Fluid standards: The case of mobile content services

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Abstract
This paper theoretically and empirically discloses transformations in the 'world of standards' and the challenges it creates for current and future standardization in the turbulent and complex environment of m-commerce. This paper discusses the increasing complexity and pervasiveness of standards and standardization processes as the result of an increasing number of standards, links between them and actors involved in their development. While these processes create demand for additional standards, we point out how different kinds of standards and standardization approaches are required - not just more of the same. Developing a case study of a standard (originally Norwegian) for m-commerce, the CPA, we illustrate a range of important qualities and characteristics of standards in a field that reflects these transitions. Drawing upon recent research in Actor-Network Theory (ANT), we discuss the CPA as a fluid standard, or a “mutable mobile” composed of a variety of components and with the characteristics as being open, complete, simple, informal, flexible, robust, as well as building on the installed base. In a turbulent and unpredictable environment due to emerging technologies and new organizational relationships, the organization of the standardization work must fulfil basically the same requirements.

Keywords
Standardization, Actor-network theory, mobile technologies, mobile content services
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1. Introduction

Research on ICT standards is in its infancy, but its volume as well as assumed importance is growing (for example illustrated by the Special Issue of MIS Quarterly on the topic published in August 2006). This reflects the growth in number of and importance attributed to ICT standards. But it also reflects a change in requirements of standards due to a more complex and rapidly changing world due to, for instance, globalization processes. This again causes changes in the nature of standards and new requirements regarding standardization processes and their organization. Globalization and internationalization processes more broadly, also leads to a rapid growth in standards outside the ICT domain. Andrew Barry (2001), for instance, argues that the European Union should primarily be seen as a standardization effort aiming at developing the standards need for European integration. This includes standards like the Euro as well as standards for chocolate and the form of cucumbers. Such standards will, however, be closely related to and embedded into ICT standards implemented by the vast range of ICT solutions required to make the envisioned European integration real.

Telecommunication has traditionally been a domain where standards have played a central role. However, during the last decades, this sector has changed dramatically through digitization, liberalization, the development and diffusion of mobile communication technologies, processes of convergence between IT, telecom and media technologies and sectors, globalization processes, etc. The aim of this paper, then, is to explore the changing nature of (ICT) standards in general and and within valued added mobile services in particular. We do this by highlighting their “fluid” (in Actor-Network Theory terms) character based on a case study of the CPA standard for distribution of content across mobile phone infrastructures. We outline the initial establishment of this standard in Norway and its later internationalization (by being transferred to some other countries) by seeing development and diffusion
of the standard as an integrated process in the way pointed out by Lyytinen, Keil and Fomin (2008).

The paper is organised as follows. Section 2 presents related research on standards. In section 3 we will present our theoretical approach – Actor-Network Theory. In section 4 our research approach and methodology is outlined. In section 5, our case study is presented. We first describe the initial development of the standard in Norway, followed by a description of its transfer by one of the network operators to Malaysia, Hungary and Ukraine. Section 6 provides an in-depth discussion followed by section 7 that summarises our key points.

2. Related research – a changing ‘World of Standards’

Because of the growing significance of mobile communication technology, some research has been done on the definition and establishment of mobile communication standards like NMT, GSM, UMTS, etc. (for example Fomin 2001; Keil 2002; Manninen 2002). The major focus of these studies has been on historical accounts, as written in committee minutes, technical documentation and specifications, and as recollected by committee members. Standardisation has been conceptualised as the manner in which different standards are selected, how formal standardisation organisations supports this process and how economically and socially optimal standards can (or cannot) be stimulated by ways of organising and regulation. Thus, the focus has primarily been on formal standardisation processes and the resulting output of standards as technical specifications. The research presented in this paper is part of a growing interest in research on standardisation in general and standardisation within ICT in particular. This increasing interest is a result of the growth in the number and importance of standards as well as the transformation of the ‘world of standards’ that is a part of the so-called convergence of telecommunications and information technologies (Brunsson and Jacobsson 2002). Standardisation of m-commerce and mobile content services is among the newcomers in this ‘world’. Our research aims at disclosing the transformations and the challenges they raise for future standardisation, and suggesting proposals for how to deal with these challenges.
The number of standards has increased substantially, and so have the links between them (Brunsson and Jacobsson 2002; Romer 1990; Schmidt and Werle 1998). Technological changes within telecommunications and ICT have brought many new actors into this field. Telecommunication standardisation used to be taken care of by (a limited number of) service providers and equipment manufacturers. With the digitalisation of telecom, computer manufacturers and software companies also got involved. This technological change opened up possibilities for a broad range of new services. The development of such services involved even more actors – even users (big and small companies, professionals like medical doctors, etc.) (Jakobs 2000, Tilson and Lyttinen 2006). Such services also implied a need for new kinds of standards which raised new challenges. Some new and hard challenges were related to the fact that the standards for high level services needed to satisfy much more complex user practices (in particular compared to the simple ones supported by traditional telecommunications which just enabled users to dial a number, talk, and hang up.) (Bowker and Star 1999; Foray 1994; Hanseth and Monteiro 1997; Jakobs 2000). The ongoing ‘convergence’ of the ICT and the media sectors further increases the current technological and institutional complexity and variety as well as increases the speed of change.

These changes partly triggered, and were partly taking place in parallel, with the deregulation of the telecommunication sector. The deregulation increased competition, which again brought more actors into the picture at the same time as it changed the relations between the actors involved and accordingly the rules of the standardisation process. The rules of the game were also changed as a consequence of the convergence of the ICT and the media sectors which implied that the borderlines between the regulatory regimens within these sectors (telecommunication, TV broadcasting, printed press, etc.) became blurred (see for instance, Antonelli 1994; Brunsson and Jacobsson 2002; Bunduchi et al. 2005a; Bunduchi et al. 2005b; Bunduchi et al. 2004; David and Shurmer 1996; David and
Steinmueller 1994; Matti 2001; Werle 2001; Williams et al. 2004). This new “world of standards” creates new requirements for standards and standardization processes. In particular, the increased dynamics, complexity, and unpredictability, require more flexible standards and standardization processes.

2.1 Standardisation processes and flexibility

Since early industrialisation, ad hoc approaches to standardisation have been replaced with formal and dedicated standards development organisations (SDO) (Lehr 1992). The aim of a SDO is to provide an institutional arena to support consensus building, ruling out heterogeneous interests and thereby avoiding the development of suboptimal standards (Tassey 1995). To a varying degree, standardisation processes need the support of SDOs. The emerging context of standardisation in telecom requires flexible standardisation processes. All changes mentioned above makes the tasks of standardisation bodies different. Commonly, the traditional SDOs are too slow, bureaucratic, and inflexible – the number and varieties of the technology and actors involved constitutes a too complex and rapidly changing environment for traditional SDOs. SDOs have historically limited their participants to engineers and non-technical issues have not been on the agenda, as described in depth by Haug (2002) and Manninen (2002) in the case of the standardisation of GSM. As an implication, SDOs are not suited for standardising complete technological systems. One initiative to meet this limitation is made by several consortiums or forums, such as the UMTS Forum, by coordinating the implementation of standards in the marketplace by rapidly exploiting commercial possibilities (Hawkins 1999; Vercoulen and Weberg 1998). The interest of the participants in a consortium is thus primarily strategic positioning in the market.

Standardisation within telecommunications differs substantially from standardisation within the computer industry related to, for example, vertical or horizontal integration and formal documentation or experimental driven processes (Branscomb and Kahin 1996). While dissimilarities in organisational styles and standardisation experiences are challenging (David and Shurmer 1996), the dynamics in the
community will also require equally dynamic standardisation architecture (Forster and King 1995). With the ICT of today, a range of decisions have to be made amongst a range of different actors (David and Shurmer 1996) who expect to be involved in standardisation (Lundvall 1995). They come from different industries with different understanding and approaches to standardisation as well as developing technology in general. To support standardisation within this context, the combination of SDOs and consortiums as a hybrid approach has been suggested (Shapiro et al. 2001).

2.2 Standards and flexibility

Standardised systems such as ICTs tend to become accumulatively change resistant as they grow and diffuse (Egyedi 2002; Hanseth et al. 1996). Thus, to endure, these systems have to be prepared for change to avoid becoming obsolete (Tassey 2000). Standards must allow for growth and change through various means of flexibility to avoid this. Flexibility can be obtained by standardised interfaces, decomposition, modularisation and black-boxing, allowing some components to be kept stable while others are changed without implications for the rest of the system. Allowing for peripheral change and innovation can release a significant potential for increasing the size of the system, its market (Tassey 1995) as well as the diversity of services (David 2001; Lessig 2001).

The location of functions close to the application that uses the function, the so-called end-to-end argument, is one example of providing flexibility by systems design (Saltzer et al. 1984). The point this argument is making is that functionality in communication networks only can be appropriately implemented if based on knowledge that only exists close to the applications standing at the endpoints of a communication system. Thus, the network should not control how it grows, the applications should. Both Lessig (2001) and David (David 2005) exemplifies this argument by illustrating the Internet as a network where intelligence is in the fringes. Since the network is not optimised for any application but open for and inviting the unexpected and surprising, innovations can flourish without changes in standards. While standards nurture and sometimes are the very preconditions for innovation, the
The interrelationship between innovation and standards is intricate. Standards may for instance result in future innovations being hampered by previous innovations which now are de facto standards in a market (Dunphy et al. 1996). Because of an increasing installed base, not only does the cost of switching and changing standards become higher but innovations are required to conform to existing standards.

