

# INTEGRATED BROADBAND COMMUNICATIONS

A Confidential Discussion Note on 'Fine-Tuning' the UK Legislation  
prepared for DTI and Director General of Oftel

*This paper has been written by Malcolm Matson as a contribution towards a confidential debate on the current status of an important aspect of the development of a vital component of our IT future and in particular to make a summary assessment of the Government's policy towards the development of IBC (Integrated Broadband Communications) in the UK. Many of the ideas expressed are tentative and therefore are not to be quoted or represented as being the formal position of National TeleCable Ltd.*

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## 1. INTRODUCTION

**1:1** Given the rapid technology convergence which is giving birth to the new 'information age' and in particular, the rapid developing market demand for Integrated Broadband Communication networks and services (IBC), it is not surprising that governments around the world faced with legislating for and regulating their PTTs, find it a difficult and complex task fraught with problems. Nowhere is that more so than in the UK where totally virgin ground has been broken as a result of the two pieces of legislation, the 1984 Telecommunications Act and the 1984 Cable & Broadcasting Act. Unlike anywhere else in the world, this unique twin legislation permits and promotes the development of a new national IBC infrastructure funded by the private sector. Using the latest technology this mosaic IBC is intended to compete directly in the local environment with the existing copper PSTN owned by the former nationalised and monopoly PTT, British Telecom. BT is forced to move at a much slower rate towards IBC because of its huge investment in an existing and 'obsolete' local plant - the copper twisted pair network. Coupled with its national obligation to provide universal access to its network, British Telecom is faced, under the current legislation (and on its own admission), with little hope of preserving its dominant position as a local network owner when the new IBCs are developed. It is doing all it can to resist this effective dilution of its local network monopoly and in the process is working against the national interest by effectively slowing the development of an IBC network.

**1:2** The innovative UK legislation seeks to accommodate both the requirement to regulate the immensely strong, market dominating (rather than market responsive) British Telecom, and also the radical requirements of promoting competition to BT through encouraging private sector investment in new public networks and services, including those that are based upon advanced broadband technology. Meeting these two core objectives of the legislation presents an immense and complex challenge. It is not surprising therefore that those responsible for writing this legislation were forced to make many assumptions about the appropriate strategic development and structure of the new de-regulated telecommunications industry and with no precedent or appropriate model to follow. It was inevitable therefore that emerging real life experience would rapidly prove certain of those assumptions if not to be 'wrong', then to be 'inappropriate'.

**1:3** I have prepared this note not to criticise the legislation which I have so consistently championed, but constructively to re-examine two fundamental assumptions running throughout the UK legislation. In my opinion, it is inevitable that these two issues will have to be addressed at some point in the near future in order to prevent an increasingly confusing and chaotic state of affairs from emerging.

**1:4** The first assumption reflected in the legislation is that different 'information services' can or in some cases should be regulated in different ways in terms of their delivery over and use of the public networks for reaching their market of domestic and business consumers.

**1:5** The second assumption relates to the relationship between **network ownership** and **service provider** and whether or not in the longer term, the current legislation, permitting as it does, common ownership of network and service, is in the best public and national interest. Professor Alan Peacock in making Recommendation 15 of his Report, has concluded that such common ownership is undesirable. In an ideal world, I totally agree.

**1:6** Stemming from these two basic assumptions are other important issues such as the current 'vogue' topic of common use of ducts. However, such issues, in my opinion should not be identified as independent issues capable of being addressed individually or in isolation. Many of them, including the matter of ownership and use of ducts, stem from the fundamental dissonance in the current legislation relating to the structural and legislative relationship between **network owner** and **service provider**. Furthermore, I believe that many of the problems occupying the regulators, today and in the future, (such as avoiding cross subsidy, tariffing, interconnect terms etc.) are symptoms of this same fundamental dissonance in the current legislation based as it is upon the two assumptions mentioned above.

**1:7** By focusing on the twin issues summarised in Para 1:4 and 1:5 above, I do not wish to infer that the UK is any less in need of an overall and internally consistent national communications and IT strategy - something which it sadly lacks at the present. The current laissez-faire approach to the market exploitation of various telecommunications delivery technologies (such as the broadcast spectrum and DBS) will simply result in further hindrance and delay to the development of the national IBC network - especially if it is to be financed solely by the private sector. This free-market and non-directive approach will permit these ancillary delivery systems to siphon off important short term revenue which could valuably go to supporting the development of the IBC. Despite the immeasurable value of an overall and consistent IT strategy, I have grave doubts as to whether there is any merit in expending effort in trying to persuade the Government to establish one. The issues are complex and in the face of very powerful vested interests, the political will and imagination necessary to establish such an important consistent IT policy is severely blunted.

