

# Knowledge of Society White Paper : 9

The Social Foundations of Knowledge Management

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# Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

## The Social Foundations of Knowledge Management

### Table of Contents

<b>Abstract</b> .....	2
<b>1. Knowledge Relation</b> .....	3
Knowledge Relation and Social.....	3
Probability Building Processes .....	5
Probability, Continuity and Meaning.....	7
<b>2. Consciousness and Rationality</b> .....	8
<b>3. Knowledge Management</b> .....	11
Knowledge Management: Classical Approach .....	11
Knowledge Management Enlarged .....	12
Conceptual Knowledge as Global Transferability .....	12
Active Knowledge as Historical Probability .....	13
Environment for Knowledge Creation .....	13
Network Information .....	14
<b>4. Knowledge Creation and Development</b> .....	16
Knowledge Creation and Development Processes.....	16
Knowledge Creation and Development Model: Classical Approach .....	16
Probable Knowledge Creation .....	18
<b>5. Networks of Knowledge Transferability and Continuity</b> .....	18
<b>6. Information Security as Foundation for Knowledge Continuity</b> .....	20
<b>7. Organization, Process and Network</b> .....	21
<b>8. Knowledge Management and Information Society Services</b> .....	23
<b>References</b> .....	24
<b>History of Modifications</b> .....	26

# Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

## The Social Foundations of Knowledge Management

### Abstract

Knowledge relation is foundation for social relations. Its management and development is the main development process of social relations. Knowledge mediation builds social rationality types, relations and integrity based on them.

Knowledge relations consist social relation types by knowledge probability building processes. These are based on development by conceptual knowledge, which includes risk, and its connection to active knowledge presenting probability on foundation of present action. The relationship of risk and probability constitutes knowledge existence presuppositions. Social dimensions global and history are based on this. They create coincidental global-history continuum where social relations are constituted by probability.

Knowledge management is a social development approach based on forms of knowledge. It is a more general development and management concept than information processing based on ICT-technologies or process approach in organization's development.

Knowledge management has a starting point at instrumental rationality and organization as principal social relations. Knowledge forms are relative to this. Enlarged knowledge management constitutes on development according to knowledge probability building processes. Social is build on management of global risk. The forms of continuity, meaning constitute forms of social interaction. There risk management and information security are principal social factors. General rationality form is network rationality and organization. Network information has special processing and development procedures and methods.

Knowledge development paradigm based on ICT-processing is inconvenient approach in network rationality. Especially in information society services it must be superseded by a general approach based on social forms of knowledge and information security.

In modern society consists important co-existence of

- Instrumental rationality based on selections at sets of means for historical ends,
- Social division of labour creating social relations and institutions based on instrumental rationality,
- Conceptual knowledge that is developed in empirical-structural probability building processes,
- Information security as protection of knowledge at instrumentally rational social units.

Information society services consider dissolution of these dominating features of modernity. They are based on network form of knowledge. Social relations do not build social structures on constant connection of global and history dimensions. These connections are probable relations of risk and probability.

## The Social Foundations of Knowledge Management

### 1. Knowledge Relation

Knowledge is foundation for social relations creation. Its management and development is the main development process in social relations. This does not limit only into formal systems, like information processing, database design or network design. Knowledge mediation builds social rationality types, social relations and integrity based on them. Knowledge also determines the change of these types – as instrumental organizations' substitution by network rationality based social integrity. For their understanding must be understood knowledge and its functions.

#### Knowledge Relation and Social

Social is created on mediation of knowledge at social interaction by meaning that constitutes relationship of acting humans by their adjustment to one another through communication (Mead, 1934/1972, Habermas, 1981).

Meaningful social action is created when acting individual in social interaction 'gets outside himself' and takes an objective attitude toward himself. He ('I') becomes an object ('Me') for himself when he in interaction takes into account the attitudes of others to himself. This twofold relationship builds a conscious Self which forms social relationships, instead of coincidental 'others' (Mead, 1934/1972, 138, 140, 144 – 164).

Communication mediated in interaction is developed on objective forms in social relationships. First are developed significant symbols, which create language (Mead, 1934/1972, 75 - 82). Later are developed external presentations of knowledge (documents, files). A new form of knowledge transferability is reached in databases and network information. Knowledge transferability builds its properties as conceptual knowledge. It is developed into active knowledge by meaning in social processes. Then knowledge is continuing and has meaning.

Social relations constitute on relations of I, Me and Self. Action on their foundation is subjective because it is social. This is a property of individual, subjective action whatever is the form of social relation and its creation process. But this relation may change when knowledge transferability and continuity change.

Man is a concepts-making animal. Knowledge is based on experience, but any a priori suppositions do not limit the way conceptual knowledge is created. There exist no a priori connection with conceptual and active forms of knowledge.

Conceptual knowledge however has no free transferability or continuity. These are constituted through knowledge validity in practice, in continuous interaction between humans, in a knowledge relation. Experience may have different forms according to how conceptual and active knowledge connection is created<sup>1</sup>. Forms of experience are forms for creating knowledge probability in relation to meaning and truth. By forms of experience are created forms of social.

Conceptual knowledge risk regarding meaning considers the conditions for existence of knowledge, risk by truth its validity and reliability. Risk is managed in a

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<sup>1</sup> It is reasonable to argue: "The social process, as involving communication, is in a sense responsible for the appearance of new objects in the field of experience of the individual organism implicated in that process" (Mead, 1934/1972, 77).

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

form of connection created between conceptual and active knowledge. This form changes when knowledge transferability changes<sup>2</sup>. This is connected to the forms of conceptual knowledge.

