



On the governance of information: Introducing a new concept of governance to support the management of information

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ABSTRACT

Information governance as an approach to better govern the use of information within and outside an organization is rapidly gaining popularity. A common and scientific ground for this approach has not yet been formulated. In this article the authors describe a definition for information governance, extending the common, one-dimensional approach into a more generic statement. Starting from the well-known principles of IT governance the authors further explore the aspects of both information and governance. Four hypotheses are proposed to give ground to the use of information governance. These hypotheses will be the basis for further research.

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1. Introduction

'Governance' is by now a well-known term in business. It has focused on the role of boards of directors in representing and protecting the interests of shareholders. A critical role for governance is to monitor and control the behavior of management, who are hired to preside over the day-to-day activities of running the organization (Fama & Jensen, 1983).

Maybe its best known use is at the corporate level: 'corporate governance', as the set of processes, customs, policies, laws and institutions affecting the way a corporation is directed, administered or controlled. Corporate governance also includes the relationships among the many stakeholders involved and the goals for which the corporation is governed. The principal stakeholders are the shareholders, the management and the board of directors. Other stakeholders include employees, suppliers, customers, banks and other lenders, regulators, the environment and the community at large. Governance provides a structure for determining organizational objectives and monitoring performance to ensure that objectives are attained (OECD, 1999).

In the ICT world, the term 'IT governance' (or 'ICT governance') is well established (Van Grembergen, 2004; Weill & Ross, 2004). It is a subset discipline of corporate governance focused on information technology systems and their performance and risk management. The rising interest in IT governance is partly due to compliance ini-

tiatives (e.g. Sarbanes-Oxley (USA) and Basel II (Europe)), as well as the acknowledgement that IT is an increasingly important element of organizational products and services and the foundation of enterprise wide processes (Weill & Ross, 2004). It consists of "the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives" (IT Governance Institute, 2003). IT governance, hence, is an instrument of strategic business-IT alignment (Henderson & Venkatraman, 1993; Hirschheim & Sabherwal, 2001).

With the enormous growth of digitized data inside and outside the organizational boundary, and with the growth of possibilities to access this data, organizations have become aware of the need for governance of their data assets. Similar to the framework of Weill and Ross on IT governance Khatri and Brown (2010) recently published a paper, introducing the design of a data governance model.

This article takes a deviant, information based approach, built on the observation that (1) information is the missing linking pin between business and IT (Maes, 1999), (2) information is a business resource, independent of the supporting IT, and (3) information, being interpreted data, is, unlike IT and data an intangible asset. Furthermore, relevant information is more and more originating from external sources and surpassing the classical IT (basically: database) formats. As a consequence, the proper use and application of information (and not only its creation) is of vital importance and hence appropriately a candidate subject for governance. Our fundamental belief (and our premise) is that organizations with an instituted information governance process are more effective at seeking, collecting, processing and applying information and are getting more value from their and others' information sources.

Information governance involves establishing an environment and opportunities, rules and decision-making rights for the val-

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uation, creation, collection, analysis, distribution, storage, use and control of information; it answers the question “what information do we need, how do we make use of it and who is responsible for it?”. Investigating current practice reveals that many organizations, if not all, lack an all encompassing information governance policy (Economist Intelligence Unit, 2008), especially for external and free format information, and often the policies and processes they do have are not effective.

First steps have been taken to define such policies and processes from a compliance perspective (Donaldson & Walker, 2004; Kahn & Blair, 2004), but the aim of this article is to define and discuss information governance in a more explorative way. To this end, we first ponder the inadequacy of IT governance to deal with the decisive role of information in present-day organizations. In section 5, we explore the value of information and discuss the governance aspects to optimize the effective use and application of information. We continue with a discussion on the aspects of governance and the various mechanisms that have been explored so far. We conclude with a research agenda in information governance. This agenda is by definition a full and wholehearted attempt to combine rigor (academically speaking) and relevance (from the point of view of practice). Information governance is “rigorously relevant” both in theory and in practice (Keen, 1991).

2. The inadequacy of IT governance

Although IT governance is now widely accepted and is considered by many authors to be a powerful and necessary instrument to improve the added value of IT investments and manage IT risks at the same time, we argue that both the foundations and the current application of IT governance also suffer from serious limitations. Some of these limitations are *inherent*, meaning that they logically follow from the very concept of IT governance. Other limitations are *self-imposed*, meaning that they are caused by the way organizations apply the concept of IT governance in practice. Both categories and their effects will be discussed in this section.

