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Governance of the Internet: emerging issues

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Introduction

The Internet and associated networks and devices are intruding throughout social and commercial activity. They are improving information exchange, storage and utilisation to an extent that is re-shaping the structure and institutions of society that have evolved over centuries in response to information limitations. The phenomenal growth in Internet activity is now challenging the dominant use of networks by telephony, despite effectively starting up just 6 years ago. The provision and utilisation of broad-band services has supplanted telephony as the central information issue of this decade.

The purpose of this paper is to comment on issues that are arising in Internet governance in New Zealand and elsewhere. Such is the rate of change in the use of the Internet and in the concomitant technology that detailed prescription is not useful. Nevertheless, changes that are taking place in the Internet provision imply that governance cannot be ignored. Enunciating the principles that should be reflected in governance that is in the public interest is worthwhile at this time.

The pressures for change are coming from the inevitable and essential commercialisation of the provision of Internet services. An effective governance structure should facilitate this commercial evolution and the efficient adoption of change and provision of services to the end user. Potential changes to the governance of the Internet Registry are matters of public interest.

Background

Since its earliest inception, the Internet has operated under a broad set of principles which support the contention that information is a public good, and that the wider public interest is best served by making its facilities available to as many users as possible for as low a cost as possible. Uninhibited user access to the Internet is thus the pre-eminent principle of this philosophy.

Early Internet services were provided as nonprofit services by universities, enabling academics to research more widely and share their work freely with each other. Indeed, the entire Internet industry development has been characterised by free sharing between like-minded individuals of

their ideas and concepts, and by largely self-created and self-governing governance structures typified by consensus-based decision-making by actual users of the Internet's services¹.

As the market for Internet services has widened, the same philosophies have become embodied in the principles of the Internet Corporation for Assigned Names and Numbers (ICANN), the international body established to oversee the allocation of domain names, which along with the information pointing to the server which channels internet messages, provide the unique "Internet address" of any individual and thus govern the ability for that individual to become "connected" to the Internet's world-wide resources. The same principles are also reflected in the values of the Internet Society of New Zealand² (ISOCNZ) which, as agent of ICANN and via its wholly owned subsidiary Domainz, allocates domain names to New Zealand internet users. ISOCNZ includes among its principles the statement that "We wish to ensure that the New Zealand Internet remains 'open and uncapturable'" and "of paramount importance is the continued reliability of the Internet"³.

This collegial approach has resulted in the development of user-led, bottom-up governance and regulatory structures which have been largely free of government intervention, and which have, to date, "worked surprisingly smoothly, even surviving the wholesale commercialisation of the net"⁴. This success has been attributed largely to the fact that access to the Internet has, until now, been controlled by representatives of the people who stand to benefit most from uninhibited access to it: the end-user⁵.

However, the commercialisation of access service provision may well be challenging, in the New Zealand context at least, the primacy of uninhibited user access as one of the governing principles. As more and more domestic consumers become connected to the Internet, a new service industry, Internet Service Providers (ISPs) has arisen⁶. In the recent past, Internet

¹ Anonymous (2000) The Consensus Machine. *The Economist*
<http://www.economist.com/editorial/freeforall/current/sf4096.html>.

² A nonprofit association with a membership comprised of Internet users.

³ ISOCNZ. 2000. *Review of Registry Structure of .nz ccTLD*. <http://www.isocnz.org.nz/DraftReport020600.html>.

⁴ The Economist, *ibid* p 2.

⁵ Hansmann (1996) theorises that, free of constraints, the ownership rights in any organisation, with respect to both the right to residual returns and the right to control a firm, will devolve onto the group of stakeholders under which the total net benefits of the *firm and its stakeholders* are maximised. These net benefits are dependent upon both the costs of market contracting (market power, risks, information asymmetry, bargaining costs, patron preference costs, etc.) and the costs of ownership (governance, monitoring, costs of poor decisionmaking, costs of risk-bearing, etc.). Hansmann, H. 1996. *The Ownership of Enterprise*. Cambridge, Mass: Harvard University Press

⁶ For an economic history of the Internet Service Provider market in New Zealand, see Enright, Christina (2000). *Strategic Behaviour of Internet Service Providers in New Zealand*. ISCR Research Paper www.iscr.org.nz/research/

usage by commercial entities was dominated by large business and institutional users with their own dedicated servers, who negotiated directly with Domainz to obtain their domain names⁷, and thus access to the web. However, the rapidly growing market for all business and domestic Internet consumers has created demand for specialist “server time hire” services to meet the sporadic access requirements of small business and domestic customers, who cannot afford the luxury of a dedicated server. ISPs have arisen to meet this need, and as part of their service package, they often also include negotiation with Domainz to obtain, on behalf of the client, the domain name that is required, along with their server address, for the customers to access the Internet.