The creation of social relations is based on creation process of transferable conceptual knowledge and its continuity created in risk management at interaction. The form of risk management builds the form of experience which constitutes a relative certainty in action (Mäkinen, 2010/15<sup>3</sup>). On it is based the subjective meaning at social action. Meaning is probability of knowledge existence – probable knowledge - also its continuity. It has different forms according to knowledge probability building process and so has social action.

Because there is no a priori connection of conceptual and active knowledge mediating social interaction there neither exists a priori presuppositions for knowledge about social. It does not mean 'existing in society and history' but the qualities of social are created by creation of subjective social interaction where knowledge has meaning. Existence and meaning of dimensions of social are determined in social processes. If they appear as 'society' continuing in 'history' it is a specific knowledge relation.

Knowledge transferability and continuity determine the dimensions of social action. Building processes of transferability and continuity create connections of social dimensions Global and History as connections of conceptual and active knowledge. Without specific development qualities Global is determined by risk probability equal to 1 and History by risk probability equal to 0, also Global by transferability of and history by continuity of knowledge. Risk probabilities between these determine social relations and social dimensions at relative certainty in interaction.

Knowledge exists when relationship of Global and History exists. This is based on a probability determined in social risk management process. Truth is not relative but knowledge. Truth is always determined in the connection of existing social spatiotemporal dimensions in a knowledge relation, type of social experience.

All knowledge is created at conceptual relation into reality. Content for experience as knowledge is consideration of incidents in space and time, at social specification of risk and probability of incidents.

Concepts for spatiotemporal dimensions are not possible to explain by empirical abstraction. Neither should be supposed that they are "acquired from the senses of sight and feeling" (Hume, 1748/1964, 126) or "zwei reine Formen sinnlicher Anschauung, als Prinzipien der Erkenntnis a priori, nämlich, Raum und Zeit" (Kant, 1781/1971, 94).. The context where knowledge exists, connection of global and history, is created by probable management of risks included in transferable and continuing knowledge.

Social interaction changes in global communications network by presentation form of transferable knowledge. The information society change is a change of knowledge.

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<sup>2</sup> This may include geographical widening of social interaction but does not have to: in communication network this kind of wideness has no meaning, only the volume of interaction has.

<sup>3</sup> Documents in yhteiskunnantieto.fi/White Papers series are referred by year and number in series. These do not correspond to each other; the updated versions of documents keep the original number.

## Social Foundations of Knowledge Management

### Knowledge of Society White Papers 9

Knowledge relation varies regarding interaction where it exists. Active knowledge exists in human action as meaningful knowledge creating rational content of action. Conceptual knowledge, or information, is presented in an, often external, form where knowledge is possible to develop and transmit independently of action where it is applied. It can exist concurrently in several processes and networks, and has in this sense global-history dimensions mediated by risk; only present is certain (Mead, 1932/1980) but relatively, approaches certain and never reaches the risk probability 0. Also present is conceptual.

### Probability Building Processes

The forms of risk and probability connections, risk management processes or forms of experience, create types of knowledge relations mediating social interaction. They also determine different social types of social identity relation - 'I', 'Me' and 'Self' - and types of subjective social action. Variations on these types depend on risk and probability relations

Components of knowledge building, risk and probability relations, create dominating social dimensions in knowledge meaning building processes. Processes may be called by concepts based on dimensions: historical, structural-empirical and global probability building process (Mäkinen, 2011/Tr3)<sup>4</sup>.

The creation of meaningful knowledge in global-history continuum means probability creation, also a creation of concept for certain present. This conceptual present means approximation process into risk equal to 0. Interaction as a continuum has no a priori social meaning. By meaningful knowledge it is possible to specify social interaction and the social itself. This determines the form of interaction, the form of social, and the connection of social dimensions global and history as knowledge presuppositions. The existence of this connection may be identified with the existence of meaningful knowledge.

The specific form of global-history connection is related to the form of social interaction, knowledge and social relations continuity. There are determined ways how relative certainty and also moral judgments are created as well as forms of contingent, for example factual judgments.

Probable existence of knowledge is based on social processes that determine conceptual and active knowledge connections. Their varying types create types of continuity of social interaction. Social relations constitute on 'a probable course of social action' (Weber, 1921/1976, 13). The continuity types determine the knowledge meaning types. The creation and maintenance of meaning is social process that makes possible the individual 'knowing'. By these knowledge continuity, meaningful forms, are created forms of social rationality.

At the historical probability creation 'history' is the only relevant social dimension and determines continuity. Meaningful knowledge is determined by the verification according to it. Structural form of probability building is determined by empirical active knowledge, for example in instrumental moral judgments or at scientific knowledge verification. This presupposes a 'fixed' connection of social spatiotemporal dimensions which is created by relative certainty in action. In global probability creation such a connection exists not but it is created in a process dominated by conceptual knowledge and determined by information security. Risk

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<sup>4</sup> Documents in Knowledge of Society Training Papers are referred by year and number in series with a prefix 'Tr' for difference from White papers series.

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

and probability connections at global knowledge relations may be several. Some 'empirical' corresponds conceptual on foundation of probability. 'Empirical' also is not the necessary or sufficient presupposition for knowledge creation.

