



## The role of telematics in integrating Ireland into Europe's information society

Title	The role of telematics in integrating Ireland into Europe's information society
Author(s)	Grimes, Seamus;Collins, Patrick
Publication Date	2002
Publisher	Taylor & Francis

## The role of telematics in integrating Ireland into Europe's information society

Seamus Grimes and Patrick Collins

European Planning Studies, 10(8), 2002

~~Seamus Grimes and Patrick Collins~~

~~Department of Geography, National University of Ireland, Galway, Ireland~~

~~Department of Geography, University of Hull, HU6 7RX~~

Formatted: Centered

Formatted: Font: Not Bold

~~ABSTRACT This e-following paper is an evaluation of Ireland's participation in the Telematics Applications Programme (TAP), which was part of which was a research, development and demonstration initiative initiative supported by the European Commission's Fourth Framework Programme for the period 1994-1998. TAP was primarily concerned with public sector bodies and their ability to adapt to the Information Society. The paper explores Irish participation in the programme and examines the contribution of this participation to the clustering of telematics experimentation within Ireland and to the increasing integration with other European regions arising from project networks. The role of the TAP programme in furthering Europe's information society in Ireland is assessed.~~

~~The rationale of the paper derives from the significant level of Irish participation in the programme. We look firstly at the TAP project itself in relation to Ireland's participation and then move on to examine in greater depth the contribution of the programme towards the clustering of telematics experimentation within Ireland and the growing integration of such experimentation with other European regions. Finally the discussion raises some questions about the role of the TAP programme in furthering the European Information Society project in Ireland.~~

### 1. Introduction

~~While Europe has achieved considerable progress in promoting the so-called 'Information Society', mainly by increasing the diffusion of information and communication technologies (ICTs), this success has resulted in some contradictory developments. As we advance towards the Information Society an evident contradiction is beginning to emerge. With the widespreadgrowing dissemination of ICTsinformation and communication technologies (ICTs) there is an increasing tendency to growing trend towards rejecting the rather simplistic scenariosaccounts of the collapse of space and time set forthimagined in early writings such as McLuhan's (1964) 'global village'. In the evolving Within the new geography of economic activity being shaped predominantly by the logic of liberal capitalism, the winners constitute the private sector has sought to reap the benefits provided by the new technologies, while those who have failed to adapt to the rapidly changing circumstances and the losers have foundfind themselves in a newly constructed periphery (Gillespie et al, 2001; Grimes, 2000). The Telematics Applications Programme (TAP) was part of the European Union's response to the recognition that~~

the Information Society (IS) ~~was not being equally diffused to~~ ~~has not resulted in~~ ~~benefits for~~ ~~to~~ all sectors of European society. The focus of the TAP programme on Europe's public sector was partly a policy response to the reality that intervention was required to ensure that modernisation of this sector took place, and that all Europe's citizens, particularly those forming part of marginalised groups, would benefit from the potential offered by the new technologies (Gibbs, 2001).

This paper sets out to explore the functioning of the Telematics Application Programme of Europe's Fourth Framework research programme, looking in some detail at the case study of Irish participation in the programme. While, clearly this is focusing on the Irish end of a large number of pan-European research networks, and is thus a partial view of the European programme, the detailed analysis of Irish participation provides an opportunity to consider the impact of the programme both in terms of contributing to cluster and network formation within the country, and also between Irish participants and those located in other parts of Europe.

The paper begins by examining the thinking behind the TAP ~~programme~~, which formed part of Europe's political programme of establishing an Information Society as a means towards furthering European integration. The specific objectives of TAP are outlined, and the focus on integrating and modernising Europe's public sector is explained. The emphasis within the programme on establishing networks and clusters between public and private sector organisations, both within and between the regions of Europe is highlighted. Particular weaknesses of the programme, such as the considerable gap between innovation and the market are also ~~identified~~ outlined. The paper examines the range of projects within the main sectors of the programme in which there was Irish ~~involvement~~ involvement, and also the ~~contribution~~ contribution, which these projects made towards diffusing a wider exploitation of telematics within public sector organisations, such as universities, health boards, city corporations and public libraries. ~~Numerous Examples~~ of public policy challenges in which the TAP programme ~~has sought to contribute~~, such as improving aspects of public administration, ~~dealing with traffic congestion~~ transport, providing greater equity of access to educational services, and expanding employment opportunities, are provided. Finally the paper focuses on the dynamics of networking and cluster formation of participants within the TAP programme. While the emphasis is on exploring the geography of the Irish ~~participation~~ participants in TAP networks, attention is also given to the European dimension of these research networks and the benefits derived from a closer integration of telematics experimentation in this cohesion country with the core regions of Europe.

TAP can be seen as the EU's attempt to bring the IS to the public sector in Europe, because it ~~was~~ is becoming increasingly ~~more and more~~ evident that without some policy intervention the IS ~~would not come to~~ will not transform the public sector.

~~The Telematics Applications RTD (Research Technology Development) Programme was~~ Programme was a research, development and demonstration initiative supported by the European Commission's Fourth Framework Programme for the period 1994-1998. The TAP had an initial budget of 843 MECU and this was increased during the life of the programme to around 937 MECU. This represented more than a threefold increase in budget and in the number of projects since the Third Framework Programme. TAP activities were closely related to those of Esprit and Advanced Communications Technologies (ACTS), with all three combined

accounting for 28% of the Union's research budget. The role of the TAP was mainly developing and demonstrating software applications for use by the European public sector. The activities launched by the Telematics Applications Programme are continuing in the Fifth Framework Programme (1998-2002) under the key actions of the Information Society (IST) Programme, namely 'Systems and services for the citizens' and 'Multimedia content and access tools'.

While there was a focus on industrial competitiveness, the philosophy of TAP was described as being 'user-led' rather than resulting from 'technology push'. Being 'user-oriented' the programme was designed to take users' needs into account, to be involved with users' representatives, and to provide resources for validation in user environments (CEC 1999). This was reflected in the profile of networking formation within the programme, which typically contained technology suppliers and users, with some participants playing the relatively limited role of testing the telematics applications. The 'users' of the telematics systems and services developed by TAP projects were mainly public sector organisations, also referred to as 'organisations of common interest'. The emphasis, therefore, was on facilitating public service organisations in taking initial steps towards modernising their operations through deploying the new technologies. The concerns of the European Parliament were reflected in the programme's rhetoric about improving the 'quality of life' for citizens, and particularly for excluded or marginalised groups such as the disabled and unemployed. At the same time the European Commission and the individual European member states, who who had a significant input into the formulation of TAP, were concerned with improving the cost effectiveness and competitiveness of public services, even if this meant in many cases trying to improve huge loss-making operations resulting from problems such as traffic congestion or organisational inefficiencies. While the overall approach of TAP, therefore, was a big improvement on the overly technological determinism which had characterised previous EU Information Society programmes, the uncritical acceptance of technical solutions together with the politically driven nature of the programme, ensured that there was still considerable scope for further improvement.

The programme was divided into four areas, which in turn were subdivided into sectors with budgetary allocations as shown in Table 1. The main areas of the programme included Services of Public Interest, Knowledge, Quality of Life and RTD activities, while the subsectors included administration, transport, education and training, libraries, urban and rural areas, healthcare, disabled and elderly, environment, engineering including language, telematics and information engineering.

**Table 1** — Workprogramme areas and budget breakdown  
Source: CEC, 1999

## 2. Telematics and the Information Societyheoretical Background

The purpose of the following section is to provide a background on the theory underlying both aspects of TAP that we are concentrating on. Firstly we shall deal with the theory behind the philosophy of TAP itself, then we shall move on to literature on cluster formation, one of the main goals of TAP. Both of these issues are dealt with empirically in the following two sections.

### *2.1 The TAP Philosophy*

—Some years prior to the commencement of the TAP programme, the notion of an Information Society progressed to the top of the EU agenda, presenting policy makers with a significant challenge because of the complexity of the issues involved (Gibbs, 2001). The policy challenge in adapting to the Information Society is a complex one. Information and Communication Technologies (ICTs) have considerable spatial effects on economic output, with some academics claiming that a broader structural change is occurring, one which is articulated in organisational behaviour and lifestyles, and is often referred to as the 'Information Society' (IS) (Dabinett, 2001).

—The social and economic implications of the new ICTs are complex and frequently contradictory (Castells, 1996; Gibbs, 2001). They have been identified as having the potential to both centralise (Genosko, 1987) and decentralise (Kellerman, 1993) economic development activities. There are two very divergent schools of thought on the potentiality of the IS, which can be identified. One is, that of the technologically determinist school, which believes that the IS will prove to be the panacea of economic ills, and an entity that promises to harmonise Europe economically, and the second is composed of those who take the more realistic standpoint, that the IS, while being a significant development in many respects, will not in itself bring about any major redistribution of income (Grimes and Lyons, 1994). The earlier literature predicting the possibilities for economy and society associated with the new technologies contained many examples of utopian visions based on a strongly determinist view of ICTs (Graham and Marvin, 1996). Looking beyond such unfulfilled visions, however, it is clear that the European political programme of the Information Society continues to be driven more by theoretical and policy discourses rather than by empirically proven realities (Dabinett, 2001).

In examining the literature on the IS it is hard to avoid the utopian callings of the determinist school of thought, with their space transcending ideologies. However, looking beyond these, one realises that the concept of the Information Society is still strongly driven by theoretical and policy discourses rather than being empirically proven (Dabinett, 2001).

