입법평가연구 제 9 호
2015년 10월 pp. 77~101

Legal Definitions and Semantic Interoperability in Electronic Government

Dag Wiese Schartum*

* Oslo University, Professor

Ⅰ. Introductory remarks

This article is based on the assumption that inadequate legislation methods constitute a problem within areas of law where legislation will be implemented by means of ICT-based systems in the government sector ("eGovernment systems"). I discuss drafting of legislation when it is clear that the law will be implemented by means of eGovernment systems, in particular ICT systems performing a high degree of automated collection and further processing of data in individual cases.[1] The relation between legislation and ICT government systems to implement this legislation is, of course, many-sided. Here I highlight questions regarding only the choice of words and phrases and their definition.

As an introductory comment, I will remind the reader about the very central role legal regulations have within the area of government administration. Individual decisions in government administration will almost always have legal bases and implications. When eGovernment systems are developed, input, processing and output must to a large degree be evaluated within a legal framework. The question is whether this legal framework is, or could develop to be, compatible with technological requirements (and vice versa).

Words in legislation describing factual bases of decisions in individual cases (e.g. "live-in partner", "residence" and "wage earnings") may often not be understood in terms of colloquial language, but must be interpreted pursuant to relevant legal sources which establish the legally correct definitions.[2]

---

1) Such as cases concerning various taxes and duties, social benefits, admission to the educational system etc.

2) When parties of cases are individuals, many of the legal concepts relate to personal

Easy and reliable access to legal definitions or other clarifications of legal concepts is thus a crucial first step for everyone with ambitions of mapping the semantics of such legislation, for instance with the aim to develop ICT systems and exchange data between government agencies.

Because they describe basic aspects of citizens' lives, some words and the corresponding types of data are used in several legal decision-making processes.[3] Information regarding identity (name, personal identity number etc), connections to other individuals (relationship, marriage, employment, etc.) and sources of income (wage earnings, social benefits, pensions, etc.) are among the types of data which are often bases of individual decisions. Other types have more specialized use ("residence permit", "unemployed", etc.), while a third group is highly specialized and corresponds most likely to information needs of very few government agencies ("patent number", "date of bankruptcy petition"). The initial expectation, however, should be that most types of government data are relevant and of potential use to at least two government agencies – sometimes several. In other words, there is seemingly a great potential of designing eGovernment systems for sharing such information. This is an important reason why semantic interoperability and reuse of data is a central objective of EU and of many European governments.[4]

In this article I discuss questions of semantic interoperability within administrative law and eGovernment information systems or, in other words, the important overlapping area between semantics as a general topic and legal

---

information which comes under personal data legislation. Data protection and privacy questions, however, will not be addressed in this article.

3) Corresponding situations arise regarding information about businesses, but the discussions here will primarily concern private citizens.

4) Cf European Interoperability Framework (EIF) for European public services, v. 2.

interoperability.[5] My contribution is not based on the view that semantic interoperability between legal instruments is always a possible and sensible strategy. Within some areas, needs exist to choose definitions of terms which are different from existing and almost identical definitions. Sometimes politicians may find differences necessary in order to express something which yields fair and political acceptable results. If so, the consequence may be that reuse of existing information resources will not be desirable, and time and expenses of information processing may thus rise. Having said this, it is important to add that lack of awareness, methods and tools may make it difficult to identify and choose semantic interoperability in legislation relating to public administration even when it is possible and desirable to do so. This article is based on the firm assumption that, in many cases, there are unexploited potentials of data sharing and reuse, and that often this is not due to valid political and legal grounds but result from lacking awareness and capabilities.[6]

The major empirical material on which the following discussion is based, is an examination of all new Norwegian laws in the period 2007–2010 with identification of the extent to which and the way the legislator has established legal definitions, that is, occurrences where the meaning of legal terms is decided in a statute.[7] To the extent that words and phrases are fully

---

5) In public administration there are, of course, semantic questions not related to law (although very many questions are), and there are questions of legal interoperability not related to semantics which I will not elaborate on here.

6) Questions of concepts denoting facts are certainly not the only category of concept within this overlapping area between law and semantics. Equally important and interesting is the issue of questions relating to concepts denoting operations, i.e., how factual information should be processed. Here, however, I will emphasize the first category of semantics.

7) See Dag Wiese Schartum: Legaldefinisjoner i nyere norske lover [Legal Definitions in

defined in a statutory text, concepts are to a large degree fixed and only to a limited extent open for interpretation. Thus, legal definitions represent an important statutory technique with direct effects and potentials for the development of adequate information systems in government administration.

II. Interoperability and the law

Interoperability between eGovernment systems is often seen as comprising four layers: technological, semantic, organizational, legal and political.[8] One aspect of legal interoperability concerns legal semantic questions.[9] Here, I understand semantic interoperability as the ability to exchange information and to mutually use the information which has been exchanged.[10] One of the questions on the layer of legal interoperability is the extent to which information based on legally defined concepts can be exchanged.