In social probability building processes are created both contingent and moral judgments<sup>5</sup>. Their creation process do not have special characteristics but they differ on foundation of objects. Contingent object presupposes global-history connections that have no absolute content. It may in practice be supposed, as a 'limiting value', but this is not a required property of object, rather a deviation on its theoretical functions in knowledge building processes. If object is contingent it is possible to verify on foundation of experience. Moral judgments however are based on non-contingent object that presupposes infinite verification which is impossible; it also is a 'matter of belief' or trust.<sup>6</sup>

Probability building processes correspond to widening processes of social interaction. The knowledge creation, also risk management, presupposes a social set of incidents to be build; no singular incident cannot create it but social processes where is created sets of social incidents and on them founded action. This 'large set of incidents' may be build on foundation of history, empirical relation into reality or in a genuine global set of incidents where relevant knowledge creation is not possible to determine on foundation of empirical experience in action. Widening process does not presuppose its geographical widening; in global network geographic distance rather looses its meaning.

Widening processes however do not explain knowledge creation types; it is based on risk management of conceptual knowledge, also knowledge properties and on it founded meaningful social interaction. Historical incidents do not as such explain the creation of social forms.

Social interaction presupposes a non-contingent connection of conceptual and active knowledge, also global and history dimensions of social. These are determined as limiting values of dimensions connections and are based on relative certainty in action. On their conditions are build judgments which are conceptualized moral (Mäkinen, 2010/15). They create social relations as probable courses of social action and also forms of social interaction and rationality. According to determined meaning rationality may exist as value, instrumental or network rationality.

The forms of moral judgment do correspond the forms for creation of knowledge continuity. It consists of the principles of social integrity inception and maintenance. At historical knowledge creation this is based on some authority on history dimensions dominance, an extra social authority. At structural knowledge creation social interaction is created on foundations of continuity of constant

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<sup>5</sup> Actually also the judgment of art is developed in same process. Kant defines three kinds of judgments: Reinen Vernunft, Praktischen Vernunft and Urteilstkraft, in knowledge relation context: contingent judgment, moral judgment and judgment of art. Last one is the most subjective: it is not supposed that somebody is accepting the judgment as in the case of moral, but judgment has its status when it is subjective and evaluated only by its object's qualities. But it must be continuing: if there is no interaction, it disappears. At contingent judgment or judgment of art this is not a relative certainty at action; loneliness is the main, if not only, property of meaningful knowledge.

<sup>6</sup> Hume's guillotine formulates that from what *is* cannot be concluded what *ought* to be (Hume, 1739-1740/1969, 521, also 507–521). But the 'ought' is developed in the same social probability building processes as the 'is' (Mäkinen, 2010/15).

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

relationship of global and history dimensions, also 'a society'. At global knowledge creation social integrity is based on individual knowledge building.

In every case existence of knowledge is presupposition for social integrity and continuity. The forms of moral judgment based on extra social or social authorities are forms of knowledge continuity as well as judgments on individual foundations. Information security specifies knowledge meaning in global relations and is a basic factor for social integrity.

### Probability, Continuity and Meaning

In global-history continuum, which is contingency, is created knowledge relation by social identity relation and social action. These build social relations by a probable course. Probability is evaluated as property of action. Also knowledge and social are properties of action but at relations consisting of sets of incidents, not on singular, coincidental actions. By these conditions knowledge and action have meaning. Meaning is continuity and continuity probability. Social properties of action are based on transferability of knowledge realized in singular, coincidental action, and exist by probability.

Social relations at global-history continuum constitute on probability distributions of individual actions. Actions may constitute limiting values based on community or society and history constructions which have properties of generalizations. Moral judgments constituting social integrity are however always based on individual action and social regulations on limiting values.

Forms of knowledge transferability may be considered types of generality. In conditions of fixed social dimensions these may be supposed infinite and generalizations<sup>7</sup>. Conceptual transferability is based on unlimited realization of social objects in a finite, contingent context, determined by risk probability equal to 1. Continuity is limited by probability 0. Limiting values are never reached. Knowledge creation is determined by unlimited but contingent conditions, in contingent social processes. These determine forms of knowledge meaning, social identity relations and interaction.

Social communication is based on transferability of knowledge. It may constitute on generalizations based on common properties of action which are followed at social incidents and selections by a probability match. Then social objects have social properties when they are mediation of conceptual knowledge in generalized structures.

Transferability means also conceptual knowledge in global-history continuum where is created social properties by risk management of knowledge existence. These are properties of social sets of incidents. Social objects have these properties by probability of risks management and knowledge meaning conditions.

Difference of these generality forms is in conceptualized constitutions of social dimensions. If there is supposed 'absolute' dimensions, either history or global-history connection, it is possible to suppose that social properties and action are

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<sup>7</sup> Infinite generalization is presupposition for assumed 'natural properties' of human or action. Such properties cannot be concluded on any experience but on supposition of dimensions absolute value. Thus for example supposition of moral judgment on seeking happiness in classical utilitarianism is a knowledge relation based on supposed infinite generalization (Mäkinen, 2010/15). On same grounds all 'self-fulfillments' are forms of instrumental rationality.

# Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

continuing in infinite, non-contingent world. This does not presuppose that there is a probability for non-contingent continuity but that it may exist in principle. If generality is based on supposition of transferability in contingent object, social properties may be supposed to exist in an unlimited world that is determined by knowledge transferability and continuity and contingent by their probable connection that is presupposed for constitution of knowledge and social relations.

Social action constitutes on mediation of meaningful knowledge. It is determined by knowledge; it is not based on adaptation and application of generalized knowledge which should presuppose that it is determined independently of knowledge. Social action does not only accomplish general laws of social but on the contrary these are based on properties of action and knowledge.

By these requirements types of social relations for action creation depend on the types of knowledge probability building; there are different forms of 'I', 'Me' and 'Self'. By these properties varies orientation to other people in action, social rationality (Weber, 1921/1976, 11 - 13)<sup>8</sup>.

