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The Intelligent City

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The speakers' notes provided to those of us on this panel say that 'the objective of the Panel is to enlighten and broaden the perspective of conference delegates by raising and debating issues associated with the intelligent city concept. The focus will not be on the technology issues rather the community value that new technology brings'.

It is pleasing to see that the organisers of a conference such as this have provided a forum for a perspective which incorporates some notion of social responsibility.

1. INTRODUCTION

I have gone through the list of speakers, and I don't think I would be insulting them to say that most are 'tech-heads'. But I also think they would feel relieved that they have been spared what happened to Dick Morley (who helped develop the floppy disk and the magnetic-stripe credit card among other things) who spoke at a conference in Sydney in July of this year. His wife also spoke at the conference on the topic 'Life with a nerd'[1].

It is not surprising that technology dominates this conference: it is, after all, largely about the extension of technology-based services and what they can provide for people.

But there is another side to this upbeat approach to the extension of technology based services in a liberalised and privatised environment, especially for utility services. The other side is the reality of regulation for accountability and quality in your services and service provision. That is, a focus on consumers.

In the *Chairman's Message* on page 1 of the Main Announcement & Registration Brochure, Mr Garner says that the theme for the conference is 'Technology, Best Practice, Competitive Advantage, Customers'. Working for a legal centre with a focus on the public interest, I am sorry to say that this focus is somewhat inadequate.

It is not enough to have a customer focus: you must have a consumer focus.

In a competitive market (or so they tell us) it is easy to have a customer focus: lose that and you go broke. It is much harder to have a consumer focus: many managers in utilities have been appointed in recent years precisely because they have a customer focus. Having a focus on all their consumers is thought to take their attention away from the main task of operating as if they are in a commercial enterprise. This perspective underlies the development of the concept of the Community Service Obligation (CSO) or the User Service Obligation (USO), which are part and parcel of commercialisation, corporatisation and privatisation.

The distinction between customers and consumers is usually over-looked in discussions of public policy. But it is vital that those of us with an interest in the least well-off and otherwise disadvantaged not to lose sight of the difference. There are a significant number of consumers who do not always have a market relationship with the supplier. Because they do not have this market relationship with suppliers, normal market disciplines (built around pricing) do not apply; nor is this group of consumers necessarily made better off because of competition. Because they are not purchasing the good or service, price signals simply do not work.

Customers are a subset of the larger set of consumers. A customer stands in a market relationship with the supplier of the good or service. Normal market disciplines should apply and contract and other forms of legal redress are available to the customer (however inadequate that might be given the power differentials). Inevitably, the more a customer consumes the more important s/he is to the supplier.

PIAC and other similar organisations generally speak more for those forced out of the sub-set of customers.

Having made that point, in the remainder of this short paper, I will:

- provide some basic information about PIAC and its place in the consumer and community sector;
- give a community perspective on the concept of the intelligent city;

[1] Australian Financial Review, 10 July 1997, page 55.

_ give you our perspective on industry developments which may be leading to the creation of an intelligent city; and

_ try to explain what a reasonable regulatory system might look like in this context.

2. PIAC

The Public Interest Advocacy Centre - PIAC - is 15 years old this year.

It was established to undertake public interest test-case litigation and policy work which has the potential to impact on, and promote, the interests of the broader community. The Centre does not offer a general legal advice service dealing with the legal problems of individuals across many areas.

It works, not by seeing numbers of people individually, but by strategically targeting legal and policy work to benefit as large a group of disadvantaged people as possible. Strategies used include test cases, representative proceedings and *amicus curiae* ('friends of the court') interventions in behalf of, or with the potential to effect, hundreds of individuals.

Areas of work identified in our Strategic Plan include:

_ to make the legal system more accessible, fairer and just for disadvantaged people in public interest matters;

_ to make the governmental system more transparent, participatory, responsive and accountable for disadvantaged people;

_ to redress and reduce institutional abuse and make community services more responsive and accountable for disadvantaged people;

_ to ensure that utilities are accessible, responsive and accountable to citizen, consumer and community interests, especially to disadvantaged people;

_ to promote better health outcomes through public access to information, especially for disadvantaged people; and

_ to seek redress or reform on behalf of citizens, consumers and communities, especially disadvantaged people, in public interest matters;

We do this with a staff of 13 people.