3. A Theory of Fluid Standards – from “Immutable” to “Mutable Mobiles”

Our chosen theoretical approach is Actor-Network Theory (ANT). The primary motivation behind the development and use of ANT has been to enhance our understanding of the relationships between scientific and technological issues on the one hand and social, organizational, political issues on the other. ANT has been used to describe the establishment of scientific theories and facts and working technologies as the building of dense socio-technical networks, where elements of various kinds (technologies, humans, institutions, etc. – called actants) are translated (i.e. modified or re-interpreted) and enrolled into aligned actor-networks. Individual actors, whether these are humans, technologies or organizations, are also seen as heterogeneous networks (e.g. Callon 1991). Central to ANT studies has been the process by which a scientific theory or technology are made universal, i.e. made to work across ‘all’ contexts, becoming a universal and purified as pure technology or science free of any social or political attributes. Bruno Latour (1987) has called such objects “immutable mobiles” – they are ‘objects’ that move around in time and space, but they stay the same. A standard, as traditionally understood, is a paradigmatic example of an “immutable mobile.” According to Latour, the making of such an immutable mobile is quite an achievement. And it is not only the object in itself that needs to be created. Its context also needs to be constructed in specific ways. This corresponds to a situation we all know within Information Systems and Software Engineering: To make a piece of software run on all computers, those computers need to be standardized (hardware, OS, etc.). And to make a computer system work, we need electricity, buildings and furniture, and an organization of people with various competences and roles, etc. And a working measurement system, like the measurement of hemoglobin
in blood, requires a lab with certain instruments and staff with certain skills, electricity, etc. The
“immutable mobile” in itself is then portrayed as a heterogeneous network, but in addition to be both
immutable and mobile another heterogeneous network need to be in place.

As a part of the recent development within Actor-Network Theory, the so-called “after ANT movement”
(Hassard and Law 1999), it is argued that now the world has become more complex, and that most
‘objects’ (knowledge, technology, practices, etc.) need to be mutable to be mobile. As “mutable
mobiles,” they transform as they flow from one region to another, but possible without the transformation
leading to abrupt changes. Mutable mobiles are fluid, they may go through invariant transformation (Mol
and Law 1994).

The concept of fluidity was introduced by Mol and Law (1994) in their study of anaemia in Africa and the
Netherlands as a social phenomenon in a fluid space. The fluid concept is seen from a topological point
of view, as a space, and in particular in contrast to a region and a network. The authors describe an
entity by the space it occupies which in this case (of anaemia) is argued to best described as fluid. A
fluid shares all the basic characteristics of an actor-network - plus some more specific ones, so specific
that they prefer to go beyond the concept of a network. A network is normally described as a set of
discrete entities with links in between. Elements of a fluid are not necessarily discrete. They are so
closely related that they cannot be clearly separated.

de Laet and Mol (2000) define a fluid more precisely as having six characteristics, some of which are
closely related. A fluid has: no clear boundaries; multiple identities; mixtures; robustness; continuity; and
dissolving ownership. We will consider each of these characteristics. Possibly the most important and
defining characteristic is that the boundaries of a fluid technology are not clear. Boundaries are defined
by all that is needed to make the technology work. This leads to the second and closely related
characteristic of multiple identities. There are many answers to asking the question "What is the
Zimbabwe Bush Pump". It is a water pumping device, a hydraulic system, a sanitation device, a health
provider, a community builder and a nation builder among others. Each identity has its own boundaries
that are defined by what is needed for the technology to work as that identity. The boundaries are
different for each identity and change over time. The identities themselves are not stable and change
over time and in different contexts. Some identities may be emergent resulting from collective use of the
technology reaching a certain level, e.g. nation building and water infrastructure. Some identities of the
technology are defined by elements in its environment and not by its own elements. As a consequence
of the multiple identities, the fluid can be said to be robust as it is successful or unsuccessful based on
which of its identities is working and not working. It is not clear when it stops acting, achieves its aims
and when it fails and falters. Although in the case of the Bush Pump, some components could be
substituted or done without, it is not that kind of robustness which is conveyed. Lots of things can make
the pump stop working but because of the multiple identities the robustness comes from its multiple
purposes and there being no single weak link that can make all the identities come apart. The strongest
link may also dissolve and not be obvious. The fluid is also continuous. It may have existed before but
not in the same way. When new models come in old models do not disappear. The fluid technology may
be specific and unique but share characteristics with others, a family resemblance, which form
continuity. The fluid technology is also a mixture. It is part of other elements which could be fluids
themselves. The mixtures however have a need to collaborate with each other if the technology is to
work. The collaboration does not have to be rigid and can be flexible and adaptive. Finally the fluid
technology has a dissolving ownership. The ownership is fluid in itself allowing the technology the
flexibility to have unclear boundaries and multiple identities.

So, what can a perspective on standards as fluids bring to our discussion on standards? In particular,
we will argue that a standard like the CPA has to be mutable to be mobile within the complex and
rapidly and unpredictably changing world it is a part of. This is contrary to a more ‘conventional’ perspective on standards as the formal, precise, unequivocal output of a formal standardization process, i.e. seeing standards as immutable mobiles. By highlighting the fluid character of CPA we aim at making a contribution to the research on the heterogeneous nature of standards and how to develop standards offering the required flexibility for rapid innovation and technological change.

4 Research methodology

Standards are widely accepted as being of strategic value, thus standards develop through a process where multiple actors pursue their strategies and agendas. Our research approach is based on an understanding of the processes of standard making as being open and situated as well as being understood differently by the various actors involved. Inspired by Star (Star 1999), our ‘reading’ of how CPA emerged was focused on identifying and analysing different perspectives as well as the more unstructured and invisible work involved. While CPA is usually presented by network operators as their ‘success story’, our approach revealed a highly complex process that was not primarily network operator driven. Further insights were gained into local contingencies, the properties of the standard and the achievements of those engaged in developing the standard.

The research presented here started in 2002 and continued until late 2005. As we were involved in a larger project studying various attempts of internationalising platforms within one of the Norwegian network operators, the case of CPA seemed to be of particular interest. Early discussions with people working with CPA directed our attention to various properties of CPA and challenges related to its standardisation, implementation and operation. To understand these issues better, one of the authors initiated an in-depth study of the standard. Another author studied how the CPA standard had been internationalized in 4 other countries. Since CPA appeared as inseparable with its context, a case study approach was adopted (Yin 1994), following an interpretative perspective (Klein and Myers 1999; Orlikowski and Baroudi 1991; Walsham 1993; Walsham 1995). We found our role as researchers to
involve describing, interpreting, analysing and understanding the social world of these actors (Klein and Myers 1999; Orlikowski and Baroudi 1991).

Starting out by interviewing the manager of CPA within the network operator where we were involved directed our attention to how close the standard was interrelated with other (internal) technical platforms as well as actors within the business sector. We also found the appearance of the relationship between the various actors and their coordination interesting which guided us also to study how CPA was initially conceived and implemented. Thus, to understand the standard, the study reached both back in time towards the predecessors of CPA, out into the business sector as well as out into the more ‘global’ setting by studying the internationalisation attempts.

A total of 62 formal interviews were conducted with managers, heads of sales and system developers in a total of 34 different organisations, official of government agencies and forums (listed in Table 1), including the two Norwegian network operators. Interviews were all done face-to-face and that involved travel to Malaysia, Hungary and Ukraine. The hierarchical and professional positions of the interviewees are not listed here. The interviews lasted typically 45 minutes to an hour. 39 of the interviews were recorded and transcribed. Notes were always taken and in the cases where recording was not done, notes and summaries were discussed or sent to the interviewee to obtain his/her feedback for a common understanding and completeness. The interviews did not follow a strict, but rather an open interview guide. They were focused on discussing the very nature of CPA, its development and operation. As the interviews progressed, certain issues were also identified and focused on. In addition to the interviews, data was also collected from studying standard documents and specifications, websites and the trade press. In following the internalization attempts, presentations made and in some cases email exchanges were also obtained and studied.

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While giving a broad understanding of the standard as well as its context, this approach came with certain challenges. Since we did not operate within the borders of one or a few organisations, we had to negotiate access and justify the participation of the interviewees in a variety of different organisations, ranging from 5-men businesses to network operators with 20,000 employees. While this required different approaches to gain access, maintaining access to all these organisations was not feasible.

Another challenge was to identify the important actors related to CPA, both historically and related to the business sector. To access these ‘hard-to-reach’ populations, a snowball strategy (Vogt 1999) was used.

The data analysis was interpretive and based on our capacity to conceptualise the essential topics in our data. In our analysis, we broadly focused on the industry's market structure, the nature of the services and the standard to include a broad context of influential factors as the actors' aims, institutions and organisations and their strategies. During the transcription of the interviews and detailed study of the notes and other documents, the key themes were identified. The themes subsequently acted as input to discussions and guided the further analysis of the transcripts and notes as well as the topic for new interviews. In parallel with this, the research has been guided by presentations and discussions of our findings at several seminars, workshops and conferences.

5 The CPA case

In this section we outline the Norwegian CPA infrastructure, then what we see as the CPA standard, its process of establishment and the actors involved. We put a particular emphasis on what we see as
distinct with CPA compared to traditional and common standards and standardisation approaches within telecommunications.

5.1 The CPA infrastructure

The CPA infrastructure basically supports three tasks:

- production, preparation and marketing of content services;
- transportation (requests and deliveries) of services between producers and consumers; and
- handling the involved billing transactions.

