensure maximum uptime for all client web sites, managing Poptel's NT web servers.

Janet Worthington, Technical Support

Janet is a member of Poptel's technical support team in Manchester. Dealing with customer support questions, Janet applies her trouble shooting skills on a daily basis.

With formal education in Business Information Technology and Japanese from Manchester Metropolitan University, Janet worked for Vertex Data Science as an assistant to the senior Project Manager before coming to Poptel. She also worked at the Internet helpdesk of British Telecom, and moved on to a team for ISDN Support and Speedway there. She is experienced in liasing between technical and non-technical people and has great communication and organisational skills.

Registry Operator's Proposal

For the .union global Top Level Domain

Sponsor :
International Confederation of Trade Unions

Registry Operator :
Poptel Ltd

Volume 5 of 7
Appendix F: Financial Projections

F. Pro-forma financial projections

Financial Forecasts in this Appendix

- Summary P&L forecast

- Detailed P&L forecast

- Detailed cashflow forecast

- Revenue and Demand forecasts

- Detailed Cost of sales forecast

- Detailed overheads forecast

- Detailed capital expenditure forecast

Assumptions behind the forecasts

Quarterly Profit and Loss

- The quarterly P&L summary is derived from the detailed monthly P&L forecast.

- The detailed P& L summary is derived from demand scenarios and estimated costs.

- Revenue is calculated from the demand summary and split between the Poptel as Registry Operator and Poptel as Registrar.

Cashflow

- Revenue is assumed to be received in the month invoiced.

- All other costs assumed to be paid in the month they occur.

- No account of sales tax has been taken at this stage.

- Initially Poptel would be net receivers of sales tax on UK sales.

- Maximum cash requirement in each scenario is indicated.

Demand & Revenue Forecasts

- The price charged for domain registration varies according to geographic area in line with ICFTU's banding policy. Prices set for Registrars are guideline prices only.

- It is assumed that domains will be charged for two years in advance

- Demand scenarios are based on the best estimates of demand taking account of geographic areas.

- Revenues figures show a split between the Registry Operation and Registrar services

- Assumptions are made about increased competition for registrations services and a consequent decline in Poptel's share of the registrar business.

Cost of Sales

- ICANN fee. As ICANN's cost recovery needs for new TLDs have not been established, Poptel has estimated that these will be in the region of $2 per registration to cover both registry operator and registrar fees.

- Other cost of sales include Internet connectivity and hosting requirements.

Overheads

- Staffing levels, calculated on the basis of levels of transactions per months including new registrations and renewals and the total number of registrations projected at each confidence level within the year. The number of staff per transaction is in line with current industry standards.

- Staffing costs are based on known UK market rates adjusted to US$ using the rate of $1.5 to £1.

- Marketing. Based on estimated staffing requirement plus the costs of an international PR campaign rolled out by region as detailed above.

- Office. The Majority of costs have been estimated based existing Poptel budgeted costs per member of staff.

- Finance. Assumed that the majority of payments will be by credit card and a cost of 1% of revenue has been assumed at this stage.

- Legal, audit & accountancy. Estimated using existing Poptel budgets.

- Maintenance. Hardware and software. Calculated using standard industry rates as percentage of cost.

- Further detailed overhead calculations are available on request.

Capital Expenditure

- Based on the specifications given in the Technical Plan adjusted for levels of demand.

- Based on the specifications given in the Technical Plan adjusted for levels of demand.

Registry Operator's Proposal

For the .union global Top Level Domain

Sponsor :
International Confederation of Trade Unions

Registry Operator :
Poptel Ltd

Volume 6 of 7
Appendices G to H

G. Organisational documents

H. Annual report

Registry Operator's Proposal

For the .union global Top Level Domain

Sponsor :
International
Confederation of Trade
Unions

Registry Operator :
Poptel Ltd

Volume 7 of 7
Appendices I to K

I. Proof of capital

J. Proof of insurance

K. Registry Operator's Fitness Disclosure