Whereas end users gain their ultimate commercial or utility value (“profit”) from the content of information they get from the Internet, ISPs in contrast gain their profits from the number of customers they have, the total time their customers spend “surfing” and the frequency of access of those customers to their services. The actual information downloaded from the web by customers may be their lifeblood, but to the ISPs it is irrelevant. Commercial success for ISPs is determined not directly by the *value of information transferred*, but by the *amount of business* generated from their customers and the price they can charge for those services. The evolution of the ISP industry has resulted in a player who is governed by the principles of profit maximisation rather than by the principles of uninhibited access to freely available information, being inserted in the chain between the end-user and the Internet. While the entry of profit-maximising entities can be expected to benefit consumers by intensifying the availability of value-added services at reduced costs, it also creates some very real challenges for the governance of the Internet.

The impacts of this can be illustrated by the situation in New Zealand where the Internet Society as owner of Domainz and the sole maintainer of the Register, is being challenged by a number of agents wishing to take ownership of the allocation of subsets of domain names directly. These agents, which include a number of ISPs, wish to change the current single registry Domainz system to a “Shared Registry” system, where domain name allocation and IP number registration can be undertaken on behalf of Internet users by a single agent, rather than the dual process – Domainz and the ISP - currently used.

⁷ See Appendix 1 for a detailed explanation of the operation of the Domain Name system and Internet access.

The Shared Registry model as proposed appears to offer a “seamless service” for Internet users. Such a system would likely reduce the transaction costs involved in registering both the initial Domain Name/IP Address coupling, and subsequent changes on the Register, due to economies of scope available when one agent undertakes both tasks. It is also argued that currently, when ISPs act as users’ agents in obtaining domain names from Domainz, the end user is in many cases unaware of the existence of the subcontracted contractual relationship with Domainz so would effectively perceive no practical change (apart from a reduction in the cost of the process) should the move be made to a Shared Registry. Furthermore, advocates of the Shared Registry model also argue that competition between Registry Agents would drive down the cost of the registration process, further benefiting end users who currently must deal with a monopoly in the form of Domainz.

From an operational perspective, these arguments supporting a Shared Registry have validity. However, a detailed analysis based upon principal-agent relationships and information property rights yields a different scenario, one in which the for-profit ownership and objectives of ISPs pose significant challenges for the governance structures of Internet Registries, if uninterrupted open access to the Internet is to be preserved. Specifically, in the context of New Zealand competition law, unless the governance structure of a Shared Registry is carefully designed, there is a significant potential that such a system may lead to breaches of the Commerce Act and Commerce Commission precedents with respect to barriers to entry, and in particular at this point in time, the ease of transfer for domain name holders between ISPs.

Principal-Agent Relationships

In the current single registry model, as illustrated in Appendix 1, the dominant principals in both the Domain Name and Internet access processes are the Internet users, the Domain Name holders. The nexus of contracts that enables them to access the Internet exists only because they create a demand for this service. The principal in the supply of domain names is ultimately ICANN, and the Registry exists only because of the rights vested in it as an agent of ICANN for a subset of the world-wide allocation of domain names. All other players in this system are agents of one or other of these principals.

As the dominant demand principals, Internet users require:

- continuity of access to the Internet

- privacy of information kept about them in the process of accessing the Internet, and
- ease of transfer between any of their suppliers, should they wish to change the agent acting on their behalf.

As the principal in the supply of Domain Names, ICANN requires its agents to provide Registry services which are:

- consistent
- integritous
- reasonable (with respect to allocation of Domain names⁸)

and which comply with the conditions under which ICANN allocates its name range.

The Internet user is principal to two different agents for two distinct contracts. The user commissions an ISP as agents to provide a route to the Internet, and thus gains access to the IP address which allows this to happen. The user separately commissions Domainz to allocate a domain name and record both this and the IP address on the central register. Domainz carries out this task jointly with its agency from ICANN. In this process, there is transparent separation of the registration function from Internet access, both between contracts, and between the agents carrying out the contractual duties.

