Abstract
This paper is based on the fact that information and digiware are not the only intangible goods which will be important in E-Commerce in the near future. Besides them there are other kinds of intangible goods which can be ‘sold’ by E-Commerce - or rather E-Government: incorporeal chattels. This paper will focus on Intellectual Properties such as patents or trademarks which are the privileges given by a government to use a certain knowledge, information or idea or a certain constellation of letters exclusively.
The first part of the paper will introduce the fundamentals of Intellectual Properties. Afterwards the paper will show different aspects of the trade of Intellectual Property using electronic media. Starting from a trademark research, the paper creates in a first step a generic reference process to trade information about Intellectual Property. In a second step the differences to the trade of incorporeal chattels will be focussed on.
In the third part the paper will present the project MIPEX (Message Based Intellectual Property Exchange), an initiative of several Trademark Offices all around Europe to create an E-Commerce solution for Intellectual Property in Europe. The Swiss Trademark Office - the Swiss Federal Institute of Intellectual Property - plays an important role in the MIPEX-Project as the responsible Office for the Trademark Filing.

1. Introduction
Most people think that information and intangible goods can be seen as synonyms. In this paper we will show that there are other kinds of important intangible goods: the right given by government to act in a specific way. Many of these rights exist independent of the circumstances of a person as for example the right to live. For other rights it must be proven that vital interests exist as for example the right to pass the neighbours reality to get to a house.
In this paper we will focus on the right given by the government to use an information exclusively. We call this kind of rights Intellectual Properties (IP). IP is the superordinate concept for a lot of specific rights a person can own. One part of IP is the copyright, e.g. on a written book or melody. Another part of IP consists of the industrial legal protection we are especially interested in for this paper. Industrial legal protection is also a superordinate concept for three spheres of IP. Firstly it deals with the right to use an invention in a special way written down in a patent. Secondly it consists of the right for a design. And thirdly it concerns labels. This can be a trademark or a company name. Although there are different legal systems in other countries, the base remains more or less the same. Some other very special rights are beyond the scope of this paper.

2. Trading Intellectual Property
2.1. Intellectual Property versus tangible assets
It is very easy to find out who owns tangible goods – at least theoretically. Who has an object at present is the possessor. And the person to whom object in reality belongs is the owner. In most cases this will be the same person. However when the owner is borrowing an object suddenly two different persons appear as possessor and owner. Normally only the owner has the right to decide
what happens with his property – making money with it for example.

With reference to intangible goods it becomes quite difficult to decide who is owner and who is just possessor. Everybody can possess an information, even without the approval of the owner. And how will an owner make money with his knowledge if everybody can imitate it?

Therefore governments founded several offices called Trademark Offices or Patent Offices and established several laws concerning the protection of IP. The target was:
- To create ownership of inventions and therewith a protection of the inventor and his ideas.
- To have a possibility to price and to trade IP
- To create a balance between public and private interests

Therefore the IP Offices have to examine whether an idea constitutes new knowledge and if this new knowledge fulfills the conditions to be protected by law. Not every idea, knowledge or information can be an Intellectual Property. To be an IP a governmental office must accept it and protect it by law.

2.2. Negotiable components of Intellectual Properties

There are several components of IP which can be sold, most of them only by the owner, but some can also be traded by everyone or only by the government.

First of all there are the products created with the knowledge of a patent, or objects with a protected design or labelled with a trademark: in most cases this will concern tangible goods because algorithms and “instructions to the human mind” cannot be patented in many countries.

Another possibility is to sell the right to use the knowledge. Then the owner of the IP will receive royalties.

And in the end the owner of an IP can even go a step further. Instead of just selling the right to use an IP he can sell the IP as a whole. In that case he will not get royalties but a one-time amount instead. And he will lose the legal protection to the new owner of the IP.