IT governance includes decision making structures, alignment processes and communications tools (Weill & Ross, 2004). A definition in line with this is given by Van Grembergen (2004): “IT governance is the organizational capacity exercised by the board, executive management, and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT”.

IT governance is said to be deprived of a clear and commonly agreed upon definition and to be based on too operational frameworks, such as COBIT and ITIL (Simonsson & Johnson, 2006). Notwithstanding its operational nature (Van Grembergen & De Haes, 2007), IT governance is still considered the foremost mechanism linking investments in IT and business value; however, the concept of aligning business and IT, in itself, has been called difficult to master (Chan, 2002) and even harmful (Ciborra, 1997) and misleading (Maes, 2007). The concept of governance has been criticized from the side of systems studies (Hoebeke, 1990) as being a mechanism developed to manage the unmanageable, in this case incoherent aggregates. All activities transgressing boundaries e.g. innovation, are then discouraged or even discarded by falling back to governance. Governance, if established in this manner, is primarily a tool of repression (Hoebeke, 2006). Besides, Carr (2003) has argued that IT is no longer of strategic importance and hence no longer a concern of top management. Despite all this, strategic business-IT alignment and IT governance still score points in any CIO survey of imperative questions (e.g. Cap Gemini, 2009; Society for Information Management, 2009).

The inherent limitations of IT governance logically follow from its two constituent words “IT” and “governance”.

The first major inherent limitation of IT governance is that it is not concerned with the way information can be created, sought, consumed, processed and exchanged in order to add value to a business, but that it solely focuses on managing the resources that eventually must be deployed to achieve such a goal, and the associated risks.

The second major limitation of IT governance is that it exclusively inhabits the “control” half of the business universe, including administration, policymaking, responsibility, authorization, reporting, monitoring and audit. IT governance relies on the paradigm that IT investments and the resulting IT systems can and must be controlled in order to be successful. At the same time, IT governance carefully avoids the other half of the business universe, which hosts such vital elements as entrepreneurship, innovation, business development, creativity, improvisation, value creation and experiment. According to Kooiman (2003) creativity, intuition and experience are just as important as goal-directness, criteria of efficiency and working ‘according to rules’. Conscientiously implementing IT governance may widen the well-described gap between business and IT (Peppard & Ward, 1999) instead of bridging it.

Third, practice shows that IT governance, even if it is restricted to the IT organization, often suffers from incomplete or half-hearted implementations. Examples include impressive policy documents of dubious operating effectiveness, information security projects that are delayed or aborted altogether, service levels that remain unmonitored, and failing internal controls that remain undetected until an incident occurs. There may be several reasons for this; it has been noted that the added value of IT governance is not always clear to the IT organization, and IT governance often leads to a more formal and sometimes bureaucratic environment that is not always liked by IT professionals (Overbeek, Roos Lindgreen, & Spruit, 2005).

3. Definition of information governance

Taking these limitations into account we introduce information governance as a ‘logical’ alternative, focusing on the seeking and finding, creation and use, and the exchange of information, and not solely on its production. Information governance is not a new term, but the proposed definition in this article is different from the approach in existing literature. Information governance was introduced scientifically by Donaldson and Walker (2004) as a framework to support the work at the National Health Society on security and confidentiality arrangements to apply at multiple levels in electronic information services. More recently a report was published by the Economist Intelligence Unit (2008) on the use of information governance in enterprises. Information governance in these approaches typically includes records management, privacy regulation, information security, data flows and ownership, and data lifecycle management.

The explorations so far all show the potential pitfall to rely on ‘old principles’, by introducing a hierarchical control framework without exploring the possibilities of alternative governance approaches. We will explore a broad, conceptual approach to information governance as a basis for further research. This approach will give room for multiple approaches to governance. Similar to the previous sections we split our approach in an ‘information’ part and a ‘governance’ part.

