2. EXECUTIVE SUMMARY

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The new eEurope 2005 action plan captures the ambition of the European Commission to make broadband reach every home by 2005. To achieve this objective, the Commission acknowledges that the existence of alternative network infrastructures should be promoted as it plays a crucial role in increasing competition and therefore lowering broadband access prices and boosting penetration.

However, the current situation in Europe regarding broadband Internet access does not indicate that competing alternative network infrastructures will be a European-wide reality in the near future in Europe. Although a few countries have extensive cable networks, former telecom monopolies still dominate most of the access network infrastructure in most European markets as the unbundling process has not been successful and the bulk of competition has been limited to Competitive Local Exchange Carriers (CLEC) operating similar technologies on the same incumbent's infrastructure.

The lack of competition from alternative networks in most EU member states is one of the reasons why North American and Asian countries are more advanced than the EU in terms of broadband penetration. Only EU countries with different competing access technologies, such as Sweden, Belgium or Denmark, have been able of aligning themselves with Asian penetration and exceeding that of the USA.

The limited roll-out of HFC and FTTH and the related profitability issues of these technologies increase the need for the massive roll-out of a technology able to become real alternative to xDSL in order to foment competition, drive prices down and increase penetration to the levels targeted by the EU in a reasonable time period.

In this White Paper, the strengths and potential contribution of the PLC technology to eEurope's objectives have been analysed in detail. The key conclusion is that PLC represents a **tremendous opportunity** for increasing and speeding up the arrival of the digital revolution's main benefits in Europe, as it meets the fundamental requirements to become a successful alternative "last-mile" telecom infrastructure:

- PLC is a **proven and technologically viable** broadband access technology
- It uses an **already existing infrastructure** with a higher potential coverage than other competitive technologies
- It has an **unrivalled ubiquity** (indoor and outdoor)
- PLC allows for **high market responsiveness** as the installation is fast
- It presents **attractive economics**

- It enables to provide **multiple services with the same IP technology platform**
- PLC is a **fixed wired** technology
- It benefits from the **long-term perspectives** associated with the leading Power Utilities' business

[a] PLC is a proven and technologically viable broadband access technology:

As shown in detail in Chapter 3.1, PLC grew tremendously as a technology from the first experience to the large-scale commercial and technological trial roll-outs started in 2001. Currently there are over 60 on-going experiences in 26 countries and 12 commercial deployments in different regions. Europe is leading the deployment of the PLC technology with over 13,000 users connected (14,000 connected worldwide). The promising results of these experiences validate the technological viability of PLC as well as its high speed rates (broadband through a share access, nowadays from 2 to 20 Mpbs).

[b] PLC uses an already existing infrastructure with a higher potential coverage than other competitive technologies:

Current PLC roll-outs show that the potential coverage is higher than that of xDSL. In addition, the PLC technology uses the existing medium and low voltage power lines, which enables to avoid additional wiring. This makes fast installation possible and maximises convenience for the end user.

[c] PLC has an unrivalled ubiquity (indoor and outdoor):

Ubiquity, both indoor and outdoor, is the main differentiating characteristic of PLC:

- Indoor ubiquity is a consequence of the existence of low voltage electricity sockets in most of the rooms of the buildings with electricity supply (any conventional socket can constitute a connection point to the PLC network).

- Outdoor ubiquity is a direct result of PLC usage of the electricity distribution grid, the infrastructure with the highest household coverage worldwide.

[d] PLC allows for high market responsiveness as the installation is fast:

PLC deployment is very fast compared with most of the competing technologies given that it is based on an existing infrastructure. This optimises market responsiveness and allows for fast mass market deployment when market demand booms. PLC presents the additional advantage that it can be an attractive broadband solution for deployment and operation in low-density areas.

[e] PLC presents attractive economics:

A comparative analysis of the economics of PLC and of three other broadband access technology (ADSL, HFC and FWA) indicates that PLC's economics are very competitive and will become increasingly so as equipment costs decline as the market progresses from its present early development stage. The use of Medium Voltage PLC technology for the metropolitan distribution network makes economics particularly attractive.

[f] PLC enables to provide multiple services with the same IP technology platform:

PLC was born in the Internet age, having IP technology as the integrating protocol for all services it is able to offer. As a result the PLC technology meets the convergence of networks and services. With PLC, the same modem allows access to Internet, telephony, interactive TV, domotics, security, etc. This adds to customer convenience, reducing equipment costs and the number of devices needed to access these services.

[g] PLC is a fixed wired technology:

Being a fixed wired technology, PLC does not require allocated spectrum, whereas the wireless broadband access technologies are subject to spectrum allocation which is a scare resource. This represents an advantage for PLC given that spectrum distribution is an issue for new mass market technologies.

[h] PLC benefits from the long-term perspectives associated with the leading Power Utilities' business:

The strength of the Power Utilities that are carrying out the PLC initiatives gives long-term perspectives to the business and will certainly generate trust in the potential clients' mind.

Taking into account the strengths aforementioned, PLC has the potential to become a catalyst of the Information Society development. It could increase residential EU broadband penetration up to thirteen points in the middle term if it is launched in 2003. That means over 20 million additional broadband connections throughout the European Union in 2005, if compared to the figures forecasted without local loop unbundling and infrastructure competition (see Chapter 5.1).

However, for PLC to fully exploit its potential during the strongest broadband growth period, a clear and technology neutral regulatory framework for PLC is needed. Although the active work in regulation developed during the last three years has allowed for commercial PLC deployments to be a reality, special attention must be paid to the evolution of regulation and standards, so the investments in PLC networks today are guaranteed in the future.

The European leadership in PC technology should be supported by the EU in order to maximise the benefits for the European industry. The EU should ensure that PLC technology is treated equally to other broadband technologies and that a favourable and stable regulation is established so that investors feel comfortable to strongly support the deployment of commercial PLC networks.

In particular, a favourable framework would include the establishment of a neutral treatment in EMC limits, not discriminatory compared with other technologies. It is important to point out that the lengthy process to approve EMC standards for PLC networks is likely to force PLC operators to take the decision to deploy commercially without being certain that the business will be financially viable. Indeed, while it is always possible to reduce unintended emissions, the technology deployment stops to be financially viable from a certain emission limit level.

Related to this issue, it is relevant to highlight that no interference case has been detected related to PLC technology in the PUA member roll-outs. It is also worth pointing out that specific solutions exist to solve specific cases of interferences, as would happen with any other technology.

As a result, the establishment of EMC levels should be done pragmatically. For example, the maximum emission levels proposed for the PLC technology should not be exceeded by services, devices and networks already in service. The USA is a good example as it established clear and pragmatic standards to regulate emissions for PLC since long ago. It is highly recommended that a similar favourable approach is adopted in Europe by regulatory authorities.

In this process, National Authorities can also take actions to favour the deployment of the PLC technology as they have the capacity to establish emission levels, therefore covering existing gaps.

As a conclusion, the National Authorities, European Commission and the European Council should consider the opportunity to impulse PLC technology to promote competition in broadband access and accelerate the achievement of eEurope objectives. The utilisation of an existing infrastructure – in PLC's case, the electrical one – could very well be the only solution to reduce the broadband gap between Europe and Asia or the USA, as the current financial situation makes difficult the deployment of new infrastructures or the upgrading of existing ones.

Power Utilities and manufacturers are ready to make of PLC a mass-market technology: it is therefore the moment for regulatory authorities to give the impulse that will make of it a definite success.