These parts of an IP can only be sold by the owner. Nevertheless there are other components which everyone can trade: information about the IP. An Intellectual Property or information about it are not secret. When an application is accepted the knowledge written in the application will become public. And everyone who has this information can sell it. This gets especially interesting when an IP comes to an end and the competitors want to prepare their own products. Or when a competitor wants to know the name of the holder of an IP in order to make him an offer to buy it. There are several enterprises which are doing business with collecting such information and selling them. The IPI is one of them.

However there is one thing that has to be sold before all the other components can be traded: the acceptance of an idea as an Intellectual Property. However there are a few differences to the aspects we discussed before:
- Only a government (as the representative of the society) can be a “seller” of legal protection.
- The good “legal protection” is created during the process.
- The relationship is not governed by a normal contract, but by the desire to create a decree. Therefore we leave the field of civil law.
- The payment does not follow normal rules, but is a fee.

2.3. E-Government and E-Commerce

The Swiss Federal Institute of Intellectual Property (IPI) plays a double-faceted role in the whole process:

On one hand it is a representative of the Swiss Government. The Federal Law of the Swiss Federal Institute of Intellectual Property (IGEG) describes the IPI as an institution of the public law [1]. In this role the IPI has to fulfill orders which cannot be undertaken by private institutions as for example the handling of the different registers. Another task given by public law is the verification and acceptance or non-acceptance of applications. An accepted application represents the right of exclusivity in a certain case. This right can be enforced by governmental help, which therefore makes it impossible for a private organisation to fulfill this task.

On the other hand it deals with information on the basis of civil law. The legislation defines that the IPI is managed by economical aspects [2], or in other words, it has to be able to exist without receiving any taxes. Therefore the law specifies that the IPI has to render services based on civil law [3], as for example selling information about existing patents to interested customers.

![E-Government and E-Commerce](image-url)
These two totally different positions of the IPI bring a blending of E-Commerce and E-Government, depending on whether the IPI acts as a representative of the government or as an institution of civil law.

2.4. Information Versus Incorporeal Chattels

The IPI trades with two sorts of intangible goods: information about existing Intellectual Properties and the acceptance of an idea as an Intellectual Property, or in other words, the right to use a piece of knowledge or idea as a monopoly. We will call this acceptance an Incorporeal Chattel.

These two sorts of intangible goods are characterised by quite important differences, which starts with the contract parties. While an information can be sold by everyone who owns it, a right concerning governmental protection can only be granted by a governmental representative. Moreover the difference concerns also the contract party of the buyer. While an information about an IP can be bought by everyone who is willing to pay for it, the Incorporeal Chattel can only be given to the inventor.

The second difference is the fact that an information about an IP can be copied without any problems and be given to everyone who wants it. Once an information exists, it can be reproduced without any appreciable restrictions. However the IP itself as a monopoly can only be created once. Of course afterwards the owner of the IP can resell it to interested enterprises, but the IP Office cannot create the same IP a second time.

3. Reference Process

This chapter will create a generic reference process of trading intangible goods. First we will discuss the trading of information about IP and secondly the trading of incorporeal chattels.

3.1. Trading Information

The basis on which on information can be sold is a sales contract of civil law. A distinction must be made by basic information about the laws, ordinances and other existing rights where knowledge by all parties is assumed and therefore the government has the duty to provide basic information to the public.

In order to create a generic reference process, we imagine that a company wants to find out if there is a certain trademark. The reason why we focus on trademarks instead of patents or designs, is because the case study in Chapter 4 describes an existing project concerning electronic trademark applications.

The whole process will be fulfilled in an electronic way. To be able to buy the information the company wants to set up a sales contract on the relevant information. A sales contract needs at least two contracting parties. Therefore the company will search on the Internet for a possible information supplier. This does not necessarily have to be the Trademark Office. Maybe there is a trademark lawyer who offers the information as an intermediate service. Or perhaps there is an enterprise which manages its own trademark register based on the publications of the Trademark Office.