Novel Norwegian Laws]. Unipub forlag 2011 (ISBN 9788272261381), CompLex (6/11). Definitions could also be part of preparatory works of the law, cf section 6 (below).

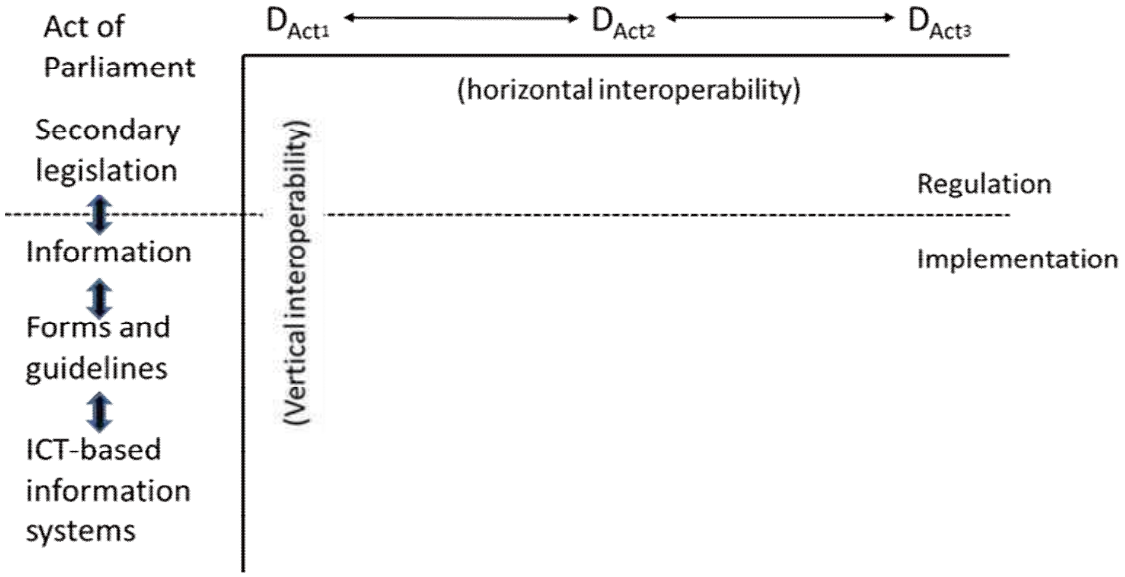
8) See, European Interoperability Framework (EIF) for European public services, v. 2, section 4.1.

9) In contrast to the explanation of legal interoperability in European Interoperability Framework (EIF) for European public services, v. 2, section 4.3, I will claim that this concept should give room for more than exchange of data and also include other aspects of coherence and compatibility between laws, for instance regarding overall statutory structure, external and internal reference structures between/ within laws etc; that is, other qualities which determine how difficult it is to understand the interplay between related laws.

10) Cf the European Interoperability Framework (EIF) for European public services, v. 2, section 4.5, which describes semantic interoperability as "the meaning of data elements and the relationship between them", including "developing vocabulary to describe data exchanges" and ensuring "that data elements are understood in the same way by communicating parties".

We may partly talk about horizontal legal-semantic interoperability, that is, use of the same concepts with one uniform definition in different Acts.[11] Another aspect is the degree of semantic interoperability in statutory hierarchies, meaning between Acts of Parliament, secondary regulatory levels and instruments of their implementation. Such vertical legal-semantic interoperability exists if uniform definitions are established from top to bottom; for example, Acts, regulations, government's internal guidelines on application of the law, as well as forms and eGovernment systems developed to implement the law. Here, I will not discuss the vertical aspects in any detail, but only observe it as a basic requirement to legislation and appurtenant eGovernment systems. Contrary to the horizontal aspects of legal-semantic interoperability, the vertical aspects are often beyond discussion with no strong remonstrance.[12]

Figure 1. Horizontal and vertical aspects of legal semantic interoperability



11) Data definition in Act 1 is equal to definition in Act 2 ($D_{Act1} = D_{Act2}$).

12) But certainly not without problems; see Dag Wiese Schartum: Om forholdet mellom forvaltningslover og tilknyttede skjemaer [On the Connection Between Administrative Laws and Related Forms]. Lov og rett 2011 ;Volume 50.(9), 551-566.

Legal interoperability within the semantic field should first and foremost be the result of the legislative process and not only, or primarily, be a question which is solved in the course of implementation. In Norway, modernization of public administration is first and foremost on the technological agenda. Related legal initiatives are to a large extent about removing juridical obstacles and paving the way for desired computerized solutions.[13] Such reactive approaches may of course be necessary. This article is based on the view that laws should as far as possible be drafted to fit with technological and administrative models and processes from the start. My research on legal concepts and their definitions therefore to a large extent concern how the legislative process ought to be in order to prepare the ground for development of eGovernment systems designed to implement legislation.