Information Issues

Content

The two pieces of information that are vital for a user to access the Internet to receive information and to enable other Internet users to access the user's own website, are the Domain Name and the IP address. However, in order for the Registry to maintain its customer base, additional information is required to enable unique personal identification of the user-principal: it includes such data as name, physical address and other contact information. Security information, such as a password, is required to ensure that when any changes are made to this information, it can be ascertained that they are in fact authorised by the user-principal, and billing information is required for financial accounting purposes. This is the basic information required for maintaining the Registry process.

⁸ In New Zealand, this is on a first-come, first-served basis, within restrictions which limit the allocation of names which are assessed as inappropriate in form (e.g. offensive names) or purpose (e.g. ensuring only academic institutions utilise the xxx.ac.nz range of names).

ISPs will also require the personal identification information held by the Registry. However, their agency requires them to hold this information not for Registry purposes, but for information transfer purposes. It is the ISP which physically transfers information to and from the Internet user. In the course of this activity, the ISP is capable of building a significant database of information about the Internet usage of that particular user. This can be used to customise services offered (for instance, targeted advertising) or retained for later use in yet-to-be-designed value-added services. It is noted, however, that this information relates to the *process* of access, rather than the *right* to access Internet services.

Property Rights

The two agency relationships lead to the identification of two separate sets of property rights to the information surrounding Internet usage. The Domain Name, although “owned” by ICANN, is licensed, via Domainz, to the Domain Name Holder. Similarly, the IP address is provided to the Internet user/Domain Name Holder. As such, the licensed property rights to the coupled information held on the Register are vested in the Internet user/Domain Name Holder.

The rights to use information collected on an individual’s Internet usage, however, would appear to belong to the ISP. Even though the information is generated by the activity of the Internet user, the process of capturing it at the ISP is at the ISP’s discretion. Typical contracts for the provision of ISP services appear to recognise this right, by requiring users to sign consent forms to enable the ISP to use this information for the purposes of the service offered, and to limit the extent of its disclosure to third parties. In this way, such information parallels the information kept by trading banks on financial transaction information. There are legal precedents which acknowledge the bank’s ownership of this information and limit the bank’s ability to disclose it to third parties, but which do not preclude the bank using it in the provision of other services to the customer. For instance, bank-held information on a transaction such as issuing a mortgage is used to target offers of life insurance to the customer⁹.

⁹ The potential of bank-held information to provide competitive advantage in insurance services is addressed in Evans, Lewis; Neil Quigley and Craig Simms 1999. *Economies of Scope in Banking and Insurance: does banking information assist insurance prediction?* NZ ISCR Working Paper.

Thus, it can be seen that the property rights to the routing information are legally separate from the property rights to information generated as a consequence of routing activity. If an Internet user decides to change ISPs, then this can be achieved merely by ceasing the agency with the first ISP, obtaining the IP address of the new ISP, and forwarding this information to the Register. The Domain Name is entirely portable between ISPs. The information generated as a consequence of past activity is, however, the property of the ISP and does not have to be transferred as a consequence of the change of provider.

Telecommunications Number Portability Parallel

There are clear similarities and differences with number portability in the telecommunications industry. The telephone number, like a Domain Name, is the identifier by which third parties can make contact with the owner. Switch address information, which enables telephone exchanges to connect the call to the user's physical telephone, parallels the IP address. In New Zealand, the property rights to both a telephone number and the switching information are vested not in the telephone user but in the company providing the connection service. If a user wishes to change telephone companies, the number generally cannot be transferred. This inability to transfer numbers becomes a barrier to customers switching between telephone companies due to the transaction costs involved in changing telephone numbers. These costs can be significant for, particularly, business users, whose identity may be linked to their telephone number (e.g. 0800, 0900 and 0508 "word" numbers may be linked to significant brands). Such high switching costs mean customers become "locked in" to particular providers, and are forced to continue using their services, even though, switching costs excepted, they may prefer the package offered by another provider. This limits competition between existing providers, stands as a barrier to new providers entering the market and inhibits customer choice. Furthermore, it enables a less efficient provider to continue providing services, even though, switching costs excepted, it would be socially beneficial for customers to change to a more efficient provider. However, as in any cost-benefit analysis, these costs must be offset against the benefits accrued. In telecommunications, the costs arise from the traditional PSTN network practice of the use of a single number to identify both the caller and this person's network address.