In a first step the company will have a look at the different advertisements on the internet. During the phase of contract preparation the different invitations to treat will be checked and decided upon which enterprise will be the contract partner. Therefore the company answers to the relevant advertisement, which is what the jurisprudence classifies as an offer. The offer itself leads the process into the phase of negotiating. Perhaps the company will ask for a discount in price if they make a second trademark search. If a potential contract partner is willing to deliver the relevant information, we call this an exchange of corresponding declarations of intention. As a result of this a sales contract is created. To fulfill the contract, the company has to pay for the information it receives. Maybe there is still an exchange of receipts in order to have a possibility to prove that the contract was fulfilled. And this is where our sample process ends.

Facing it from a legal point of view, the whole process described above can be divided into three different phases: (1) Contract Preparation, (2) Contract Negotiation and (3) Contract Fulfillment. We also have several documents where the current state of the intentions is written down: (1) Invitation to treat, (2) Offer, (3) Contract and (4) Receipt. Or in other words, there are dynamic aspects - the phases - and static aspects - the documents - in the same process.

Of course in reality it is not that easy as the above model may suggests. Normally the customer will find more than one Invitation to Treat. After having selected his possible contract party by placing an offer, it is possible that several counter-offers will follow. It is even conceivable that in the end more than one contract will be established. Only the number of receipts can be calculated. They are dependent on the number of exchange of goods. In our case this would mean that two receipts will occur: one for the delivery of the information and one for the payment of the fee. Also the dynamic elements - the phases - are more complex than described in the above reference process. The process is not a one-way road. It can be ended in the preparation phase as well as in the negotiation phase. Only during the fulfillment phase there is no way to break down the process without paying amends. It is also possible that one contract party goes back to the preparation phase if it does not find an
acceptable offer during the negotiation phase. This will lead us to a dynamic contract process [4].

![Dynamic contract process](image)

**Figure 3: Dynamic contract process**

A sales contract needs at least two contract parties: a buyer and a seller. In most cases this constellation is sufficient. We will try to include these two roles in the model introduced above. Regarding the whole process from a legal point of view we will find, that the process can be divided in seven process steps.

<table>
<thead>
<tr>
<th>Process Step</th>
<th>Seller Preparation</th>
<th>Seller Negotiation</th>
<th>Seller Fulfillment</th>
<th>Buyer Preparation</th>
<th>Buyer Negotiation</th>
<th>Buyer Fulfillment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I Invitation to Treat</td>
<td>C Contract</td>
<td></td>
<td>O Offer</td>
<td>D Delivery</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>A Accept</td>
<td>R Receipt</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 4: Simple reference process [5]**

The Swiss Contract Law is mainly based on trading tangible goods in a common way. Nevertheless these legal maxims are also working for trading intangible goods in Electronic Media. A new way of doing business does not justify a new judgement of the legal aspects. However there are a few points at which we have to look a little bit closer.

**Process step 1: Invitation to Treat.** A sales process starts either with an invitation to treat or with an offer. An offer means the expression of the will to set up a contract. If another contract party accepts the offer, the contract is established. The invitation to treat is the weaker form of an offer. It is only the expression of the interests to set up a contract. An Invitation cannot be answered with an acceptance but must be answered with an offer of the second contract party. This offer now must be accepted by the first party to establish a contract. The important difference between an offer and an invitation is the fact that a contract party is bound to an offer while it can deny its invitation at any time.

Jurisprudence in Switzerland tends to see advertisements in electronic media as invitations to treat. Asking for the Information or the product by the customer would be the offer which has to be accepted by the seller by delivering the product. We think this view is too much simplified. Information can be reproduced without any problems at any time. So the vendor never risks to run out of stock. There is no reason anymore to protect the seller. Nevertheless we will start the process with the invitation to treat according to the jurisdiction.

**Process step 2: Perception of the invitation to treat.** Process step 2 represents the perception of the invitation to treat by a potential contract party. If no interest should be shown the process is aborted here. In the case of selling intangible goods by the World Wide Web this step means the phase where a customer visits the homepage and reads the invitation to treat.

**Process step 3: Offer.** At this stage the potential customer wants to buy the offered information. Therefore he generates an offer. In the World Wide Web this happens mainly by filling out an electronic form and submitting it to the seller.