This service sector of content services to mobile phones was up until 1999 based on the network operators providing separate and different infrastructures and where they were taking care of all these tasks. The introduction of CPA broke up this vertical integration into functional domains, enabling and requiring a range of new roles and actors. The provision of rather simple services, such as ringtones for mobile phones will in the case of CPA usually involve:

- content producers (composers represented by IPR-brokers₁);
- content providers (preparing compositions for mobile phones);
- aggregators collecting a rich variety of content and possibly integrating these in larger service concepts;
- media windows (i.e. newspapers, magazines, TV-broadcasters, etc.) providing space for marketing; and
- network operators providing transportation and billing services.

Linked to the core of its business idea, CPA is a joint undertaking by the Norwegian mobile network operators. On the one hand, they provide the same set of functions and a common service level (i.e. secure delivery and level of capacity), but not a single technical interface towards content providers/aggregators. On the other, they provide a common user interface for content service consumers. CPA enables the consumers to acquire content services through some simple steps. For example, if a consumer would like to travel with public transport from address A to B in Oslo, he first locates the required information for ordering the service. Typically, this information is available on the web, in a magazine, but most importantly close to where it is supposed to be consumed, such as on a poster at a subway station. The information required is basically a short number (four digit phone

₁ IPR-brokers are actors mediating between content producers and those who hold Intellectual Property Rights to the content
number) from where to order the service from and the syntax for the service request. The subscriber requests the content by sending a simple SMS (Short Message Services) from his mobile phone - containing in this case for example "from A to B" to the number 2003 (see step 1 in Figure 1).

A key element of CPA is that service usage is billed over the regular mobile phone bill. Since the consumer is already registered with one of the network operators, there is thus no need for cumbersome registration and confirmation of personal data, credit card number etc. When the network operator to which the consumer subscribe receives the SMS at its SMSC (message centre), the number 2003 is recognised and the request as well as the subscriber’ phone number is sent to the CPA platform (step 2). The CPA platform forwards the request to the appropriate content provider over a TCP/IP connection (step 3).

When the content provider receives the request, they recognise "from A to B", and produce and return the requested content back to the network operator together with the phone number of the requester. In addition, the content provider also specifies the rating class of the service, i.e. the cost which the consumer is to be charged. It is thus the content provider and not the network operators who specify the cost, according to standardised rating classes ranging from 1 to 60 Norwegian Kroner (NOK) (step 4).

The network operator requests their billing system with a CDR (Call Data Record) to handle billing of the request according to the rating class (step 5), and if successful, the content is delivered to the customer by SMS over the SMSC (step 6 and 7). Finally, when the subscriber pays his mobile phone bill, the revenue is split based on a standardised sharing model between the network operator and the content provider.
provider. The actual content of these transactions are not approved, monitored or controlled in any way by the network operators. However, it is to their discretion to react to complaints and exclude services they find inappropriate (e.g. involving racism or child pornography) or not following their guidelines.

One prominent aspect with the CPA standard is that it is based on so-called "premium Mobile Terminated (MT) billing." This means that incoming messages, that is the request for services, are charged as basic SMS messages according to the calling plan of the consumer, while the return message originating from the content provider (step 4 in figure 1) is premium rated, i.e. charges the receiver for more than the cost of a regular SMS. This gives the content providers the possibility and responsibility to charge several times for one request, and thus enables subscription or push services as well as services that are requested from other sources than an SMS, in particular the Internet. For example, based on choosing a certain geographical area or destination, ski-enthusiasts can subscribe to alarm services which are triggered with an SMS whenever there is more than 20 cm fresh snow (powder-alarm). Usually, subscribing to such services is for free, but each alert triggered SMS is charged according to a certain rate. Initiating such a service subscription may be based on preferences registered via the web, rather than using a simple, but cumbersome WAP interface or SMS.

As owners of the underlying mobile telecommunication infrastructures, including the billing systems, the network operators were central actors in the establishment of the CPA standard. But their recent efforts have been modest and catered primarily to increasing traffic. At the same time, several application houses are active in building add-ons to the underlying infrastructure to enable new services and service concepts. Examples include software to collect votes, produce and visually present numbers

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2 Billing occurs either when a subscriber sends (originates) a text message to request a service, Mobile Originated or MO billing, or when a subscriber receives a service on their phone, Mobile Terminated or MT billing. The kind of subscription based services described here requires MT billing. Billing strategy is normally an important strategic decision for mobile phone operators. Most billing systems are based on just one of these strategies and changing from one to the other is a task of enormous costs which implies that these services will normally only be provided over infrastructures which are based on MT billing. The crucial role played by billing systems was expressed in the very first statement of our first interviewee. "What kind of services you can provide is totally determined by the billing system." (For more on the complexity of billing systems see Blechar and Hanseth, in press).
and statistics on ballots in relation to TV-shows, as well as software which presents on-screen
comments and questions posted by SMS to discussions/talk-shows.

5.2 The standard

The conventional view on standards is to see them as a set of detailed technical specifications –
approved by a formal standardization body or an industry consortium. Compatibility standards like tele-
and computer communication standards are primarily seen as interface specifications. Communication
standards typically define communication protocols and the formats of data to be transferred. Such
standards also define, implicitly or explicitly, the overall functionality and architecture of the
communication system or infrastructure the standards relate to. Our description of the CPA standard
deviates from this description, illustrating that the CPA is a standard of a different kind. While being
interrelated with a range of technical standards such as GSM, SMS, WAP and MMS, the CPA standard
is primarily based on more flexible, loose and informal agreements which are necessary to coordinate
the various actors' efforts. Its technical details are not specified in a coherent set of documents.
However, it does play the role of traditional compatibility standards and it fits perfectly with de Vries’
(1999) definition - which he arrives at after reviewing and discussing a huge number of such definitions -
of standardisation as:

"... the activity of establishing and recording a limited set of solutions to actual or potential matching
problems directed at benefits for the party or parties involved balancing their needs and intending and
expecting that these solutions will be repeatedly or continuously used during a certain period by a
substantial number of the parties for whom they are meant" (p.155)

And what we here consider the CPA standard to be is more than just technical specifications – it is
rather a “standardised package” (Fujimura 1992) that includes components of very different kinds. The
package the ‘parties involved’ arrived at in the case of the CPA includes the following five core
components:

- Business model and revenue sharing model.

CPA is based on the network operators providing a standardised business model for premium
rated content services to the content providers. This business model is further of an 'open
garden' kind, implying that the network operators allow any content provider to distribute their
content to all subscribers, a model that offer content providers public market access as well as
economies of scale in billing. A revenue sharing model is also standardized (i.e. it is non-
negotiable). The maximum charge is 60 NOK (approx 7.50€) and the predefined revenue split
favours the network operator from 54 to 29 percent.

- **Equivalent functionality, architecture and service level for content providers**

  The content providers are offered basically the same functionally and service level, even if the
  interfaces to the network operators' implementation of CPA platforms differs. The service level
  provided by the network operators are standardised in the sense that the infrastructure of each
  of the network operators can take care of general services as well as the typical traffic peaks.
  The services are provided by means of an infrastructure based on a common architecture. This
  infrastructure is, however, implemented differently by the different network operators. While one
  uses the CIMD protocol, which is a subset of Nokia’s CIMD2 with additional operator specific
  parameters, the other has implemented a SonicMQ client API for the content providers. The
  content providers are thus required to implement a TCP/IP interface, as well as a Java-client,
  alternatively a C-client. Both interfaces are based on content providers initiating a TCP/IP
  connection to the respective CPA platforms. The basic transactions are service requests
  originating from the subscriber, messages containing the services originating from the content
  provider, as well as acknowledge/error messages from the CPA platform to the content
  providers. However, aggregators provide interfaces which hide the differences between the
  operators' implementations of CPA for the majority of the content providers. This reduces time-
to-market and the necessity of substantial up-front investments to connect to CPA. Further, it
  also lessens the administrative burden of network operators as smaller content providers find it
  appropriate to connect through the aggregators.
• Administration and use of rating classes and short numbers

Based on their public market approach, network operators have also standardised their administration and use of short numbers and rating classes. This adds to the transparency of the market by being the basis for a standardised way of marketing the services.

• Guidelines for consumer protection

Further, in order to reduce the risk of ‘offensive’ services being provided and marketed or marketed fallaciously, the network operators have standardised guidelines describing which services cannot be provided over CPA as well as how to market the services in a consumer friendly manner.

• Interface for service acquisition

By providing a standardised interface for service acquisition – the user interface, every mobile phone user in Norway has easy and transparent access to content services. Independent of which operator they subscribe to as well as the type of subscription and calling plan, subscribers can access the same services, from the same short number and for the same price. This also makes the marketing of services simpler and thus easier for consumers to read and understand.

5.3 The standardization process

We will now describe the standardization process, i.e. the design, implementation and adoption of the CPA standard. While focusing on the efforts of the two Norwegian mobile network operators, we will also show the crucial importance of other actors in this process. The standardization can be split into two major steps: the first was through experimentation reaching “consensus” about an open approach; the second defining and implementing the open standard.

In 1997, both of the Norwegian mobile network operators launched independent platforms for provision of content services. These services were not considered by the operators as being of strategic
importance, and they thus refrained from any substantial investments. The platforms were instead
based on the efforts of a few enthusiast strongly inspired by the current development of the World Wide
Web – they wanted to create the mobile Internet and a marketplace in everyone’s pocket based on the
mobile phone. This resource-situation combined with an ad hoc approach of a few enthusiast rapidly
generating new services, led to the underlying platforms being developed in a unstructured fashion and
outside the strict systematization regime of the network operators. Over these platforms, the operators
offered exclusive content and utility-based SMS services to their respective subscribers – like more or
less all operators around the world currently are doing. With these exclusive offers, operators could
differentiate and by that (at least assumingly) strengthen brand value and increase customer
attractiveness and loyalty. So, the most crucial precondition for establishing an open standard was that
the operators changed this approach.