Under the current single registry Domainz model, Internet users cannot become "locked in" to a particular ISP in the same way as telephone users because, as they already have property rights to the Domain Name, they can freely switch merely by contracting with a new ISP and obtaining

the new IP address. The separation of name and network address solves the number portability problem for Internet users. Furthermore, as a neutral Registrar, Domainz has the responsibility to register the new information as agent of the Domain Name Holder. Domainz has no commercial incentive to refrain from registering this change, as it derives no commercial advantage from the identity of the ISP serving the client. Thus, the independent Domainz registry process has contributed to overcoming the problem of number portability which has characterised the New Zealand telecommunications industry, and to date has enabled the objectives of continuity of service and ease of transfer between ISPs, and consequently, uninterrupted access to the Internet, to be achieved by all Domain Name Holders in New Zealand.

Implications of a Shared Registry

The Shared Registry model posits that any number of competing Registry agents should be able to register combinations of Domain Names and IP addresses. If a central and independent open-access Register is maintained, then there may be little change to the existing processes. In theory, this merely formalises the relationship which exists currently, where other agents such as ISPs register user details on their behalf. The Register still acts in the dual role as both the user's agent and the agent of ICANN, and the contractual agreement with the Register is separate from the contractual agreement with the ISP.

The danger to user property rights emerges if, via the shared Registry process, the agency relationship from ICANN for maintaining the Register moves away from the independent Domainz directly to Registry Agents. This could occur if the Register is effectively "divided", giving Registry Agents control of the property right to segments of Domain Names currently vested in ICANN¹⁰. Registry agents in this case are now in a position to charge users not only for the process of registering the name, but also for the sale of the property right to the use of the Domain Name. A Registry Agent could potentially exercise this right when selling specific names which have commercial value to the end-user, such as has been exhibited in the recent instance of the sale of the juliaroberts.com domain name.

¹⁰ For instance, if rights to xxx.co.nz were vested in one agent and xxx.org.nz in another, or aaa.co.nz to mmm.co.nz in one agent and nnn.co.nz to zzz.co.nz in another.

ISPs as Registry Agents

Furthermore, if the Registry Agent is also an ISP, then a vertical integration of both businesses would occur. The ISP would take on the dual agency of both ICANN for Domain Name allocation and the user for Internet access. This merger would result in a significant conflict of interest for the ISP. Domain Name and IP address information would no longer be transparently separable and controlled by the Internet user. ISPs would control both access to the Register and access to the Internet, and their clients may be subject to “capture” and “hold up” just as telephone subscribers are now affected. This danger is even greater if, in its new power as ICANN agent, the ISP specifically retains the property rights to the Domain Name, by merely renting access to it to the user, rather than conferring the license, as occurs under the current Domainz system.

ISPs’ profit-making objectives provide a very real incentive for them to exploit this dual-agency advantage at the expense of their end-user customers. Customers for whom access to information is vital would, in the absence of governance rules, have little option but to pay the price – either transaction costs of losing their Domain Name and moving to another ISP, or the inflated price of their existing provider – if they wish to retain uninterrupted access to the Internet. This power would be limited if the right of any individual or entity to register a Domain Name was preserved.

The pursuit of such objectives stands in contrast to the co-operative, uninhibited access approach to information which has to date characterised operation of the Internet, yet incentives to pursue them are inevitable under commercial imperatives. Commercial objectives contribute to efficient levels of information exchange for competitive trade and development of innovative ISP services, but such objectives have implications for governance. The ability of end-users to continue to control the governance structures of the Internet is challenged by the appearance of these commercial bodies between the Internet and end-users, as their dual agency allows them to exert influence backwards to the domain name allocation process and forwards to end user access. This poses challenges to the power of self-governance, and raises the issue of what sort of governance structure, within the existing legal framework, is in the public interest. Governance structures in other network markets – that of the New Zealand Electricity market, for example – have evolved to solve the trade-off between competition and co-operation. These governance structures may offer some guidance in the dilemma facing the custodians of Internet governance.

Competition Policy Responses

In New Zealand, the Commerce Commission has indicated that lack of number portability in telecommunications potentially constitutes an unacceptable barrier to entry.¹¹ This leads to the conclusion that if a Shared Registry system which reduced the portability of Domain Names currently enjoyed under the separate Registry, or, by fiat, inhibits access to this Registry, was introduced in New Zealand, then this may well constitute an illegal act. To this extent, end-user rights to Domain name portability, and the ability of ISPs and Registry Agents to compete for business appear to have some protection under New Zealand legislation.