Information has several unique characteristics, which render it difficult to value and to govern. But independent of its content (financial information, client information, etc.), generic principles on understanding the value and governance of information can be recognized. Information is an unusual good in many aspects—creation, distribution, cost, and consumption. Information is both an end-product and an instrument or input into the cre-

ation of other goods, decisions, and information (Rafaeli, 2003). It is expensive to produce and cheap to reproduce (Shapiro & Varian, 1999). The value of information is subjective, since it may be more useful in satisfying the wants of one person than another, or of no use to one person and of use to another (Huizing, 2007). Information has many definitions (Pijpers, 2006) and by itself is more or less without value. By giving meaning to the information it has value to a person. Huizing (2007) describes in his paper, that the difference between IT and information is the human aspect. Giving meaning to information is a human element and by definition subjective, since objectivism cannot deal with the human sense making.

Secondly the basis for governance, as stated by Kooiman (2003), is the interaction concept. Actors within a certain environment interfere, collaborate and are involved in many interrelations. Actors by themselves do not have the knowledge required to solve complex, dynamic and diversified societal challenges that come along. They will need a governance approach to streamline the patterns of interactions. More specifically, for information exchange they will need a governance approach to streamline the patterns of sense making interactions. By sense making we mean a motivated, continuous effort to understand connections (which can be among people, places, and events) in order to anticipate their trajectories and act effectively (Klein, Moon, & Hoffman, 2006). Information exchange can be considered as a form of sense making interactions. Following Klein we state that whether an information exchange makes sense depends on the person who's doing the sense making. The property of "exchanging information" isn't a property of statements but an interaction of people, situations, and knowledge. The governance of information should therefore be considered with the inclusion of the sense making interactions aspects to understand and utilize the information's value.

So, who interact when we consider sense making interactions? In general, any actor, receiving or consuming information, will give meaning to the data that he or she encounters. At the same time, data that the 'consumer' or 'receiver' of information encounters is always created by some actor (the 'creator') in some format and through some communication channel or system, which implies that creation of information cannot be without any subjectivism. Information governance should therefore include the human interaction of actors with people, data and the underlying systems.

Finally information should always be viewed within its context. Therefore we follow Pijpers, noticing that information can only be evaluated with an awareness of the context in which it is being interpreted. Context is an element of the *information environment*, which incorporates all the factors affecting how an organization deals with information (Davenport & Prusak, 1997). Similarly to the information environment, Huizing and Bouman (2002) describe the *information transaction space*, which 'represents the set of all possible information exchanges—economists say transactions—available to any actor at any time'. To influence these exchanges, if possible at all, some form of governance should be introduced, and accordingly, a governing actor to guard these governing principles. Therefore we introduce the 'governing actor', the third actor involved, a determinant of the information transaction space, being able to influence the interaction between the creator and the receiver of information.

Summarizing the above, information governance may be viewed as a concept to govern sense making interactions (instead of assets) between the actors involved in an information transaction space. Based on these considerations we propose the following definition:

Information Governance is the set of activities aimed at establishing a normative foundation to facilitate and stimulate sense making interactions.

4. Value creation and information governance

Information governance may be viewed as a framework to optimize the value of information in some sense to the actors involved. Our definition leads to the question to whom the value is optimized, and what the dependencies are to enable optimization of the information value. Obtaining a better understanding on the optimization of the information value and its dependencies will give a basis for the choice of a matching governance concept.

To answer the first question ('to whom is the value optimized') we consider the actors involved, as discussed in the previous section: the creator, the receiver, and the 'governing actor'. All three may reflect one or more persons (single person, group, group of individuals). The governing actor may be viewed as the actor who is governing the 'interaction' between creator and receiver within the information transaction space. The governing actor may be within an organization, but may as well be external (e.g. a legislator or an external auditor). All three (groups) will give value to the considered information and to this respect the optimization of the value will depend on the value that is given by the three actors involved. This leads to our first hypothesis on the value of information. In the continuation of this section we will describe four hypotheses. They will be stated here and provide a basis for further research, as described in the concluding section.

Hypothesis 1. Implementation of information governance may be considered successful when it has led to an acceptable balance of the information value for the three (groups of) actors involved

We use the term 'acceptable' instead of e.g. 'maximal' because of two reasons:

- (1) Maximization would imply that the value of information can be measured. However, this is questionable since no objective measurements can be applied (by definition).
- (2) Since three actors are involved information governance may establish an 'optimum' that is acceptable for all the actors involved. Since they all may have different perspectives it is better to consider an optimum instead of a 'maximum'.