The services offered by these closed platforms were typically news, stock quotes, weather forecasts
and yellow pages. All in all, it was only simple information services. The service prizing was set
regardless of the content and charged simply on a per transaction basis and as regular SMS – there
were no possibilities for premium rating. Thus, at this time the stake of the content providers involved
was primarily to extend the reach of their services as well as to experiment with and perhaps relate their
brand to new and innovative technology. While this made the services cheap for consumers (NOK 3) it
offered no, if any, possibilities for generating direct profits for the involved actors. The network
operators’ pursuit of exclusive services further inhibited and limited the richness of the services offer
(only utility services) as they were related to the operators’ brand. The market did not respond positively
to this approach, not much traffic was generated and no further service development and innovation
was spurred.

In spite of the limited success of the services, some enthusiasts persistently believed and argued that
mobile content services had a potential. Fortunately, we may say, they were allowed, or at least not
hindered, to work with such ideas. But the circumstances only allowed for initiatives were resources
spent were insignificant and services not doing harm to the Operators’ brand. During fall 1999, one of
these ‘entrepreneurs’, a former employee of one of the network operators, returned after working for a
TV broadcaster for a few years. Based on his experience with the existing SMS services from his work
at the TV broadcaster, combined with his contacts with other content providers and knowledge about
what they needed, he had a vision about how to approach mobile content services. Upon his return, he
started pursuing a more open and dynamic approach where content providers were enabled by the
operators to freely create and sell content services. Along with the other content providers, he argued
that what was needed was a platform where the content providers freely and rapidly could introduce
new and change existing services. Only content providers had the sufficient knowledge of the market
and the will and guts to invest and innovate. As he started to pursue the operator to open up their
interface, other content providers also approached both network operators with similar ideas. However,
the network operators (at managerial levels) where difficult to deal with, and did for example not take
suggestions such as to charge 5 and 10 NOK for content services seriously, but where rather laughing,
as commented by a product developer from one of the TV broadcasters:

“So, we felt for a long time like banging our heads to the door there, and this was not because of
technical issues, because that was the next thing, then one had to build that in addition. The problem was
that they simply did not believe that it was possible to create revenues from it [content services].”

On the basis of these initiatives from the content providers, the lack of success with the previous
platforms, high cost for marketing, fundamental concerns related to linking their brand to non-utility
services as well as the pricing possibilities (no premium rating), the network operators, represented by
the few enthusiastic and persistent individuals, took new initiatives. The management efforts and the
investment in the further implementation of what was becoming the CPA were, again, limited. However,
these individuals managed to find some space for action even if this was more in conflict with than
supported by existing strategies - as noted by the ‘lead enthusiast’ in the CPA ‘project’ within one the
network operators:
“It was a bit of entrepreneurship spirited, the project, because we had no resources assigned like you are
used to in a big company. So we had to make everything ourselves, and find the resources ourselves, in
a form of a project. And this resulted in, that the atmosphere, both market wise and business wise and
the technical development, was entrepreneur directed.”

After trying for months to get the access based on rumours regarding the ‘new platform’, and initially
being rejected, the first content provider finally got the access to the CPA platform of one of the network
operators in the fall 2000. The CPA platform was at this point only based on minor technical changes in
the existing SMS service platform, and it was clear that the platform was premature and still
controversial for network operators, as noted by the manager of the content provider:

“And then they had something running … and suddenly I showed up, but they had not planned to launch
at this early stage. And they had to sort out, what do we do now? And that is difficult in this kind of an
organisation. So, finally by being persistent, I could plug into the platform, but it was made clear that the
billing could fail to function at any time and without any rights for me to claim compensation … John3 [an
employee a network operator] meant a lot for this, he did a lot that he was not allowed to by his manager.
He pushed this trough internally, in a way that he possible would not if he were a devoted and nervous
guy. So he was scolded a lot in the beginning.”

Despite the legacy of the flaws and ‘hacked’ nature of the previous SMS platform, the platform served
its new purpose. Soon, the other operator had its platform running and other content providers followed,
and the traffic and revenues surpassed the previous platforms in only a few months.

To develop the CPA standard, negotiation and coordination were also initiated among the network
operators. Already back in 1997 the operators had seen the costs, the other downsides and the ultimate
failure of providing exclusive content services. In the case of the CPA, the coordination was based on
sorting out issues such as the usage of common short numbers to attract large media actors. In
addition, common price intervals (rating classes) were introduced to enable marketing and one number
and one price for services across the market. In this coordination process, the need for a standard, at
least related to the service level, was identified. The network operators were focused on avoiding the
development of interfaces that were too different towards the content providers. While a certain
difference in the interfaces could be positive since it would make it less attractive for small content
providers to connect directly to CPA (with increasing administrative costs), too much difference could
lead to only one, strong aggregator controlling the content market, which should be avoided.

3 Not the actual name
We will now describe the process leading to agreement about each of the components of the CPA standard “package”. First, the common interface for service acquisition came as a result of the high cost of advertising and approaching only one fragment of the market. A common approach towards the consumers would increase the ease and reduced the cost of advertising and make it more straightforward for the users to acquire services. Already before the CPA, the network operators took the advantage of this approach by using the same acquisition procedures and basically providing the same services. Second, a common business model and revenue sharing model rendered possible the content service business, as well as strengthened the operators’ power towards the content providers. For example, whenever content providers have tried to negotiate revenue shares with the operators, the operators have acted as being tightly coordinated. The operators offer standardized and open contracts, and the contracts are open and available on the web for content providers. At the same time, this common approach has reduced the administrative burdens. Third, equivalent functionality, architecture and service level for content providers have lowered the threshold for content providers to connect to the CPA platforms and further enabled new service concepts. In particular, as new service concepts have emerged, the CPA platforms have changed from being mere extensions of the previous platforms that was put together rapidly and ad hoc, to well integrated, tested and documented platforms with proper queuing and fault handling mechanisms. Forth, and partly covered above, administration and use of rating classes and short numbers, has been important to enable a common interface for acquisition. Coordinating short numbers implies that whenever a content provider approaches one of the network operators to acquire a new short number, the network operator make a phone call to reserve this number also with his peers in the other operator. Fifth, guidelines for consumer protection have from day one been important to avoid negative attention. In general, the industry has managed to have a low profile. Such guidelines have only recently been formally agreed upon by the operators, primarily due to the industry growing larger and the attention from media as well as the national
Bearing in mind the limitations of the earlier attempts of the operators to offer content exclusively to own customers (or ‘walled garden’ approaches), there is consent in the Norwegian market that the CPA standard was crucial for this industry. While the initiatives behind introducing the standard to a large extent originated from outside the operators, the very shape of the standard was at the same time defined by the network operators on their own. For example, the revenue model has been a contagious matter between network operators and the rest of the industry. This tension is intensified by the lack of initiative and resources put into developing CPA further by the network operators. While the division of roles and responsibilities is seen as appropriate, this is not reflected in the distribution of burdens and benefits. Defining the shape of the CPA standard, the constellation of network operators have also created a monopoly situation in the sense that the revenue share models are non-negotiable and there are no alternative equivalent channels for content services. Attempts by external actors to implement competing ‘CPA platforms’ in the mobile networks have been turned down by the network operators.

To summarise, the developers and the promoters of CPA were operating with scarce resources but were equipped with the ability to pursue what they called a ‘non-telecommunication’ like approach. More particularly, they avoided the need for a strong and convincing ‘business case’, the costs of the usual grand marketing campaigns of the network operators, the need to cumbersomely change the billing system and they managed to postpone technical systematisation and documentation. The standardization as well as its implementation was carried out in a bottom-up fashion where a few enthusiasts, working for the operators, and a couple content providers, set up a pilot version of the infrastructure and a few pilot services using it. The successful demonstration of these attracted more content providers and other actors. As the use of the infrastructure expanded, it was polished and extended and the standard defining it worked out as described in the previous section (and more on this
Rather than a traditional telecommunication standardization model, i.e. a formal top-down process focusing on formal and detailed technical specifications, the standardization model was more driven by “rough consensus and running code” – i.e. in line with the slogan describing the Internet standardization approach. While the network operators implemented technical CPA platforms, content providers were similarly important in their persistent belief and pursuit for its realisation. In this process, aggregators found their role in providing support for smaller content providers where the standard did not suffice. In addition, and perhaps more important, they developed and introduced add-ons and extensions to the platform, enabling new services and service concepts. At least partially resulting from these circumstances, the cost of implementing and operating CPA platforms became marginal for the network operators compared to earlier and alternative approaches. The costs and further the risks involved are now primarily resting with the content providers.

5.4 The standardisation bodies

We will now turn to the organisation of the standardisation process: which actors were involved and what kind of ‘standardisation bodies’ they established to help coordinate the work. We use here the term ‘standardisation body’, but it is worth noting that none of those we will mention were of the traditional kind with formal rules and formally established working groups, etc.

The Norwegian mobile telecommunication market is relatively tidy and basically composed of two network operators and approx 20 mobile virtual network operators (MVNOs). In turnover, the operators have respectively 55 and 29 percent of the market. Related to CPA, the industry is much more complex and involves a range of different roles and actors as illustrated in Table 2 below. The main activities related to CPA involve approximately 50 different companies and 250 employees.