## 2. LEGISLATIVE IMPLICATIONS OF THE DIGITAL WORLD

### **Premise One:**

*Different 'information services' can or in some cases should be regulated in different ways in terms of their delivery over and use of the public networks for reaching their market of domestic and business consumers.*

**2:1** 'Technology Convergence' is a fashionable topic. Far from being a cliché, it is a reality which has huge legislative and regulatory implications. The term is used to denote the relentless common 'digitisation' of various hitherto separate information forms and industries - most of which have grown up in their own largely unrelated 'analogue' worlds supported and regulated by equally disparate legislation and regulatory environments.

**2:2** Whether it be television pictures, computer data or telephone conversations, the common existence over public networks of what I call **FMCI** (Fast Moving Consumer Information) will be in the form of a digital stream of 'zeros and ones'. In transmission, these three apparently separate forms of information will appear identical because they will **BE** identical. Only when decoded and perceived will they have any separate identity as a TV programme, a voice conversation or music, or as an intelligible output of data in words or figures for subsequent human or computer consumption.

**2:3** It will now begin to become apparent as these industries 'converge' in their markets as well as in their technologies that the legislation and regulation supporting them is inconsistent, if not inadequate. It is my contention that the current legislation embodies certain fundamental conflicts (resulting from the false premise stated above) which eventually will of necessity have to be resolved. I believe it is desirable to start now the difficult process of attempting to define a new conceptual framework appropriate to the IT world and which is not founded upon that premise.

**2:4** The UK has already begun this painful process and much earlier than other European countries including West Germany and France. Despite this, much ambiguity and inconsistency in the legislation still exists and the nation will do itself a disservice if it is content simply to 'patch' it up as and when individual anomalies appear. Such an ad-hoc approach is inevitably the means of making short term progress, but a more fundamental continuous strategic review of the legislation and its underlying assumptions must also be undertaken in order to ensure that development of the information age and the national IBC is constrained only by the market and technology and not by artificial (and unnecessary) constraints accidentally imposed as a result of incomplete legislation.

**2:5** Detailed examples of this regulatory or legislative inconsistency stemming from the premise that different information forms require different regulatory frameworks are already apparent and many more will emerge as time goes by. They are even extended backwards into the regulation of the supporting hardware for the 'apparently' separate information forms.

**2:6** For example, over the years a well developed regulatory structure has grown up to ensure that any equipment attached to a public telephone network is formally approved as being technically 'clean'. This procedure is administered by BABT (British Approvals Board for Telecommunications). To date this procedure has worked satisfactorily but will it continue that way? A licensed broadband network is a PTO (Public Telecommunications Operator) with full interconnect rights to the national PSTN. Assuming that the broadband operator uses a common carrier broadband technology such as the IVDM system being adopted by National TeleCable (which offers two-way simultaneous switched digital and analogue TV signals at 2 Mb/s), why should the telephone handset (*voice*) require BABT approval but not the personal computer (*data*) or the television set and the video camera (*video*) - each of which are equally capable of sending signals directly onto the public network without having to pass through some form of 'BABT approved modem'? Maybe the broadband network itself requires a green sticker? Logic and consistency would say yes, they should all be approved, common sense suggests another answer! What should the legislation say?

**2:7** Another clear example of legislative inconsistency results from relying upon the false assumption that broadband services and narrowband services can or should be separately regulated as far as their transmission over a PTO network is concerned. A licensed provider of a digital 'data' service to be delivered over a public telecommunications network (a VANS licence holder) has the right to demand that the PTO delivers that service over its network to any of his customers. On the other hand, a provider of a 'television' service (also to be digital in the future) does not have to be licensed and has no right to demand that his service is delivered to anyone by the broadband PTO. Such inconsistency is unwise.