With information governance we therefore aim for a framework that pursues a precious equilibrium for all parties. For example, a governing actor may require that certain privacy statements are followed. The information governance framework within an organization will then need a setup that complies with the external rules, but that leaves sufficient space for actors to perform their activities.

To answer the second question in the beginning of this section ('what are the dependencies to enable optimization of the information value') we propose three hypotheses, each with an emphasis on the role of one of the three actors:

Hypothesis 2. Obtaining an acceptable level of the value of information to the actors involved will depend on the reliability, relevance and usability of the information to the receiver and the way the information enables the receiver to take action

For example, a financial report may give value to a CFO, who is able to interpret, for example, the 'financial health' of a business unit, based on the given numbers. In this case the report may come from a controller, who is highly trusted by the CFO, and who always delivers a report with an extensive oral clarification and analysis on the status of the specific business unit and who ends with an advice on the actions to be taken by the CFO. With this approach the report is relevant to the CFO, due to the approach of the controller. The CFO is able to take action based on the received information. He trusts his controller and the systems that were used by the controller, based on confidence, but probably also on the controls that were

incorporated (such as an audit on systems and data, and a number of system controls). The reliability of the information in this example is therefore easy to verify and both relevance and reliability support optimization of the information value to the CFO. If none of this applies, then the CFO will probably take no action. The value of the information to both receiver and creator would then be worthless.

Besides reliability and relevance of the information the usability of the information is a factor that may contribute to the optimization of the information value to the receiver, because it determines the way the receiver takes action. Information use involves the selection and processing of information in order to answer a question, to solve a problem, to make a decision, to negotiate a position, or to understand a situation (Choo, 1998). Many person related factors play a role in the process of making use of the information, such as level of subjectivity and level of intersubjectiveness between creator and receiver (Huizing, 2007), but also culture, physical context and mental frameworks (Putnam, 1983). This brings us to our third hypothesis.

Hypothesis 3. Optimizing the value of information to the actors involved will depend on the environment wherein sense making interactions take place. This can be influenced by the governing actor through the governance of the related sense making interactions, which follow the principles of economic, political, financial and social mechanisms.

This hypothesis covers the most complex, but most interesting part of this section. The governance of the sense making interactions will depend on the aim of the governing actor, responsible for the governance of the interaction(s). He may want to strictly control the process and outcome of the sense making interactions, more or less independent of (the value to) the receiver e.g. a CFO wants to control all information that ends up in the annual report. In other cases the governance will be set up to facilitate sense making interactions, creating an environment where information can meander freely (e.g. creating a content specific community to support employees in sharing knowledge), so that the synergy between receivers and creators of the information may reach some optimal value. Or, possibly, he may aim to organize the flows in order to optimize the effectiveness for the receiver of the information.

At the other hand the sense making interactions follow rules of economic, political, financial or social mechanisms. This is clarified through an example on social mechanism; in some countries police departments are yearly evaluated on a number of performance indicators, giving insight in their policing activities through the year. An example of such an indicator is the total number of speed tickets distributed through the year. Although the number of speed tickets can be measured objectively, it appears that most departments are able to reach the required standard every year. Having a closer look shows a consequent peak in the number of speed tickets in December. Apparently the police departments put more effort in giving speed tickets at the end of the year to obtain the required standard. Consequently other activities may be neglected in that month. It is questionable whether the effectiveness of the police department is optimal due to this behavior. On top of that is the value of the performance indicator worthless, because it does not give a good insight in the policing activities of the departments through the year. The information value for all actors involved is not optimized. It shows that the information flow regarding performance indicators leads to a desired behavior, a social mechanism. Taking this into account, applying effective information governance would probably lead to a system where performance indicators are measured at random instead on a yearly basis.

Similarly, economic mechanisms in relation to information flows play a role. Especially because information is costly to produce, but very cheap to reproduce (Shapiro & Varian, 1999) people are conscious to exchange information without a reward. One may

state that ‘useful’ information does not come for free. Setting up and governing sense making interactions will require attention to these mechanisms.