The role of aggregators is to collect content from a variety of content providers and provide it in the

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4 This picture is a bit different today with e.g. three network operators in Norway. But, this has not significantly changed the picture described here
market. Managing the relationships and interfaces with the network operators, aggregators decrease the time to market and leverage the up-front costs for small content providers (100.000 NOK per operator). Media windows are departments of media houses and TV-broadcasters which offer marketing space for content providers and aggregators. Application houses and integrators specialise in developing gateways to the network operators as well as new service concepts. Finally, the content providers are producing (from scratch or based on others’ content) and providing the content services.

<table>
<thead>
<tr>
<th>Type of actors</th>
<th>Number of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network operators</td>
<td>2</td>
</tr>
<tr>
<td>Aggregators (large)</td>
<td>5</td>
</tr>
<tr>
<td>Media windows</td>
<td>6</td>
</tr>
<tr>
<td>Application houses and integrators</td>
<td>14</td>
</tr>
<tr>
<td>Content providers</td>
<td>153</td>
</tr>
</tbody>
</table>

To coordinate between the different actors in the case of CPA, several bodies have developed over time. Coordination is primarily ongoing between the network operators and the content providers as well as between these groups.

The development and establishment of CPA did not involve any traditional standardization organisations. In one way, several activities were coordinated by the market. But institutional structures beyond the market did play important roles as most of the discussions were taking place through informal networks. This was possible because the number of people involved was low and people knew each other rather well. Relationships had developed through collaboration and because people moved around among the organisations. For example, several of those who initially developed CPA are now working for application houses and integrators as well as being managers of the aggregators. Another example is the one who initiated the development of CPA within one of the network operators, who did that explicitly based on experiences from working with a content provider and media window. This person did later become head of one of the application houses. The first version of the CPA was developed by a few people within the network operators after a few key people had agreed upon the
approach. On the one hand, they agreed to follow this approach because of extensive knowledge about the needs of the content providers due to own experiences in the content industry as well as inputs from pro-active and persistent content providers. On the other hand, they also knew that management would not allocate resources to do anything more technically sophisticated.

After the development of the first version of the platform, most standardisation work has been organised as ad hoc projects going across various organisations and types of actors. Most projects have been initiated by content providers that need new functionality. They have approached aggregators and discussed the detailed specifications of the new functions and how to implement them. And in most cases the aggregators have implemented and added to the ‘ends’ of the platform, i.e. the parts operated by the content providers themselves. But in some cases, the new functions have required extensions to the platforms operated by the network operators. This happened, for instance, when the service levels had to be improved to handle traffic peaks related to TV-shows such as “Big Brother” and “Idol” as well as the introduction of MMS services.

Most actors are represented in the organisation ‘Teleforum’. Within the framework of this organisation the actors have agreed upon a set of rules for consumer protection related to CPA, for instance what kind of content they should not allow, treatment of customers including dealing with customers complaints. A main motivation behind the way this forum works is the fact that all actors agreed early to act cautiously so that the public authorities did not see any need for more formal regulation of this sector. They believed that such formal regulation would make things more difficult and slow down its growth and development. The content providers have also established an organisation called ‘Innholdsnett’. Within this organisation they discuss various issues of shared interest. This includes discussions to help understand the market, the architecture of CPA and the possibilities within. Both ‘Teleforum’ and ‘Innholdsnett’ have thus played a role in informing the market about the CPA standard 5

5 A Norwegian word for ‘Content network’
5.5 The transfer of CPA to other countries

One of the Norwegian operators, Telenor, eventually found the CPA as a “best practice” towards addressing the mobile content market. And, from 2001 it launched attempts to establish the CPA standard in countries where the company had an affiliate. We will here describe this ‘transfer’ to Malaysia, Hungary and Ukraine.

5.5.1 DiGi in Malaysia

In 2001, Malaysia had 5 mobile operators, out of which the Telenor affiliate DiGi was the 3rd largest (in terms of subscribers). At the time, all operators were selling mobile content under their own brand.

In mid 2001, Telenor brought in one of their senior managers to be the new Marketing Director (MD) in DiGi. He had previously worked with CPA in Norway and knew it to be a good concept. In Sep 2001, with the support of the MD, two members of the Norwegian Telenor CPA team travelled to DiGi to describe the CPA system - including its success in terms of revenue generation. As a result, in Oct 2001, the DiGi MD initiated a small team made up of the managers from Product Development and Mobile VAS (Value Added Services). They were given the task of revamping DiGi’s mobile content business. Although they were aware of details of the CPA and they did incorporate ideas from it, they developed what they felt was relevant for DiGi in their local context. As work progressed and more people got involved, there was some debate on the basic idea of opening up the value chain to external parties by offering a revenue sharing model. The conventional idea of DiGi doing its mobile content business largely by itself still remained strong. But the MD championing the new ideas inspired by CPA, and had the support of the CEO (also a Telenor expatriate). The two DiGi managers could also show that some of the shortcomings and risks related to the current approach could be solved with a CPA standard. Those shortcomings included DiGi’s limited advertising and promotions budget for mobile content. In addition, DiGi were unable to work with content providers with content they knew could
generate revenue but weren’t sure if they wished to associate with the DiGi brand.

In the mean time, a Telenor Project Manager who had worked on the CPA in Norway arrived in Jan 2002 to assist with the CPA project. He knew the MD and that DiGi was on the move towards the CPA system. As his girlfriend was being sent to DiGi for a period, he contacted the MD to ask if there was an opportunity for him to work on the CPA project in DiGi. The MD decided to give him a six month contract. Although there was no specific requests from the DiGi’s CPA project to have this Project Manager work at DiGi, they supported the Marketing Director’s decision to do so. As one manager said:

‘We were actually quite happy to have somebody who had the right experience to come and assist us because at that time most of the stuff that we were talking about we were actually just basing on what they (the Telenor managers doing the first presentation) sent us, basically the presentations on how the market grew for CPA from present to Telenor’s value added services revenue and what not. We were pretty much working from that viewpoint but to have somebody who had been there and done that would make it a lot easier especially when talking to the other operators because this was a person who could give immediate feedback.’

The Telenor Project Manager worked closely with a team of local managers. The team worked out the functional specifications for the CPA platform and invited proposals/quotations from a number of software solution providers. The Project Manager provided knowledge of Telenor’s CPA platform in developing the functional specifications. He also got statistics on usage and queue handling from Norway. On the commercial side, the agreement for Content Providers was taken from Telenor. DiGi’s legal personnel adapted it for local laws and practices. At the same time, DiGi’s CEO brought up the CPA system and cooperation on short numbers at the monthly CEO meeting among mobile operators at the MCMC (Malaysian Communications and Multimedia Commission). This made it easier for DiGi to call for the first ‘CPA meeting’ with all the operators later that same month. Before the meeting took place, however, all the operators were invited for a meeting by one of the local television stations, TV3. The meeting consisted largely of a presentation by a Malaysian wireless technology company called Howtraffic. The previous year, at a conference in US the CEO of Howtraffic met John Strand from Strand Consulting who described the trends of the Scandinavian markets in general and the role of
SMS as a tool for interactive TV in particular. Howtraffic worked with TV3 to provide technical solutions for programs that required interaction with the viewers (e.g. voting). In particular, they were challenged by the lack of coordination among the operators. Presenting 5 different short numbers, and sometimes different prices, made TV-interactivity unnecessarily cumbersome. TV3 wanted to help and called for the meeting with the operators on behalf of Howtraffic.

The TV3/Howtraffic meeting added momentum to the meeting called by DiGi. DiGi presented the CPA system and its success in Norway, the advantage of this system to the mobile operators and content providers. TV3 and Howtraffic were presented as ‘a real life example’ showing how common short codes and standard charges would make advertisements clearer and easier for the TV station, content provider and users. The meeting ended with a plan to meet again where the other mobile operators would give their feedback or other proposals on what was discussed.

A second meeting was held in Feb 2002. Another operator, Maxis, presented their thoughts in the form of three possible systems. All three systems required cooperation on short numbers and prices. Two of the options placed one Operator or a 3rd part company in a controlling and coordinating role. The 3rd option which was the same as DiGi’s proposal placed all the Operators in the same non-controlling position. In this way there would be little or no overall control. Since none of the Operators really wanted to see any other Operator in a controlling position; they left that no or little control was the better option.

Despite opinions to the contrary, DiGi pushed for keeping the maximum value at RM 10⁶ and for the short numbers to be 4 digits (as it was in Norway). A discussion on email followed on the number of digits. One of the other Operators felt that 4 digits was too small as the first two digits was to indicate the Operator whereas DiGi felt that 4 digits would be much easier to remember. The other Operators supported 5 digits so DiGi gave up on the 4 digit position. Each operator would manage a number.

*The Malaysian currency RM (Ringgit Malaysia) equals to 0.21€*
series according to its prefix (Celcom (019) – 39xxx, DiGi (016) – 36xxx, Maxis (012) – 32xxx, Time
(017) – 37xxx and TMTouch (013) – 33xxx). The operators would let each other know which number
they had assigned to a Content Provider so that the CP could have that same number with all the
operators.

A 3rd meeting was held in April 2002, where the short code system was confirmed. Each operator would
decide independently on setup, access and maintenance fees and disclose these amounts among the
operators so that there would not be too large differences. Twenty-one tariff categories from RM 0.30 to
RM 10.00 were also finalized. The proposal to MCMC was sent in July 2002. The operator TMTouch
pulled out of the discussion at this stage, and was not one of the signatories in the MCMC proposal.
TMTouch however subsequently cooperated with the other operators on what was agreed.