**2:8** Needless to say there is an exception (inconsistency) to this general principle, namely the four terrestrial broadcast channels of BBC1, BBC2, ITV and Channel 4 plus the proposed DBS service. All of these have been designated 'must-carry' signals which a broadband operator is obliged to include in his offering to the public. In the case of the four terrestrial channels there is no provision for the broadband network to be remunerated for carrying these signals. In the case of DBS, it is far from clear that an adequate regulatory framework has been established for the resolution of any disagreement over the commercial terms which a broadband network will charge the DBS service for this carriage. I see no logical reason whatsoever, why these five services should enjoy a privileged status. Why should they not have to pay for being carried and delivered over a broadband network? Why should not ALL other television channels have the same right of access to their potential customers by also being designated 'must carry' signals? (see below)

**2:9** In summary therefore, the common digital technology that is now upon us will increasingly make it a nonsense to differentiate between various information services since in transmission all will be identical. In the near future it will become quite impossible to sustain a regulatory framework which 'pretends' that they are different. To persist in maintaining legislation and a regulatory framework based upon the metaphysical quicksand of trying to differentiate between identical entities (streams of digital ones and zeros) on the basis of variations in the way in which this common digital commodity will eventually be 'perceived', seems to be asking for trouble!

### **3 THE COMMON OWNERSHIP OF PUBLIC NETWORKS AND NETWORK SERVICES**

**Premise Two:** *There is no need to separate the ownership and control of networks from the ownership or control of the services provided over them*

**3:1** Modelled as it was upon the Hunt Committee's Report, the legislation saw no need for the separation of roles between programme provider and broadband network owner. As the White Paper of April 1983 stated, (Paragraph 50):

*"To require a strict 'common carrier' approach whereby the cable provider installed and maintained the cable system but was precluded from any part in cable operation would be unnecessarily restrictive."*

**3:2** Thus the current legislation does not separate 'network ownership' from 'service provider' for either broadband networks or the PSTN. (Interestingly, a different approach was taken with the two cellular networks). Being thus structured, the legislation invites the two major 'service providers' (i.e. the duopoly) to compete by attempting also to own and manage their own network. The focus of competition (and investment) is therefore taken away from the end service to the consumer and centred upon controlling the network.

**3:3** Consumers want a choice of services so that they can shop around in order to find one that is attractive in terms of price and quality and offered with courteous customer support. No telecoms user or TV viewer in the world cares a fig for which ducts, cable (or indeed satellite transponder) that service comes via. The market is currently deprived of a great deal of choice for the reasons discussed below, namely, that 'the network' rather 'the service' is the fundamental focus of competitive strategy for the old-world PTTs - it always has been and it always will be.

**3:4** Both BT and Mercury have a firm belief that they have to 'own' the network (i.e. the switch) if they are to provide a competent and competitive service. It is as if two bus companies insisted on owning their own individual motorways in order to compete effectively between London and Birmingham. Mercury and BT do not actually follow through on this point in the international environment where very little of the global infrastructure is in their ownership or control, but the cosy CCITT 'club' of international PTTs is regarded as giving sufficient mutual comfort on this point. However, when it comes to the UK, both BT and Mercury have what can only be described as an obsession about network ownership. This can go to absurd lengths such as provoking action that is patently not in the best interests of shareholders. British Telecom, as an example, rather than actively and aggressively exploiting the benefits of Mercury's switched network to provide some of BT's VANS services more attractively in terms of quality and price (e.g. Prestel or video conferencing) insists instead on using its own network for primary delivery. The current BT Megastream tariff structure is consequently very high. This tariff only persists because BT 'as the largest VANS provider in the nation' refuses to derive the cost benefits of using Mercury's switched network instead of its own dedicated point-to-point 2 m/bit links. The market knows no better and is still content to watch BT and 'follow my leader' If ever there was a case of effective 'cross-subsidy' that is clearly one. BT 'VANS' by refusing to use a vastly more cost effective network for distributing some of its services, is subsidizing its own network survival. This is probably the ONLY way a de-regulated monopoly can behave, since it has nothing to gain and everything to lose.

**3:5** Similar behaviour on the part of BT and Mercury can be seen in their relations with the new broadband operators. Both Mercury and BT, rather than reduce the costs of local phone calls by using the more efficient common carrier broadband network (technology permitting) continue to insist on switching voice telephony over their own separate networks. Mercury wishes to do it via a new 'overlay' network, whereas BT is not making any such new investment and insists on using their old copper network for local conveyance and delivery. In the case of Westminster Cable TV (40% owned by BT) where BT could, and indeed should, demonstrate the benefits of a common carrier broadband network, BT is effectively providing a form of 'negative subsidy' to its own copper network by 'agreeing not to compete' with it. They are resolute in not using the more effective Westminster Cable broadband network as a common carrier for the delivery of its voice and other VANS.