In respect of achieving intelligent city entry status, we have email, web access, we hope to have a web site in a few months and we are registered with the Government Purchasing Index.

3. THE PROMISE OF NEW TECHNOLOGY

> Insofar as there is a dominant belief in our society today, it is a belief in the magic of the marketplace. The doctrine of laissez-faire capitalism holds that the common good is best served by the uninhibited pursuit of self-interest. Unless it is tempered by the recognition of a common interest that ought to take precedence over particular interests, our present system - which, however imperfect, qualifies as an open society - is liable to break down. George Soros The Capitalist Threat, 1997.

The promises being made for the new technologies are similar to the promises made for what are now old technologies:

- the motor vehicle would make us more mobile, enable us to escape from the tyranny of bus and trains schedules and give us access to the natural world so that we might appreciate the wonders of creation and thereby be improved. Trams are back in Sydney;
- television was going to improve education by bringing the real world into our homes and making education fun. We've got *America's Funniest Home Video* and *Neighbours*; and
- cable was going to provide a whole new world of entertainment where the consumer would not be constrained by the programming decisions of the free-to-air stations. So, we get re-runs of *Mr Ed* while the foreign language movie channel is an additional cost.

While annoying, these are perhaps minimal costs. The danger of much of the new technology is that it has the potential to re-create the city as an intelligent predator, while the disadvantaged become the predated.

Technology allows for a more precise definition of market segments *via* access to information about tastes and preferences. Direct mail marketing across the network can be more accurately targeted, and the new 'push' technologies make this even more likely. On the other hand, the information technologies also make it easier for suppliers to more accurately tailor their products to specific consumer needs. The issue here is how to minimise the former while maximising the latter.

The consumer finance market offers a case in point. Housing finance packages can now be structured to suit specific customer, no one-size-fits-all mortgages. But access to small credit products (small loans with lower interest rates) have been replaced by the credit card which provide continuing credit at higher interest rates. As real wages fall, the immediate attractiveness of the latter becomes greater, but the long-term debt consequences are significant in an uncertain employment environment.

4. A COMMUNITY PERSPECTIVE ON THE CONCEPT OF THE INTELLIGENT CITY

4.1. INTELLIGENT CITY-SIGNIFICANT TERM?

How much significance does the term 'intelligent city' have? One would think that if significant, the web would contain a great deal of content on the topic. So, I looked up 'intelligent city' on the web.

- 'HotBot' the *Wired* search engine, which I find to be the most useful and one of the quickest. Worldwide, found 119 sites; when I narrowed it to Australia, it found 5[2].
- ANZWERS, the search engine available from Ozemail's home page, turned up 44 matches for the world, and 16 for Australia[3].

The intelligent city concept owes a great deal to the old idea of the 'multi-function polis' (MFP). 'Polis' and 'city' are, of course, the same word; and 'intelligence' and 'multi-functionality' have at least something in common. So, perhaps the concept of the intelligent city is not so new after-all. This suspicion of mine was deepened by the existence of the initials 'MFP' at the bottom of the LETA site in Australia - there was an international conference in South Australia last year. The initials were not hypertexted, so I did not try to follow this up.

There is also an element of the intelligent city which can be built-in using technologies which have been available for some millennia eg the orientation of housing to enhance energy efficiency. This is design intelligence. Choice of construction materials also falls into this category.

4.2. MEANINGS OF 'INTELLIGENT CITY'

The underlying notion of an intelligent city seems to imply connections between functions which were previously seen as separate. First, information which used to be provided in discreet bundles called books or pamphlets is now provided in the same form as bank account information, electricity consumption data and the latest post-modernist musings in *Hot Wired*. We might call this passive intelligence.

Second, information can flow the other way. We can provide information on our likes and dislikes to the providers of services, we can create for ourselves and others a set of links to information which supports our case, which entertains us, which informs us and which infuriates us. We might call this interactive intelligence.

Third, we can conceive of a city which, using information technology, is itself able to respond to changing conditions. Traffic lights which automatically monitor traffic flow and change the timing of lights; trains which are able to sense changes in railway traffic flow and create their own schedules; libraries which provide the reader with information about new publications based on the exhibited preferences of the reader-viewer are all possibilities. This might be called the techno-city - or the MFP.