The kind of rhetoric upon which the TAP telematics was based is very similar to that found in policy documents such as was based was laid down by the 1994 Bangemann Report (Bangemann, 1994). This generally prescriptive report, like so many that followed, saw the current state of economic and social affairs as being on course for a revolution, leading to a situation in which telematics applications would become all pervasive. To quote Talbot and Ray and Talbot (1999, 154): “the advent of this new reality is imminent and inevitable, the technological momentum unstoppable, the nettle of the cultural turning point demanding to be grasped”. The

Bangemann Report was one of the building blocks of the EU's IS policy, which resulted in programmes such as TAP. The 1994 report along with much of the policy formulation thereafter was wrought with technologically deterministic views, ~~views which that~~ we can now in hindsight see as detrimental to many EU programmes. Such deterministic thinking was complemented by a sense of urgency on the part of policy makers who feared that Europe was lagging behind in exploiting the potential offered by ICTs. This view underpins the sense of urgency with which we need to adapt to this new society, a view which has led to quotes similar to the following from Erikki Likaren, the Commissioner for Enterprise and the Information Society, reflected this urgency at the launch of the e-Europe Initiative at the end of 1999: "There is no time to wait until the current policies of member states and the Commission deliver" (TAP-ASSESS, 2000, 15).

~~The deterministic view is therefore complemented by a sense of urgency in policy formulation.~~

However, attention must be drawn to ~~the~~ its user-led nature of TAP, counterpoising as opposed to the much used technology push approach. This predominant policy response has focused on supply-side issues, which essentially conceives the information society as a *technologically driven* phenomenon whereby regional problems, such as peripherality and geographically constrained markets, can be overcome through the application of technology (Gillespie, 1997). The EU STAR programme was an example of this type of policy ~~response~~ response, which. This aimed at stimulating regional development through infrastructure provision. In this case, however, as in that of the Highlands and Islands Telecommunications Initiative in Scotland, infrastructure provision ~~had~~ is been well in excess of demand and the expected benefits were not realised (Gibbs, 2001). TAP differs from both these examples because its user-orientation was designed to take users' needs into account, unlike the aforementioned with their narrow focus on technologies and their uses. ~~Despite this improvement, however, TAP cannot be held up as a shining example of how to approach the Information Society. While the programme it does well by focusing attention on user needs and provides resources for validation in a user environment, it is lacking in many more of the fundamental criteria for an effective policy approach to the Information Society.~~

~~Among the main objectives of the programme was the interconnection of public sector bodies across the EU and also the networking of these bodies with private sector organisations. Networking lies at the heart of the Commission's thinking on how organisations within regions can best collaborate, and thereby give rise to information diffusion from the richer (more knowledgeable) to the poorer (less knowledgeable) regions. In the 144 TAP projects with Irish participation, there were 1,593 non-Irish participants compared with 144 participants from Ireland, a ratio of 7.3 to one (Forfás, 2001). Table 2 reveals a ratio of 7.3 non-Irish to Irish participants in TAP projects with Irish involvement. Such networking This in turn (according to theory), should will lead to the much sought after cohesion amongst European regions. The legal requirement of EU programmes such as TAP to foster economic and social cohesion is derived from the various European treaties such as Maastricht.~~

~~This is rather hard to argue against, since. eConsidering The constitution of dynamic networks beyond formal collaboration was such that, access of public sector researchers to the best industrial laboratories in European firms, and the opportunity~~

for private companies to benefit from a larger pool of research resources than is available within a single nation, ~~were~~ ~~are~~ ~~just~~ some of the positive benefits of the partnerships ~~resulting from~~ ~~envisaged in~~ TAP. European R&D programmes supply the research institutes with an elaborate legal framework for co-operation with both private firms and public bodies. For all involved, they create an opportunity to meet and collaborate with trustworthy partners. Frequent contacts facilitate deeper and broader acquaintance with the research underway, than would be possible in the case of occasional collaboration. They also create favourable conditions for taking advantage of tacit knowledge, which can be obtained during frequent meetings (Vavkova, 1995).

While programmes like TAP make an important contribution towards fostering Europe-wide networks, two important factors have been neglected. Firstly, recent networking theory raises some questions about the extent to which organisations participating in programmes like the TAP have benefited from networking (Vavakova, 1995).- While networking has many positive benefits, most of these benefits tend to accrue to private sector organisations involved in contractual agreements where the outcome is a marketable product. The public-private sector mix of TAP is not conducive to the sharing of competencies and trade secrets between such, by either bodies. One the one hand it is rare for innovative breakthroughs to originate in the public sector, and on the other hand the private sector is not inclined to share innovations within a public network, where the gains to be reaped are circumscribed.

A second weakness of the programme is the massive gap between innovation and the market, which is why the funded research is regarded as being pre-competitive. Although the potential existed to exploit the outcomes, the bureaucratic approach of the programme appeared to prevent this happening to any great extent. Participants in these programmes have been somewhat sceptical of the commercial benefits that accrue from these types of collaborative projects. There is also some scepticism as to whether or not these types of participations improve competitiveness (see Forfás, 2001).

A second weakness of the programme is the  
While the argument in favour of networking in programmes like TAP is obvious, the ability of these programmes to help organistaions market their product is much weaker. Ideologically, there is a sound basis for networking in these programmes, but the Union completely neglects the need of many of the bodies to market their product. Consequently there exists a massive gap between innovation and the market, which is why the funded research that is funded must be regarded seen as being pre-competitive. Although There is the potential existed there to exploit the outcomes, the bureauceratic approach of to operationalising the programme appeared to prevent this happening to any great extent, but the Union seems blind to this fact. This is a problem recognised by Irish participants in the Fourth Framework programme programme generally, and formsis one of their main objections to networking (Forfás, 2001). Thus “40 per cent% of firms had not and did not expect commercial returns to acerue directly from projects given the type of work they had undertaken, and firms were similarly divided in terms of the impact participation had or had not on the competitiveness of their organisation” (ibid. p. 47)

Clustering theory has had some influence on EU policy making, as reflected in programmes like TAP (Legendijk and Cornford, 2000). While



**Table 2** Irish and Non-Irish Participations in TAP  
Source: Forfas, 2001

The recent evaluation of the Fourth Framework Programme by Forfas provides some useful insights into on Irish participation in such research networks. Interviews carried out by the authors with some of Ireland's key players in TAP have also provided important evaluation background for evaluation. While knowledge and networking goals were important for all participants, the most important driver of for participation was funding. Most participants ranked exploitation goals as less important than knowledge related goals. Even though the intangible, capacity-building goals associated with collaborative R&D programmes were emphasised even by industry participants, few ever lost sight of the fact that they were but a means to an end, and that new products and processes were the ultimate goal. Industrial partners ranked new processes/products and services as the top three main goals of their participation. It was precisely in these areas that participants were most disappointed.

#### *2.2 Networking and Cluster formation*

geographical proximity together with interactivity between organisations contributed to the cluster formation process, it is also useful to consider the less tangible nature of clustering and networking. Geographical proximity and the interactivity of the above organisations contributed to aid the cluster formation process. TAP shares the goal of cluster formation and collective learning with many other EU projects. Before examining a number of clusters, to determine how determine how effectively this has been achieved, it is useful to consider the theoretical rationale. This Collective learning involves the creation and further development of a base of common or shared knowledge among individuals making up a productive system, which allows them to co-ordinate their actions in the resolution of the technological and organisational problems they confront. According to Keeble and Wilkinson (1999) the creation and development of a localised knowledge base can involve both conscious and unconscious mechanisms, an example of the former being research collaboration between local SMEs and a local university, and examples of the latter being the movement of 'embodied expertise' and know-how in the form of researchers, managers and skilled workers.

Some TAP projects can be noted for their incorporation of dynamic power relations formed between the local level and the extra-local level.

Actor network theory has been applied in some cases to the type of networks which TAP facilitated, including both endogenous and exogenous elements (Callon, 1991). According to this The endogenous and exogenous nature of TAP points towards an actor network formation (Callon, 1991). Some TAP projects can be noted for their incorporation of dynamic power relations formed between the local level and the extra local level. We see the conceptualisation 'of 'networks'' are here brought into being through various types of 'actors' (be they Universities, City Corporations or Health Boards). Actor network theory states that these local-to-extra-local relationships become a mechanism to construct meaning; or more specifically they translate the inputs from the actors into a meaning of development particular to the network. Thus "an identity network has the potential for enrolment into the



development process and for the translation of agendas and can thus be seen to be constitutive of the development process” (Ray and Woodward, 1998, :30). What network theory highlights is the need for ~~the embeddedness~~ the embeddedness of networks ~~iff~~ cluster formation is to be successful. Among the key issues to be considered, therefore, in examining cluster formation arising from Irish participation in the TAP are the following: the extent of embeddedness of participants within clusters; the extent to which ‘community’ had been promoted through the enhancement of networks within localities; and the extent to which reflexivity of social and institutional behaviour is recognised as being important, which according to Storper (1997) involves uncovering the micro-social relations that co-ordinate the collective identities of economic actors and their mode of economic participation.

While there is little doubt that the formation of networks is one of the main aims of TAP, the effects of some of these networks may have fallen somewhat short of what was intended by the programme. The creation of information flows and soft infrastructure is what firms need to both receive and disseminate information, which is the key product of the Information Society. Theorists like Cornford (2001) emphasise the need for acquisition of tacit knowledge to compete in the new economy and TAP’s clustering strategy reflects some attempt to encourage this development. Much of the theorising about tacit knowledge and clustering, however, is derived from a business organisation background, which means that its application to public sector organisations can be problematic. The concept of cluster is essentially based around competitiveness, and the application of organisational theory to the public sector is unlikely to result in it becoming a competitive entity.