**3:6** Both BT and Mercury, while accepting interconnect, are both anxious to try and get the broadband operator to contractually bind itself to keeping the other national PTO off the network. Thus the new broadband operators are tending to fall into either a BT or a Mercury camp. The effect this 'duopoly' is having on 'minimising' the improvements to the provision of voice telephony services is now clear to see. In a 'BT broadband area', domestic phone charges have risen sharply in recent years as they have in the rest of the country. In a 'Mercury broadband area' you have the possibility of enjoying the benefit that phone charges may only rise 'sharply *minus* a few %'!

**3:7** Unless and until there is a *single* common carrier network in an area (i.e. of the sort National TeleCable proposes to adopt in Project Beany) which, by virtue of being licensed itself for voice, can 'bang BT's and Mercury's heads together', the dramatic improvement in the quality of local services and the reduction in their cost which the market so desperately wants, will not be seen. All because of a mistaken and misguided but widely held assumption that network ownership is essential to service offering and that separation of the two is undesirable.

**3:8** Therefore, the effect of the legislation as currently written is that the nation has three licensed PTOs in any area, each trying to gain a competitive edge in the future IBC world by laying its own network:

- a) British Telecom, slowly upgrading its PSTN via ISDN
- b) Mercury Communications 'threatening' to lay a secondary fibre optic network.
- c) the local broadband operator, often being courted or controlled by a) or b) but *never* both

**3:9** That is to say, unless there is a radical change of strategy on the part of the above three PTOs, then there is every likelihood that in any particular town, each of the three networks could have its own separate system of ducts, its own set of wires and electronics, with each being required to interconnect with the other and most important of all, all three aiming to be entirely broadband, i.e. each with potentially sufficient capacity for the entire market.

**3:10** This is clearly a nonsense and as already suggested, equates to encouraging haulage companies to compete by having the freedom to construct their own road network. In the field of IBC, the social cost and consequences of permitting competition to gravitate towards such a low 'commodity' level is already enormous and will increase. Effort and investment that should be being directed towards the development of what the market actually wants, namely broadband SERVICES, (which is where the added value is anyway) is being directed into duplicating a utility. This is clearly not in the national interest, nor is it in the interest of the shareholders of those companies foolish and short sighted enough to be responsible for it.

**3:11** Although the market would properly require that a PTO should have the right to build and own its own separate network if that which already existed proved 'uncompetitive', I believe that the legislation should not blatantly encourage it to do so. At present, the UK legislation invites competition to be based upon network ownership rather than service provision. This is a serious shortcoming.

**3:12** It is quite clear that if properly planned, any one of the above three duct systems or broadband networks could have sufficient capacity to meet all the needs of the market (including that of the other two PTO's) in that local area. That is to say, economic logic would argue for a 'monopoly' status. As long

as all three categories of PTO are permitted and even 'encouraged' by the legislation to compete by laying their own separate networks, then the probability of gaining the national economic benefits of a 'common carrier' are significantly reduced. There may be some short term employment benefit resulting from three gangs of labourers digging up Britain three times and laying three separate ducting systems. However, this would be easily outweighed by the huge redundant investment which would be ploughed into networks and ducts, and which could have gone into the development of competitive broadband services.

**3:13** In the matter of the UK broadband PTOs, there is a further problem resulting from the right of common ownership or control of the network as well as the services that it carries. It is clearly against the public interest that Mr. X or Mr. M can dictate what television programmes the consumer can receive if Mr. X or Mr. M has the right to own some of those programmes. BT and Robert Maxwell both own major networks as well as having significant programming interests. There is nothing which prevents these two operators offering only their own version of this or that channel - indeed, that is precisely what is happening. Moreover, when they start to act in concert (as is happening over the movie service) then the consumer's choice suffers – an absolute negation of the legislative intention. A consumer or a programme provider currently has no right to demand that a particular network operator carries a particular TV service. This is clearly wrong and specifically avoided in the telecoms legislation covering voice and VANS services. A licensed VANS service has right of access to the PTO. Again, the root cause of this difficulty which will become increasingly embarrassing is a combination of the two assumptions stated in Para 1:4 and 1:5.