Furthermore, as the rights to issue Domain Names are currently managed by an Incorporated Society, agreement of the members would be required to enable such a change to occur. If an illegal change was agreed to by the Society, then there is potentially personal liability for the executive and members who authorised such a change, as this could constitute collusion to acquire a dominant position, a *per se* illegal offense under the Commerce Act.

Thus, any changes to the governance system should be fully tested against competition law prior to being implemented.

Questions remain, however, about whether satisfying New Zealand statutes is sufficient to protect the rights of end-users in an industry which is becoming increasingly global and increasingly commercial. The ability of the New Zealand Government to police and enforce competitive activities of companies based overseas but serving New Zealand end-users is negligible¹². This is especially relevant given that the locational choice of ISPs is increasingly being determined by the extent to which government policies in particular countries affect the company's cost structure¹³.

¹¹ See the Commerce Commission (Decision 356, 17 May 1999) authorisation the Number Administration Deed. The Commission reports a Government Section 26 statement that number portability “must be independently administered and allocated” and with respect to governance “the allocation, use and ongoing planning of telecommunications numbering must be efficient, must be based on relevant principles, and must involve robust processes including binding dispute resolution to resolve any disputes that arise”.

¹² Howell, Bronwyn. 2000. *Taxation Treatment of Information Service Provision*. NZ ISCR Working Paper.

¹³ In a competitive industry, where small cost changes have significant impacts upon industry profitability, there are positive incentives to relocate into jurisdictions which offer advantages such as deregulated telecommunications environments, Research and Development incentives, or lower consumption tax rates (Howell *op cit*).

Hence, it would appear that there is an urgent need for clear Internet governance principles which define the end user rights, in order to ensure that these rights are protected and enforceable internationally, and to protect end-users from commercial exploitation by intermediaries for whom free access to information is not the primary guiding principle. This is likely to require a clear vesting of property rights to the Domain Name/IP address coupling in the end-user, irrespective of who provides either Registry or ISP services, and a clear explication that the end-user and ICANN remain the principals in the assignment of all data contained in the Internet Registry. Furthermore, these governance principles need to be monitored and enforced by a body which has the support of all stakeholders, and which has the power to bind participants to its code of ethics. While it has been suggested that the governance principles of the New Zealand Electricity Market may provide a model of how this could be achieved using a non-governmental structure in the New Zealand legal environment, neither this, nor potential – government or otherwise - structures to date address the wider global considerations

Future Information Issues

The Internet governance principles, however, may not be able to stop at simply specifying property rights to Registry information and practising ethics for Registration Agents. The same issues of information ownership and ISP power also apply to the body of information being built up by ISPs on their customers' Internet access activity. This information is already being used to identify candidates for receipt of specific unsolicited information, based upon historic usage¹⁴ and to customise some user-generated search functions, often without the end-user's knowledge or consent.¹⁵

These additional services may well provide benefits for which the user is prepared to pay. For instance, an ISP may command a premium price from users if it can filter out unsolicited traffic, or customise search processes. Many more potential products and service innovations not yet even imagined may be developed by ISPs as a result of information retained on users' Internet

¹⁴ The increasing use of cookies (software programs placed on a user's computer when visiting a site) shows that such information-gathering may not be limited to ISPs, but is also undertaken by other for-profit users in order to maximise their profitability.

¹⁵ The utilisation of information collected about end-users' uses of the internet is spawning specialist application providers (ASPs) that design and construct applications for the management, including use, of this information. The extent to which these are integrated with ISPs is to considerable extent affected by the privacy requirements of the collected information. In jurisdictions where collected information is the property of the ISP, independent specialist ASPs are difficult to establish.

access patterns. Furthermore, use of cookies¹⁶ already indicates that this type of product innovation may not be limited solely to ISPs. Such innovations have arisen principally because there has been no intent or ability to date to limit the flow of information based upon *content*. Indeed, free access has encouraged such developments.