Ⅲ. Legal definitions and the vague nature of legal concepts

In many ways, administrative law is about the art of handling vagueness and discretion in natural language. When passed, statutory texts are open for interpretation and often with considerable manoeuvring room for those applying the law. This uncertainty may be intended and could be the result of the admission that it is difficult to formulate a clear and fixed rule regarding, for example, a difficult problem area undergoing rapid development. Even if they do not clearly admit it, legislators may decide on the basis of the view that "you never know about the future", and thus have rather

13) See, Norwegian eGovernment Program - Digitization public sector services, section 3.9, available from http://www.regjeringen.no/en/dep/fad.htm.

low ambitions as to the degree of preciseness of legal concepts. Instead of clarifying every possible question of how terms may be interpreted in every type of future situation, legislators may trust that the context will give sufficient guidance and rely on the assumption that those applying the law will have sufficient competence to make reasonable choices in the future. If no known individual case makes an interpretation question topical, it may furthermore be regarded as too theoretical to be solved. Legislators may thus choose to trust that courts of justice and other actors of the legal system will identify problems and solve them in due time, and to the extent questions of interpretation should prove to be of practical significance.

It is important to understand the interaction between legislators and other actors of the legal system in order to explain the rather "shocking" degree of uncertainty and need to interpret statutory texts. The fact that the judiciary, appellate authorities and legal theory may analyse and solve various questions over time, represents a technique to adapt law to actual situations, and not only presuppose situations which have been predicted in the legislative process. With regard to legal concepts in statute law, this may, in other words, be seen as a *continuous definition process:* It starts with rather vague concepts and continues with continuously increased precision over the years, and – probably – ends up as relatively well-defined concepts. Viewed in this way, application of the law implies a dynamic process of concept definition where various actors of the legal system take part in a continuous and rather open deliberative process.

In contrast, establishing legal definitions, that is, more or less fixing the meanings of terms and phrases in laws implies that much of the definition process precedes implementation. Thus, semantic and legal flexibility/uncertainty is exchanged with a higher degree of semantic rigidity/certainty, implying that the ground is better prepared for establishment of information systems.

Figure 2. Traditional development of legal definitions over time

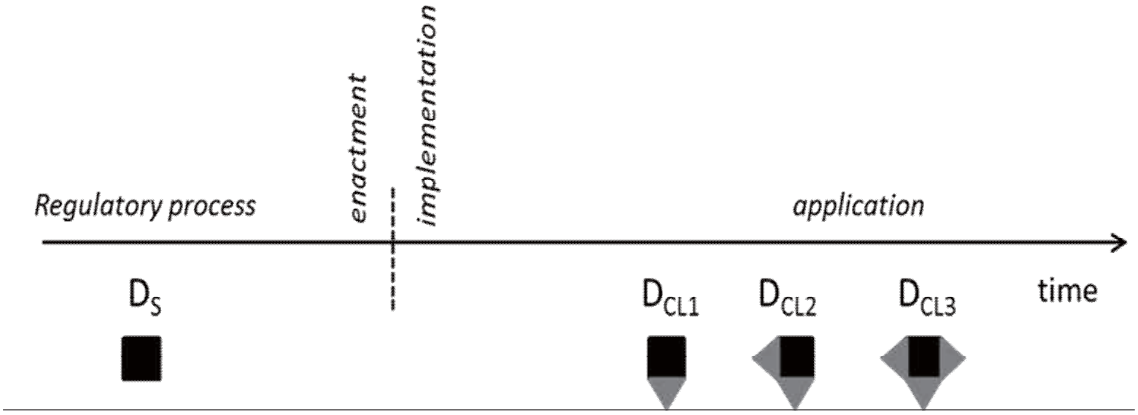


Figure 2 illustrates how definitions in statutory law (D_S) may be rudimentary and handed over to case law for complementation over time (cf $D_{CL1\ -3}$). To the extent that individual fairness and political flexibility and control are prioritized, such a continuous process of definition and redefinition could be considered reasonable and even valuable. However, emphasis on efficiency of case processing, automation and lowering of administrative costs provides an argument for choosing pre-defined and relatively fixed legal concepts. In this event, the significance of case law will be reduced (but may not be eliminated).