**3:14** With this major false foundation stone in place, the Government's desire to 'regulate' the broadband industry by positively 'licensing' somebody consequently took another false turn. Whilst realising that in the age of global satellite transmission it is a nonsense to attempt to 'licence' programme providers, it decided instead to licence cable operators (an animal that was erroneously conceived from the inappropriate US model). It then went on to permit these licensed cable operators and them alone (i.e. not the market) to decide what was carried on their networks. They were licensed in fact as 'monopoly retailers' of non-broadcast TV signals rather than monopoly distributors obliged to carry everything. Casting the legislation thus, the seeds have been sown for a situation which can only become more problematic as consumers in this or that franchise area decry the fact that they cannot access a particular service simply because it is owned or offered by a 'competitive network owner'. Interestingly, none of the current UK operators has yet tested the point by trying to get programming into his area from another franchise area by relying on the telecoms licence interconnect. What would be the response of the legislation and the regulators to that?

**3:15** This problem has already been recognised and addressed with respect to narrowband voice and data services whereby all PTO networks are required to interconnect and the services themselves are licensed. The historic BT and Mercury interconnect decision handed down by the Director General of OfTel in 1985, made it quite plain that ownership of a public telecommunications network should not permit the owner of that network to deny people on the network access to a 'service' offered by a

competitive PTO. That is to say, BT, who both own a public network and offer services (such as voice telephony) over it, should not be permitted to eliminate competition from other network owners who wish to offer voice services over that network. As discussed earlier, they seldom want to do this, preferring to build their own network. Although the concept of separating network ownership and service provider is anathema to the PTOs of the world, it will be forced upon them when they are faced with the resale of circuits. That time is not far off in the UK.

**3:16** The Oftel interconnect ruling on voice outlined above marked another important milestone which may have become 'blurred' in some peoples minds since it happened to be an interconnect between two network owners. What was really significant was that it was in fact a ruling between the only other national 'voice service provider', Mercury Communications, and the 'largest network owner', BT. In the future it is to be hoped that there will be other voice service providers whether or not they own networks. In my opinion, it is in nobody's interest that the PTO's of the world go on deluding governments and the world at large into thinking that the provision of a public telephone service requires ownership and control of the ducts and wires over which it is carried. That is self-interested nonsense!

**3:17** The logical extension of this is that broadband TV programming, indistinguishable as it will eventually be in digital transmission from narrowband services such as voice (see Para 2:2) should be treated in an identical fashion. That is to say, any provider of a programme service should have the right to demand that a licensed broadband network carries that service to his would be consumers.

#### **4. THE ROLE OF BRITISH TELECOM**

**4:1** It is worth considering how British Telecom, the most active participant in the emerging broadband industry in the UK is behaving when it comes to wearing at various times and in various places, the different hats of:

- a) broadband network owner
- b) cable operator
- c) programme provider
- d) PSTN

BT is not singled out for any reason other than that as by being the major player in the UK broadband and narrowband telecommunications business (resulting from it's former monopoly position) it's potential impact upon the consumer and what he or she can get and at what price, still far outweighs that of any other single party.

**4:2** To date, (excluding the recently funded ELT franchise in the London Docklands) British Telecom has been the most significant equity investor in broadband networks. In addition it has effectively been the only lender to the emergent cable operating industry in so far that it has been prepared to finance the construction of broadband networks for 'unsecured' onward leasing to broadband operators in which it has a minority but 'controlling' interest. All other lenders have required collateral in the form of covenants of well established companies or specific guarantees. This dominating role of BT was not envisaged at the time of the White Paper (see the quotation in Para 3:1) but it has unwittingly resulted in BT's common ownership, or control, of both the operating company and the network in a number of franchises. Given BT's basically defensive reasons for participation in the UK broadband industry, this dominance has of itself resulted in 'unnecessarily restrictive' activity. BT, both in its investor and network supplier role, has attempted to ensure that the cable operator concerned adopts a strategy and technology which denies it access to the immediate revenues which would be generated from using the network to offer non-entertainment services that would compete directly with BT's own services offered under its national licence and over its copper PSTN.

**4:3** Evidence of this is not difficult to find. In those broadband networks where BT is playing a dominant role, either as investor, network provider or both, (Westminster, Aberdeen, Swindon, Coventry), despite being uniquely placed to satisfy Condition 15 of the DTI telecoms licence with regard to the offering of voice telephony, no such 'common carrier' approach has been adopted by BT. Moreover, in Belfast, where BT and the local Independent TV contractor control the franchise holder, no approach has been taken at all - the franchise lies totally dormant! This is anything but accelerating the provision of a national broadband grid as proposed by Peacock.