[2] 11 July 1997
[3] 16 July 1997

4.3. PASSIVE INTELLIGENCE

There are a number of information services provided *via* telephony. This is probably the simplest (most unintelligent) form of passive intelligence.

More significantly, we currently have 4 (so-called) free-to-air television stations. These provide basic information services, though many are more like infotainment, edutainment or advertorial 'services'. Entertainment is their primary product. Taking into account cable and satellite television, FoxTel, for instance, provides about 20 other channels to those who can afford it. Their services are consumed in the same way SkyTV is consumed in hotels and clubs: on your bum with your mouth shut.

Some of the cable channels market themselves as purely information providers. For argument's sake, let us assume that BBC World News, CNN and the Discovery Channel on FoxTel provide quality information services.

But, unless one can afford it one cannot access this information. Even this service in the passively intelligent city is not available to the disadvantaged. Geographic disadvantage also has to be considered. Where cable has net yet been rolled-out (such as parts of Bulli, NSW) even those who can afford it can't get access to FoxTel. If we go one step further, to cable-based telecommunications, one needs to be able to afford a cable-modem and to pay an internet service provider (ISP) to access this aspect of the intelligent city.

Sophisticated high-tech "intelligent" delivery systems are not the same as intelligent content. There is a slogan which has done the rounds in discussion of telecommunications industry development: 'content is king'. The slow take-up of cable television has been variously blamed on expense, failure of roll-out and unemployment. But the question has to be asked whether cable television's content is so poor that most people have no interest in paying good money for more of what they get on the 4 free-to-air channels. We can have an intelligent city which pumps out nonsense or raises questions about how much entertainment/information people want. The failure of my fellow citizens to embrace the technology encourages me to optimism - perhaps 'consumer sovereignty' will have an impact, but I'm not holding my breath.

This is not an argument against either cable or the internet. But I do argue that the excitement which has accompanied the expansion of these technologies fails to acknowledge that there are problems even with the most primitive form of the intelligent city.

4.4. INTERACTIVE INTELLIGENCE

> The automated home would be more power-efficient and streamlined, [Will] Fiala [of ALFA-TEK] said. "So your dishwasher could dial up your hot-water service and say 'I need water in an hour', and your hot-water service could say, 'well I've promised the washing machine water then'[4].

This is a great example of interactive intelligence: decisions are made based on a set of rules which we provide to the machines. Using pre-programmed instructions (eg that the hot water service can only serve one appliance at a time), the hot water service's chip automatically responds in a certain way every time. In other words, it operates the same way as an algorithm in mathematics[5]. This algorithmic thinking is not very interesting really: it is little more than the microelectronic version of the mechanical cistern, which fills automatically every time the water level drops below a certain level.

Again, access (physical and monetary) is required before the technology can be used to meet needs or demands. To extend the mechanical analogy: residents in developing countries or Australians in impoverished rural locations while capable of using the cistern and getting the advantages of the improved hygiene which flows from it, are unable to utilise the technology because they cannot afford it.

[4] Jenny Sinclair *Welcome to the wired home* in Sydney Morning Herald, 15 July 1997.

[5] For a sustained application of algorithmic thinking to the whole of existence, see Daniel C. Dennett (1995) *Darwin's Dangerous Idea: Evolution and the Meanings of Life,* Penguin.

Looking at the larger Australian situation, expansion of interactive intelligence underlies some of the findings of the recently released Wallis Committee Report on the financial system[6]. The Committee said (on page 101) that *more sophisticated telephone technology, combined with innovations in its use by business through both operator-assisted and interactive voice response systems, is facilitating the increased use of the telephone for accessing a variety of financial services. Such systems also provide greater convenience and lower cost*. The Report goes on to praise the achievements of FirstDirect which provides direct telephone banking services in the United States.

The interesting thing is that these glowing assessments are not new. They appeared, for instance, in the 1991 Martin Committee Report[7] But the Martin Committee went on to list the following limitations on the application of such technology:

- people who suffer from intellectual disability, many of whom suffer from memory difficulties *which can easily result in particular problems with account numbers and PINs* (para 22.12);
- functional illiteracy. It is essential that these people have access to assistance for basic banking activities such as filling out a cheque (para 22.13). Also falling into this category are those who are functionally illiterate in English; and
- finally, *for economically disadvantaged customers, a transaction fee of whatever amount is a far more significant cost than it is for average customers. Over time it may deplete what small savings they are able to accumulate* (para 22.14).