Thus, Internet user access information is rapidly becoming a valuable input for the production of goods and services. Yet the generators of this information stock are largely unaware of its existence, let alone its value to third parties¹⁷. The culture of unimpeded access and free sharing is, by giving away such information, creating the opportunity for operators to generate profits “out of the ether”. While currently this may be improving service for end-users, it may well be imminent that such information can be used to control processes which are, if not vital to managing our daily existence, then at least provide significant financial advantage to end users¹⁸.

The ownership and utilisation of this information by ISPs, however, may in the future create even greater “lock-in” than ownership of Internet access information. Where customisation of service provision may require an extended usage history, the ability of a new provider to offer a comparable service may be impeded by the inability to access usage history information. Only by collecting the information over an extended, real-time relationship can a provider be able to create the customised service or product. Ownership of the information by the service provider therefore constitutes not only a barrier to switching by the customer, locking the customer in to continued service by the incumbent supplier, but also a barrier to entry to a new provider wanting to offer services to the customer.¹⁹ This has significant implications for the promotion of competition, and protection of the rights of end users, for it cannot be assumed that the tradition of free sharing will extend to the free transfer of such information when the profitability of individual firms is at stake.

¹⁶ Software programs placed on a user’s computer when visiting an Internet site. Cookies allow the “planter” to track the user’s Internet habits and combined with personal information provided, allows profiling and targeting by third parties as well as ISPs.

¹⁷ For instance, in a recent US survey, 70 percent of computer users surveyed had no knowledge of what a cookie was, let alone what it could potentially do. Rutter, Kim. 2000. Big Brother is Watching You. *Grace* July: 40-41.

¹⁸ For example, global satellite positioning (GPS) tracking of vehicle movements, transferred by wireless dial-up Internet connections, provides valuable rolling stock management information for trucking companies. However, this combined with similar information on other vehicles using the road may enable real time route adjustments to be made to avoid congested sections of highway, thereby both avoiding costs of delay for the trucking company, and reducing what would have been even greater congestion for users on the congested road, by keeping the truck off it. The value of this data is contingent upon the ISP having access to GPS data of both the trucks and other vehicles on the road. Combining such data has significant commercial advantage for the trucking company, for which it may be prepared to pay a significant sum. Withholding it may impact significantly upon the trucking company’s financial performance.

Any analysis of this issue must be tentative because of changing technology and uses of information. It may be, for example, that acquiring and manipulating Internet user data requires investment in sophisticated innovative databases that are assets with limited or no alternative uses, and thus entail commitment to its ongoing utilisation to ensure efficient investment. However, such implied long-term relationships are more likely to be efficient if contractually-based, rather than the outcome of restrictions imposed by arbitrary rules in governance structure of the Domain name system. Any information management governance structure needs to recognise the needs of the wider commercial information exchange environment, not just the activities of a limited number of providers of a pre-defined range of services.

In consequence, it may be timely to also examine and clarify property rights to information collected as a by-product of Internet access, and society's perception of the rights to privacy and protection of such information. Is it really the property of the collector, or is it really the property of the generator? If it is collected by the agent in the capacity of conducting an agency contract, does the principal automatically have a right to request disclosure? Or because it is utilised in the process of conducting activities other than those contracted for, is it the proprietary information of the collector? Are there structures which will enable end-users to exercise rights of ownership, yet still allow competing service providers easy access to develop new and innovative service offerings as well as competitive options to existing services? And will the property rights vested be enforceable in a global economy with various legal jurisdictions and differing legal structures?