**4:4** British Telecom is therefore using its ownership of the network to control what the consumer gets by largely refusing to supply its own non-entertainment VANS services over the network (including voice telephony). This is quite clearly permitted by the existing legislation if BT controls *both* the network and the operator. However, it is more damaging than this since there is no provision in the legislation to prevent BT in its contractual arrangements, concluded as network provider with those cable operating companies that it does not wholly own, from effectively excluding all other VANS operators from using the network. Although 'interconnect obligations' ought to overcome this, in practice the same result can be achieved by subtle means such as quoting the network operator a prohibitively high cost to 'upgrade' the network to a true IBC capable of supporting such services.

**4:5** Other examples of this defensive control by BT are not difficult to find. Those subscribers on a British Cable Services (Maxwell) network and those on a British Telecom network until recently were unable to demand access to identical feature film programme services as the two network owners had a strong interest in their own film services and offered these in preference to the other. That is now likely to change as the two film service providers, finding that they can control (eliminate) competition in their area because they control the networks, are now attempting to come together as an intelligent 'cartel' and

cut the costs of offering two services by merging them. This cannot be in the public interest in the longer term.

**4:6** This behaviour by British Telecom is understandable and inevitable under the current legislation and is virtually the only means they have of preserving any value in their copper PSTN network. This strategy has to date worked for BT, in so far that nobody else has demonstrated 'in the ground' how much more cost effective and profitable a broadband network is than BT's copper PSTN. Therefore BT can afford not to be committed to an aggressive broadband approach to the rapid development of IBC and can, virtually free of threat, pursue its slow evolutionary progress towards IBC via ISDN, getting there alongside the other European PTT's around the turn of the century - too late to achieve the ITAP goal.

**4:7** When NTC through Project Beany (or anybody else for that matter), manages to 'prove' the legislation by effectively establishing a local broadband telecommunications network, it will have a significant negative impact upon British Telecom. It cannot be in the national interest let alone in the interest of BT and its shareholders, that this major national company should be severely or irreparably damaged as a result of having pursued for too long a 'negative' and defensive strategy to the broadband legislation. It is my contention that that is precisely what they are doing.

**4:8** Faced with the 1984 Telecommunications Act, BT had two strategic options. It could either:

- a) Direct its efforts towards 'controlling and managing' the decline in its market share by adopting a radical re-appraisal of its long term corporate objectives.

or:

- b) Direct its efforts towards 'resisting and minimising' the decline in its market share.

In my opinion, British Telecom has mistakenly adopted the latter strategy. The Company does not appear to be behaving in a way that would suggest that it accepts the over-riding 'moral' and legal obligation placed upon it by the legislation to desist from trying to protect its former monopoly. Apart from the negative national consequences resulting from BT adopting this policy, it could have serious negative consequences for BT itself and its shareholders. This is unhealthy, and part of any amendment to the legislation must be aimed at motivating BT to adopt a more positive and aggressive strategy towards broadband, in its own best interests.

**4:9** It is not difficult to illustrate the potential negative consequences of BT's current reactionary policy. Its existing tangible assets in a licensed broadband area are of two distinct kinds:

- a) duct network
- b) copper twisted pair telephone network

On Sir George Jefferson's (BT Chairman) own admission, once an independent party has been licensed to construct a broadband network with 'exclusive' rights to deliver entertainment TV services, then given the potential revenue which this 'bandwidth-hungry and frequently used service' will generate, no other party will be able to justify the investment required to lay a competitive over-lay network. (and so it should be, since as already discussed, it is a nonsense for competition to be encouraged by the building of competing broadband networks - the technology invites a common carrier approach)

**4:10** Given this state of affairs, BT should appreciate that at the very moment that the broadband licence is awarded to an 'enlightened' independent operator, the value of its own copper network in that area will inevitably and irrevocably decline. That is to say, BT's best way to optimise its return from that written down asset is probably to divest itself immediately of it to the newly licensed broadband network in that area, on as attractive terms as possible. This is in effect what AT&T were 'pleased' to do at Judge Greene's direction in the US. In a single move, AT&T rid themselves of their old copper network and were thus freed to compete in the very arena in which BT should be directing their efforts - national and international traffic and worldwide VANS. BT's copper PSTN terminations would inevitably be of some value to the broadband network even if the underlying asset (ducts excepted) had no long term value. By owning BT's copper network in the area, the broadband network owner could then initiate a phased 'broadband upgrade' programme deriving, virtually without hiccough, telecom type levels of penetration (i.e. 85%+). BT could then offer all their existing telecom services (including voice telephony) over this locally owned broadband network at considerably lower cost to itself and could offer lower tariffs to the customer accordingly.