**Process step 4: Perception of the offer.** Step 4 means the transmission of the offer by the buyer and perception of the received offer by the seller. This step is the border between the phase of contract preparation and the phase of contract negotiation. During this action the offer changes from an existing will to an expressed and perceived will. As a result the offerer is bound to his expressed will.

**Process step 5: Acceptance of the offer.** Step 5 marks the acceptance of the valid offer by the potential contracting party. As a result this offer turns to a valid contract.

However besides an acceptance the contract party has other ways to react. Probably it wants to generate a counter offer or even does not want to react to the offer. This would either abort the process or going back to an earlier step.

**Process step 6: Contract.** The acceptance of an offer turns this special offer into a valid contract. This point marks at the same time the transition from the negotiation phase to the phase of the contract fulfillment.

**Process step 7: Delivery and receipts.** Process step 7 marks the exchange of the agreed performances. The obligation expires by the correct fulfillment of the contract and the entire transaction process is terminated. Both parties fulfilled their obligations. If necessary receipts are exchanged.

### 3.2. Trading Incorporeal Chattels

As we have seen trading of Incorporeal Chattels can also be regarded as a contract. So at least at the base the process remains the same. It also is accounting for three phases and the transition between them is always made by a document. Nevertheless the process needs quite a lot of...
modifications. Most obvious is the new wording, but it deals with much more decisive changes.

This process starts with a phase called filing. As far as the collecting of information is concerned, we talk of a contract of civil law and the process described in the chapter above will take place. When the process of trading incorporeal chattels starts, all necessary information must already be available. The process itself begins with an application, a request to register a trademark which is transmitted to the Trademark Office where it is filed and a notification will be sent to the applicant.

The phase of filing is followed by the examination. During this phase the Trademark Office will check if the application fulfills all legal requirements to be registered as a trademark. Amendments and changes are likely to occur. In some cases the filing date might change. The Office and the applicant or its representative negotiate the exact wording mainly of the good and service classes. If the request does not fail, the trademark will be registered in the public Trademark Register of the Trademark Office. In the process of trading information the second phase is called contract negotiation. However during the registration of a trademark, there is not much space for negotiation. This has mainly two reasons: (1) The product of registration of a trademark is exactly described in the law. Also fixed by law are the fees to be paid. (2) The Trademark Office has a monopoly. In this paper we will not discuss the several possibilities of using the Trademark Office of another country according to several international contracts, which could be used in some cases.

The last phase is the publication. In the process of trading information we called it contract fulfillment. The difference is that in the new process only the Trademark Office has to fulfill its part of the contract. The applicant had to pay the fee together with the application, so he fulfilled his obligation. We have to mention that the fees must be paid whether the trade mark is granted or not. The product the Trademark Office has to deliver in the last phase, is a publication of the registration together with the certification to the applicant. If the Trademark Office rejects the application the contract is already fulfilled at the end of the examination phase because the applicant does not pay his fee only for the registration but also for the examination.

Regarding the documents we can see that in the new process every phase ends with only one document. This means that every application is answered with one notification, one registration and one certification (this does not cover international registration). None of these documents can be compared with the documents which are issued during the process of trading information. There is neither an invitation to treat nor an offer. This is because the application as a request must always be accepted by the Trademark Office if it does contain some minimal information, which is really basic (Trademark, Applicant, Good and Service classes).

![Figure 5: Dynamic decree process](image_url)

In this sense the application can be seen as an offer together with an acceptance. The Trademark Office has to act when the applicant demands it. Under these circumstances the notification is not the acceptance, but only the donation of a filing date, which is important for the priorities and periods.

The registration of the trademark however is very important. After a trademark has been recorded in the register the protection of the brand comes into effect. This is one of the important parts the Trademark Office has to do to fulfill the contract. The registration is a special kind of document. It is not a letter sent to the applicant as the other documents. It is a record in a public register.