Social action has subjective meaning to acting human. Rational orientation to other people has dimensions: meaning, in relation to social continuity, probability, and risk in relation to other people. It includes properties of social. These properties at action are based on knowledge risk and probability and constitute genuine properties of social dimensions at interaction. Genuinely global knowledge probability building is based on concurrent risk and its evaluation. Social relations on that foundation have no dependency on social continuity connected to history that is determined as limiting value in social action but only properties of individual action. Social integrity has no authority or intrinsic properties of knowledge or social action presupposing authority exist not.

Meaning is subjective when it is social, otherwise it is accidental. Behaviour according to features of certain rationality are based on risk and meaning evaluation – and actually regarding global risk management practically accidental in social formations. On the other hand social continuity and relations may be realized only through conscious historical action by subjective meaning.

## 2. Consciousness and Rationality

All knowledge is originated with human consciousness based on experience in time and space. Experience however has varying forms depending on probability building processes and socialization of transferred knowledge by experience; experience is contingent. Knowledge actually exists only in consciousness but there exist different types of knowledge. Outside this knowledge relation transferable knowledge constitutes types of social relations by probable knowledge qualities. In these relations knowledge may have external presentation in knowledge and information assets. Knowledge meaning is subjective and social continuity and transferability is realized only in meaningful actions.

Continuity of knowledge constitutes on active knowledge whose mediation builds social action. It is managed risk of transferable, objective forms of knowledge,

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<sup>8</sup> Functional continuity is based on continuity of structure in history. The forms of knowledge and social action are supposed to fulfil some functions presupposed by social. Then is assumed social to be determined by existence in society and history. Continuity based on knowledge relation and meaningful action according to it considers the creation process of social which determines also the existence of society and history.

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

constituting 'Self', consciousness. Subjectively certain is only conceptual present, managed risk of conceptual knowledge; it is a conceptual relation into reality, a relative certainty. It creates continuous forms when risk and probability connections exist, also global and history are determined. If they have limiting values constituting a probable course of social action then may exist conscious action according to social judgments, as moral judgments.

Consciousness is a relation of social dimensions. Actually there is created consciousnesses, and the connections of social dimension are several, but in relative certainty one dominates. This relationship constitutes purposive – or intentional – action<sup>9</sup> by means-ends relationships, rationality judgments, orientation into other people.

Conscious purposive action may be formulated in meaningful, risk managed, social concepts<sup>10</sup>. By means-ends connections at action are created different continuity and active knowledge types which form rationality types. Consciousness is property of rationality types, forms of social orientation, formulated by knowledge creation principles.

Ends and means relate to each others like forms of knowledge. Ends may be build 'freely' but as far as they have no continuity, they are accidental. Their realization, determination of means, presupposes a probability building process<sup>11</sup>. Means are created by global dimensions of social determining the realization presuppositions for ends.

When probability building is dominated by historical continuity, ends - by limited global risk evaluation - are dominating the rationality creation process. Ends are selected by conditions of limited set of means (Bauman, 1990, 112) and dominating rationality is value rationality. In a developed global dimension, where exists a global-history connection based on relative certainty at empirical experience, means are determined in empirical world. Ends may be selected by an empirical set of means (Bauman, 1990, 112) and the probable connection of means and ends is possible to determine by their probability match. Then is created instrumental rationality<sup>12</sup>.

These rationality types are constituted on fixed social dimensions and their connections. They are also limiting values, determined by relative certainty in action, of probable processes where are build 'ends' or 'means' as real social

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<sup>9</sup> On the relationship of 'purposive' and 'intentional' action see (Mäkinen, 2009/14).

<sup>10</sup> "Intention appears to be something that we can express, but which brutes (...) can *have*, though lacking any distinct expression of intention" (Anscombe, 1957/1963, 5). Even brutes can communicate by their gestures and actions, but they cannot conceptualize them by transferability and continuity in global-history continuum where are developed selections for action.

<sup>11</sup> It seems reasonable to talk about subjective free will only when this relationship is determined; rational free will exists in probability creation process. It is also reasonable to connect purposive action and moral judgements into duty and following laws, in society-type of integrity, as "...eigentlich aus Pflicht geschehe und also einen moralischen Wert habe" (Kant, 1785/1974b, 33). This is a property of social action and only its: "Nur ein vernünftiges Wesen hat das Vermögen, nach der Vorstellung der Gesetze, d.i. nach Prinzipien, zu handeln, oder einen Willen" (Kant, 1785/1974b, 41). – Then also "Die Autonomie des Willens ist das alleinige Prinzip aller moralischen Gesetze und der ihnen gemäßen Pflichten" (Kant, 1788/1974a, 144).

<sup>12</sup> Translations for Weber's concepts (Weber, 1921/1976) 'wertrational' – 'value rational', 'value rationality' and 'zweckrational' – 'instrumental rationality' are according to (Weber, 1947).

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

objects by mediation of conceptual knowledge – as are limiting values of probable processes also meaning, consciousness and purposive action. In global probability building and relative certainty based on it, probability processes are actual ones and have limiting values that are based on transferability of knowledge, not generalizations. Objects may be ends realizing means by some probability and means have different social forms. Then is created network rationality (Mäkinen, 2011/Tr4).

In case of network rationality continuity of social relations and on them based social integrity are constituted on individual properties of action. They may build limiting values but at network and transferability and not on societies and generalizations. Knowledge meaning at continuous risk-probability evaluations and subjective action support directly rationality and integrity and require no social rationality structures or integrity rules and authorities for creation of social. Social is based on probability distributions of individual action.

Development of humanity and individuality are development of global dimension of social.

