Intelligent Car Communication Systems

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Abstract: Car telephone, car entertainment, navigation system and board computers are optional accessories of a car that are available today. However, these parts operate independently and do not support each other. If the car-phone can talk to the navigation system and there is a service provider who monitors the position of the car to inform about traffic congestion then the system will be smart enough to recommend a new route. Supposed that the bandwidth of the cellular phone is sufficient, the system can download an up-to-date map from a server instead of using a map from a CD-ROM. Applications like emergency calls, breakdown assistance, email, Internet services, remote diagnostics, etc. are also useful. The paper discusses various aspects of an intelligent car communication system that are relevant to achieve optimal performance and cost.

Keywords: Communication, Entertainment, GSM – based Services, GATS, WAP

1. Introduction

In our information society, mobile phones, computers, Internet, TV and video are penetrating nearly all sectors of daily life. The question is how these applications will find inroad into the car. Telematics, Intelligent Transport Systems, Infotronics are the headlines. Because consumers are only willing to pay for a product or service if they perceive it as desirable, it is important not only to consider the technical feasibility but also to look at the big picture. The success of new systems depends very much on affordable prices and useful services. This requires a high degree of integration and a common sense for standardization so that the various components of systems and services fit to each other.

2. Value chain

Figure 1 shows the value chain how the content of a service makes use of an infrastructure and an on-board terminal to reach a user to satisfy his needs.
2.1 Needs Determine Service Content

Although at the end of the chain, the starting point should be the needs of drivers and their willingness to pay for useful services and equipment. The needs determine the content of services. Entertainment and information, including traffic information, count as basic needs. Emergency call, breakdown assistance, navigation and route guidance, especially in case of traffic congestion are certainly desirable. Personal communication and information like email, trip planning, etc. are useful if they are implemented in a sensible way. Remote diagnostics might be useful for carmakers to offer new services. There is also a need from the society to improve traffic efficiency instead of spending billions to build new roads for the increasing traffic. Last but not least, service providers must be ready to invest in the infrastructure that can cost a lot of money.

2.2 Terminals Must Fit Services and Supported by Infrastructure

Terminals are required to bring the content of a service to users. The price of terminals as well as the cost for the required infrastructure must be affordable. Car radio is the classical and cheap source for entertainment and information but it