Within two years the mobile content business was flourishing in Malaysia. And the transfer of the CPA to
Malaysia was found to be the most successful best practice transfer ever accomplished by Telenor
(Alphonse, 2007).

5.5.2 Pannon in Hungary

In 2002, the Hungarian Telenor subsidiary Pannon was the 2nd biggest out of three mobile operators.
During the 90ies, Pannon offered through some Content Providers various premium rate services using
IVR (Interactive Voice Response) – mostly services related to the sex industry. In the late 90ies Pannon
started selling logos and later ringtones through SMS. Pannon bought this content from external content
providers and re-sold them under the Pannon brand. Pannon did not consider this a business to be one
that could generate revenue - just useful for fairs and promotions. By 2000, the growth in person-to-
person SMS triggered a focus on SMS also as a delivery channel for premium rated services. Pannon's
Telenor expatriate CEO was knowledgeable of the success of CPA in Norway and saw its potential.
For Pannon, a big problem with premium rated IVR was fraud. With IVR, Pannon’s subscribers would be directed through inter-connect to fixed lines and then to the Content Providers. This involved a range of parties, limited control and higher costs. With SMS, however, the Content Provider would have a direct connection with Pannon’s message handling and billing platform, and accordingly come under a direct and more controllable relationship with Pannon.

Most of Pannon’s management – in the same manner as DiGi’s - was sceptical about allowing 3rd parties to run the content business. But, Pannon’s Telenor expatriate CEO saw the virtue of creating a cooperative environment among the mobile operators in order for the external Content Providers to thrive and drive this market. He convinced the other managers to support a decision to go for an “open garden” approach. At levels further down in the organization, the Telenor managers in-charge of CPA made presentations to the Pannon managers in-charge of mobile content to show the success of the CPA in markets like Norway and Malaysia.

At that time, the CEO’s of the Hungarian mobile operators met 2-3 times a year to discuss common issues. Pannon’s CEO used this forum to try to convince the largest operator Westel (a subsidiary of T-mobile) CEO to cooperate on opening the market. This involved following key aspects of the Norwegian CPA model. The Westel CEO was initially sceptical to the ideas, but started to move in this direction after some months.

In 2001, Telenor’s country office in Hungary started a company called Digitania to help Pannon develop the market for premium rate SMS. They used the technical platform and resources of another Telenor company (Telenor Link, Norway) that had provided the CPA platform for Telenor in Norway. And in 2001, Pannon was the first mobile operator to introduce premium rated SMS by third parties in Hungary. The third party Content Providers were made up by companies selling premium rate voice. Big Brother
was later screened by TV2 in Hungary and offered SMS voting, giving the Hungarian premium rate SMS market a boost.

Pannon’s premium rate SMS business model in 2001 was as follows. The Content Provider signed an agreement with Pannon. The CP has to buy the right to use an access number or a range of access numbers for a fee and pay a monthly maintenance fee. There was then a revenue share between the CP and Pannon on the selling price of the content. The revenue share percentage was negotiated individually and ranged between 50-60% for the CP. The CP could decide the price of the content from a range of pre-determined price classes, but one access number could only be used for a specific price.

As a result of the concern for fraud, Pannon initially decided that Premium rate SMS services could only be used based on a pre-paid scheme. Therefore, post-paid subscribers would first have to purchase pre-paid units before being able to use the services.

The access numbers for premium rate SMS services consists of 10 digits – primarily due to the requirements set by the regulatory authorities. The system originated from the access code number system for premium rate voice calls. The format and what they denote is given in the table below.

<table>
<thead>
<tr>
<th>Long distance</th>
<th>Premium rate</th>
<th>Operator code</th>
<th>Price code</th>
<th>Content provider code</th>
</tr>
</thead>
<tbody>
<tr>
<td>06</td>
<td>90</td>
<td>xx</td>
<td>X</td>
<td>xxx</td>
</tr>
</tbody>
</table>

The Long distance and Premium rate codes are fixed. The Operator codes are 62 for Pannon, 63 for the two other operators T-mobile and 67 for Vodafone. A combination of Operator code and the Price code identify a particular price. Therefore, Content Providers need different access number for different prices. The final three digits are the Content Provider Code.
There was no cooperation among the operators on access codes, and Westel argued that they wanted their subscribers to know that a particular service was coming from them by seeing the ‘3’ in the access number. Even when the operators were using premium rate SMS to collect donations for people affected by a big flood in Hungary, the operators could not agree on a common access number. Later, as a result of strong pressure from the Content Providers, the regulatory authorities allowed some 4 digit number series to be used as access codes for premium rate SMS services and the introduction of number portability, the operators started to coordinate short numbers.

Pannon attended the CPA workshop organised by Telenor in 2002 and met Telenor affiliates from Asia and Europe. Pannon’s practice of not allowing post-paid subscribers’ credit for premium rate SMS services was strongly questioned. This resulted in Pannon re-examining this policy and later in 2002 allowing post-paid customers a credit of 2000 HUF for premium rate SMS. This had a ‘good effect’ and in 2004 this was increased to 6000 HUF. In early 2003, Pannon also developed a more standard and transparent revenue share agreement with the Content Providers, based on the revenue share depending on volume generated.

5.5.3 Kyivstar in Ukraine

In 2002, Ukraine Telenor’s affiliate Kyivstar was the 2nd largest operator in a market with three main operators. UMC, the largest operator, was the first mobile operator in Ukraine to offer mobile premium rated content in 2002. The content comprised of logos, ring tones and news services which were either developed in-house or purchased from 2-3 content providers. The content was sold directly to the end-users and under the UMC brand. UMC used SMS as the means for billing the content. Kyivstar, also in 2002, started selling a limited number of logos and ringtones which they promoted on their website. The content was also either developed in-house or purchased from a content provider and sold by Kyivstar under their brand. The price was kept low and it was done for promotions. Kyivstar used IVR as the

\[7\] The Hungarian currency HUF (Hungarian Forint) equals to 0.004€
means for ordering and billing the content. The price rating was based on a premium rate for dedicated
phone nos.

As one of the first few Content Providers in Ukraine put it: “Before 2003, no open content market. All
operators did ‘something’ content based on their own. Kyivstar started the CPA politics in Feb 2003”.
This process started in 2002 when Telenor’s CPA manager made a presentation about the Norwegian
CPA System to managers in Kyivstar’s Product Development department. The Head of the PD
department, who was present in that meeting had heard about the success of the (mobile) content
business in Western Europe and was very interested:

“I was focused on content as a business. I had heard about the success of the content business (in
Western Europe) and believed in it. Telenor introduced the proper way to implement it.” and “The benefits
of the CPA system was that it was a success in Norway; would provide additional revenue from additional
services to the customers; and cost efficient way for Kyivstar to just provide the infrastructure and the
content providers do everything else.”
The Telenor CPA manager said of the meeting:

“There were doubts how it (the cooperation) was going to work with UMC but they liked the idea anyway
as it was a good way to manage the content business.”
The IT Department got involved as well. As the IT Manager said: “There was a huge presentation from
Telenor. We created a working group. What we can do? Didn’t have the feeling of pressure from
Telenor. A lot of presentations.” The Kyivstar IT Manager asked Telenor for technical specifications of
their CPA platform but Telenor did not have much technical documentation to send. The decision
however was always leaning towards the IT department doing it themselves. As the IT Manager said:

“It was considered a pilot project – new services and a new platform. The plan was to try and spend as
little as possible. “It was an unknown business at that time. Thought it would be a small business”.
The CPA platform was developed just for SMS and later they tried to connect (premium rate) voice services but it was hard to unify the two services as the process around IVR was too different. On the technical side there had never been any exchange of information with UMC. As the IT manager said:

"From technical level no relations to UMC or even other Telenor companies. Tried to discuss with Vimpelcom and Pannon but all had different solutions. Discussion was on content providers and services."

A new manager was hired by Kyivstar’s PD Head in Apr 2002 to develop and manage the CPA business in Kyivstar. He came from a smaller mobile operator in Ukraine and had worked with premium content using voice. On his 3rd day on the job he met with Telenor’s CPA manager who made another visit. The CPA concept and its success were once again presented. The PD Head had earlier described revenue sharing as “a questionable issue” as at that time in Kyivstar “there was no revenue sharing business with anyone”. He however said “I was in-charge of the roaming department as well and understood revenue share was a normal international way of doing business”.

A major concern was whether they would find companies that wanted to play the role of content providers. Kyivstar asked Telenor if they could pursue Norwegian content providers to start operations in Ukraine. The Norwegian Content Providers were however either not interested in the Ukrainian market or wanted very special terms. As the Telenor CPA manager said “When you invite content providers, they want a special deal”. The market was considered undeveloped and less attractive compared to other European markets.

The Head of the Product development department believed in the “synergy effects” of all the operators using the same access number and went several times to UMC to meet with people from their Product Development department. The negotiations with UMC went on for six months. The agreement with UMC had been to provide the content providers with a pool of numbers in the 7000 to 7500 range. However,
UMC gave out access codes, some with 4, 5 and 6 digits.