Relationship of risk and probability constitutes relationships to social and action, to others. It is mediated by specific, also varying types of communication and knowledge. The explicit, objective, conceptual forms of knowledge are possible to transfer independently of immediate, empirical or historical experience and interaction. Constitution of relationships into others and properties of social action change by this development; they include explicit risk and are determined by probability.

Conceptual transmission of knowledge makes possible a 'distance' in time and space, also in physical and geographical form, which is independent of relative certainty at interaction. This makes possible the inception of wide social and historical formations. The 'wider' conceptual knowledge is possible to transfer, the 'wider' are also these formations. Every widening in space presupposes historical development and large amount of events.

Consciousness as unity I, Me and Self is analogical, obviously same thing as constitution of meaningful, rational action on risk and probability, or global and history dimensions of social. The latter ones have no 'own life' in social; such has only consciousness and actions as historical events. Social is continuity of social relations, realized as type of rationality and contains properties which are required for building social formations.

General understanding of social place and time should not be based on knowledge adoption and properties at a certain period of spatiotemporal continuity, as in relative certainty at empirical experience. Knowledge is part of the network of social relationships. Its components may be 'spatial' and 'temporal' originating anywhere where knowledge ever can be transferred, where also knowledge relation exists. This includes that knowledge, and social qualities on it, are based on certainty only at conceptual present, relative certainty at conceptual existence of social dimensions or their connections, and in the general case on risk.

Social relationships are constituted on coincidental continuum of global and history. Whatever the social and historical formation is, it develops from consolidation of activities and measures, conscious social action at social probable relations for consciousness building. Forms of 'consolidation', continuity, builds forms of social

# Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

and knowledge. If its probability is bigger than zero, social relations and knowledge do exist.

## 3. Knowledge Management

### Knowledge Management: Classical Approach

Knowledge management (e.g. Nonaka – Takeuchi, 1995, Takeuchi – Nonaka, 2004) is a development approach based on forms of knowledge and the conditions for their creation. It concerns both knowledge development processes and organizational development. It is a more general development and management concept than concepts for information processing based on ICT-technologies or process approach as organization's development principle. ICT-solutions concern with one form of knowledge, conceptual generality, in a static situation without knowledge development aspects. Social interaction processes are mediated by knowledge in conceptual and active forms. Without these social action and its forms cannot be understood.

Paradigmatic form of Knowledge Management however has a starting point that organization is a principal social formation of rationality and knowledge forms are specified in its relations. These are real but special cases of knowledge. Organization and its knowledge should be considered at historical conditions for management of global risks. Organization is not principal social formation but created by a knowledge relations and rationality types, actually type attached with knowledge forms analyzed in paradigmatic knowledge management conception.

Classical knowledge management defines knowledge in forms

- explicit knowledge and
- tacit knowledge (for example Nonaka- Takeuchi, 1995, Takeuchi – Nonaka, 2004).

Explicit knowledge, that practically consists of information, is conceptual and can usually be represented on some external carrier, as document, file or data base. These are generally conceptualized 'information assets' (ISO 27001, ISO 27002). They are transferable and divisible, in the special way characteristic to information; not absent where it is transferred from. They have spatiotemporal or on experience based properties only on special conditions - not in global-history continuum but in risk managed social relations where they have on continuity based meaning. Explicit knowledge has meaning in definite global-history connections, in limiting values of social relations. Tacit knowledge is bound with the human activity and has spatiotemporal properties in relation to human experience, in knowledge relation based on empirical probability building process.

Special environments where action or knowledge transfer are taking place are important for knowledge inception and functioning; not in the sense that these environments should 'determine' knowledge but they give presuppositions for knowledge creation in definite forms, and its socializing processes (vonKrogh – Ichijo – Nonaka, 2000, especially 47 -49). Knowledge is not only processed, but primarily created and developed. This process creates conceptual knowledge from action based knowledge and network information from conceptual knowledge delivered globally and vice versa. Third component of knowledge problematic is information security giving it social dimensions and meaning.

# Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

## Knowledge Management Enlarged

At knowledge relation context knowledge management concepts should be enlarged by principles (Mäkinen, 2011/Tr3):

- Interpretation of conceptual knowledge as global transferability of knowledge that includes risk,
- Interpretation of active knowledge as historical probability of knowledge,
- Interpretation of interaction environment for knowledge creation as contingent world emerging into knowledge presuppositions.

In these conditions knowledge forms are dependent on probability building processes that create different forms of active knowledge whose functioning in conceptual knowledge risk management processes creates forms of meaningful conceptual knowledge. The probability creation processes themselves are contingent environments for knowledge building.

The main factor of 'knowledge management enlargement is risk at transferability, conceptual knowledge in global-history continuum. Conceptual knowledge is there accidental. It does not matter how it is created and how many 'rounds of meaning development' it has behind. Every piece of information may have the form of disinformation or misinformation (Lash, 2002) or in general case form a non-knowledge processes. In certain types of continuity, rationality it may have forms specified in probability building processes.

Risk also considers the existence, meaning of conceptual knowledge. In general case this is a probability distribution determined by risk definitions. If risk regarding knowledge meaning does not exist – but only risk on its truth value – there is a knowledge relation where social dimensions are determined as limiting values with fixed connections. Then is possible to analyse social action as application of existing knowledge and may be supposed 'simple conceptual knowledge' and a 'simple active (or tacit) knowledge'. which are special cases of knowledge building probabilities. General case is risk based network information where knowledge cannot be based on individual properties at action or applications of generalizations.