Some banks value personal contact rather than some form of computer interactivity to increase profit rates and to increase their status. *The Economist*, for instance, reports the experience of the Swedish Handelsbanken which has 500 branches for a population of about 10 million[8]. It has the lowest proportion of costs as a percentage of income of a range of banks throughout the world (including NatWest, Deutsche Bank and Credit Suisse). It has achieved this *without resorting to such Anglo-Saxon brutalities as mass redundancies* and *is the only big Swedish lender not to have spent a fortune hiring consultants to teach it about efficiency*.

In Australia, the total number of bank branches declined from 11 760 in the 1980s to 6 507 in 1997[9]. So choice is shifting. Now it is use the new technology or pay a premium for human service. Soon it will be use the new technology or get no service at all.

4.5. THE TECHNO-CITY

> The 'Urban Footprints' group asked itself how the city could be made into a kind of intelligent organism that responds to changes in its surroundings. They started from the premise that the city is a complex, self-organising, networked, fractal system. The city is a baby, not a spaceship! The point is not to make a massive, pre-programmed technostructure orbiting under the control of HAL, the all-powerful computer from 2001, who refuses to open the pod door for his hapless passengers. Maybe a city, a successful city, is more like a baby. It grows and learns in doing so. Understanding comes from experience. Good environmental outcomes need positive encouragement, and maybe some gentle smacks for bad behaviour[10].

To achieve this version of the intelligent city depends on convergence between various technologies. Convergence is a reasonably simple concept: one or more industries which have traditionally been treated quite separately become, primarily for technological reasons, more closely linked. At the most extreme edge, they come to be treated as a single industry[11].

The development of what the Germans call the TIME (Telecommunications, Information, Media & Entertainment) industry is probably the best known example. Fixed wire telephony (the most basic telecommunications service) combines with broadcast technology, and then extends into the

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[6] Financial System Inquiry [Wallis Committee] (1997) *Financial System Inquiry Final Report*, AGPS

[7] The House of Representatives Standing Committee on Finance and Public Administration [Martin Committee] (1991) *A Pocket Full of Change: Banking and Deregulation*, AGPS.

[8] The Economist, 12 July 1997, page 75.

[9] Wallis Committee Report, page 636.

[10] Found on an Australian web site: Workshop Results: Urban Footprints is the heading of the document. It is actually the **pod bay door**.

[11] Much of this section is based in PIAC's Submission to the NSW Hogg Committee Inquiry into the sale of electricity assets (July 1997).

business of content production. Taking the concept of convergence further, the TIME industry is now being linked to the electricity industry.

And to take this concept of convergence to the 'nth degree', Barbara Lepani in a recent paper said:

> The city and town of the future will be 'intelligent' through a vast network of information technologies, combining cabling and micro-wave links with software knowledge tools. We can expect further links to intelligent materials technologies which will begin to mimic the intelligence of, for example, our skin, and biological engineering driven industrial ecology to tackle problems of waste management[12].

I want to take some time to explore the concept of convergence more deeply.

4.6. CONVERGENCE

There is a hierarchy of convergence between these two industries, from simplest to complex.

Table 1: Electricity & Telecommunications Industry Convergence

SIMPLE **Shared resources**	**Linkage**	COMPLEX **Merger**
_ rights-of-way _ easements _ conduits _ poles	_ billing procedures: eg sub-contract billing technology & complaints handling _ joint marketing	_ use of wires for telecommunications _ product packaging _ corporate mergers/takeovers

Of course, convergence is occurring in areas besides the electricity and TIME industries. But I will spend some time exploring the concept of convergence between the TIME and electricity industries more fully as it is now extremely relevant for significant public policy decisions in NSW and elsewhere.

4.6.1. SHARED RESOURCES

This is the simplest form which convergence could take. The rationale for this level of cooperation was set out in the clearest terms in March of this year:

> ... the key to building broadband infrastructure will be to *cooperate*, not compete - with local power companies taking the lead to build *common* infrastructure. Why electric companies? Because utilities need universal, instantaneous data flows to optimize marketing, efficiency, control, and environmental accountability. "Just-in-time" energy could be an enormously advantageous application of computing. Utilities have financially significant reasons for bringing the infrastructure into being, together with assets such as poles, wires, billing systems, customer goodwill, and service crews.
>
> These resources would be convenient instruments for cooperation, with the utility ceding retail service options to its telecommunications and information provider partners. The utility's rewards would come from building and running the platform over which the rival providers reach ultimate customers[13].