~~In identifying the clusters of Irish participation in TAP, the following issues are of particular concern:~~

- ~~☐ The extent of embeddedness of participants within these clusters~~
- ~~☐ The promotion of ‘community’ through the enhancement of networks within localities~~
- ~~☐ The extent to which reflexivity of social and institutional behaviour is recognized as being important, which according to Storper (1997) involves uncovering the micro-social relations that co-ordinate the collective identities of economic actors and their mode of economic participation.~~

Formatted: Bullets and Numbering

### 3. The Telematics Applications Programme

The Telematics Applications Programme was a research, development and demonstration initiative supported by the European Commission's Fourth Framework Programme for the period 1994-1998. The TAP had an initial budget of 843 MECU and this was increased during the life of the programme to around 937 MECU. This represented more than a threefold increase in budget and in the number of projects since the Third Framework Programme. TAP activities were closely related to those of Esprit and Advanced Communications Technologies (ACTS), with all three combined accounting for 28 per cent of the EU’s research budget, indicating the significance of the Information Society programme within that research framework. The role of TAP was mainly developing and demonstrating software applications for use by the European public sector. TAP’s activities are continuing in the current Fifth

Framework Programme (1998-2002) under the key actions of the Information Society (IST) Programme, namely 'Systems and services for the citizens' and 'Multimedia content and access tools'. This more recent reorganisation reflects an attempt by the Commission to integrate in a more systematic way all research areas related to promoting the Information Society.

While there was a focus on industrial competitiveness, the philosophy of TAP was described as being 'user-led' rather than resulting from 'technology push', something that had characterised earlier EU programmes such as STAR, which was mainly involved in funding infrastructural developments. Being 'user-oriented' the programme was designed to take users' needs into account, to be involved with users' representatives, and to provide resources for validation in user environments (CEC 1999). This was reflected in the profile of network formation within the programme, which typically contained technology suppliers and users, with some participants playing the relatively limited role of testing the telematics applications. The 'users' of the telematics systems and services developed by TAP projects were mainly public sector organisations, also referred to as 'organisations of common interest'. The emphasis, therefore, was on facilitating public service organisations in taking initial steps towards modernising their operations through deploying the new technologies. At the same time the European Commission and the individual European member states, who had a significant input into the formulation of TAP, were concerned with improving the cost-effectiveness and competitiveness of public services, even if this meant in many cases trying to improve huge loss-making operations resulting from problems such as traffic congestion or organisational inefficiencies.

The concerns of the European Parliament were reflected in the programme's rhetoric about improving the 'quality of life' for citizens, and particularly for excluded or marginalised groups such as the disabled and unemployed. The social-democratic political background of much of Europe's policy formulation is reflected in this well-intentioned concern for groups who were unlikely to benefit from the market's exploitation of ICTs. While the overall approach of TAP, therefore, was a big improvement on the overly technological determinism which had characterised previous EU Information Society programmes, the uncritical acceptance of technical solutions together with the politically driven nature of the programme, ensured that there was still considerable scope for further improvement.

The programme was divided into four areas, which in turn were subdivided into sectors with specific budgetary allocations as shown in Table 1. The main areas of the programme included Services of Public Interest, Knowledge, Quality of Life and RTD activities, while the subsectors included administration, transport, education and training, libraries, urban and rural areas, healthcare, disabled and elderly, environment, engineering including language, telematics and information engineering.

**Table 1** Workprogramme areas and budget breakdown

<u>Workprogramme area</u>	<u>Budget (MECU)</u>	<u>% of total</u>	<u>Average Funding per project</u>
<b><u>A: Telematics for Services of Public Interest</u></b>			
A1 Telematics for Administration	49.5	5.9	2.7
A2 Telematics for Transport	198.3	23.5	3.0
<b><u>B: Telematics for Knowledge</u></b>			
B1 Telematics for Knowledge	48.0	5.7	1.2
B2 Telematics for Education and Training	87.0	10.3	6.6
B3 Telematics for Libraries	30.0	3.6	0.4
<b><u>C: Telematics for Improving the Quality of Life</u></b>			
C1 Telematics for Urban and Rural Areas	70.3	8.3	3.0
C2 Telematics for Healthcare	128.1	15.2	1.5
C3 Telematics for Disabled and Elderly People	63.7	7.6	2.0
C4 Telematics for Environment	28.1	3.3	0.3
<b><u>D: Horizontal RTD Activities</u></b>			
D1 Telematics for Engineering	10.8	1.3	0.9
D2 Telematics for Language Engineering	77.9	9.3	3.3
<b>Total</b>	<b>843.0</b>	<b>100.0</b>	

*Source: CEC, 1999*

### 3.1 Telematics Projects

### **3. Telematics projects**

Like all other areas of the EU's Framework Programme, TAP was focused on the construction of networks involved in the sharing of information, knowledge and expertise, and bringing together service providers and users in different areas of ~~activity~~ activity such as health and education. Much of the activity of the projects was involved in raising awareness with a Europe-wide focus, such as the ~~For example,~~ ~~one~~ project that focused on the estimated 100,000 white collar workers in the EU who were visually impaired. Other projects sought to help SMEs in peripheral areas to exploit telematics to trade beyond their local market areas. The emphasis was on the application of existing technologies and on developing ~~a~~ markets in Europe for telematics applications, which was estimated to be worth about two billion ECU.

—Like so many other areas of EU-funded research, some of the rhetoric about solving the problems of the disadvantaged and excluded, or even dealing with more technical issues such as solving traffic congestion in cities by means of telematics applications, could give rise to ~~s~~kepticism and questions about credibility. A major problem here is the aspirational nature of much of this work and the lack of analysis and critique based on actual achievements. Despite the rhetoric, however, many of the objectives are worthy in themselves, but perhaps the objectives should be stated more modestly.

The EC documentation acknowledges a certain level of failure within the programme, with some projects not being completed and some project partners dropping out before projects were completed. There are examples of this among the projects with Irish involvement, with some partners becoming insolvent, and in other cases where the necessary cooperation to facilitate the project's success was not forthcoming at the local level. Considering the experimental nature of much of the activity within the programme, a certain level of project failure is to be expected. The important point is that many of the projects are in fact building on the experience of previous efforts, resulting in a cumulative experience across Europe.

An examination of the TAP projects reveals much about the thinking in Brussels on the nature of the emerging Information Society. One dominant idea is that the Information Society is inevitable and positive, and there is an underlying concern that all citizens, particularly the less advantaged in terms of social skills or geographical location should gain from the benefits accruing from the new technologies (Gibbs, 2001). ~~Because of the political nature of the programme, there is little or no reference to possible negative effects such as the tendency to substitute traditional approaches to education by emphasising the need for young people to become skilled in exploiting the new technologies.~~

—An analysis of the TAP project profile also suggests a political dimension in this area of activity as in other policy areas of the EU. Attempts to improve public sector administration ~~are~~ in a sense an effort to 'Europeanise' such areas of activity and to promote European integration. Much of this thinking stems from the reality of the Single Market and attempts to further reduce barriers within Europe to greater economic and political integration. In a sense, promoting the Information Society and the means to attain it such as telematics applications, is part of a political agenda, in that it involves to some extent subsuming the role of member states in the delivery of services to citizens. This may be partly because the central European bureaucracy is more advanced in its organisation and systematic approach to administration than is the case in some member states. The influence of Brussels, however, should not be exaggerated, since both its overall budget is small in relation to European GDP, and the significance of the Framework research programme is quite modest in the overall context of European RTD activity. Until recently, however, particularly in cohesion countries like Ireland, where state financing of research activity was modest, the Framework ~~Programme~~ has formed a significant proportion of research funding in universities.

While a number of external factors have positively influenced the diffusion of telematics applications in Europe, such as the successful diffusion of information networks, the fall in ICT prices and the common standards, regulations and policies which have accompanied the acceleration in the construction of a single European market, some barriers towards successful diffusion have also been identified (TAP-ASSESS, 2000). Among the barriers affecting the scale of commercial exploitation of telematics were the inertia of public and no-profit organisations and the fragmentation of the European markets. The TAP-ASSESS report found professional resistance, especially among non-ICT personnel, which it regarded as 'very understandable', since the traditional power balance within organisations was under threat by the introduction of ICTs. The focus on technological issues tends to play down the

significant political, sociological, and psychological dimensions involved in integrating telematics systems (Johnson, 1999).

While TAP was mainly concerned with telematics experimentation, a working paper prepared by ETHOS for TAP acknowledged that there were considerable costs involved in deploying telematics systems and services (ETHOS, 1998). The cost of research, development and demonstration accounted for only about three per cent of the total costs, while approximately 55 per cent of the costs were associated with organisational change (redundancies, recruitment, etc.). The remaining costs were training (25 per cent), systems integration (12 per cent) and infrastructure (five per cent). The Commission's intention was that the implementation of telematics systems, arising from the TAP projects, would be facilitated by funding from sources such as Structural Funds, at least until the end of 1999. The Commission was concerned that whatever was done in terms of operational measures to support structural change, should build directly upon the results of the RTD area (Johnson, 1999). This has not happened to the extent that it was hoped mainly because of a lack of coordination between national and European resources and the failure of public sector organisations to instigate the necessary structural adjustment to implement such systems (ETHOS, 1998).