## Conceptual Knowledge as Global Transferability

Conceptual is knowledge relation, social interaction where knowledge is transferred, not a property of knowledge. It has usually material presentation but knowledge relation and transferability do not presuppose this. Conceptual represents 'global' in knowledge, also is defined by risk probability = 1. Conceptual knowledge has no certainty but it is developed by historical connections into experience and human activity. These connections do not exist a priori but only in a knowledge relation where conceptual knowledge is mediated. They may have, and actually have, different forms.

Conceptual knowledge is not infinitely, although unlimited transferable. Its infinite transferability should presuppose determination of infinite social dimensions that determine properties of social. Transferability is finite by risk, also created by building of risk-probability relation where are based social dimensions for knowledge presuppositions. Knowledge is also active knowledge on foundation of probability. Transferability is although unlimited in the sense that knowledge may be presented in unlimited number of social incidents without being away anywhere.

## Social Foundations of Knowledge Management

### Knowledge of Society White Papers 9

Conceptual knowledge has meaning or it is 'true' only in relation to active knowledge. In global-history continuum without this relation to human interaction, it includes only risks. Relationships where knowledge has meaning are based on probability distributions depending on social interaction. There knowledge is presented by relative certainty that is required and realized at action. Conceptual knowledge is 'true' by knowledge relation properties; truth is not relative but knowledge.

Continuity of transferability is determined by form of active knowledge This is a knowledge and social relation by defined probability, not any more a phenomenon in global-history continuum but not also necessarily a limiting value with fixed knowledge continuity. In generalized knowledge at social structures, the form of knowledge continuity is primarily empirical. On it global and history build connections, social relations where are defined active knowledge. Knowledge development processes are dependent on the forms of these connections.

### Active Knowledge as Historical Probability

Knowledge meaning is realized at active knowledge in historical probability in social interaction. It may never reach risks probability equal to 0, also absolute certainty. That is why it is always conceptual and social continuity is limited by risk.

Active knowledge may present tacit or empirical knowledge in structural probability building processes. But it may mean also trust or reflexive relation into reality, continuous evaluation of its probabilities. Active knowledge forms a special type of rationality.

Active knowledge is created at knowledge relations by knowledge (conceptual) transferability; it is a conceptual relation into reality, presupposing specifications for present or global-history connections. Social historical events are potential sets of events determined at knowledge relation. 'Empirical' is a type of active knowledge and builds a type of social relation. Active knowledge represents history in knowledge, is defined by risk probability = 0. This continuity is created in different ways depending on the connections of social dimensions.

Active knowledge specifies the realization of global at conceptual knowledge. This creates the historical social relations in global-history continuum. The way active knowledge is gathered depends on its form.

### Environment for Knowledge Creation

Interaction environment for knowledge creation is based on mediation of knowledge in continuity forms. Any interaction environment, historical incidents, do not 'affect' into knowledge creation, but is based on mediation of conceptual knowledge. Development of interaction environment creates and develops knowledge presuppositions.

Interaction environments for knowledge creation are build on relative certainty at global-history continuum, also a kind of social limiting value, but they do not consider probability distributions of social interaction. This determines a conceptual relationship into reality, contingent world where knowledge is specified with corresponding social interaction and relations. Interaction environment for knowledge development cannot be the coincidental world of global-history continuum but there must be realized social relations, probable courses of social action.

# Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

Knowledge creation environments are built on combinations of knowledge, process and network components. Their combinations build social conceptions by specific probabilities; their 'fixed' combination is a probable contingent world. A social world for knowledge development should be determined by networks (global dimensions) that are based on transferable knowledge regarding action and social interaction processes, continuity – history dimensions. These social components are specified as networks that build constant combinations only regarding relative certainty at social interaction process.

## Network Information

Knowledge change determines the requirements of enlargements for knowledge management and development.

Meaning of knowledge and social relations are limited by risk probability equal to one, global. Infinite regulation of social risks exists not and in the long run exists only risks (Mäkinen, 2009/14). Conceptual knowledge may appear in form where it seems to be transferable without conditions of risk management for knowledge creation. This presupposes social conditions that are 'infinitely' determined, also social structure and history without social qualities for their inception. Knowledge seems to exist 'always when human thinks' and whenever it is created it remains knowledge wherever it is transferred. These forms of social dimensions and knowledge are created by empirical probability building processes like generalizations of relative certainty at action.

Social is changing into mediation of network information, when knowledge continuity and transferability develop in global network. Then exists no infinite social dimensions but knowledge creation is always dependent on risk definitions. There can be specified formal and technical components of networking and on the other hand interactive components that may build structural regulation environments, but main conditions for knowledge building are social dimensions connections based on probable risk management and information security. Any 'general' components of social relations, independently of risk management, are not possible to specify in global networks.

Network information exists in environments that are entirely determined by risk management and information security. Global network constitutes on transmission path that has no information security, social structure or social relations defined. Knowledge there is determined by probability distributions. This builds the specific form of social continuity, meaning, in network.

Relative certainty is determined at global-history connections that may be present or dimensions' relation. This determines the type of experience. There is mediated knowledge relations connected to action. Conceptual knowledge may exist concurrently in several processes and networks. In its simple forms it creates social structures of certainty where may seem to exist its infinite transferability. In global environment such certainty may be based only on probability and information security. Then also relative certainty is based on them.

'General' form of social in global network is not determined by generalization but on transferability properties of knowledge. They are defined in a set of social incidents where several global properties exist by probability at incident level. Logic based on probability match of incidents in social structures is replaced by logic based on transferable properties in sets of incidents. Relative certainty however is build as a

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

limiting value for knowledge in social action. It does not present constant connections of global and history but their network, process and knowledge connections (Mäkinen, 2011/Tr4)<sup>13</sup>.