Afterwards the new registration has to be published in an official gazette and the applicant will receive a certification of the registration. Although this certification is demanded by law and constitutes the official and formal end of the process, it would not be really necessary. The IP right was created with the registration of the trademark.

The announcement happens in two ways: (1) with the record in the public register and (2) with the publishing in the official gazette. Nevertheless a certification is produced. Perhaps the easiest way to accept this fact is to consider it as a kind of tradition which would need a change of legislation to be abolished.

Regarding the process steps we will find that the basis can be used for the majority of all requests of citizens to the administration. The scheme is often the same: a request arrives at the administration and leads to an action. In most cases this fact is notified to the applicant. Afterwards there is an examination of the request with a decision. This is followed by an action. The decision and the action are always at least communicated to the applicant, and when necessary to the public.

**Process step 1: Application.** In this process step the applicant creates a Trademark application. Together with the application there must be a fee paid. This amount is independent of the success of an application.

**Process step 2: Perception of the application.** Process step 2 represents the perception of the application by the Trademark Office. Every application which can be
regarded as a request has to lead to an action by the
Trademark Office. There are only few reasons to reject a
request, so we will not discuss those rare occasions.

<table>
<thead>
<tr>
<th>Process Step</th>
<th>Filing</th>
<th>Examination</th>
<th>Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicant</td>
<td>A</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>Trademark Office</td>
<td>H</td>
<td>N</td>
<td>F</td>
</tr>
<tr>
<td>Public</td>
<td>R</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

A Application    C Certification
N Notification   D Delivery
R Registration   R Receipt

Figure 6. Simple reference process

Process step 3: Notification. The Trademark Office
creates an Notification to inform the applicant that the
process has started.

Process step 4: Perception of the notification. Step 4
means the transmission of the notification by the
applicant. This step forms the border between the phase of
filing and examination.

Process step 5: Examination. Step 5 marks the
examination of the application by the Trademark Office.
If the application does not fulfill all legal requirements the
process will stop here and the applicant will be informed.
Otherwise the process will lead to process step 6.

Process step 6: Registration. The new trademark is
recorded in the register. With this act it becomes legal
protection.

Process step 7: Certification. Together with the
register and the official gazette the new trademark will be
communicated to the public. This is a new role we have to
introduce in the process. While a contract concerns two
persons, a decree of public law is of interest for the whole
society. This is why the public obtains a role of its own.
The process itself ends with the certification of the
registered trademark to the applicant.

4. Case Study - MIPEX

There are several projects to establish the IP processes
in a electronic manner one of which this case study will
introduce. MIPEX (Message Based Intellectual Property
Exchange) has the goal of bringing Intellectual Property
and E-Government together. The project itself and the
necessary environment (network, security) of the E-
Government framework are discussed. Then the different
steps of the general model are mapped to the work that
has been finished so far and that is planned until the end
of MIPEX.

4.1. MIPEX History

Since January 1996 a partnership between IP offices
and their customers is developing the basics for E-
Commerce in the field of Intellectual Property. The main
goal was to build a reliable environment and starting
pilots. The work in MIPEX follows the rules that were
established by the United Nations Commission on
International Trade Law (UNCITRAL).

MIPEX I was funded under EC contract within the
Telematics Application Programme as an R&D project. In
MIPEX II new partners started actively to take part: the
German Patent and Trademark Office, the Finnish Patent
Office, the Dutch Patent Office, the Swiss Federal
Institute of Intellectual Property and Baltimore
Technologies, a leading company in Public Key
Infrastructure (PKI) and security issues.

The goals of MIPEX I were the following: the
objective of the MIPEX project is to allow IP
professionals to communicate and conduct IP transactions
by exchanging electronic messages with their national
Intellectual Property Offices, with other national and
international IP Offices and with associates, including
those in other EU member states. IP Offices will also be
able to use the system for the interchange of data between
themselves, and the network could also be used by
companies to supply IP commercial services.