When legal-semantic interoperability is an aim, it is required to have a high degree of precise definitions already in the regulatory process. Instead, the regulatory process should yield results in harmony with requirements of the eGovernment system which is necessary for the implementation of the law. Thus, such definition processes must be *system driven*, that is, the degree of definition must be decided on the basis of system needs (and not the needs of a case-by-case approach).[14)]

14) The distinction between case-driven and system-driven interpretation of legal sources was introduced in Dag Wiese Schartum: Fra lovtekst til programkode [From Wording

Most legal terms are not explicitly defined.[15] Only a small selection of words and phrases in laws are defined on the statutory level. However, the results of my investigations demonstrate that legal definitions in Norwegian legislation are usually not designed to solve every definition issue related to the words and phrases in question. Thus, they both cover situations when only a few definitional elements are established in the statutory text and situations when a "complete" definition is stated.[16]

Development of eGovernment systems may give grounds for definitions that are as complete as possible, preferably defined in ways which fully answer questions of interpretation required to develop efficient information system as part of implementation of the relevant law.

IV. Primary and derived legal definitions

Legal definitions are usually placed in one of the first sections/articles of the instrument but may also be placed in other parts of a body of rules.[17] The scope of such definitions is typically the legal instrument in which definitions are made, but as a rule, definitions must be understood as applying to subordinate legislation and other related legal instruments.[18] Within Norwegian legislation, only a small selection of words and phrases are defined

---

of an Act to Programming Code], (August 2012), available from http://www.uio.no/studier/emner/jus/afin/FINF4001/h12/pensumliste.xml.

15) But could partly be defined by its context and by means of amplifying statements.

16) One requirement to a "system driven" approach should probably be that a great number of definitional elements are decided.

17) A similar technique is applied, for example, in EU directives and regulations, and in various conventions, etc.

18) Cf vertical legal semantic aspects as shown in section 2 (above).

in each law, often numbering no more than five to ten. My investigation of all legal definitions contained in all novel Acts of Parliament in Norway during the period 2007 – 2010, showed that legal definitions existed in 35 of 53 laws, that is, in the majority of occurrences. Almost all novel Acts of a certain complexity and volume contained legal definitions.[19)]

Legal definitions in my investigation comprised words and phrases commonly occurring in the Norwegian language, as well as expressions especially designed for a specific legal purpose. Even if defined words are commonly used, there were several examples of legal definitions clearly deviating from definitions of the same word in dictionaries. However in the majority of cases, definitions were within the scope of what could be commonly accepted in the Norwegian language.

The investigation showed that legal definitions were generally more detailed than similar definitions in dictionaries. Moreover, legal definitions frequently contain formal definitional elements, that is, elements referring to something which has been manifested because it is decided or officially registered. It is possible to distinguish between at least three groups of such formal elements in legal definitions:[20)]

1) Measurable and quantifiable indicators/variables (e.g. length, weight, time, amount etc);
2) Physical phenomena and conditions which are recognized as notorious facts or which could be objectively observed (e.g. gender, physical conditions, chemical compositions); and

19) The total number of definitions was 210, implying an average of six definitions per Act There was relatively great variation between the Acts, ranging from only a couple of definitions to up to 40.

20) Cf Jon Bing: Om tolking av enkeltord – særlig i lovtekst [On Interpretation of Single Words – Particularly in Statutory Texts], In: Anders Bratholm m.fl. (red), *Samfunn Rett Rettferdighet Festskrift til Torstein Eckhoffs 70-årsdag*, Tano, Oslo 1986, 131-143.

3) Final authoritative decisions, regarding formal positions (such as Member of Parliament, lawful spouse, owner), established rights and obligations (eligibility to a concrete benefit, decision regarding tax liability) and other decisions with a significant bearing on a person's legal situation (e.g. a decision regarding residence, i.e., a piece of information registered in specific information system etc).

Category 3) is particularly comprehensive and heterogeneous, and here I will not explore details. In cases of "authoritative decisions" – as in categories 1) and 2) – it will be possible to ascertain beyond reasonable doubt whether or not something is legally true or valid (e.g. that a person has the right to receive a certain benefit, if duty to pay a certain tax exists, etc). Of course, in a small minority of cases it could happen that a person is transsexual, that decisions regarding benefits, etc. are incorrect and that erroneous facts are registered in a government information system. Our assumption may nevertheless be that indicators, conditions and decisions in categories 1) – 3) typically are relatively fixed, and at least much less uncertain than in situations where correct interpretation of, for example, "supports a child", "too heavy", "owns a fortune" have not been established by a final authoritative decision or registration.

In line with the observation and categorization mentioned above, it is thinkable that legal definitions are constructed by means of such formal and relatively fixed elements. "Domicile" could be defined, for instance, as "the place where a person has his/her true, fixed, permanent home, and to which, whenever the person is absent, he/she has the intention of returning." As point of departure, such a definition is obviously open to dispute, and it would require a lot of effort to examine the conditions, for instance regarding a person's intentions. When this question is settled and a domicile

is established as a result of an authoritative decision, it would be possible to introduce legal definitions which build on this decision/establishment of facts. Thus, a *derived* legal definition of domicile may be, for example, "the place where a person has his/her home according to legally valid information in the National Register." The meaning of "domicile" could in other words be fixed by referring to what has been established as part of registration in an authoritative information source (or a decision).

