SF 60: Interoperable electronic payment systems in public transport

Fr	B	C	NY	S	T	Total
6		8	2	7	10	33

Beispiel:
As early as in 2001, the world's largest railway company, JR East, launched the so-called SUICA (Super Urban Intelligent Card) in Japan. This card allows passengers to make (nearly) all payments in the local and long-distance traffic system by simply placing the card on the ticket gate. These days, the card is used millions of times every day in **Tokyo** and across the country. This success can be attributed to the expansion of the payment options offered by the card and extensive cooperation with other transport operators (e.g. buses and trains).
The cardholder can, for example, use the card to make payments in more than 1,000 retail stores in the metropolitan area of Tokyo. Of even greater importance is the cooperation with almost all other local public transport operators (around 50 of them), which means that the SUICA can also be used in their transport systems. This gives passengers the chance to use all trains, underground trains, buses and even taxis with just one card and to undertake all their necessary long-range and short-range journeys without having to resort to private transport. In this sense, the card, as an electronic payment system, contributes towards an improvement in the quality of local public transport.

1. Differentiated description of the key field

In this key field, electronic payment systems in local public transport which satisfy the following three criteria are described:
• Ease of use: the use of cards is very simple and user-friendly. For payment transactions, the card only needs to be held in front of a reader, and can remain in the wallet.
• Interoperability between transport operators and means of transport: the systems are not limited to a means of transport or transport operator, but can be used as a means of payment in the majority of local transport vehicles. Operational limits or network boundaries are virtually no longer relevant for passengers, and changing from one form of transport to another is easy.
• Cross-domain: the system is characterised by the fact that it is not limited to one domain, such as transport, but is also used as electronic cash in other fields.

2. Reference to sustainability:

With regard to environmental impacts, similar systems may have a positive impact on the use of public transport due to their quality-enhancing effect. Emission reductions can thus be achieved thanks to the decreasing use of private transport.

Greater use of local public transport is, of course, also of benefit to the transport companies that are still, in part, owned by the city in the German-speaking region. In this connection, a purely monetary utility for cities is achievable.

Insofar as the systems also facilitate access to public transport and contribute to the short-range coverage and connectivity of public transport, as is the case in this example of the city of Tokyo, the social sustainability of the urban system will also benefit, since mobility can be considered as a basic prerequisite for social participation.

3. Relevance to industrial sectors?

Mobility:	High
Energy:	None
Production & logistics:	None
Security:	Low
ICT:	High
Water infrastructure:	None
Buildings:	None
Governance:	Low

Brief description of the high level of importance:
The importance of rapid, interoperable and cross-supplier electronic payment systems is above all important in the mobility sector because what the public transport operators offer can become significantly more attractive with the help of such systems. If customers have the chance to change from one form of transport to another, they are more likely to use the services than if this is not the case. One can, therefore, attract customers in this way.

This key field is of great interest to ICT, above all with regard to the implementation of the systems. Due to extensive communication channels which have to satisfy the highest security and privacy standards, future extensive development opportunities and needs can be identified in this specific field.

4. Impact (positive & negative)

Besides the already stated impact on sustainable urban development, the following positive effects can be expected:
• Strengthening of local public transport systems and the associated reduction in motorised private transport.
• Increased influence of cities, if they have stakes in local transport companies
• Initiation of interest groups and strategic partnerships (synergistic effects)

In addition, the following negative effects can be expected:
• Possibility of creating a monopoly platform which, in the long term, adversely affects the actors not involved.

5. Implementation measures:

To successfully implement a similar ticket system, the following factors are highly relevant:

• Cooperation between the providers of various means of transport, if possible over both long and short distances. With this in mind, a willingness to participate in a comprehensive exchange of information with each other must be generated. The initiative for this can either be initiated by businesses or by the political sphere (especially when it is a matter of urban transport services).
• Before technical implementation can start, a common strategy to introduce and operate the system must be created by the participating actors, one which defines key action steps and responsibilities.
• The highest possible coverage of the service areas by the participating companies.
• Establishment of additional uses of the payment systems.
• Generate incentives for use (e.g. discounts, point systems, etc.)

In addition, it should be noted that, due to the fact that such systems offer extensive insights into various areas of a person's life, the cards must have the highest safety standards.
From a technical point of view, an information interface between all actors involved must be also created.

6. Actors: Who can shape things?

The initiative to create interoperable payment systems in the field of local public transport should, as a rule, come from transport operators, since it is mainly a matter of their core business. In addition, however, cities and interest groups can also work to ensure that local transport operators develop and implement similar systems, especially when cities themselves are shareholders in local transport operators.

The cooperation of as many stakeholders as possible is of vital importance for the success of such systems. An electronic ticketing system, therefore, will only be successful if all the available means of transport can be utilised. The individual solutions of various actors appear very promising.

7. Prerequisites:

The central prerequisite is the willingness of companies to cooperate and to exchange information on at least at the local level, even if there are partial overlaps in business fields or a competitive relationship with other stakeholders.

From the user's perspective, trust in a safe mode of operation for financial transactions is a fundamental requirement. That is why the most stringent demands as regards technical implementation with regard to the protection of personal and financial data must be made.

In addition, as illustrated earlier, a certain scope of supply and services is a prerequisite for the success of such systems, since a large number of individual solutions from different vendors promise no real relief for users.

8. Obstacles/barriers:

In line with the prerequisites described, the individual interests of partly competing companies constitute a barrier to interoperable payment systems. If there is no willingness to cooperate, only isolated solutions can be implemented.
If the cards allow direct money transactions to be undertaken, they must satisfy very high data protection standards. The expected cost with regard to this could definitely be a barrier to entry.

9. Indicators:

Firstly, it should be determined whether payment options offered or used in the city also cover the various offers of local public transport, retailers, etc. In the specific case of local public transport, one can check whether the various electronic payment methods can be used with the offers of different providers, e.g. buses, underground and commuter trains. In this case, the amount or the percentage of participating companies can also serve as an indicator.
If such systems are in place, their importance in the overall urban context can be identified by means of further indicators, which are:
• The number of cards issued compared to the population
• Usable terminals (purely public transport; other payment methods)
• Daily transactions per user

If a similar system has not yet been used, the presence of an initial common strategy of cooperating actors can be seen as a first step towards its introduction.

10. Special features/remarks:

Many cities already offer tickets that are valid for all public transport associations, but these are very rarely electronic ones. A comparable approach is currently being developed in Utrecht, whereby short-distance coverage is currently not yet guaranteed. Electronic ticketing systems that can be operated by simply placing cards on a terminal are also used in many local transport companies (e.g. the Paris Metro), but mostly with the restriction that only the vehicles of the operator can be used.