Kyivstar started the CPA system with 2 Content Providers and UMC with just 1. Kyivstar had clear standard agreements and did not discuss revenue terms with the CPs. The price model was adapted from Telenor. Kyivstar also sold the access numbers to the CPs, something Telenor didn't do. Kyivstar was being approached by more companies wanting to be Content Providers. As Kyivstar’s CPA Manager said:

“There were some good companies but some just asked a lot of questions and some came with strange ideas (for content and business arrangements)”

In Sep 2003, the revenue from IVR premium rate content increased dramatically by more than 20 times and by 40 times two months later (both compared to the figures in Mar 2003). This was attributed to new services like song dedication which worked only on IVR.

Final coordination with UMC on price and numbers only happened about towards the end of 2004, more than a year after CPA started. No coordination prior to that however had never created a serious problem. The Content Provider would approach either UMC or Kyivstar first and then ask for the same number from the other Operators.

By 2005 the Ukrainian mobile content industry had about 92 Content Providers with 5-6 new CPs and 15-16 new services every month.

5.5.4 From diffusion to development
This transfer process was not just about moving and modifying the Norwegian CPA to fit the context of the other countries. It was just as much about modifying the whole standard. This happened, first, by Telenor’s decision to make it a corporate standard that should be implemented and shared by all subsidiaries. When it was implemented it the other countries, it was also becoming (in varying degrees) a national standard in these countries which further implied that the CPA was becoming an international
standard although not a dominant one). And thorough this process the standard was not just diffusing, it
was also modified.

6 Discussion

6.1 The CPA standard's success in Norway

We will now discuss the success of the CPA as a standard. We will first discuss what made the
standardization process successful in the sense that a standard was defined and implemented in a
timely manner. Then, we will discuss specific features of the standard in itself that we see as important
for its success.

The first factor contributing the success of CPA we will highlight is the relatively small community of
individuals involved in the mobile content service business segment at the time the CPA emerged. It
was a community of mobile operators, content providers and supporting businesses that were known to
each other in the market. In Norway, individuals in these organizations knew each other very well, they
had been working for different companies and kinds of companies, and many of them had worked for
the operators. The members of this community had a shared understanding of how the different kinds of
actors were thinking and what needs they had. Shared ideas related to mobile services had been
developed, and in particular the idea that they should be implemented on top of an open platform.

A second important factor is the fact that the largest operator Telenor decided not to invest into this
area. If they had done so, we believe that would have preferred a closed proprietary platform like i-Mode
and in line with what most operators making investments in this area have done. This also implies that
Telenor participated in this domain and in the community as a small unit including, by and large, just a
few individuals and not as the big corporation it really is. This means that Telenor was just an ordinary
member of the community of small companies.
The successful development and implementation of the CPA standard also depended on the approach followed which can be characterized as bottom-up and experimental or as evolutionary and learning oriented. First, the simplest possible pilot version was developed and tried out. The platform was then extended and improved as new needs emerged. This simple platform made it easy to try out new services which is exactly what is required in an environment, or emerging market, like the one of mobile content services. This kind of bottom-up and experimental standardization also requires specific organizational structures. The organizational structures need to be simple, flexible and dynamic. And the informal and project oriented – or ad hoc – organization of the activities fit those requirements well.

The success of the CPA standard in Norway was also dependent on what we see as its key (partly overlapping) characteristics: openness, completeness, simplicity, informality, flexibility, and robustness. We will here briefly discuss each of these points and how they are related to the standard’s fluid character.

The standard was based on an open platform. Not only can anybody connect to the platform, but they can also extend it by adding new functions at the ends and thus extend the existing architecture without changing what exists. Thus the architecture is also open. At the same time, the standardization process has been open for those with the initiative to participate.

The standard was complete in the sense that it covered all aspects that the actors needed to agree on. It included the mere technical issues such as the overall functionality and the service level of the network operators’ platforms. But just as important, it was a mixture that also included the business model, aspects related to marketing, use of short numbers, rating classes, etc. And implicitly, the standard also defined roles for the various actors, such as the aggregators and integrators.

Completeness is commonly identified as a key requirement of a standard. Completeness then refers to the technical specifications of the standard. Please note that the CPA was complete in a different sense, and that, as will be discussed in the next paragraph, the in-completeness of its specification is seen as a success criterion.
The standard was also very simple. Only the minimum of functionality was included. This means that it was easy to understand and to use or implement, and it was cheap and easy to provide new services based on it. Further, the standards simplicity made it easy to change when new requirements were revealed.

Another crucial aspect of the standard is the fact that it is informal, which means that almost none of its features are specified formally or in detail. What was specified was the platforms overall functionality. This characteristic is the opposite of what is commonly seen as a crucial requirement of a standard which says that its technical specifications should be complete so that if two independent implementations of a standard are both correct, they should interoperate perfectly. The reality, however, is different. No matter how detailed a standard is specified, there are always holes in it that those implementing the standard need to agree upon. In the CPA case, this informal character was not seen as an anomaly, but as an important feature that was taken advantage of. The problems a technically complete standard is supposed to solve are in the CPA case solved by organisational means rather than technological ones in the sense that unified interfaces to the operators are provided by the integrators. This has been an advantage because:

- Specifying a technically complete standard would require lots of hard work which again would demand resources which were not present.
- This work would be organisationally complex because of the heterogeneity of the actors’ involved (small and big ones, new and old, rich and poor, coming for various business sectors, etc.), and in particular the competition and rivalry between the network operators, would make it hard for them to agree upon a detailed specification.
- A more formally specified standard would normally be expected to solve future needs. What the future needs are in this area is incredibly hard to predict. Different actors would have very different ideas about that, and accordingly they would have very different ideas about what the requirements for a standard should be, and accordingly how to meet them.
- A more detailed standard would be more complex and expensive to implement not even considering about changing it. Accordingly it would not enable innovation in the same way as a more informal one.

The open, simple and informal character of the CPA standard made the standard flexible. Flexibility is of
utmost importance in an unpredictable and rapidly changing environment like that of mobile services. This flexibility also made the standard robust. It is robust in the sense that when new requirements emerge, the overall infrastructure can be accommodated to them in several ways. New functionality can be provided by enhancing the basic platform by the network operators or be added to the 'middleware' provided by the integrators and aggregators or it may be implemented by the content providers. It is thus also robust in the sense that modifications can be done by different actors. This means that the modifications and the work can be done where and by those best suited and most committed. The network operators are hesitant to reveal details about, discuss and indeed coordinate their internal systems such as the billing systems. By choosing a standardised service level as well as normalising the standards as far as possible, the network operators (with help from integrators and aggregators) have avoided engaging in such discussions and the potential problems associated with them. But, perhaps most important, this makes the standard robust in the sense that no single actor can block changes that do not fit their (monopoly) interests or if they do not have the resources. Thus, the standard is robust in the sense that every actor becomes to a certain degree superfluous, or at least replaceable.

6.2 The transfer and internationalization processes

The CPA standard was successfully implemented in all three cases presented above. And the CPA also turned out to be a success (to varying degree though) in these countries. However, the speed of the transfer process varied. Seeing the Malaysian case as a case in point, we can also conclude that the CPA was more successful the more fully it was implemented as a common national standard.

During the process through which CPA was established as a national standard its characteristics discussed above were all crucial. In all cases the CPA standard emerged through an evolutionary process where it was growing in terms of elements included in the standard as the scopes of agreements expanded. Through these processes the CPA also turned out to be flexible and robust in
allowing for adaptation to various local specificities (like regulatory frameworks, installed bases of
services based on IVR technology, fraud problems, etc.). The standard also stayed fluid in the sense of
being informal. The only more formal specification was produced in Malaysia.

The standardization process consisted in all cases of two major steps: first convincing the affiliate to go
for an “open garden” approach, then the other operators that they should do the same and that they
should collaborate about access numbers, price structure, etc. Telenor expatriates played important
roles in all cases. And the project members involved in Malaysia did actively contribute to making that
transfer the most successful case. Content providers – or lack of - were also important. Content
providers have a clear interest in open standards and platforms. Howtraffic, for example, did indeed play
a crucial role in the processes leading to consensus about CPA in Malaysia. And in the other countries
content providers put increasingly more pressure on the operators as they were growing in numbers and
the positive experience with the CPA increased. An important aspect of the standardization processes
was also the fact that the CPA contributed to its own success by proving itself superior to other
standards for selling mobile content. It gained acceptance and was established not all at once, but in
stages where one was building on what already existed in a modest fashion. Nurturing the installed
base of technical components, social relationships as well as external actors was a vital process.

6.3 CPA as fluid standard
de Laet and Mol (2000) defined a fluid as having six characteristics: no clear boundaries; multiple
identities; mixtures; robustness; continuity; and dissolving ownership. We will discuss each of them
briefly in the relation to the CPA standard. This definition of a fluid matches well the characteristics of
the CPA highlighted in the previous section, and accordingly the success of the CPA standard can
largely be explained by its fluid character. But the success of the standard also depend on the fluid
character of the “CPA standardization body.”
Seeing a standard as a fluid is almost the exact opposite of the traditional and still dominant view on standards in general and within telecommunication in particular (and the one shared by all standardization bodies) where a standard is seen as an “immutable mobile” consisting of a set of documents giving an exact and consistent definition of a context free piece of (more or less) pure technology.

We will start with the last of the six characteristics of fluids: dissolving ownership. Dissolving ownership allows for different actors to take ownership, make a contribution and then release the ownership. It is in fact how open standards have been created, developed and maintained. Open standards are owned collectively by all its developers and users with no one singular owner. Yet there have been individuals or organizations that took ownership, made it their own, developed the standard further and then released it back so that others in the collective could also make further developments. It is in fact that taking and releasing of ownership which created the movement that brought the CPA standard from one country to another. Telenor took the initial ownership in taking it to the other markets but was also ready to release ownership allowing first their subsidiary and then the other mobile operators to adapt it to the local context and make it their own. Numerous content providers took ownership individually in terms of selecting, developing and marketing content and in so doing they collectively drove the business and contributed to the CPA’s success.