Figure 3. Primary and derived definitions

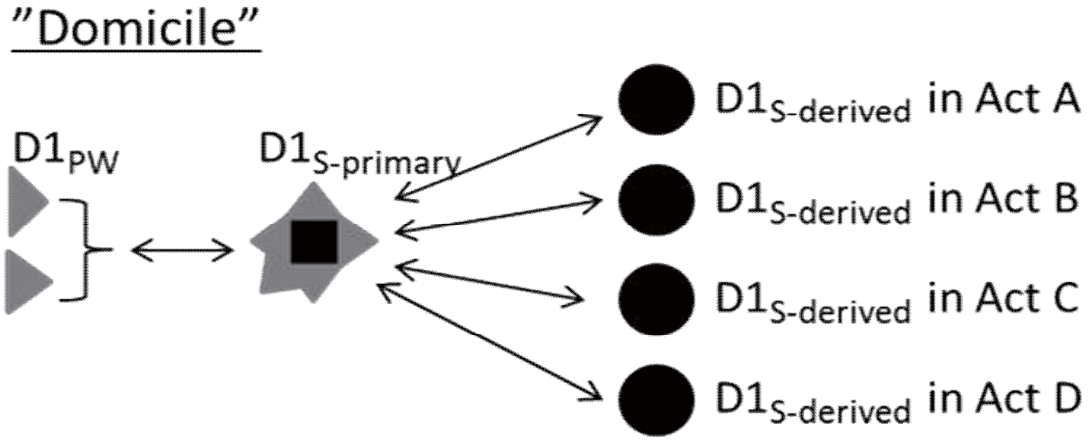
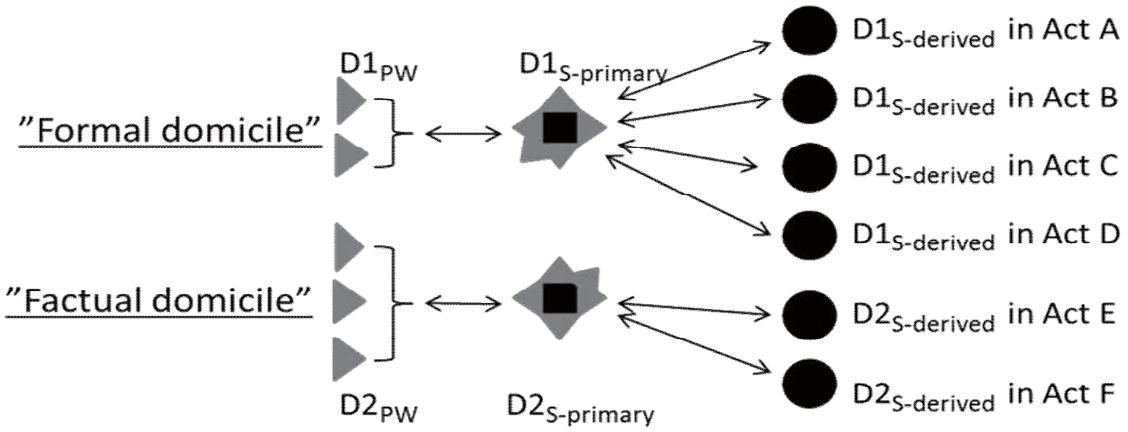


Figure 3 (above) illustrates how a primary definition in statutory law ($D1_{S\text{-primary}}$), including supplementary definitional elements in preparatory works ($D1_{PW}$), may be shared in several Acts ($D1_{S\text{-derived in Act A -D}}$). It may be difficult, however, to draft all laws on the basis of one defined word or phrase that describes where people live. It might be necessary to have different but similar expressions in the National Register Act and the Immigration Act describing where people live. If so, construction of overlapping (modular) definitions[21]

21) About a modular approach, see Dag Wiese Schartum: *Sharing information between government institutions - Some legal challenges, in: van der Hov og Groothuis (eds.) Innovating Government, Information Technology and Law Series vol. 20*, Springer 2011.

should be considered, by introducing a new definition (D2, cf figure 4, below) which partly contains the same definitional elements as in D1. In this event, the same word defined in different ways in the two Acts should be avoided. Instead of introducing a synonymous phrase (e.g. "place of residence") the legislator should consider using terms identifying the relationship between the two concepts. For instance one definition may relate to "formal domicile" and the other to "actual domicile". Subsequent legislation may, in such a case, choose between two primary definitions – or more. The point is that a relatively small selection of primary legal definitions may cover the need for definitions in a relatively great number of laws.

Figure 4. Example of modular constructed definition



An example from my investigation of legal definitions in Norwegian legislation may illustrate the potentials of a modular approach distinguishing between primary and derived legal definitions. The concept "employee" [arbeidstaker] is defined in seven Acts of Parliament. Three of these definitions are identical, implying that we have four different legal understandings of the same word. However, all existing definitions contain some common defini-

tional elements. On top of that, the definitions contain additional definitional elements and may therefore be designed as the joint definition plus special definitional elements.