Mercury would be encouraged to do the same in competition with BT but over the same network. In my opinion, this would be BT's optimum strategy for holding Mercury at bay in the longer term and it would of necessity, have a huge positive impact upon the cost of telecommunications in that area. Thus increasing the attraction of that area for inward commercial investment, adjacent areas of the country would soon wish to derive for themselves similar benefits by encouraging the establishment of their own local IBC infrastructure. This would further accelerate the organic growth of a mosaic national IBC.

**4:11** Apart from the local copper PSTN itself, there *is* an asset that BT owns in the local environment that has a potential lasting value, namely the ducts through which the copper network is drawn. The potential revenue that this major asset could generate for BT and its shareholders is, in my opinion, considerable. There is little doubt that National TeleCable (and hopefully other broadband operators) would be only too pleased to refrain from digging up the UK in order to install their own ducts if they could lease capacity in BT's ducts on acceptable terms. This basically means on a more favourable basis (i.e. 'cheaper') than they would incur if they constructed their own ducts. However, this high 'market price for access' (and hence the capitalised value of the ducts) is preserved for BT and its shareholders *only* until somebody else (e.g. the broadband operator) constructs a competitive ducting network thereby radically increasing the supply side of the equation. In my opinion it is very short sighted of BT and against their

shareholder's interests for them to be following their current policy of trying to use its ducts 'defensively' by not allowing other parties (PTOs) to have access.

**4:12** Unfortunately, adopting either of these policies (selling local copper networks or leasing off duct space) would be heretical to BT. The first violates their 'sacred cow' (and that of all PTTs) namely that the offering of any basic telephony service requires ownership of the network (See Para 3:4) The second would entail BT exploiting their assets (ducts) to the benefit of potential competitors rather employing them defensively in order to try and prevent the competition developing effectively in the first place.

**4:13** By pursuing these 'defensive' strategies, BT has been singularly successful in driving the emergent broadband industry away from becoming an effective local telecommunications competitor. This situation has resulted from:

- A. BT capturing or controlling the operator
- B. operators being short sighted enough to build something less than a true common carrier IBC network (and BT giving no example of doing anything other themselves)
- C. franchised operators remaining 'stuck' as unfunded shells with no sound strategy for attracting investment to pursue a local common carrier IBC network strategy.

**4:13** My analysis splitting the current 20 current cable franchisees/licensees (NTC'S Bolton franchise excepted) into the above three categories is as follows:

Category A	25%
Category B	35%
Category C	40%

Not an encouraging picture!

**4:6** The remainder of this note is devoted to a positive analysis of what the relationship between network provider and service provider might be and, starting from where we are, how the legislation or policy might be refined in order to achieve the optimum regulatory environment for the rapid 're-wiring' of the nation and the provision of a wide range of broadband services. The following section develops a conceptual framework that may prove useful in this process.

## 5. THE ELEMENTAL HIERARCHY OF IBC

**5:1** IBC (Integrated Broadband Communication) networks or indeed, any public telecommunications network can be conceived of as having four fundamentally different elements:

- LAND
- DUCTS / MASTS
- NETWORK
- SERVICES

**5:2** The primary element is 'SERVICES'. By that I mean that it is the only one in the context of IT for which there is a primary demand. The other three elements are all 'supporting' or secondary elements.

**5:3** That being the case, all investment and effort should be directed into developing variations of the primary element, namely SERVICES. However, in order to maximise demand for these Services, they should be offered to the market at the minimum possible PRICE, commensurate with optimising PROFIT by keeping the right balance between volume and price. This necessitates the cost to the provider of the SERVICES being kept as low as possible. These ongoing costs are largely constituted by the cost of using or accessing the supporting elements of LAND, DUCTS and ELECTRONICS. The obvious way of achieving this cost reduction is for SERVICES to share these supporting elements - i.e. for all Services to use a common set of ducts, and a common network.

**5:4** This strong argument for a 'tendency towards a monopoly' (i.e. common carrier) of the two supporting elements is further reinforced by the fact that the underlying cost of each element becomes higher as one moves up the Elemental Hierarchy. This is due to the fact that supply or capacity of each reduces.

- specific single location of land - UNIQUE
- specific single duct - CAPACITY FOR DOZENS OF CABLES/FIBRES
- specific single network fibre - CAPACITY FOR MILLIONS OF SERVICES

Access to each of the Elements as one goes up the Hierarchy can potentially command a higher price which becomes an increased cost of the SERVICE. Therefore, control or ownership of any one of the 'upstream Elements of the Hierarchy (i.e. Land, Ducts or Electronics) could totally control the cost (or even existence) of the ultimate Services.