Lack of clear boundaries between what has been inside and what has been outside the standard is closely related to the standard’s open character. What content should be sold was undecided in the beginning and is continuously being decided even today. In Ukraine, the SMS delivery channel turned out to be only one option as IVR turned out to be more popular. Allowing the CPA standard to re-form so to speak in different contexts aided the transfer processes. It was in a way up to the context dictated by what had existed before, the business environment, operators and content providers that decided
which parts of the original Norwegian model should be adopted or omitted. The ability to do that and the
fact that the standard could still exist as a standard and also accommodate to constraints in the context
contributed to its transferability. The lack of boundaries has also made it easy to extend the standard
when new requirements have emerged throughout innovation processes.

The openness means that there were no clear boundaries between the inside and the outside of the
standard and the group of participants in the standardization process. Further, there were no clear
distinction between central and peripheral actors related to initiatives, innovativeness, risk-willingness
and investments. This characteristic is a crucial precondition for enabling innovative activities related to
content services.

The CPA has also multiple identities as different aspects have been of prime importance for various
groups of actors. For instance, for some it has been a business model and a technical architecture for
others. What aided in terms of its internationalization was that it carried the identity of being a success
story from Norway that some of the other markets wanted to emulate. In Hungary, the identity that the
CPA could be a source of fraudulent misuse subjected it to additional requirements from the operators.
It is thus important to be aware of the more important identities that develop and to address them either
by accommodating them or trying to overcome them which was also done later in Hungary. The fact
however that a standard can accommodate different identities adds to its robustness in terms of
satisfying more owners and encompassing different boundaries. The fact that the CPA standard can
mean different things to different actors secures its usability across multiple actors and situations.

The mixture that composes the CPA consists of technical platforms, revenue models, mobile operators,
the GSM network, content providers, mobile content, SMS, etc. Along with the boundaries, it is a
mixture that is continuously composed and re-composed with different parts having different significance
to different groups and over time. This also contributes to its robustness.

Continuity has also an important aspect allowing the standard to be moved over and still be a part of what existed previously. There were no sounds of loud revolutions as the CPA standard was implemented in the different markets. Instead there was the flow of continuity and connectedness with related objects, time and space. That continuity also implied a connection with and a building upon existing installed bases.

Two of the characteristics of the CPA standard we identified as important for its success do not relate equally directly to the definition of fluid: CPA’s simplicity and the fact that it builds on installed base. But indirectly they do because they both contribute importantly to the CPA’s flexibility, and accordingly to its robustness and continuity.

We also believe that the fluid character of the organizing of the standardization effort contributed to its success. In one way, the organizing of an effort aiming at the development of an open standard has to be fluid by definition in the sense that anybody is free to participate, i.e. there are no clear boundaries between those that can participate and those that cannot. But in this case, the organizing was also fluid in the sense that there was no clear structure. Informal projects and meetings were organized as needs emerged. This contributed to the flexibility and robustness of the effort.

Should all standards be fluid? No, we do not think so. The fluid character of standards are of particular importance in domains when, for instance, a larger numbers of actors of different kinds are involved; things are rapidly changing; and technology is closely linked to user practices or needs. In such domains there is a large uncertainty about user needs and preferences and spaces for experimentation and innovation. Mobile content services is one such domain. Information infrastructures, including their
standards, for health care is another (Hanseth et al. 2006, Braa et al. 2007). Of the factors mentioned, uncertainty about user needs and preferences is, may be, the most significant. Other parts of telecommunications standardization, for instance the development of standards for interoperability across different messaging services (e-mail, SMS, chat- systems, etc.) of the kind under development by the Open Mobile Alliance (OMA) is an example where seeing standards as “immutable mobiles” still make sense.

6.4 A "common core"?

Having emphasized the fluid and dynamic character of the CPA standard one may ask: what is the CPA standard really? Does it contain a core which is shared by all its implementations and which is the “real” CPA standard? There is something which seems to be common for all – but not that much: the business model and at a rather abstract level we can see that the overall idea of the CPA, its architecture and functionality seem to be common. On the other hand, none of these are specified in official documents. So they are all subject to how individuals’ see them – which of course will be different. But we will still insist that it makes sense to say that the different implementations of the CPA are the same in spite of the fact that they are different as they are distributed across time and space and accordingly that they all are implementations of the same CPA standard. Sameness is here defined according to Ludwig Wittgenstein’s (1958) concept of “family resemblance.” Wittgenstein arrives at this concept after discussing what instances of the same concept have in common which makes them “the same.”

"Consider for example the proceedings that we call “games.” I mean board-games, card-games, ball-games, Olympic games, and so on. What is common to them all? – Don’t say: "There must be something common, or they would not be called ‘games’" – but look and see whether there is something common to all. For if you look at them you will not see something that is common to all, but similarities, relationships, and a whole series of them at that. ... we see a complicate network of similarities overlapping and criss-crossing: sometimes overall similarities sometimes similarities in detail. ... I can think of no better expression to characterize these similarities than “family resemblances.”" (ibid., para. 66-67.)

This kind of similarities is exactly what the different CPA implementations have in common and which makes them" the same."
6.5 Beyond fluids?

The discussion of “immutable” and “mutable mobiles” is a part of “the Rise of Objects in the Study of Organizations” (Blackler and Engeström, 2005) and the research on the role of objects in “socio-material practices” (Suchman 2007). We see standards as important objects in modern life and think that more research on their “nature” should produce significant contributions to this stream of research. The aim of this research reported in this paper, however, has been to make a contribution to the more narrow and specific discussions on standards within IS and related communities. But we will, however, offer a few reflections on the first theme.

We have pointed to the fact that standardization communities see standards as “immutable objects.” At the same time, a key feature of standards is their rigidity and lack of flexibility as they diffuse, i.e. implemented into technologies which are widely adopted. Their rigidity originates partly from the embedded-ness into technologies and material objects, but also from their institutionalization and taken-for-grantedness. What is needed in the domain of standardization, then, is to move beyond pointing out that some objects are immutable while others are mutable. If the argument of this paper is valid, i.e. that we need fluid standards in certain domains, we need a richer concept of fluids which helps us comparing objects and discuss whether one (standard) is more or less fluid than another, what makes an object fluid or not, etc. And of particular relevance to the technology analysed in this paper, we need to know how a standard gets transformed from mutable to immutable as it diffuses and how to avoid that to happen.

In the case reported here, the CPA standard has been maintained fluid. One simple reason for this is the fact that the attitudes of those initiated the intial establishment have diffused along with the standard. I.e. all new actors being involved has had a pragmatic approach where keeping things simple has been at the centre. To our knowledge, nobody has suggested that a traditional standardization approach
should be adopted. The traditional arguments for defining compatibility standards are as valid in this
case as in any other. If one started drifting towards such an approach, the complexity of the technology
as well as the organizational structure would most likely start growing, and such increased complexity
would produce a more rigid standard.

7 Conclusion

Based on describing the condition in which the Norwegian CPA standard emerged, this paper has
attempted to bring new insights into the requirements for standards and the process in which standards
emerge in the area of mobile content services. While we cannot give complete answers to all questions
posed, we argue that our case gives solid evidence in support of the assumption that standards are
important in this area in the same way as in other areas of telecommunications. However, this study
shows that in order to be successful, such a standard ought to contain more than specifications of
technical interfaces. We need a fluid standard, or a “mutable mobile” containing a variety of components
like business models, the structure of the business sector, short numbers, rating classes and service
levels, etc. In addition, such a fluid standard needs to have certain characteristics: It needs to be based
on an open or end-to-end like (i.e. extensible, scalable) architecture; complete in the sense that it
covers all aspects that the actors need agreement about; simple so that it easy to understand and to
use or implement, such that it is cheap and easy to provide new services based on it, and that it is easy
to change when new requirements are uncovered; informal in the sense that almost none of its features
are specified formally or in detail; flexible and robust in the sense that when new requirements emerge,
the overall infrastructure can be accommodated to them in several ways.

In a turbulent and unpredictable environment due to emerging technologies and new organisational
relationships, the organisation of the standardisation work must fulfil basically the same requirements. It
needs to be flexible, lean and simple, i.e. informal and based on ad hoc projects rather than formal rules,
structures and projects.
What we have argued here is that while standards are increasing in number and importance related to ICT, what we need is not necessarily more of the same. While standards as formal technical specifications will continue to play important roles, the current pace of innovation and the nature of actors involved in standardisation require something else. In this paper, we have showed how the CPA standard successfully adapted to this novel situation, and argued how the fluid character of the standard led to its success.

The fluid discussion contributes to our understanding of successful standard in a number of ways. First, in seeing it through dissolving ownership, we see how in the case of Malaysia, the standard was accepted more widely through the taking and releasing of ownership by the different operators and content providers. Second and related to this is the concept of identity. Even if ownership as in the case of the CPA standard is more in terms of making a contribution and then allowing other to make contributions; the identity the standard carries can have a significant impact on its fluidity and success. In Hungary, it was the identity of something that could be put to fraudulent use. Third, fluidity as unclear boundaries requires it to incorporate things that were not in the original model. The turning point in Ukraine came when the IVR channel was also included in the CPA standard, something which was not relevant in the other countries.

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