Ⅴ. Selection of terms to be defined

In guidelines from the Norwegian Ministry of Justice, it is advised that legal definitions should be used in situations with a particular need for strict concepts and in cases when concepts have a basic function in the relevant law.[22] However the Ministry does not specify further what should be regarded as a "particular need" and "basic function". Legislation is many-sided, and it is obviously hard to formulate general and simple rules to govern which types of words and phrases should be subject to legal definition. If we restrict the discussion to the area of eGovernment, however, it would probably be feasible to formulate some general guidelines.

Information systems of government agencies which process data in the course of decision-making in individual cases contain typically well formalized types of data describing each case. System requirements regarding input data about, for example, people's "income", "matrimonial status" ("married", "divorced", "live-in-partner" etc), or the fact that a person is the "supporter of children under 18 years", etc., are established as part of the system development process. Formalization comprises elements such as the establishment of mandatory input data, requirements regarding the number of digits in input codes, various cross-checks of inputs (e.g. consistency checks

22) See, Ministry of Justice and the Police, Lovteknikk og lovforberedelse. Veiledning om lov- og forskriftsarbeid [Statutory Technique and Preparation of Laws], Justis- og politidepartementet 2000, section 7.4.

and probability checks), etc. However, as long as input data are registered manually, such formal requirements are not on the level of what we reasonably can call definitions, because they only deal with representation in the data system and not the semantic content: For instance, we may decide that "income" is a mandatory type of data and that it may be represented by Arabic numerals, but without defining the type of assets included in the term.

Norwegian laws contain a very limited number of explicit legal definitions of words and phrases denoting input data to government data systems. Thus, system developers using law as the source for data models in eGovernment systems do not have many clear definitions to apply. Clearly, lawyers may find definitional elements scattered around in relevant legal sources (case law, preparatory works, administrative practice etc), but these will require time-consuming expert effort from lawyers, and the conclusions will easily be disputable. One possible response is to transform questions of defining legal words and phrases from a problem of applying the law to a problem of making the law. The basis of data input for eGovernment systems could, in other words, be defined by statute to a much greater extent than currently.

Automated processing of data in eGovernment systems does not come as a surprise, but is very often an obvious consequence of novel legislation, and is always a result when existing legislation relating to automated public administration is amended. Uncertainty as to the degree of automation, etc., does not change this fundamental fact. If the question is posed in this situation as to which words and phrases should be considered for legal definition, some answers and grounds could be indicated, in my view.

Rule of law and predictability could obviously be held as grounds for requiring strict concepts in laws, and in particular as part of eGovernment systems which implement laws. This is especially true regarding systems pro-

ducing individual decisions pursuant to highly automated routines. A high degree of automation will make this argument stronger due to reduced control by people. Words and phrases denoting a factual basis for individual decisions are of fundamental relevance, and should therefore always be considered for legal definitions. The previously mentioned legal concepts, "domicile", "income", "married" and "live-in-partner" denote information on which individual decisions dependent, and which thus should be considered for legal definition. Some definitions could be derived from other pieces of legislation, while other definitions may be legally defined in a primary mode, cf the distinction in section 4 (above). Ffor instance, there will almost never be a need for an alternative definition of "married" in the Marriage Act, while "income" occurs with numerous definitions and may often be linked up as a derived definition.

Unless there are well-founded reasons for another conclusion, all input data required in eGovernment systems with law as a source should, in my view, be considered for definition. Such a policy would strongly promote semantic interoperability within the legal domain. My argument does not imply that such legal definitions should be designed to be as exhaustive and strict as possible. When one decides how definitions should be carried out, the most important factors are probably choice of definition technique, organization of the regulatory process and tools, see the next sections.

VI. Definition techniques

Definition statements in statutory texts may create expectations of exhaustive identification of definitional elements, something which would imply that all/most issues of interpretation of the word or phrase in question will be

solved. My investigation of legal definitions in Norwegian legislation showed that in order to be fully informed of every aspect of the defined term, it was in most cases necessary to consult the preparatory works of the Act in question. Such further delimitations and explanations in preparatory writings were often comprehensive. Frequently they contained further references to other documents, making it necessary to read former, repealed legislation, other Acts of Parliament in force and various legal instruments of the European Union.

Full information pertaining to the defined words and phrases could only be attained, in other words, from reading the statutory definition itself, explanations in preparatory works, plus one or several documents within other parts of the legal domain. Although definitions were apparently simple when worded in the statutory text, legal definitions in Norwegian laws only expose a fraction of relevant definitional elements. Such definitions are not designed to make application of the law simple. If the objective is to establish clear definitions of words and phrases, such a practice is obviously inappropriate. On the other hand, this does not necessarily imply that all definitional elements should be found in the law itself. Other legislative techniques must also be considered.