~~The ETHOS working paper also noted that TAP, rather than developing new ICT products, was mainly involved in demonstrating the potential of existing technologies, most of which were developed from outside the European Economic Area. This has been an on-going weakness of RTD policy, whereby many of technological innovations developed in Europe never reach the stage of commercialisation. Few ICT products developed as part of EU programmes such as ESPRIT, or indeed by national initiatives, were used to demonstrate the social and economic benefits of TAP. This reduced the incentive for funding additional projects for further demonstrating the approach adopted in TAP projects. The paper also noted that few private sector organisations became involved in TAP, because they saw little benefit from participating. There are few reasons why most private sector organisations would want to 'subsidise' the showcasing of technologies to which they had limited exploitation rights. Since TAP projects were developing systems and services to meet the needs of the common good, the private sector had few exploitation routes, apart from demonstrating the potential of technologies that they had developed (ETHOS, 1998). While private organisations often realised potential benefits from new technologies through reduced levels of employment, such an approach would prove more problematic for organisations, which were expected to contribute and maintain employment.~~

~~The process of networking, which was an essential aspect of these projects, and which brought together actors and organisations from developed and less developed regions, was expected to contribute towards raising the level of professionalism and competence within public administrations and local authorities. One of the biggest impacts of TAP was the experience which organisations and individuals gained from working with European partners. Lessons from projects with successful outcomes were to be promoted as models for adoption across Europe. While local circumstances do vary between European regions, projects have been designed to bring together European cities of size or port cities with common problems and possibilities.~~

### 3.2.1 Telematics for Services of Public Interest

The two sectors included in this programme area were public administration and transport. The first sector, which developed and tested telematics solutions designed to meet the needs of public administrations, received 49.5 MECU or 5.9 per cent of the TAP budget. With the completion of the Single European Market, the free movement of people, goods and capital has presented a major challenge to public administration. Telematics-based trans-European information networks provide them with the opportunity to share information at the EU level, although the success of these information networks depends greatly on their interoperability. Projects in the Administration area included a high percentage of ICT suppliers and developed systems for the collection, management and delivery of information to public administration and to citizens for a number of particular markets (TAP-ASSESS, 2000).

The second sector, which had 23.5 per cent of the TAP budget (the largest share) had the objective of developing a telematics systems appropriate for all transport modes and their interconnections. ~~There are Anan estimated 150 billion ECU is lost annually of annual economic losses~~ through traffic delays and accidents in the EU. Transport also was the sector with a high level of Irish participation in TAP, with 26 participations in 14 projects. The focus was on transport problems between and within larger and medium-sized European cities and only five Irish participants came from outside Dublin. The acuteness of traffic congestion in the nation's capital would seem to justify such a concentration of activity. The significant representation of Dublin-based partners is partly explained by projects involving collaboration between national authorities, such as those dealing with air travel for example, which usually result in networks involving agencies in capital cities.

Based on his experience with a transport project, Wickham (2000) notes that unlike Bologna and Helsinki, but like Athens, Dublin is a car-dependent city. This is explained by poor public transport, combined with low density housing and a land-use pattern in which workplaces, shopping and public facilities are all dispersed across a wide area. Unemployment in working class areas can be partly explained by the lack of public transport provision in areas of low car-ownership. Unlike other European cities, local government in Dublin has little financial autonomy and decision-making power, and this partly explains the absence of an effective public transport system.

~~Using Dublin, therefore, as a major validation site for the use of smart cards lacks credibility, and like many of the projects, little attention is paid to the local socio-political context of the regions involved.~~

— TAP projects in the transport sector involved collaboration with a total of 123 organisations across Europe. Half of these partners were from the core countries of Europe while only 20 partners came from the cohesion countries. While the provision of public transport in Ireland is more similar to what is found in cohesion countries, the greater involvement with partners from core regions reflects the need for Ireland to benefit from the progress being made in these regions. A deficiency of the projects, however, is the tendency to assume that an efficient public transport system is in place, as a basis for the effective application of telematics. There would appear to be little point in putting Dublin forward as a validation site for smart card technology,

which helps the interoperability of public transport systems, when the current state of public transport is so deficient. Recognition of this serious deficiency is reflected in the recently announced major investment plan to overhaul Dublin's public transport system.

Much of the project work involved the demonstration and validation of advanced transport ~~telemati~~telematics systems in user application sites across Europe. Projects with Irish participation involved a wide range of transport areas. It was not uncommon for projects to build on the experience of earlier projects. Both SAMPLUS and SAMPO were involved in looking at Demand Responsive Transport Services for passengers in urban and rural areas with the former building on the latter. The difficulty here, in an Irish context, was that work on the SAMPO project was halted because neither the necessary local funding nor the required route operating licences could be secured. Despite these local difficulties, however, advanced transport telematics (ATT) systems to control traffic, transport management and bus priority have been diffused to 40 per cent of EU urban areas, and applications from the SAMPO project are being acquired by many towns in various EU countries (TAP-ASSESS, 2000).

### *3.32 Telematics for Knowledge*

The second programme area included telematics projects for research, education and training and for libraries. The proportions of the TAP budget for these areas were 5.7 percent, 10.3 per cent and 3.6 per cent respectively. Using new technologies such as cable television, the ~~In~~internet and videoconferencing, projects in this area focused on sharing educational resources more equitably throughout the European population by overcoming geographic barriers. The emphasis was on the Europe-wide delivery of educational services by universities and other providers, promoting the concept of the virtual campus. By establishing a network of interconnected libraries, the objective was to form one major European library source for all citizens by means of the new technologies. While use of the network of existing public library infrastructure provided considerable potential for reducing disparities and increasing cohesion across Europe, sharing resources between university libraries, for example, whose institutions are often in competition with each other, ~~c~~would be more problematic. Some of these projects also included the role of public libraries as essential information providers in the ten accession countries of Central and Eastern Europe.

### *3.43 Improving ~~the~~ Quality of Life*

Included in this programme area were ~~telemati~~telematics projects for urban and rural areas (8.3 per cent of the budget), healthcare (15.2 per cent), projects for the elderly and disabled (7.6 per cent) and those dealing with the environment (3.3 per cent). Projects in this area dealt with challenges such as developing visual aids and interfaces to enable the elderly or handicapped to play a full role in the economy and society. Another area of concern was the development of teleworking and teleservices, ~~including~~ (i.e. telemedicine) and environmental ~~and~~-warning systems. In relation to the environment, a coherent European approach was being promoted



towards monitoring pollution, developing integrated systems for waste management, ~~and~~ cooperation on a Europe-wide basis for supporting the management of contaminated sites.

The TAP sector with the most significant level of Irish participation was Telematics for Urban and Rural Areas. While projects with Irish involvement accounted for 20.3 per cent of all TAP projects, in projects dealing with urban and rural areas, they accounted for 45 per cent of the total. The focus of this sector was on exploiting telematics to foster new employment opportunities for citizens such as socially and excluded groups and self-help groups. While this concern for the poor and disadvantaged is laudable, it should be made clear that it is part of an effort to ameliorate some of the negative effects of more dominant policy areas dealing with liberalisation and competition, which to some extent result in contributing to disadvantage and exclusion (Grimes, 2000). In failing to address some of the causes of disadvantage, projects seeking to apply telematics as a tool to solve social problems are likely to have limited success.

Many of the projects for Urban and Rural Areas sought to expand employment in marginalised communities. IRDSS ~~was~~ a highly aspirational project, whose Irish participants ~~were~~ located in the Donegal/~~Northern Ireland~~ border area. Through the provision of user-friendly multimedia kiosks in libraries and community centers, it ~~sought to seeksh-to-help~~ marginalised communities to do business with cross-border regions, to bring these communities more into the development process and to bring about a decentralisation of work to the local level. Such high-minded rhetoric is unlikely to be fulfilled merely by providing access to information through such kiosks. The credibility of such projects in this particular region has been damaged to some extent by the failure of the IT Centre in Letterkenny (Co~~nty~~-Donegal) which was dependent significantly on EU funding for its activities for many years.

One of the development agencies with considerable experience in telematics projects for rural areas in Ireland is Údarás na Gaeltachta, which is responsible for promoting economic development in Irish-speaking communities mainly along the western seaboard. ~~As a state agency, it benefitted~~ benefited from ERDF and ESF funding under the Gaeltacht Development Programme, and also under the Operational Programme for Industrial Development 1994-1999. Among the telematics projects in which it was involved was TELEPROMIS, whose objective was to implement and evaluate the exploitation potential of a range of telematics services for citizens in rural areas. The pilot community for the Irish partner was the Aran Islands. The involvement of regional development agencies like Údarás na Gaeltachta in the west region and Shannon Development in the Mid~~w~~-West region in the TAP programme, are good examples of the co-ordinated use of structural funds building on RTD activity, which has been one of the objectives of the Commission. Over-dependence on EU-funding by such agencies, however, can lead to an uncritical form of strategic planning.