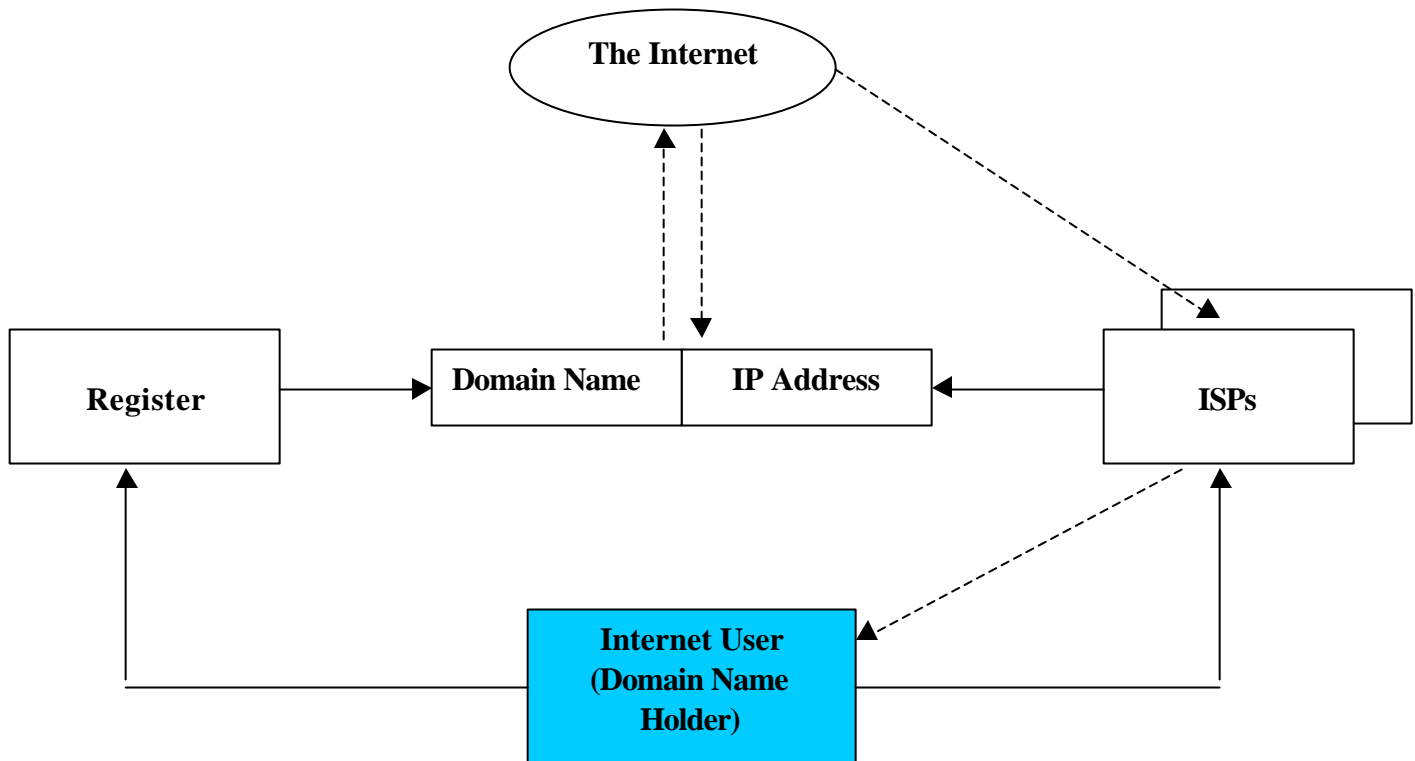
Answers to questions such as these reach beyond the scope of any governance arrangements to specify, and may entail legal strictures at national and international levels. The answers to questions like these have significant implications for competition policy and consumer rights beyond the actual operation of the Internet. The vulnerability of existing governance and legal frameworks is being exposed by the actions of the ISP industry, but the implications relate to the entire Information industry as well as final-goods industries.

¹⁹ The extent to which such a barrier is important will depend upon the length of time required to establish any end-user's pattern of preferences: the longer the time the higher the barrier.

Final Comment

In New Zealand as elsewhere pressures for change are coming from the inevitable and essential commercialisation of the provision of Internet services. An effective governance structure should facilitate this commercial evolution and the efficient adoption of change and provision of services to the end user. Governance of the Internet Registry is a matter of particular public interest, but it is just one of a range of issues that the Internet poses. Because of rapid growth and technological change useful detailed prescriptions are unlikely to be useful, but issues of property rights and Registry governance are of particular public interest. The increasingly pervasive nature of the Internet and its burgeoning products is likely to be most efficiently continued by decentralised decision making of firms and individuals within the parameters of competition law.

Appendix 1: How the Internet Works



To access the Internet, a user requires an unique address so that messages can be directed to and from the appropriate computer. This unique address is comprised of:

1. the Domain name of the user
2. the IP address of the computer (server) via which messages are directed.