Given the dynamic nature of the legal system, the choice of legislative technique has considerable significance. The evolution of legal definitions as a result of application of the law (case law, etc.) is problematic for designers of eGovernment systems. If, for instance, a data system is designed to automatically collect case-relevant data from specific databases in another government agency, and the system is able to do so because the statutory definitions are identical, it will obviously be a problem if case law gradually formulates deviating definitional elements on the basis of considerations of object clauses, new policy considerations, etc. If this happens, establishment of manual

routines to handle cases covered by such new definition considerations is a possible option as an emergency solution, but will probably only be a quick and not a very lasting fix. There is at least one realistic approach to such problems caused by the dynamic nature of law, cf below.

In my view, legal definitions should always be established by combining statutory definitions and definitional elements in preparatory works.[23] Here, there should be no "either/or" discussion, but rather a determination of the desirable mix between the two types of definition techniques. Argumentative legal weight of statutory text is generally greater than the weight of statements and clarifications in preparatory works, and the first mentioned technique thus represents the most stable and lasting way of defining a legal term. However, stability is not the only important consideration. Equally important is a certain flexibility and the possibility to adapt to changing circumstances. When primary legal definitions are placed as integrated elements in several laws,[24] this will increase the probability that changed political considerations related to one of these acts will create needs to amend the joint definition. If that happens, it is important to avoid that this results in a breaking out from the interoperable pattern.

Placing definitional elements in preparatory works creates the possibility for such flexibility. In preparatory works, for instance, it could for be stated that certain definitional elements *may* be taken under consideration, but without introducing these elements as strictly binding. Statements in preparatory works could furthermore accentuate the relevance of semantic compatibility and administrative considerations regarding electronic exchange of data. Such statements may only *reduce* the probability of case law develop-

23) Or alternatively in texts with similar functions, for instance in preambles of EU directives and regulations.

24) Cf derived definitions in section 4 (above).

ments that break with joint definitions. It would not be acceptable if the legislator tried to stop courts of justice's from controlling that legally based words and phrases are correctly implemented: Courts should always in principle have the competence to decide on the basis of concrete interpretation in individual cases and thereby be a guarantee for a minimum degree of fairness in legislation. Stable and effective eGovernment systems could only be one of several considerations.

To the extent that definitional elements are given in preparatory works, it is crucial that these elements are collected and jointly presented. Contrary to what my investigation showed, definitional elements should not be scattered around in several documents making it necessary to go on a treasure hunt through various sources. The degree of semantic interoperability, in other words, should be easy to assess by consulting the wording of the Act and a separate explanatory section of preparatory works where all definitional elements on that level are collected and commented.

Ⅶ. Organization of the regulatory process

Observed from the outside, laws leave the regulatory process when they have been sent to government administration for implementation. Development of eGovernment systems required by legislation is seemingly a task of a technological nature – and to a large extent this is true. However, important parts of this development should also be seen as a continued regulatory process – with the important difference that the formal regulators have left the scene. The fact that the regulatory process is continued is not more surprising than the fact that secondary law is established after the Act is passed. In both situations, the task is to bring the often rather general and

lofty provisions of the Act "down to earth" and translate abstract rules into concrete conditions, procedures etc. For instance, the design of eGovernment systems could be about finding out how the phrase "supporter of child under the age of 18" in the provisions of an Act should be interpreted in order to identify whether or not it is necessary to collect this information manually, or alternatively, if automatic collection is possible, from existing databases which match with the legally required definition.

Definition differences are not necessarily politically unavoidable: For instance the legislator has defined "live-in-partner" as "two people with a joint address living in a marriage-like, established and stable relationship", while available information resources are based on the definition "two people sharing accommodation and living in a marriage-like relationship with the intention to continue to live together." Although there are differences between these two definitions, this does not mean that drafting it would have been politically unacceptable if one used only one of the definitions in both laws. If a single acceptible definition corresponds to that of a machine-readable source and the other is unique and requires expensive manual collection of data, it may very well be that the legislator would choose the definition represented in the digital source – if only they knew that these sources existed.

One obvious challenge for the legislator is to discover that a choice exists between two or more defined machine-readable data resources. There are many ways of mapping available digital data with the required legal definitions. One possible model is to establish a task force with special competences and responsibility to perform such analyses as part of the legislative process. Draft legislation could, in other words, be analysed by people who investigate existing legal definitions, as well as administrative and technological consequences of using existing words or introducing new ones. The

task force could then give their result as input to the drafting committee. Arguments and consequences of legislative choices will in this way be better understood, and possibilities of optimizing information systems will be enhanced.