#### 4. Irish Project Clusters and ~~N~~networks~~\_formation~~ in TAP

The geography of Irish participation in TAP reveals a not very surprising concentration of projects in the larger urban centres of Dublin, Cork and Limerick. In the Dublin metropolitan area, where more than one third of the Irish population is resident and which is characterised by a significant concentration of both public and private service sector activity, there were 110 of a total 190 participations. Many TAP projects involve the participation of national agencies from all member states and such agencies tend to be headquartered in Dublin in the case of Ireland. In this sense Irish participation in TAP tends to be reflected in the involvement of organisations in Dublin. Although TAP, like other areas of EU activity, is concerned with benefiting citizens living in remote and rural locations, the fact is that a significant level of experimentation in telematics applications takes place in larger urban areas. There is the added dimension of innovations tending to diffuse from core regions. Another important factor is the role of research centres focused on the new technologies, many of which are associated with universities and third level institutions, which have a significant presence in the Dublin metropolitan area.

Table 23 provides some indication of the geography of TAP project clusters. It lists all the organisations and institutions involved in two or more clusters by location. Not surprisingly Dublin emerges as the most significant concentration of activity with 13 organisations involved in 53 projects. It should be noted that different EU databases dealing with TAP projects can indicate varying numbers of projects for a particular organisation, and part of the discrepancy may be accounted for by the varying levels of involvement in projects. Cork, the second largest Irish city, had three organisations involved in 11 projects, while Limerick had four organisations involved in 12 projects. Outside the main urban areas, there were four small clusters, all of which were involved in two projects each. They included the Letterkenny IT Centre in Donegal, which is now defunct; Údarás na Galetachta, the regional development agency located in Furbo, County Galway, which is responsible for economic development in mainly coastal areas with small Irish-speaking communities; The Northwestern Health Board, located in the small town of Manorhamilton, County Leitrim, and the Northeastern Health Board located in Kells, County Meath.

Among the main objectives of the programme was the interconnection of public sector bodies across the EU and also the networking of these bodies with private sector organisations. Networking lies at the heart of the Commission's thinking on how organisations within regions can best collaborate, and thereby give rise to information diffusion from the richer (more knowledgeable) to the poorer (less knowledgeable) regions. In the 144 TAP projects with Irish participation, there were 1,593 non-Irish participations compared with 218 participations from Ireland, a ratio of 7.3 to one (Forfás, 2001). This level of networking would be expected to result in a considerable contribution to cohesion amongst European regions.

Figure 1 provides details of the partnership origins of the main networks. The non-Irish partners are grouped into three categories: core countries (UK, Germany, France and Italy), cohesion countries (Spain, Portugal and Greece) and Scandinavian countries (Sweden, Norway, Finland and Denmark). Non-Irish partners for these main clusters of activity came mainly from Europe's core countries, with Scandinavian countries being more significant than the cohesion countries as sources of participants for these projects. It is not too surprising that, as one of Europe's cohesion countries,

Ireland would be involved in networks, which were predominantly composed of partners from leading edge countries in the area of telematics.

#### 4.1 The Dublin Cluster

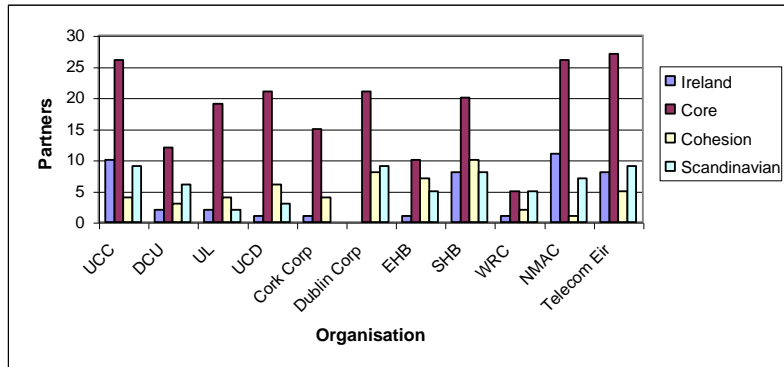
A great part of the significance of the Dublin concentration is related to the location in the capital city of national headquarters of agencies and common good organisations, such as the Library Council and the Council for the Blind. It is also worth noting that two Dublin clusters were accounted for by the private sector high tech companies, Lotus Development Ireland and Software Systems Engineering. We have already noted the dominance of Dublin participants in the projects, but where the dominance is most noted is in telematics for the transport sector, with Dublin organisations accounting for over 80% of Irish participations in this sector. The reasons for this concentration have already been noted, but now let us look at how this pertains to cluster formation and collective learning.

**Table 23** Network profile and location of main clusters

Cluster	Projects	Partners	Average Network size
<b>Dublin-based clusters</b>			
Dublin City University	4	30	7.6
University College Dublin	10	64	6.4
Telecom Eireann	3	54	18.0
Eastern Health Board	5	62	10.3
Software Systems Engineering	2	21	10.5
FAS (Employment Agency)	2	32	16.0
Lotus Development Ireland†	2	8	4.0
National Avionics	2	10	5.0
Dublin Institute of Technology	5	56	6.0
National Council for the Blind	2	9	4.5
National Library Council	2	8	4.0
Work Research Centre	3	14	4.6
<b>Cork-based clusters</b>			
Southern Health Board	5	46	9.2
Cork Corporation	3	22	7.1
University College Cork	9	56	6.2
<b>Limerick-based clusters</b>			
Limerick County Council	2	32	16.0
Shannon Free Airport	2	37	18.5
Development Company	5	39	8.0
University of Limerick	8	56	7.8
National Microelectronics Centre	3	22	7.0
IT Centre Letterkenny*	3	15	5.0
Údarás na Gaeltachta	2	20	10.0
Northwestern Health Board	2	20	10.0
Northeastern Health Board	2	20	10.0

Source: European Commission Cordis Database

\* Now defunct



**Figure 1** Partnership composition of major clusters

#### 4.1 The Dublin Cluster

A great part of the significance of the Dublin concentration is related to the location in the capital city of national headquarters of agencies and organisations of common good, such as the Library Council and the Council for the Blind. It is also worth noting that two Dublin clusters included the private sector high tech companies Lotus Development Ireland and Software Systems Engineering. Dublin's overall dominance in TAP has already been noted, but this dominance was most evident in telematics for transport, with Dublin organisations accounting for over 80 per cent of Irish participations in this sector. The reasons for this concentration have already been noted, but the contribution of these clusters to collective learning would appear to be minimal since the majority of them were 'one offs', involving only one Dublin representative. Of the twelve Dublin projects in the transport sector only three had more than one partner from the city (WELCOM, SAMPLUS and CONCERT). WELCOM involved two Dublin partners, Bell Lines Limited and Icarus Marketing, representing their only participation in this phase of the TAP. The SAMPLUS project included Pambo Transport Limited and EU Transport Telematics, a partnership that collaborated again in CONCERT. The CONCERT project, headed by Barcelona Technologia, involved partners from the cities of Bologna, Hannover, Marseille and Trondheim and is noted here as possibly the only project in the Dublin area contributing to cluster formation. The nine Dublin partners from the banking, transport and public sectors, were involved in promoting a mass market for urban smart card applications. Taking into account the needs of both the banking and the transport sectors, this project involved collaboration and the sharing of conventions between organisations of common interest in the Dublin area.

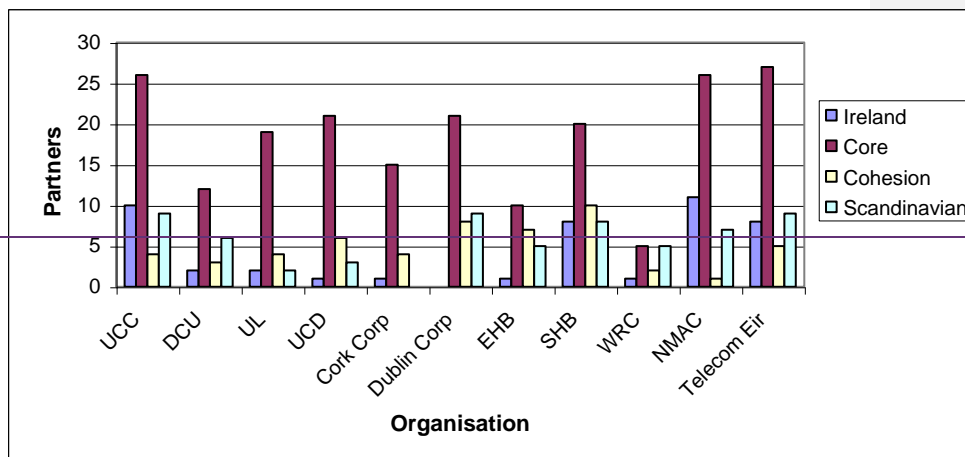
#### 4.1 The Dublin Cluster

A great part of the significance of the Dublin concentration is related to the location in the capital city of national headquarters of agencies and common good organisations, such as the Library Council and the Council for the Blind. It is also worth noting that two Dublin clusters were accounted for by private sector high tech companies, Lotus

Development Ireland and Software Systems Engineering. We have already noted the dominance of Dublin participants in the projects, but where the dominance is most noted is in telematics for the transport sector, with Dublin organisations accounting for over 80% of Irish participations in this sector. The reasons for this concentration have already been noted, but now let us look at how this pertains to cluster formation and collective learning.