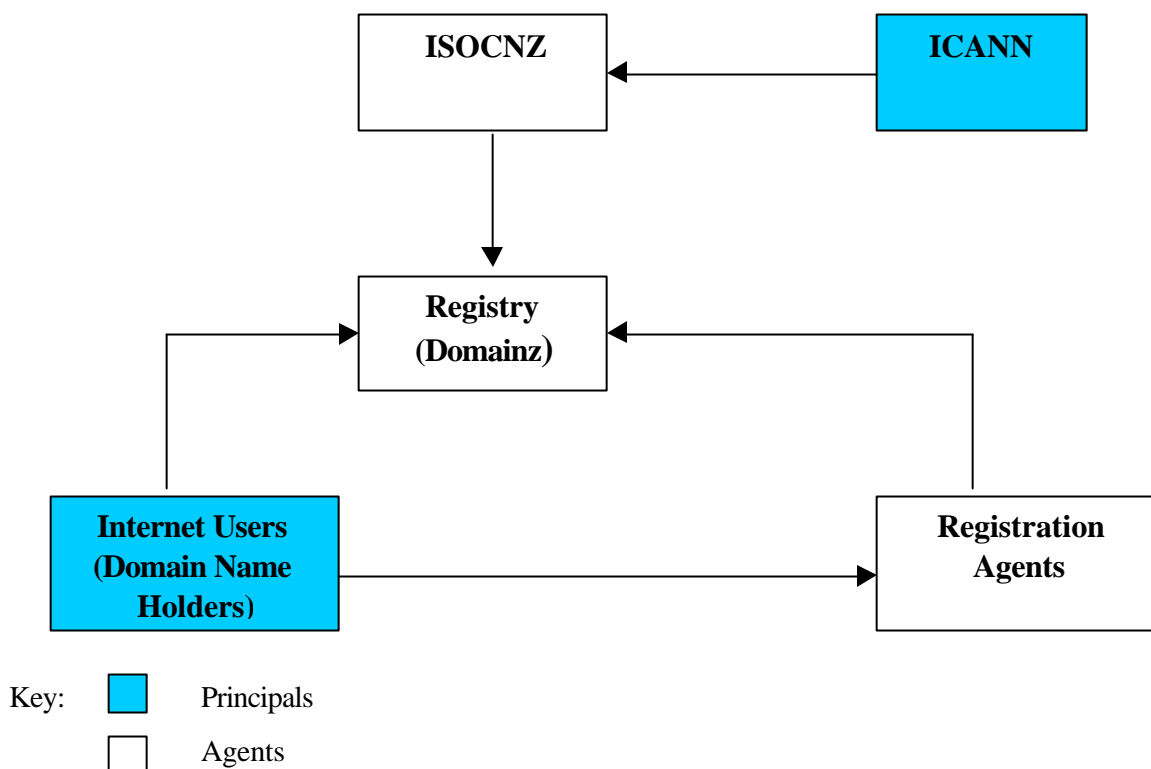
The domain name (e.g. iscr.org.nz) is the literal name by which the user is identified.

The IP address identifies the computer which “hosts” a user’s web page and channels messages between the World Wide Web and the user’s own computer. When a user owns a dedicated server, this IP address will be to that server. However, when a user hires server capacity from an ISP, this IP address is the address of the ISP’s server. The user “signs in” to the ISP’s server to both send and receive messages via the web.

To use the Internet, a user must “register” both of these pieces of data in a central Registry. This Registry is the “master address book” which ensures Internet messages are sent (“routed”)

to the correct computer. This Register “couples” the server IP address to a domain name, which is allocated uniquely as part of the registry function. The Register (e.g. Domainz in New Zealand) is an agent of both the Internet user, in registering rights to use the name in that user, and of ICANN, which has issued it the right to register domain names within a specific range²⁰. Where the IP address is that of an ISP server, this information must be provided by the ISP to the customer who then registers it with the Registry. In practice, ISPs frequently act as agents of the Internet user, and deal directly with the Register on their clients’ behalf. However, in doing this, they are clearly acting as agents of the user.

Key Agency Relationships:



In New Zealand, Domainz is currently the only agent who can input either domain names or ISP addresses on the Register. If an Internet user changes ISPs, then the IP address of the new ISP can only be entered onto the register by Domainz. This requires the express authorisation of that user (via a password supplied when the domain name is issued to the domain name holder). This process recognises the fact that the Internet user is the principal in this contractual relationship. If the ISP undertakes to arrange the updating by Domainz, then again, this is only as able to be done in the ISP’s capacity as agent to the Internet user principal. Clear separation

²⁰ In New Zealand, Domainz has the right from ICANN to issue all names of the format xxxx.xxx.nz.

of the Register from the operation of ISPs ensures the independence of the user's access to the Internet from any other access-related service provision.