To complete the optimization of the information value we will define a hypothesis on the third actor, the creator of the information. The creator may either construct the information himself, but may also be an aggregator, consolidator, maintainer, or assimilator of information, created by others. The fourth hypothesis focuses on the constraints to the creator of the information.

Hypothesis 4. Optimizing the value of information to all actors involved will depend on the constraints for the creator of the information

The position of the creator is better understood when we consider the range of constraints that is possible:

- There are legal rules and regulations, that prescribe the way information is exhibited or that restricts the publication of certain information.
- The information in the information exchange may be created solely for this exchange, but often the information is based on data with multiple purposes. This may lead to constraints in the availability and usability of the data.
- If information is not directly available, costs have to be made to create the required information. Costs may therefore be a constraint (Huizing & Bouman, 2002).
- The position of the creator and his relation to other actors and/or stakeholders will strongly determine the ease to obtain the necessary information for the exchange.

Raban and Rafaeli (2003) note that: ‘another view on the viability of the information society is by assessing the vitality of information exchange and flow within it’. In some cases this may be a one-way issue, but more often a flow goes back and forth until consumer and creator have reached the same level of understanding (Griffith, Sawyer, & Neale, 2003). Therefore hypothesis 2 and 4 are, in fact, interchangeable. Equally, the governing actor is not necessarily a separate body, but its position will depend on the choice of the governance model (Kooiman, 2003). The last three hypotheses imply that exchanging information and optimizing its value is a play between three (groups of) actors. The choices to optimize its value will have an impact on the design and organization of the information processes and its underlying systems. Focusing solely on one actor, for example by optimizing the information systems on the creator side, may lead to sub optimization. Therefore information governance takes all three actors into account.

Approaching information in this manner is closely related to communication disciplines. But our scope focuses on the information aspects, and not on the communication aspects. Other related disciplines are ‘information behavior’ (Julien, Cuadra, William, Luke, & Harris, 2009), information management and information management compliance (Kahn & Blair, 2004), and knowledge management and the learning organization (Choo, 1998; Senge, 2006). Finally we would like to stress that data governance and information governance are essentially different. Where data governance focuses on data assets, information governance is related to interactions. The differences between these two will be described in a subsequent article.

5. Governance concepts in sense making interactions

Governance is generally interpreted as a hierarchical framework for guidelines, policies, responsibilities, and procedures to ensure a certain level of control within an organization. But the definition of information governance does not necessarily restrict its use to one specific framework. Information governance may vary from a

set of policies, a way of working, or the creation of a space within a predefined settlement (such as an online community), or it may as well apply to a framework of strict (accounting) rules within a country (such as privacy regulations). As we previously discussed we question the one framework approach to governance in relation to the use of information. Other frameworks for governance may be more effective to govern the use of information, especially since information exchange does not restrict itself to the boundaries of an organization. In the past years the work of Kooiman has been generally accepted as a major contribution to governance approaches, both in theory (Kooiman, 2003; Kooiman, Bavinck, Chuenpagdee, Mahon, & Pullin, 2008) and in practice (Kooiman, 2005). A major part of this contribution grew out of a program directed at inter-disciplinary research on the governance of fisheries, and a subsequent project on the governability of fisheries, aqua-culture and coastal zones (Kooiman, 2008). In this section we will discuss the approaches he proposed and the relationship we envision to the use of information.

Kooiman defines three governance approaches as a way of governing. The *hierarchical approach* can be considered as the 'classical approach'. It has been around for many years and is traditionally the basic for a way to govern an organization or a state. The hierarchical approach is based on steering and control (Kooiman, 2003). The key element of steering is 'direction', and control is the way to give the 'insurance' that rules are followed. In modern times this kind of governance is moving from command to regulation, from procuring to enabling and from benevolence to activation, but the basis consists of a centrally directed approach, including a structuration framework, using structure and agent concepts. It is a topic for discussion whether such a framework is always effective for all forms of information governance, since exchanging information, formally and informally, is not necessarily restricted to organizational borders. The fleetingness of information makes that implementing controls may barely give sufficient insurance that the use and exchange of information is under control. How people act with the exchange and use of information is not based on the trustiness of the information, but on the value that is given to the information. Hierarchical designed control will probably not hold them back to exchange information in the way they prefer. On top of that is information hard to produce, but easy to reproduce. It is therefore easy to exchange information uncontrollably and therefore unpunished.