The essential social relations are developed with conceptual knowledge; there exists a global dimension of social which determines the mediation of social properties that build probabilities of social relations. Instrumentality means an evaluation of means in relation to global risk. This may happen still at spatiotemporal information assets managed in experience and action.

Forms of knowledge are forms of social continuity. Their difference is actually difference in risk management and information security. Active knowledge is mediated in action and experience where its relations to global and history are based on relative certainty of conceptual present. Knowledge mediated by conceptual knowledge having external presentation independently of action, may be conceptually verified in social relations although based on probability. This is not specified in single social relations but on a set of relations managed in global dimensions of risk management and having social continuity. Conceptual knowledge creates presuppositions for mediating forms of social interaction common to a social structure or institution, for example according to principles of organizations or societies. It is a form of continuity, but not of knowledge creation in social consciousness or in global environment. Serving instrumental objectives of social institutions, knowledge, although global, has also historical dimensions in social institutions and structures.

Both active and conceptual knowledge can be transferred in communications network. The former one is even then dependent on relations in immediate experience<sup>14</sup>, although it may not have connections experienced in time and space. There is no risk - in limits of knowledge as medium and identification, authentication and non-repudiation, a Binding (Mäkinen, 2009/7, CommonCriteria, 3.0, 3.1). But conceptual knowledge delivered in global network can be transferred concurrently in several Bindings, and even outside them, restricted only by meaning. As network information knowledge mediates social relations entirely by probability, which has a meaning only on information security. Network information should have special procedures and methods to be processed and developed.

In all forms knowledge can be, and actually is, in social processes, either contingent or moral judgments. These are objective social relations based on continuum of risk and probability. Their relations determine development of knowledge. Contingent or scientific knowledge cannot be defined according to truth value or the processes where it is created. 'Truth' is not a property of knowledge, neither 'scientific' (Mäkinen, 2009/14, Mäkinen, 2010/15). There is a statistical dependency between truth value and scientific way of producing knowledge, for example testability of knowledge and methods of acceptance in scientific community. It cannot be dependent on historical continuity, where are created 'absolute truths of life', but

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<sup>13</sup> These build continuing social forms. Subjective rationality and moral judgments are determined on the incidents levels, by their social properties. Continuing social formations are their 'approximations'. They are always regulated rights (Mäkinen, 2010/15) which may be followed by probability. Subjective judgments are based on relative uncertainty.

<sup>14</sup> 'Global present' (Adam, 2000, 87), on foundation of global communication of interaction, is also present when people are in immediate relation to each other - although mediated by communications media. It does not even require concurrency. Conditions are different only when information is transferred in a form that has no spatiotemporal properties at experience. Communications network in the genuine sense considers knowledge transference in conceptual and network forms.

# Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

on approval to take account the external incidents and ability to conceptualize events, change concepts and presentations of events according to this. In this sense science represents global in knowledge. But scientific knowledge has its properties only by contingent object.

## 4. Knowledge Creation and Development

### Knowledge Creation and Development Processes

Connections of conceptual transferability and active continuity components of knowledge are based on social processes for conceptual knowledge risk management. This may vanish or be covered if the connections of global and history dimensions - presuppositions of knowledge - seem to exist given, but if not, there should be defined social processes for knowledge meaning development and maintenance.

The conceptual forms of knowledge have meaning only when they are continuing in active knowledge. Knowledge never exists 'here and now'. Every component of knowledge has 'a long history' and 'large extension' where knowledge relation is determined. Active knowledge presupposes connection of spatiotemporal dimensions, empirical knowledge its constant connection developed in social processes. Knowledge meaning may be different regarding forms of experience, conceptual-active connection at knowledge relation.

Conceptual knowledge meaning at action and active knowledge transferability by conceptual presentation may be conceptualized by relationship of risk and probability: transferability or continuity are finite, contingent by risk determination. This property defines their development in social processes, instead of for example infinite generalizations by empirical observation. The management of risk between knowledge forms by relative certainty creates social relations where knowledge exists and processes where it is developed.

Principally both conceptual and active knowledge are created coincidentally. Because there is no a priori connection of knowledge forms there is either any limitation for knowledge building processes. On the other hand any action, experience or other, does not create knowledge without a conceptual connection at least on global and history. But knowledge forms can be developed and are actually developed – although not necessarily - in every social process where conceptual and active components of knowledge are united, also in processes building moral judgments or judgments of art. If they are not developed is created non-knowledge in non-social (Mäkinen, 2010/15).

For social rationality purposes – as for organizations or information society services - the process of knowledge development, creation of conceptual–active knowledge connection should be explicitly formulated. This is a general model for knowledge development and treatment - when the information processing model is only an aspect of knowledge development.

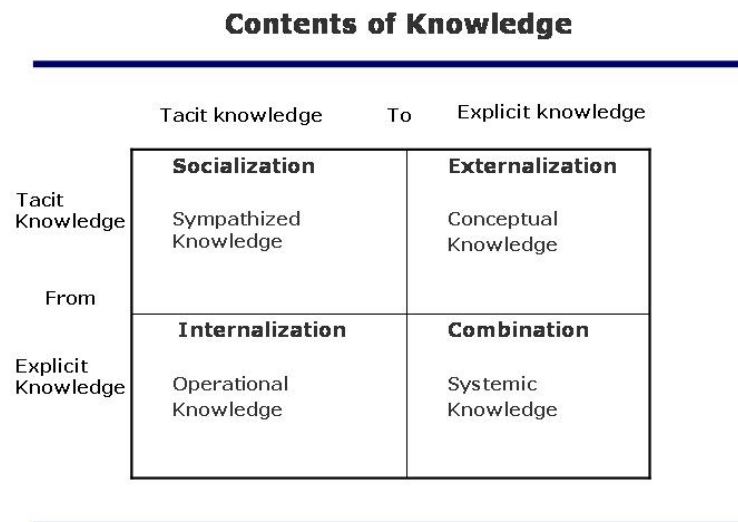
### Knowledge Creation and Development Model: Classical Approach

Development of knowledge relations from social structures based conceptual and active knowledge connection into global relations determined by network information requires information processing culture change into knowledge creation and development culture.