In the final report most of the aimed goals were
fulfilled. A user survey was made [6] with a 70-80%
success rate for the different services in the demonstrator.
The results were as follows:

- The Extranet is viable, but not in the long term as the
  Internet will dominate.
- Cryptographic routers should be used.
- The liability issues of the PKI need to be studied.
- The PKI should remain with the offices.
- Smart cards should be studied.
- S/MIME is very promising.
- The filing tests did work well. The international
  organisations EPO (European Patent Organisation)
  and WIPO (World Intellectual Property Organisation)
  should participate in e-filing.
- The handling of the patent document itself must be
  addressed (document life cycle, proprietary formats).
- For database access SSL should be used.
- Renewals have not been implemented yet, but are
  still of high interest to the customers.

The user group in Switzerland showed that not all of
these considerations are valid in all circumstances: the
user community did not have any objections against the
use of the Internet. Investigations in the area of the PKI
demonstrated that the work load for the Institute to
operate its own PKI would not be cost effective.
The findings on e-filing were rather vague due to the fact that not all problems had been solved (legal, server-side).

4.2. MIPEX II

MIPEX II is far more ambitious and funded to 50% by the EC as a Trans European Network Project. The contract started in 1999 and will end in December 2000. The goal is to produce a workable environment. The goals are mainly the same as for MIPEX I, but on a more detailed level [7]:

- Secure correspondence between IP Offices and customers
- Secure national and cross-border correspondence between agents (and foreign associates)
- Access to information from official databases
- Electronic filing of patent and trade mark applications
- Electronic renewal of IP registered right

Layer 4 | Services
Layer 3 | Applications
Layer 2 | Generic Services
Layer 1 | Network

Figure 7: Four layered „Reference Model“ of MIPEX

In the context of MIPEX the customers are IP departments with specialist staff and IP professionals. The estimation is 5000 professional IP practices in the EU, employing a total (professional and support) staff of 50-80000 people according to the project document. The overwhelming majority of these businesses are small enterprises with few employees.

4.3. Underlying Principles of MIPEX

The project document describes the principles as follows:

- **Choice:** The aim is to make electronic delivery the preferential option, but with the need to retain the option of a traditional face-to-face, telephone or paper-based service.
- **Confidence:** Information needs to be properly safeguarded so that customers can be confident that confidential information is protected and is kept and used in accordance with the agreed arrangements.
- **Accessibility:** Services should be available according to the requirements of the customers where and whenever they are needed.
- **Rationalisation:** The approach should provide for the sharing of resources, common processes and information, thus reducing costs and simplifying systems.
- **Subsidiary:** The delivery of most services is devolved to the national administrations. This allows considerable scope for national administrations to respond to their own users and develop new services to meet their demands.

Conflicts between these goals, mainly rationalisation and the others, are obvious. Harmonisation is the central issue which will keep the principles together.

4.4. Network

The current network is based on ISDN, but will move to frame relay in the backbone. The connections from the customers are ISDN as well as the connections between the organisations. Some offices will include VPN and Internet. Within the network a mix of private and public IP addresses is currently in use. Due to the fact that all national offices will be interconnected in a few years – based on the WIPONet initiative of the World Organisation of Intellectual Property [8] – the usage of public addresses in the interconnection area is mandatory. Two partners – Switzerland and Finland – already have frame relay connections to the EPO and are using them productively. The usage of VPN [9] over the Internet is mainly proposed by the EPO (PatNet) and Finland. Some partners still hesitate on behalf of their customers to use the Internet for MIPEX in any respect. Therefore it is crucial, that a proper implementation of the hybrid solution is chosen. The PatNet Security Layer is the answer to that problem.

![Network structure for MIPEX](image)

Figure 8: Network structure for MIPEX within the Swiss Federal Institute of Intellectual Property

4.5. Public Key Infrastructure PKI

At the core of each E-Commerce application lies a public key infrastructure. MIPEX decided to build an independent one for the following reasons:

- the offices can study the issue very carefully
- the offices can develop the necessary skills
the offices can take into account the special security issues which arise from Intellectual Property.