The answer is not very well, since the majority of these participations are simply 'one offs' with only one Dublin representative. Of the twelve Dublin projects in this sector only three have more than one partner from the city (WELCOM, SAMPLUS and CONCERT). WELCOM involves two Dublin partners, Bell Lines Limited and Iearus Marketing. However this project was the sum of both their participations in the TAP, implying a pre formed partnership. The SAMPLUS project involved Pambo Transport Limited and EU Transport Telematics, a partnership worth noting, as both collaborated again in the CONCERT project. The CONCERT project, headed by Barcelona Technologia, involved partners from the cities of Bologna, Hannover, Marseille and Trondheim and is noted here as possibly the only project in the Dublin area conducive to cluster formation. The nine Dublin partners hailing from the banking, transport and public sectors, are promoting the convergence of urban smart card applications, needed to create a mass market of increasing global importance. Taking into account the needs of both the banking and the transport sectors, this project showed positive collaboration of organisations in a geographic area and the sharing of conventions among organisations of common interest.

With 64 partners in its 10 projects, University College Dublin (UCD) was also had a significant participant involvement in TAP. However, as was the case with other many involvements by universities and large institutions, participation was spread across many departments with. Yet, some departments such as the Audio Visual Centre (AVC) did playing a more very prominent role, most notably in the case of the Audio Visual Centre (AVC). This centre was responsible for four of UCD's ten projects, all of which were in the same TAP sector of Education and Training. This sector had the highest per project funding in the programme, which was an important incentive for participation, but more important for the AVC was the considerable demand for the applications being promoted, helping to bring their technology closer to the market. The participation in these projects seemed worthwhile for the AVC, in the sense that the applications being promoted were actually in demand, thus bringing their technology closer to the market. Add to this the fact that this sector had the highest per project funding and it is easier to see the rationale behind the AVC's participation.



with a total of 62 partners. The ~~EHB, Eastern Health Board~~ ~~servings~~ one-third of the Irish population, ~~and can be therefore regarded was somewhat of a national focal point for other regional with regards to health boards. Its involvement in the TAP programme could be seen as a national representative of health boards, networking with health and social care authorities across Europe~~ It is in this role that it ~~played~~ its part in the TAP programme, being involved in projects ~~ranging from the of~~ ~~co-ordinating~~ ~~coordinating~~ of health care and social services ~~to and~~ the application of telematics in emergency rooms. ~~By means of these projects the EHB has networked with many regional health and social care authorities across Europe.~~

~~Figure 1 Partnership composition of major clusters~~

~~In terms of the number of partners, the Eastern Health Board (EHB) follow~~ ~~eds~~ UCD with a total of 62 partners. The ~~EHB, Eastern Health Board~~ ~~servings~~ one-third of the Irish population, ~~and can be therefore regarded was somewhat of a national focal point for other regional with regards to health boards. Its involvement in the TAP programme could be seen as a national representative of health boards, networking with health and social care authorities across Europe~~ It is in this role that it ~~played~~ its part in the TAP programme, being involved in projects ~~ranging from the of~~ ~~co-ordinating~~ ~~coordinating~~ of health care and social services ~~to and~~ the application of telematics in emergency rooms. ~~By means of these projects the EHB has networked with many regional health and social care authorities across Europe.~~

~~Figure 1 reveals a distinct lack of clustering amongst Dublin participants in TAP. The above graph depicts a networking~~ ~~rend~~ ~~amongst Dublin participants, that of lack of clustering. None of UCD's or the EHB's partners~~ ~~we~~ ~~are~~ ~~hail~~ from the Dublin area. One possible determinant of this could be the fact that many of these Dublin organisations ~~found~~ themselves involved in these projects as national partners,

~~Dublin Corporation needs special mention here as out of its seven projects only one involves~~  ~~another Irish partners. The Corporation spreads its allegiances rather evenly among the remaining partners, as the above graph shows. Dublin City University (DCU) is also worth highlighting in this context since it had a total of only two Irish partners, its total number of Irish partners~~ ~~wa~~ ~~is~~ ~~merely~~ ~~two. Going beyond the local and looking at the national picture it should be noted that the total number of Irish participants working with DCU, EHB, UCD and Dublin Corporation~~ ~~wa~~ ~~is~~ ~~11, a rather meagre number considering that these four Dublin partners~~ ~~we~~ ~~are~~ ~~involved~~ ~~in~~ ~~28~~ ~~projects~~ ~~in~~ ~~TAP.~~

#### 4.2 The Cork Cluster

Again for reasons of demography we find a geographic concentration of participants in Cork city. ~~While there were 15 TAP projects in Dublin with more than one partner from the same city, Looking back at the Dublin cluster, there were a total of 15 TAP projects with more than one partner from that city, while the corresponding figure for Cork~~ ~~wa~~ ~~is~~ ~~only~~ ~~two. The lack of interaction between the Cork partners of TAP again highlights the fact that this concentration was~~ ~~more~~ ~~as~~ ~~the~~ ~~result~~ ~~one~~ ~~of~~ ~~chance~~ ~~rather~~ ~~than~~ ~~one~~ ~~deriving~~ ~~from~~ ~~leading~~ ~~to~~ ~~a~~ ~~collaborative~~ ~~research~~ ~~milieu~~ ~~in~~ ~~the~~ ~~city.~~



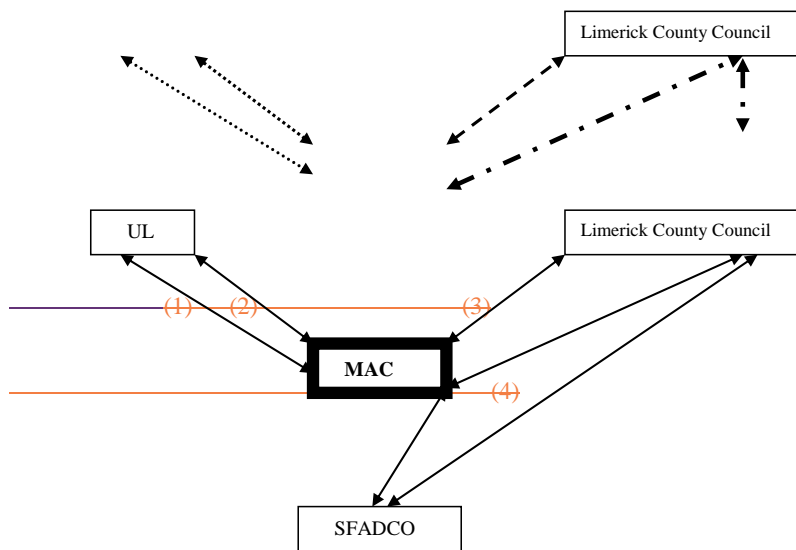
comes as no surprise when we take account of the fact that UCC was involved in 10 TAP projects. It ~~had~~s an average network size of 5.6, leaving its total number of partners at 56. The only example of cluster activity based on geographical proximity in Cork city ~~was~~ the Southern Health Board (SHB) which ~~partnered~~s UCC in two projects. The health board is also a regional representative for what is one of Ireland's largest regions. It ~~took~~akes on the role of applicator and validator in its projects, and with 46 partners across Europe ~~it~~-reflect~~ed~~s considerable Irish involvement in the healthcare sector of TAP. Both UCC and the SHB ~~had~~ve about ten partners each from the rest of Ireland, reflecting ~~the~~a greater ~~the~~-degree of embeddedness of these projects. Both UCC and the SHB ~~were~~ are also quite dependent on partners from the UK and the other core countries of mainland Europe (Fig. 1). ~~There was a notably lesser dependence on partners from cohesion countries with UCC having only five such partners and the Southern Health Board having seven. Both organisations, however, had relatively strong links with Scandinavian countries, which suggests a greater concern with establishing links with institutions more likely to be at the cutting edge of telematics.~~

—University College Cork (UCC) ~~ranked~~s third in terms of number of partners, and this comes as no surprise when we take account of the fact that UCC was involved in 10 TAP projects. It ~~had~~s an average network size of 5.6, leaving its total number of partners at 56. The only example of cluster activity based on geographical proximity in Cork city ~~was~~ the Southern Health Board (SHB) which ~~partnered~~s UCC in two projects. The health board is also a regional representative for what is one of Ireland's largest regions. It ~~took~~akes on the role of applicator and validator in its projects, and with 46 partners across Europe ~~it~~-reflect~~ed~~s considerable Irish involvement in the healthcare sector of TAP. Both UCC and the SHB ~~had~~ve about ten partners each from the rest of Ireland, reflecting ~~the~~a greater ~~the~~-degree of embeddedness of these projects. Both UCC and the SHB ~~were~~ are also quite dependent on partners from the UK and the other core countries of mainland Europe (Fig. 1). ~~There was a notably lesser dependence on partners from cohesion countries with UCC having only five such partners and the Southern Health Board having seven. Both organisations, however, had relatively strong links with Scandinavian countries, which suggests a greater concern with establishing links with institutions more likely to be at the cutting edge of telematics.~~

#### *4.3 The Limerick/Shannon cluster*

Of the three clusters, which are examined in detail, the Limerick/Shannon cluster is notable for the extent of clustering evident among a number of organisations collaborating under different projects (Fig. 2). The degree of linkage was strong amongst neighbouring partners, reflecting a high degree of interconnectivity, collaboration and sharing of conventions. The Midwest region is noted for interconnectivity, which has played a significant role in its recent economic success (Andréosso-O'Callaghan, 2000). While other TAP projects are ongoing in the Midwest region, the four included in Fig. 2 warrant mention. Their importance results from benefits to the region arising from the application of telematics (e.g. TITAN), and from the creation through networking of links between regional organisations. The latter effect, while much less quantifiable, is being increasingly recognised as critical to a region's economic performance (Gibbs, 2001). The creation of networking links via TAP establishes what Storper (1995) describes as 'soft infrastructure', and which is generally regarded as a key characteristic of the information based society.