In his book Kooiman defines two other approaches of governance, known as *co-governance* and *self-governance*. The essential element of co-governance is that the interacting parties have something 'in common' to pursue together, that in some way autonomy and identity are at stake. A good example of co-governance is the governance of networks. This is a research field in development, that started with Castells (Castells, 1996), but with more recent developments on the governance of networks by Provan and Kenis (2008). Co-governance includes key forms of 'horizontal' governing: actors communicate, collaborate or co-operate without a central or dominating governing actor. When the actors involved and their relationship are known, this may be the basis for the way to exchange information in an acceptable manner. Although the formal relationship may be hierarchical, for example in a client-supplier situation, the way to exchange information may be based on a more horizontal governing. Co-governance may lead to a higher willingness to exchange information or to guarantee a higher level of reliability of the exchanged information, because a commonly agreed set of rules has been defined and effectuated.

Self-governance refers to the capacity of social entities to govern them autonomously. Internet communities are often set up in a more or less self governing manner, where, during the process, values and norms may be defined on the way information is exchanged. Kooiman speaks of informal agreements, self-applying

rules, and also semi-formalized codes of conduct. Other examples can be found in mass psychology, for example in the work of Van Ginneken (2009). Self-governance may be an effective approach to decrease the chance that exchanging information will be abused and to increase the chances that the use of information will be optimized in some sense. A good example on the use of self-governance is given in (Forte, Larco, & Bruckman, 2009), evaluating the governance of the Wikipedia community.

The governance models of Kooiman offer a wide range of possibilities on the governance of information, each of them with its own capabilities and flaws. Optimization of the information value is related to the three (groups of) actors involved. These actors do not necessarily belong to the same organization. For example, creator and receiver may belong to different organizations and the 'governing' actor may be part of either one of them. In this case the 'optimal' governance approach might be a co-governance form, such as a network governance approach. Other examples and approaches may apply as well. It leads to new research questions on what approach may contribute to a successful form of information exchange, for example by giving enough space to innovate with information, or to mitigate the risks of information abuse.

6. Concluding section

The broad definition of information governance that was given in this paper offers opportunities for a different approach to governing the sense making interactions within and outside an organization. We explicitly put effort in the thought that governance should not be viewed as a hierarchical framework; this approach may even be contra productive in relation to managing information within a certain environment.

With the hypotheses proposed we give direction to further research that may be valuable in the field of information sciences. Research themes to be considered are:

- (1) The optimization of the information value (*Hypothesis 1*): how is the value of information defined and is there a way to describe its optimal value? Is this a uniquely defined value, or should the value be weighted differently per actor?
- (2) The role of the receiver (*Hypothesis 2*): how is the receiver influenced to take the action that is to be desired? Related research comes from Choo (2008), who made an analysis on the social use of information in organizational groups. It shows that group discussions are fraught with difficulties. Groups tend to focus their discussion on information that is common to most members at the expense of unique information known to few leading the group to make more extreme decisions than what individual members would do on their own. Similarly Griffith et al. (2003) propose a number of hypotheses on collaboration management within groups and the role of information systems as a 'jealous mistress', more specifically in relation to virtualness of the teams. Principles of governance were studied by Ostrom (2000), who discussed some interesting observations. A similar study on various information governance models may lead to a better understanding of the effectiveness of governance models in information exchange and decision making within groups.
- (3) The role of the governing actor and the governing approach (*Hypothesis 3*): we already referred to Huizing and Bouman (2002), but the research on this topic should be extended to other varieties of the information transaction space. e.g. with the growth in organizational networks questions have come up on the effectiveness of a network (Provan & Kenis, 2008). For example, policing departments within a country are often not hierarchically dependent, but work together in networks. By exchanging information they may come to new insights that

were not available based on information from one source. Effectiveness of exchanging information within such organizational networks is closely related to the topic of network effectiveness. From an information governance point of view it is a challenge to explore various governance models within networks to optimize the exchange of information.

- (4) The role of the creator (**Hypothesis 4**): interesting to this extend will be the multipurpose usage of information. What effect will it have on the creator of information and how should he deal with the various stakeholders?

This paper will therefore be the start for a new area of research within the rich field of information sciences and may hopefully be a basis for new insights to come.

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