The perspective given by *Wired* on developments in the overseas marketplace is one which the NSW electricity industry has already embraced and extended. *The Australian Financial Review* reported in March 1997 that the potential for convergence beyond the sharing of physical assets such as poles is already being examined:

> For years, Telstra has been watching the world's telcos eyeing off its market in the countdown to deregulation. Turns out the competition was even closer than it expected. In fact, cheek by jowl with its ducts beneath Australia's major cities.

[12] Barbara Lepani *Designing Education and City Futures for the 21st Century* , paper presented to LETA Conference, 29th Sept - 4th October 1966, Adelaide

[13] Steven Rivkin *Competition's Competitor* in Wired , May 1997, pages 155-156.

> For electricity companies, gas and water utilities in every State, those ducts - and their capacity to carry high-bandwidth fibre-optic cable - could prove to be a buried treasure.
>
> With right of way, access to poles and the network of transmission lines serving millions of customers, they provide physical entry to commercial and residential premises across the country - and potentially from July 1 [1997], to the lucrative voice and data market[14].

Obviously, the two industries have moved further than this.

4.6.2. LINKAGE

The extent of developing linkages between the TIME industry and the electricity industry is enormous.

Melbourne's United Energy is already extensively involved in the telecommunications market. This involvement takes the form of reselling telecommunications services to its own customers. Further involvement includes integrated billing and common support structures. This would enable a one-number inquiry service across the full range of energy and telecommunications services offered by all companies involved. If all utilities form alliances (which is looking increasingly likely) then a full range of integrated customer support facilities could be provided on a one-call basis.

While reports of these developments in both Victoria and New South Wales appeared in March 1997, by June 1997 considerable progress had already been made on developing them. These proposals in NSW extend beyond the partnership arrangements which already exist in Victoria. It was reported 17 June 1997:

> EnergyAustralia - which has about 1.3 million business and residential customers in Sydney, the NSW Central Coast and the Hunter Valley - will advertise nationally this week for proposals and is looking to have an agreement in place by the end of the year[15].

This brings us to consideration of the more complex relationships outlined in Table 1.

4.6.3. MERGER

Here it is necessary to introduce the fashionable and virtually meaningless term 'globalisation'.

TIME is one of only two industries which could be considered truly global, the other being the finance industry. I make a distinction between globalisation and internationalisation, which is implicit in the following:

> What makes an industry such as telecommunications global is the fact of the total international integration of the industry from shareholding to planning, production, distribution and consumption. One country can co-own, co-plan, co-produce, co-distribute and co-consume the exact same telecommunications service with a number of other countries and through a combination of state and privately owned assets. Take the simplest example: an international phone call. A call from South Africa to Australia will go through SA Telkom, out through AT&T, across using a co-owned satellite, down through a State-owned satellite, into an infrastructure either public or private and owned in a number of counties and to a private individual. The regulations are largely internationally set through the International Telecommunications Union[16].

In the event of merger, the electricity industry would also become global. The electricity and TIME industries are candidates for this final characteristic of convergence because electricity infrastructure can also be used for telecommunications. It is this technical reality which creates the conditions for industry players in both markets to engage in the practice of merger/takeover which characterises industry behaviour under capitalism. The most complex form of convergence is occurring in Australia too.

It was reported in the *Australian Financial Review* 17 June 1997 that the Victorian United Energy has already formed a relationship with the telecommunications provider AAPT which is expecting to take advantage of the liberalised telecommunications market from 1 July 1997. This followed reports earlier in the year that AAPT may have been considering use local wireless loop technology

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[14] Charles Wright *What's up duct? Telstra hit by trench warfare* in Australian Financial Review, March 1997.
[15] Mark Skulley *EnergyAust wants telecom partners* in Australian Financial Review, 17 June 1997.
[16] Stephen Rix *Globalisation or Internationalisation* ? Paper presented to Globalisation conference, University of Witswatersrand, South Africa, October 1996.

developed by AT&T to provide services to residential consumers (*Australian Financial Review*, March 1997).