The lead for the construction of the PKI is with Baltimore Technologies. MIPEX studies various CAs, which is absolutely crucial due to the fact that the EPO and WIPO have not officially declared their strategy on the PKI issue, and harmonisation on that level is fundamental also national limitations (e.g. the German signature law).

MIPEX puts the focus on the customers. And what is absolutely clear is the fact that the customers do not want to have several certificates of them of which they have to take care. For Switzerland this means we need to accept certificates of other PKIs (e.g. Swisskey).

The usage of Smartcards is an item to be studied.

4.6. SSL and S/MIME

MIPEX evaluates security and implements security, however it does not want to build full systems from scratch. Therefore the two standards Secure Socket Layer (SSL) and Secure MIME (S/MIME) are used. In MIPEX every transmission was S/MIME-based. The product used was Mailsecure from Baltimore technologies.

The Institute will apply SSL for some transactions, but still considers S/MIME the better solution for many operations. As long as the client-server aspect is the most important and the transaction is very session-oriented, then SSL is certainly the better solution. The trouble with SSL is that you do not have a "signed" document in the end, because SSL provides a secure channel and therefore only "volatile" authentication.

4.7. Example of a Problem Complex: Trademark Filing

The Swiss Federal Institute of Intellectual Property is the work package leader for trade mark filing. Trade marks are one of the classical businesses of IP offices [10].

4.7.1. XML. The data formats which are used are SGML and XML. The IP Offices have a long tradition with SGML. XML is more suited due to the support it will soon get in various tools.

The Institute relies mainly on the XML definition and the DTD. The software provided by the Institute for TM filing represents an additional service. The XML is based on MECA and adapted to national requirements. It allows national application and international registration in one transaction. The transactions have not been separated, because often both documents are sent together. We assume that during the harmonisation phase and with the pilot use in 2000 the XML will undergo some minor changes.

```
<TMTRANS>
  <TMMADRI>
    <TMSEID></TMSEID>
    <TMREID>IGE-CH</TMREID>
  </TMMADRI>
  <TMTCH>
    <TRAEDAT></TRAEDAT>
    <TRANSVE></TRANSVE>
    <ORIGLAN>De</ORIGLAN>
    <TRANSG>JavaApp</TRANSG>
    <TRANSADD>JavaApp</TRANSADD>
    <CHTMT>
      <CHTMTRNR></CHTMTRNR>
      <CHIREG>
        <NAMEADD>
          <NAMEADTY>V</NAMEADTY>
          <CHNAME>Peter Jost AG</CHNAME>
          <CHADDR>Jodelstrasse</CHADDR>
          <POSTCDE>8000</POSTCDE>
          <CHPLACE>St.Gallen</CHPLACE>
          <COUNTRY>CH</COUNTRY>
          <NAT>CH</NAT>
      </NAMEADD>
    </CHIREG>
  </CHTMT>
</TMTRANS>
```

Figure 9: Excerpt of the XML

4.7.2. Customer side demands for e-filing. The possible customer benefits are:
- faster reply
- fewer transmission errors
- financial incentives
- legal binding

The benefits of trade mark filing for the customers are not very big per se. Paper filing is very easy, effective, well known and cheap. Therefore the means for e-filing must be chosen very carefully in order to guarantee no additional efforts for the customers. For the customers legal security is central in order to be able to switch to e-filing.

4.7.3. Office side demands for E-filings. Possible benefits for the Offices are:
- Better quality of the filing
- More and more detailed data
- No scanning or data entry needed
- Eventually optimised internal processes

The comparison of the two lists makes it clear that the Offices are the ones which benefit more easily from e-filing.

4.7.4. Security and Reliability. Both of these features are important in order to be successful. Security and reliability are technical parameters. For the usage of the system confidence[11] is more important.
One important player has not been mentioned so far: the insurance company. The IP professionals must insure themselves against liability. Therefore the security of the system must not only convince the IP professionals, but their insurance companies need to agree as well. For the next 10 years no absolute security can be guaranteed as the necessary laws have not come into effect everywhere yet and no supreme court ruling exists. However, with careful technical, organisational and contractual work and training the necessary trust level can be built up.