**5:5** Prior to the creation of network competitors to BT, it had a statutory monopoly ownership/control of DUCTS and ELECTRONICS but of course did not have a monopoly control or ownership of LAND. To prevent land owners from inflating the cost of BT's services by extorting exorbitant prices for access,

appropriate provision was made in the legislation (Paragraph 2 Schedule 2 of the 1984 Telecommunications Act) This provides for REGULATED RIGHT OF ACCESS to land by a PTO no matter who owns it.

**5:6** If it was appropriate to enact legislation which prevented control or ownership of the Land Element from effectively controlling the price of the provision of BT's monopoly ducts or electronics, why is it not proper to have legislation which prevents ownership or control of any of the other Elements in the Hierarchy from effectively controlling the adjacent one? Indeed, use of common ownership or control of Ducts and Electronics to deny access to other networks or services could equally well be viewed as a means of 'cross- subsidy', something which is generally discouraged by the current legislation.

**5:7** The argument that BT's ducts are a private asset of BT which one cannot 'force' them by legislation to make available to others (i.e. competitors) appears reasonable. However, that argument was and is not sustainable when it comes to land. BT's ownership of a piece of real estate does not give it any right to deny another PTO *regulated right of access* to it for the purposes of laying across it a competitive ducted PTO network. In this respect BT and its privately owned land asset is subject, like any other landowner to the law of the land.

**5:8** At the other end of the Hierarchy, the law does not permit ownership of the Electronics to permit BT to deny other Service providers the right of access to it. As already discussed, any licensed VANS has a *regulated right of access* and there is an interconnect obligation imposed upon every PTO affording it a *regulated right of access* to that network for the purposes of delivering its Services.

**5:9** There are two obvious areas in the current legislation where this doctrine of *regulated right of access* is illogically abandoned:

- i. There is no *regulated right of access* of Networks to Ducts.  
In my opinion there should be.
- ii. There is no *regulated right of access* of Broadband Services to Broadband Networks.  
In my opinion there should be.

If the above analysis is valid, then this legislative inconsistency is a serious shortcoming.

## 6. PROPOSALS FOR ACTION

6:1 It should be clear from the above analysis that in an ideal world, one would wish to legislate to prohibit common ownership of Ducts, Networks, and Services. However, given the UK starting point, namely that the nation's major owner of each of these Elements is the same entity, namely British Telecom, a company which has recently been sold to the public on the basis that it will continue as a competitor in the ownership of these three elements, it is totally unrealistic to propose any such legislative separation now.

6:2 I would suggest that the adoption of a consistent policy based upon the simple concept of **Regulated Right of Access** may be worth developing and may provide an effective means for rectifying the current legislative shortcomings. For a start, it does not require any changes to the legislation for a licensed broadband operator to adopt such a policy today if it wishes. Indeed, National TeleCable proposes to adopt such an approach with its Bolton franchise, separating ownership/control of Ducts, Network and Services with each offering access to any other 'permitted' party. I believe that although this will not necessarily *prevent* an un-intelligent investment by say BT or Mercury being made in Bolton in a secondary ducted network, it will certainly discourage it. The highly competitive terms at which access to Bolton TeleCable's ducts or network can be offered to either BT or Mercury ought to deter them from wasting their shareholders money by investing in anything other than the development and provision of *services*. Sadly, I doubt whether that will be the case in the first instance, but in the longer term they will be unable to sustain profitability by following such an obscurantist policy.

6:3 It is intended that future National TeleCable broadband developments may even be able to develop a clearer separation of ownership between the Ducts and Network. NTC considers that Local Authorities could well be encouraged to be the owners of the ducts or to take the head lease on them financed by third party lessors.

6:4 It is not intended that this discussion note should provide a detailed legislative solution which fully corrects the current deficiencies identified in Paras 1:4 and 1:5 above. I hope it is sufficient that they have been identified together with a developed argument of their potential negative consequences upon the rapid spread throughout the UK of IBC networks.

6:5 While the concept of **Regulated Right of Access** may prove useful in addressing the problem of common ownership (Para 1:5) the other problem, namely a plethora of quite separate and inconsistent regulatory frameworks for various Information Services is identified in order to stress the importance of beginning to consider the issues and now to commence the process of formulating a consistent policy. any action on the Peacock Report without taking into account some of the issues raised in this paper may simply be compounding the problem.