Possibilities of choosing definitions which yield a politically acceptable and fair result, and which at the same time represent an appropriate solution regarding system design and effective automated processes, depends on the legislator's awareness of existing alternatives. In Norway, and probably in most other countries, the legislator will often not know which concepts applied in the proposed statutory text are already defined in existing regulations. Furthermore, they will not know the existing definitions that match definitions in available ICT-based information systems. This kind of insight typically arises after the law is passed and implementation has started or, to put it bluntly: too late. Special tools may change the picture.

Ⅷ. Law-making tools

ICT tools are probably necessary in order to change the regulatory process in ways which improve the capability of interoperability considerations on the lawmaker's side of the table. Currently, no such special tools have been developed to facilitate the lawmaking process in Norway.[25] Change from hand-made rules to lawmaking tools entails not only questions of how to deal with legal definitions, but constitutes answers to general needs and sets

25) A prototype tool "Regelverkshjelpen" [Regulation Aid] is under development in a collaboration between Norwegian Research Center for Computers and Law (NRCCL), the Lawdata Foundation [Stiftelsen Lovdata] and the Norwegian Ministry for Justice and Public Security.

of possibilities for supporting the regulatory process. Regarding legal definitions, a simple and concrete indication of a possible element of such a tool may take the much used definition of "personal data" as an example.

"Personal data" is defined in the Norwegian Data Protection Act:[26] "personal data: any information and assessments that may be linked to a natural person". Additional clarifications in the preparatory works of the Act are integral parts of a 530-word explanatory text in the bill written without structure to ease retrieval of definitional elements etc. When clearly analysed and structured, the following six supplementing elements can be identified (represented here as keywords):

- Marks of identification
- Ways and efforts of identification
- Significance of the object clause of the Act
- Limitations regarding legal persons
- Limitations regarding deceased persons
- Relation to a definition in the Public Administration Act

My point here is that although the legislator has a choice of where to place definitional elements, these elements should be made available without regard to which part of the regulatory process they refer to. Thus definitional elements in preparatory works should be formalized in a semi-structured way so that each element is easy to identify, understand and display together with the relevant legal definition of the Act. Even if a concept is not defined in the Act, definitional elements in preparatory works should be identified and made easy available together with occurrences of the statutory term in

26) The national definition is based on article 2 (a) of the Data Protection Directive (95/46/EC).

question. Such a complete and easy overview of how legislators understand statutory concepts would be of great importance to developers of eGovernment systems.

We can, of course, hope that participants in the legislative process will do analyses of existing legal definitions and search in available information resources without the help of any particular method or tool. The chances for getting effectual results, however, will increase if aids exist. Here I will not go into any detailed discussion of possible methods and tools, merely outline some simple starting points.

First and foremost, it is important to build a library of legal definitions which could be made available by means of a law-drafting tool. My investigation of legal definitions in recent Norwegian legislation shows that placing and wording of such definitions allows automatic retrieval of a very high percentage of legal definitions.[27)]

Mapping existing definitions is necessary in order to create a basic library of existing definitions that could be expanded on the basis of future regulatory processes. The idea is to develop a tool which is integrated with the editor used to draft statutory texts, and which automatically searches through the library of existing legal definitions and displays possible existing definitions of words/phrases that are used in the draft text.

Equally important is the idea that such a tool should facilitate collection of new legal definitions, that is, support the establishment of a library of definitions that will be updated in every case of a new legal definition. The goal should be to create a general collection of existing legal definitions that is as up-to-date as possible. Identification of every legal definition with full

27) Roughly more than 90% could probably be found by automatic means. Mapping of 100% of existing definitions will require scrutiny and manual effort, but total coverage is probably not important as part of establishment of a general library of definitions.

reference to all definitional elements regardless of where these elements are placed makes it possible to highlight occurrences of legal definitions in a legal text and to display these elements to the reader. The tool can collect and order present definitional elements from several sources.

IX. Conclusion

Legislation should always be drafted with implementation in mind. Otherwise legislators will probably often find that legislation is put into force in ways that deviate from their intentions. Legislation which presupposes eGovernment systems must be tuned to fit some of the basic technological requirements and potentials. One of the potentials which should be considered as part of the legislative process is data sharing between several government agencies and the prerequisites for this to happen. Today, the Norwegian government has interoperability and data sharing as an important political goal. However, they seem to believe that data sharing is a technological and administrative issue, whereas it should be obvious that interoperability is a regulatory and legal issue: Legislators may run the risk of drafting legislation without considering the effects on the possibility to realize efficient eGovernment systems as expected in government administrative modernisation schemes. If so, they will probably continue to produce obstacles and unnecessary problems for systems development and implementation. The only sound solution, in my view, is to extend the legislative process so that the consequences for implementation in eGovernment systems of proposed legal texts are assessed as part of the legislative process. In my mind, there are not sufficient grounds to defer dealing with these questions and relegate them to system developers who are then forced to "blindly" handle political and legal choices.