Fig. 2



Projects	Participants
(1)(1) (1) = RE1001 Adviser 1	(UL and MAC)
(2)(2) (2) = RE4001 Adviser 2	(UL and MAC)
(3)(3) (3) = TR1098 Script	(MAC and Limerick County Council)
(4) (4) = TITAN	(MAC, SFADCO, Limerick County Council, SW Regional Authority, Limerick Corporation)

Formatted: Bullets and Numbering

Figure 2 The Limerick/Shannon cluster

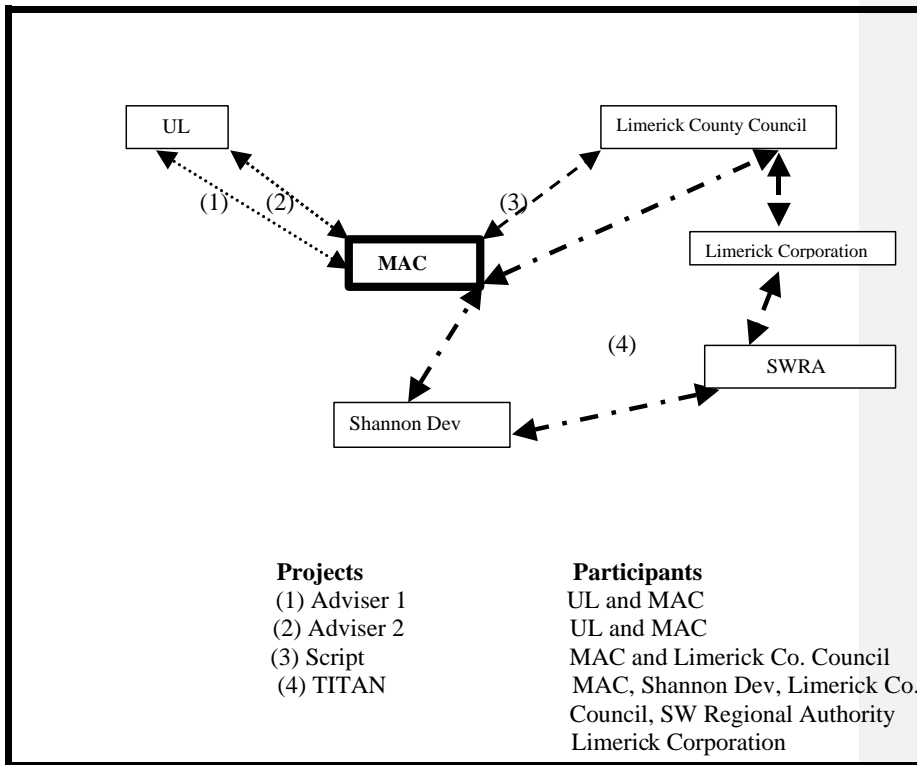


Figure 2 The Limerick/Shannon cluster

The above cluster stands out amongst the three, for reasons depicted in Fig. 2 depicted above. Clustering is evident from the number of organisations collaborating under different projects. The degree of linkage was strong amongst neighbouring partners, reflecting depicting a high degree of interconnectivity, collaboration and sharing of conventions. The region is noted for this and it has become one of the founding blocks for the recent economic success it has enjoyed (Andreosso O'Callaghan, 2000). While other TAP projects are ongoing in the mid-west region, the above four warrant

Since the National Microelectronics Centre (MAC) is being a national focal point for telematics and a major telematics applicator, means it is not surprising that there is little reason to ponder why it had so many partners. It is mainly responsible for Limerick and the Midwest region in general, developing becoming another major cluster of telematics activity in Ireland, and recently described as Ireland's leading e-region (Irish Independent 31/05/2001). This goes a long way to explaining why MAC, out of all the organisations featuring more

than twice, had~~s~~ the greatest number of Irish partners. A breakdown of its 15 indigenous partners shows that about half ~~were~~ situated in the Midw~~est~~ West region of Ireland. This shows signs of embeddedness ~~resulting from,~~ with a high level of contact with organisations in the surrounding region. Figure 1 shows MAC's connections with ~~core regions in mainland Europe and,~~ Again, ~~as~~ was the case with the Cork region, MAC had~~s~~ few links with ~~the~~ cohesion countries, which only accounted for three of its 56 partners. ~~Since MAC was a spin-off from the Department of Computing in the University of Limerick (UL), it is not surprising that UL was MAC's strongest network link. However, MAC was UL's only Irish partner, resulting in a very different network of contacts to that of MAC with its many local partners. The University of Limerick (UL), not surprisingly, had~~s~~ the strongest link with MAC, the MAC being a spin off from the University's Computing D~~e~~partment. However, the breakdown of UL's participation differs from that of MAC primarily because it was~~s~~ the latter that accounted~~s~~ for UL's sole link with an Irish institution. Like MAC, the University of Limerick was also highly dependent on EU core countries for network partners , with~~

~~The MAC spun out from one department it UL so their link is not surprising. UL is another partner highly dependent on core countries of the EU, with its networks being even more biased towards those on mainland Europe (Fig. 1).-~~

Excluding the Midw~~est~~ast cluster of TAP activity in Ireland, the picture painted is rather disconcerting with respect to milieu formation and collaborative learning, since much of the theory on the information society has begun to recogni~~s~~ze the importance of cluster formation in regional competitiveness (Gibbs, 2001). Indeed the region itself is now being hailed as a key site upon which to convene and ~~capitalise~~ ~~re~~recognized on knowledge flows. Opposing this ~~view~~ is the transcendence of space perspective of Batty (1993) and Pawley (1995), which ~~appears to have had considerable influence~~ ~~has gained a lot of weight~~ in EU policy formation. This perspective avers that human territoriality and the space and place based dynamics of human life can somehow be replaced by the use of new technologies. There is a need to recogni~~s~~ze ~~that~~ these perceptions ~~are~~s prescriptive, deterministic and ~~tending to be rather~~ cyber-~~evangelist~~ ~~evangelistic~~. Gillespie (1997) suggests that the problem of peripheral regions and non-competitive organisations are not solely amenable to technological solutions. TAP recogni~~s~~zed this only through it's 'user led' approach, but ~~as is seen in~~ the Irish case ~~would suggest that insufficient~~ ~~little~~ attention ~~was~~s paid to collaborative learning and cluster formation which are now being recogni~~s~~zed as the key to any kind of competitive participation in the Information Society. With regard to the rebirth of the local, the co-ordination and sharing of local knowledge and the embeddedness of actors, TAP ~~in Ireland~~, in all but a few cases has ~~been less than successful~~ ~~failed~~.

##### 5. Discussion

~~While there is little doubt that the formation of networks is one of the main aims of TAP, the effects of some of these networks may have fallen somewhat short of what was intended by the programme~~ ~~unfortunately, it is not the sole aim. The creation of information flows and soft infrastructure, is what firms need to both receive and disseminate information, which is the key product of the Information Society. However, having examined in some detail the Midw~~est~~ looking at this (well-funded) region and its~~ the participants ~~ners~~ in TAP, we ~~might~~ ~~have to~~ ask what the end goal was, and what the rationale behind TAP funding was ~~intended to achieve~~ ~~about~~? The projects in which these four partners were involved would appear to have brought

none of them closer to the market. ~~Those responsible for promoting programmes like TAP should be conscious promoters need to realise~~ that the end goal of network formation is to increase the knowledge of participants, making them more competitive, and bringing them closer to the market. ~~While n~~ Network formation ~~may have been~~ probably the most positive aspect of ~~best thing that~~ this programme ~~had to offer, it might be argued in the case of the Midw-West region that but this region may be a good example of~~ soft infrastructure ~~may have been~~ being squandered on organisations whose end goal ~~was~~ is not competitiveness or the gaining of access to markets. ~~The~~ MAC and, more specifically Shannon Development, are examples of organisations whose existence has depended significantly on European Union funding. While the work of both these organisations is of value, much of their activity like that of other TAP participants is in the realm of public service. While ~~both organisations have made significant contributions towards both raising greater awareness and effective exploitation of telematics in the Midw-West region, perhaps greater attention needs to be given to those involved in formulating the successors of TAP to the underlying economics of such programmes and to~~ ~~the~~ their potential for making a more effective contribution towards the market dimension of the Information Society.

~~it is difficult to fault the work of these organisations, programmes like TAP should consider its underlying economics and the extent to which it can play an effective role in the European information Society.~~

~~Experience from Irish participation in TAP suggests that greater attention might be given to~~ ~~What are the economic implications for small Information Society Technology firms in Europe? While the Commission~~ ~~Union~~ recognises that the future of Europe's comparative advantage ~~vis a vis vis à vis~~ Japan and the US depends on such firms, it is not easy to see what contribution the TAP programme has made towards this goal. It is possible that a significant proportion of TAP funding has ended up supporting collaborative networks among development agencies and regional authorities from the same region. It is clear, however that such linkages are also supported through other EU initiatives such as the Regional Information Society Initiative (RISI). While such agencies do provide support for innovative SMEs, perhaps a greater proportion of ~~the~~ TAP funding might have been focused more directly on ~~such innovating enterprises~~ ~~ors~~.