5. CONSUMER IMPLICATIONS

5.1. VALUE OF PUBLICLY-OWNED ASSETS

> In the long term, our electricity businesses will be facing only increasing and commercial pressures. In the short to medium term, the sale of the businesses will provide additional Budget flexibility for the Government as well as potentially funding a number of major capital projects. Treasurer Egan, 22 May 1997.

It is a truism that as markets are satisfied, rates of return tend to decline. While rates of return may well be lower than in emerging industries, the risks associated with such investments are very low. Capital, then, invests in such assets with confidence that positive cash-flows will be maintained over time. The balance between risk and guaranteed returns also explains why government securities and provision of household mortgage finance remain attractive.

Convergence adds another element to consideration of the behaviour of capital. Convergence provides access to long-term flows of income from the mature part of the partnership, while providing higher rates of return than the electricity industry itself would provide from the expanding partner.

Managers of publicly-owned electricity assets are no less aware of such considerations than managers of privately-owned corporations. Consider, for example, the following:

> Acting Managing-Director [of EnergyAustralia] Mr Mervyn Davies said that next month's start of full deregulation of the telecommunications industry would be an excellent opening for ... a relationship [with a telco], which would 'maximise value' for the corporation's stakeholders, the NSW Government and taxpayers[17].

To digress for a short time, here we have an industry, state-owned and profitable, returning dividends and other payments to the State, which is well-situated to take advantage of industry developments which are driving similar enterprises throughout the world. Yet, not one word has been uttered by the NSW Treasurer on the advantages which could accrue to citizens and consumers by maintaining public ownership and permitting them to take-part in the changes[18]. Moreover, many millions of words have been written to explain why the state should withdraw from industries which have low rates of return and where state ownership is claimed to reduce management initiative. Yet, it has never been adequately explained why the state (and therefore citizens) should not enjoy the advantages of massive investment in assets which are offered a new, unforeseen opportunity to maximise returns in an emerging global industry.

5.2. REGULATION

> We are all acutely aware that the electricity and gas industries have been undergoing major structural and regulatory reforms during much of the 1990s. The immediate objective has been to increase the extent and effectiveness of competition in Australia's energy markets with the ultimate objective of improving efficiency, resource allocation and market growth within the sector and of delivering lower prices and more efficient energy services to industry and household energy users.[19]

Regulation in NSW has been structured around specific industry characteristics - IPART is the exception to this feature.

Despite this disaggregated form of regulation in NSW the regulatory regime nationally remains complex. The costs of complexity are not solely borne by consumers but also by the industry (though it could be argued that in an oligopolistic market structure they will eventually be passed onto consumers). Steve Blanch said at the ESAA Conference on 17 June 1997 that there were 26 sets of legislation and regulation which the electricity industry was required to meet.[20].

Under the current structure of regulation, which has emerged as a result of the extension of competition, liberalisation and deregulation (sic) these 26 sets of legislation and regulation would be

[17] Mark Skulley *EnergyAust wants telecom partners* in Australian Financial Review, 17 June 1997.
[18] The Hon Michael Egan (1997) *Proposed sale of NSW electricity industry assets* , 22 May.
[19] Allan Asher Deputy Chairman ACCC *Explaining the ACCC's Business* , 16 June 1997
[20] Mark Skulley *ACCC adviser is Vic's new utility watchdog* in Australian Financial Review, 18 June 1997.

expanded for any corporation involved in more than one energy industry or expanding its activities beyond its traditional markets. Assuming the process of vertical integration which is occurring in other markets also occurs in Australia, the regulatory regime expands even further. Each industry participant which requires access to the electricity transmission network will also have to meet the terms and conditions of the National Electricity Market access code. This market access code itself is additional to the National Electricity Code which is being developed at the same time. The ACCC has a major role in assessing both of these Codes[21].

It is necessary to point out that the regulatory snarl creates extraordinary difficulties for consumer advocates. PIAC, for instance, has been working on public utility and competition policy reform for some years. Yet, PIAC has never been able to allocate more than 2 staff to the whole range of issues which have been thrown up in this process. While competition policy reform may be going through a period of quietude:

- our constituency is demanding plain language explanations of the policy and how it could impact on them and their organisations;
- competition policy is being extended into areas where it was not expected such as the provision of human services; and
- utility industry reform is still underway.