4.7.5. EASY. EASY (Electronic Application System) and PCT-EASY (Patent Co-operation Treaty-EASY) are the most important software packages for filing in Europe. The EPO started developing EASY for EP-filing in 1992. The patent application was stored on a floppy disc and together with a signed paper application filed in the office. No big gain for the users resulted from it and success was marginal. In Spring 1999 WIPO presented the most recent release of PCT-EASY. PCT-EASY has the same core as EASY. The PCT application is rather more complex than normal national applications, therefore the help the software provides is very much appreciated by the customers and the number of e-filings with this software is increasing rapidly. The current data flow is still based on floppy disc sent to the Office. This will change until Q2/2000.

Both EASY versions focus on the bibliographic information. The patent documents themselves are sent in the form of attachments.

4.7.6. SETA. SETA (Secure Electronic Trademark Application) is the internal server process treating the applications. The applications are tested for conformance with the minimal requirements for the database and then loaded. For the minimal juridical requirements an employee of the Institute must accept or reject the application before the application is legally accepted as such.

4.7.7. Process support. The pilot covers step 1 and 2 of our model. With EASY we will also help the applicant to work on her application and therefore to improve the quality of filings and to reduce the amount of work during the examination.

The architecture in figure 11 and the description for EASY and SETA show how step 1 and 2 are implemented.

Step 3 and 4 are equally in an electronic version. However the current legal restrictions do not allow us to rely on the electronic answer only. The Institute must for the time being issue a letter. We will perhaps try to get the acceptance of the major customers so that they accept the email as replacement. The payment of the fee can be automated when the customers have an account at the
Institute which makes it possible for us to charge them directly. Credit cards do not work for fees in Switzerland for the time being.

The examination (step 5) will be the next item to be automated. We envisage secure email as the most likely method. Step 6 is in electronic form for a long time with the BAGIS system. Step 7 will have two parts: as of March 2000 the publication will be fully electronically with Swiss-reg, our Internet based replication of the register. The certificate for the applicant will also in the near future remain in the form of a letter. However here the same holds for the notification. The trademark law \[12\] and ordinance \[13\] were adapted for electronic filing. The DTD and XML were finished in May 1999. The software alpha release will be available as of August 1999. The server software will be implemented in the same time frame. E-filing is a first step towards automation of all business processes. And the offices have to keep documents during 10-30 years depending on the type of document and the laws involved. It is therefore essential to study the document life cycle as suggest by the USPTO \[14\]. The system should be fully functional for the general public in mid-2000.

5. Conclusion

This paper shows that Intellectual Property can be regarded as negotiable intangible goods when taking into account a few differences to common intangible goods as for example information. For instance it is always the government which has to take the role of the seller. The product itself is created during the process and is always unique. And at least we are not talking of a contract of civil law but of a decree of public law.

The process of trading common intangible goods and the process of trading Intellectual Property are different and need to be treated separately. A solution for E-Commerce requires some modification to be adopted to the field of E-Government. Most important is the introduction of the public as having a new role in the process. Also kind and style of the generated documents varies from E-Commerce. And finally the processes are fixed in the law. Changing them is only possible after the law has been changed too.

The third part of the paper introduced an initiative of several IP Offices in Europe in the project MIPEX to create an E-Government solution for the application of trademarks. The project demonstrates that the traditional process can be mapped to an electronic one. The main obstacles are to be encountered in legal and organisational issues and the careful deployment of a watertight PKI.

[1] Art. 1 Abs. 1 IGEG.
[2] Art. 1 Abs. 3 IGEG.
[3] Art. 2 Abs. 1 lit. g IGEG.
[12] MSchG.
[13] MSchV.
[14] Check-list of requirements for electronic records management (ERM), Over the Life Cycle of Patent and Trademark Records, Feb 26, 1999; USPTO; Overall Plan for Electronic Records Management, Over the life Cycle of patent and trade mark case files, Feb 26, 1999, USPTO.