~~Compelling arguments in favour of TAP can be made from an awareness that the market is unlikely to provide benefits from the Information Society to marginalised groups such as the elderly or the disabled, and TAP make an important contribution to compensating for this failure of the market. While TAP may have been less market-oriented than many SMEs would have liked, the programme may also have contributed in an indirect manner towards creating mass markets for telematics applications by increasing the awareness of their utility across Europe. It is also possible that the nature of the telematics market may be unlike that of previous products and processes and may diffuse quite widely enabling it to offer benefits to~~ ~~through~~ all sectors of society.

## 6. Conclusion

This paper has explored both some of the positive benefits and also some of the flaws associated with the EU's Telematics Application Programme. This evaluation has

been based on an empirical analysis of Irish participation in TAP projects, which involved the participants in wide ranging networks, helping them to become more integrated into the European research area for telematics. Among the positive outcomes of this programme has been a significant degree of awareness raising among a range of public sector agencies and other organisations for public good in Ireland ~~of about~~ the potential which telematics applications offer for increasing ~~competitiveness~~ competitiveness and organisational efficiency. Part of this positive outcome derives from the rapid diffusion of best practice from organisations in core ~~regions which are at the leading edge of telematics applications to regions~~ regions, ~~which are at the leading edge of telematics applications to regions,~~ and ~~organisations which~~ organisations, which may be less fully integrated into the information society.

On the less positive side, it is clear that a number of flaws continue to dog the formulation of Information Society policy in the Union. Technological determinism continues to impact quite strongly on programmes such as TAP, despite its avowed bias towards the needs of users. There is a continuing over-reliance on technological solutions for many ~~problems which~~ problems, which are not amenable to such solutions. It is clear that a major deficiency of many TAP projects has been the insufficient attention to human, cultural, psychological and indeed political dimensions of transforming traditionally hierarchical organisations by means of telematics. Many projects reflected over-inflated objectives, which showed little regard for the social and cultural context in which they had to be operationalised. Analysis of the small number of research clusters which characterised Irish participation in TAP reveals some elements of what might be regarded as an Irish 'learning region'. ~~In particular (The Mid-West cluster of activity had a greater level of coherence than those in Dublin and Cork.- Yet the detailed examination of this cluster raises fundamental questions about the objectives of TAP,- which has a greater level of coherence than those in Dublin and Cork, would suggest, however, that an over-reliance on public agencies to promote the information society, may result in few benefits for creating an innovative SME sector, which must be one of the long term goal of such public programmes.~~

Experience from Irish participation in TAP suggests that greater attention should ~~might~~ be given in Europe's Information Society to the economic implications for small firms ~~Information Society Technology firms in Europe.?~~ While the Commission recognises that the future of Europe's comparative advantage vis-à-vis Japan and the US depends on such firms,- the inordinate focus of TAP on Europe's public sector resulted in little contribution being made to furthering this objective. ~~it is not easy to see what contribution the TAP programme has made towards this goal. It is clear from the Irish evidence is possible~~ that a significant proportion of TAP funding ~~has ended up supporting collaborative networks among development agencies and regional authorities within from the same region. It is clear, however that S~~ such linkages, however, are also supported through other EU initiatives such as the Regional Information Society Initiative (RISI). While such agencies do provide support for innovative SMEs, perhaps a greater proportion of TAP funding might have been focused more directly on innovating enterprises.

Compelling arguments in favour of TAP can be made from an awareness that while the market is unlikely to provide benefits from the Information Society to marginalised groups such as the elderly or the disabled, ~~and~~-TAP made ~~ke~~ an



important contribution to compensating for this failure of the market. While TAP may have been less market-oriented than many SMEs would have liked, the programme may also have contributed in an indirect manner towards creating mass markets for telematics applications by increasing the awareness of their utility across Europe. It is also possible that the nature of the telematics market may be unlike that of previous products and processes and may diffuse quite widely enabling it to offer benefits to all sectors of society.

### Acknowledgements

This paper is based on ~~arises from~~ research commissioned by the European Commission, DGIII-F 1 (Industry RTD: Information Technologies) under the COHEN project (1998-2000).

### **References**

ANDRÉOSSO-O'CALLAGHAN, B. ~~Androsso O'Callaghan, B.~~ (2000) Territory, linkages – is the Shannon region a propitious local system of innovation? *Entrepreneurship and Regional Development*, 12, pp 69-87.

BANGEMANN ~~angemann~~, M. (1994) *Europe and the Global Information Society: Recommendations to the European Council*, Brussels.

BAPTISTA, R. (2000) Do innovations diffuse faster within geographical clusters? *International Journal of Industrial Organisation*, 18, pp 515-535.

BATTY ~~atty~~, M. (1993) "The geography of cyberspace," *Environment and Planning B Planning and Design-Design*, (200), pp: 616 – 636.

CALLON ~~allon~~, M. (1991) Techno-economic networks and irreversibility, In Law, J (ed.) *A Sociology of Monsters: in Essays on power, technology and domination*, London: Routledge.

CASTELLS, M. (1996) *The Rise of the Network Society*. Oxford: Blackwell.

COMMISSION OF THE EUROPEAN COMMUNITIES ~~ommission of the European Communities~~, (1999), *The Telematics*

~~ELEMATICS Applications~~ ~~APPLICATIONS~~ RTD Programme (1994-1998) Final Commission, DG XIII, Brussels.

DABINETT ~~abinett~~, D. (2001) "Mainstreaming of the Information Society in Regional Development Policy," *Regional Studies*, 35(2), pp: 168-73.

ETHOS (1998) Main Sources of Exploitation Support Available to Applications Projects Supported by the Telematics Applications Programme (ETHOS -SU1105) Prepared for the European Commission's Telematics Applications Programme (<http://www.ethoseurope.org/>).

Field Code Changed

FORFÁS ~~orfas~~ (2001) "The Fourth Framework Programme in Ireland", *Dublin, Forfas*

GENSOSKO ~~ensoko~~, S. (1987) "The Spatial Distribution of Telematics: Modelling and Empirical Evidence," *Technological Forecasting and Social Change*, 32, pp: 281-93.

GIBBS ~~ibbs~~, D. (2001) "Harnessing the Information Society? European Union Policy and Information and Communication Technologies," *European Urban and Regional Studies*, 8(1), pp: 73-84.

GILLESPIE ~~lespie~~, A. (1997) "Regional Development in the Information Society," Paper

presented to Summer School on Regional Development in Knowledge-based Societies, University of Newcastle-upon-Tyne.

GILLESPIE, A., RICHARDSON, R. and CORNFORD, J. (2001) Regional development and the new economy, *European Investment Bank Papers*, 6(1) pp 109-31.

GRAHAM, S. and MARVIN, S. (1996) *Telecommunications and the City*. London: Routledge.

GRIMES, S. (2000) Rural areas in the information society: diminishing distance or increasing learning capacity? *Journal of Rural Studies*, 16, pp 13-21.

GRIMES, S. and LYONS, G. (1994) Information technology and rural development: unique opportunity or potential threat? *Entrepreneurship & Regional Development*, 6, pp 219-237.

JOHNSON ~~ohnson~~, P. (1999) Introducing the European Telework Agenda, European Telework Information Day, Brussels.

KEEBLE, D. ~~eeble~~ and WILKINSON, F. ~~ilkinson~~ (1999) "Collective Learning and Knowledge

Development in the Evolution of Regional Clusters of High Technology SMEs in Europe," *Regional Studies*, Vol 33(4), pp 295-303.

KELLERMANellerman, A. (1993) *“Telecommunications and Geography.”* London: \_\_\_ Press.

LAGENDIJK, A. and CORNFOR, J. (2000) Regional institutions and knowledge – tracking new forms of regional development policy. *Geoforum*, 31, pp 209-218.

MacLEODacLeod, G. (2000) *“The learning region in an age of austerity: capitalising on knowledge, entrepreneurialism and reflexive capitalism.”* *Geoforum*, (31, pp): 219 – 236.

McLUHANuhan, MH. (1964) *Understanding Media - The Extension of Man*. London: \_\_\_ Sphere.

PAWLEYawley, M. (1995) *“Architecture, urbanisation and the new media.”* Mimeo.

RAYay, C. and TALBOTabot, H. (1999) Rural telematics - The Information Society and \_\_\_ rural development. In Crang, M., Crang, P. and May J. (eds) *Virtual Geographies - bodies, space and relations*. London: Routledge.

RAYay and WOODWARDeedward, R. (1998) Voluntary organisations: status and role, \_\_\_ *Environment & Société, and Society* 20, pp. 27-33.

STORPEorper, M. (1995) The resurgence of regional economies, ten years later: the \_\_\_ region as a nexus of untraded interdependencies, *European Urban and Regional Studies*, 2, pp 191-221.

STORPEorper, M. (1997) *The Regional World: Territorial Development in a Global Economy*. New York: Guilford Press.

TAP-ASSESS (2000) Socio-Economic and Industrial Assessment of FPIV Telematics \_\_\_ Applications Projects completed between 1996 and 1998, Databank Consulting (<http://www.databank.it/dbc/english/index.htm>)

VAVAKOVA, B. (1995) Building ‘research-industry’ partnerships through European R&D programmes. *International Journal of Technology Management*, 10, pp 567-586.

VAVAKOVAavakova, B. (1995) Building ‘research industry’ partnerships through European R&D programmes, *International Journal of Technology Management*, 10(4/5/6), pp 567-586.

WICKHAMiekam, J. (2000) ‘Rush towards privatisation irrelevant to Dublin’s notorious \_\_\_ transport mess’, *Irish Times*, 30.3.00.