The lack of basic resourcing for consumer advocacy organisations means that a coordinated consumer and community response to major policy decisions such as the privatisation of electricity is difficult to obtain. IPART, too, has referred to a lack of consumer input into their determinations: the truth of the matter is that resources sufficient to provide that perspective are simply not available.

5.3. NEW REGULATORY ISSUES

Convergence and the development of the intelligent city not only has implications for the delivery of services and the regulatory structure, it also creates new regulatory concerns.

> As the impact of control and communications systems become widespread, there is a danger of the misuse along totalitarian lines. The dangers of control and conditioning have been amply described in George Orwell's *1984* and Huxley's *Brave New World*. Subtle intrusiveness of sensing and monitoring functions in the intelligent city will create a tension between the rights of the individual versus the well-being of society. Issues of privacy need to be balanced with monitoring activities of people. There is no denying that control can be a threat to civil liberty. In the interest of society, however, it is possible that a reforging of what constitutes the unalienable rights of the individual will occur.[22]

We need not look this far into the future to recognise political problems with the intelligent city - problems which no doubt can be resolved but which have to be acknowledged first. For example, one of the drivers of convergence between the TIME and electricity industries is the ability to share billing technology.

In the event that regulatory systems remain tied to specific industries, then it will be extremely difficult for a customer of any electricity company which is part of a TIME company (and *vice versa*) to be assured that confidential data will not flow from one to the other.

The need for a national utilities regulator seems an inevitability as the two industries restructure towards unification. The key issue in this new regulatory environment is whether the ACCC *via* the *Trade Practices Act* will be enough. Using the Act to take action against a corporation is a legalistic affair: in many cases, an individual would not know about it, desire it or be able to afford this process.

Thus, organisations like PIAC are important for consumers because we provide a facility for running test cases or class actions which are in the public interest. Essentially, this is not different from the action taken by businesses in Melbourne against their electricity utility for damage caused by "spiky" electricity supply (the issue became one of merchantable quality). But the sorts of class actions PIAC is involved in are with disadvantaged people, and their ability to access the courts is considerably less than even that of small business.

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[21] ACCC Press Release *National Electricity Market access code* , 29 April 1997

[22] Christian E. Stalberg (1994) *The Intelligent City and Emergency Management in the 21st Century* , originally published in the Proceedings of the International Emergency Management and Engineering Conference, 18-21 April 1994.

The creation of a alternative dispute resolution schemes and independent regulators over the period of time that competition policy, corporatisation and privatisation have been underway is welcome. The Office of the Regulator-General in Victoria, IPART in NSW and the new Electricity Industry Ombudsman of NSW (EION) are all indications of a general acceptance of the need for such consumer protection institutions.

But we cannot afford to view these institutions as permanent solutions during periods of fundamental industry restructuring such as convergence. There will be a need for 'meta'-alternative dispute resolution institutions to deal with consumer issues as they arise in the new industries.

6. CONCLUSION

In this short paper I have presented a citizen and consumer perspective on the intelligent city. Some may feel that I have been overly critical of developments which many are promising will take us into a bright new future of large-scale information flows leading to better services such as education and health care, better traffic flows and more responsive behaviour on the part of corporations to consumer needs. The fact of the matter is that there are many who are marketing these developments much more capably than I could ever hope to do.

The criticisms which I have made are not arguments against the general trends which have emerged. Rather, they are concerns which reflect the heterogeneity of our society. In particular, I have made the following points:

- a customer focus is not sufficient for firms operating in that intelligent city: not all consumers are customers;
- the promises being made for the new technology are similar to promises made about previous technologies. Those promises have not been met;
- the market segmentation which information technology permits is not a one-way street: there will be losers;
- there are at least three levels of the intelligent city: passive, interactive and techno. Each has implications for consumers;
- convergence underpins moves towards the construction of the intelligent city. Yet, convergence raises issues of capital valuation and regulation; and
- the intelligent city raises new regulatory issues, such as the need for 'meta'-alternative dispute resolution mechanisms and for sophisticated techniques and regulation to protect privacy.

Until these issues are resolved, the intelligent city creates as many risks as opportunities to consumers.