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

Forms of knowledge are not to be separated as knowledge properties, but social processes where they are constantly transforming to each other. Classical model for this is the 'SECI-model' of knowledge creation and development (Nonaka - Takeuchi, 1995, 61 – 73, Takeuchi – Nonaka, 2004, Mäkinen, 2011/Tr3).



Starting point of the model is organization's knowledge development process. It can be as such generalized into other social relations of structure and instrumental type. But considering global relations development forms it must also be analyzed according to enlarged forms of knowledge probability building and information security dimensions. Knowledge is in global network transferred in tacit and explicit – and active and conceptual - forms and requires the development functions. The information security functions defining their social meaning are different when social relation is global. Information security consists of profiles accepted in a social process (Mäkinen, 2009/7, Mäkinen, 2009/Tr2, CommonCriteria 3.0 and 3.1).

Knowledge mediation at social relations is conscious action of humans. It constitutes of knowledge transferability and continuity which depend on each other building mutual limiting factors. To be applied in 'larger', also in some degree global relations, or applied in computers and networks knowledge must be presented in explicit forms and externalized. Externalized knowledge is meaningful conceptual knowledge. It may constitute combined knowledge pools of systemic knowledge at the social relations, and environments in question. These qualities are social, 'objective', constitute on knowledge explicit qualifications. This knowledge must further be internalized, defined by meaning in human consciousness and delivered in socialization processes into the interaction in question.

The forms of knowledge correspond the way they are transferred in interaction. Tacit knowledge is transferred only in social interaction of unique activities by human. These are relatively certain and create continuity of social relations. Conceptual knowledge mediation includes risk and creates the global dimension of interaction and social relation. It can be transferred also by an external carrier.

The forms of knowledge are defined by forms of knowledge transferability. Having this property, knowledge mediates social relations of different status according to global and continuity determined by probability building processes. Transferred in immediate action, knowledge does mediate social relations by action properties. It

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

has global dimensions present in action, either in form of defined relations of risk and probability, social structures, or their undefined relations, network relations.

Knowledge development paradigm based on ICT-processing is inconvenient approach in network rationality forms. Especially in information society services it must be superseded by general approach based on social forms of knowledge creation, development and information security.

### Probable Knowledge Creation

Knowledge existence, probable connections of social dimensions at global–history continuum, has no properties that may be defined in relation to knowledge itself, ‘absolute’ connections of active and conceptual knowledge created in ‘absolute’ social dimensions.

Knowledge is conceptual or active depending on what social dimension is viewed. On the other hand conceptual and active knowledge build global and history as social dimensions on foundation of relation of risk and probability. Knowledge components have their carriers where they exist as social incidents, or objects, also are historically ‘real’. Then the connections of dimensions must be specified for conceptual knowledge in transferable, usually external presentation and active knowledge at continuing social interaction.

Phases of knowledge development do differ as social phases of probability creation, which builds forms of knowledge in probable relations at global-history continuum. Knowledge forms do not differ as ‘knowing’ but socially, by interaction processes for probability building and there determined dimensions dominating at global-history connections. This concerns both components of knowledge – knowledge existence is constituted about their connection. There exist different forms of conceptual knowledge, active knowledge and social interaction. They are determined by probability building processes

Forms of interaction that are specified in SECI-model may be presented regarding all knowledge forms but their content varies. Forms of interaction do differ also on the foundation what component of interaction – risk, probability, global, history – is dominating. Socialization and combination are mainly based on social components of interaction and internalization and externalization on their individual, historical components.

Relationships of risk and probability create special types of information security. This is the ‘third dimension’ in knowledge creation and development additionally to tacit-explicit, or active-conceptual dimensions. It determines the conditions of knowledge existence

## 5. Networks of Knowledge Transferability and Continuity

Social communication on generalizations of common properties and selections by probability match creates generalized structures and society type of integrity. Transferability of conceptual knowledge in global-history continuum creates social properties by risk management of knowledge existence in social sets of incidents. Then is not supposed constant connections of social dimensions but they build a network that is limited by knowledge probability building in contingent social processes.

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

Selections at social action are incidents that have social properties when they are continuing. Then they build form of rationality which constitutes continuity of action. In general forms of social relations these may be build – additionally to historical continuity – on probability match of means and ends or probable means in relation to conceptual ends. These rationality forms define social continuity as instrumental or network rationality.

In interaction continuity creates rationality and transferability integrity. These are dependent on each others as forms of knowledge and social dimensions. Society form of integrity is created in instrumental rationality and network form of integrity in network rationality. Both are approximations of subjective rationality at social selections and also approximations of moral judgments. These approximations are based on relative certainty in action which in network integrity is based on probability. This form constitutes on unlimited deliverability of knowledge and on it founded deliverability of global network.

There exists no principal difference in networks transferring knowledge, as there is no principal difference in forms of knowledge. They may be based on interaction mediation in forms whatever. Social interaction based on immediate, personal connections of people is a social phenomenon at same conditions as communications network based on technical equipment and transferring data in external presentation forms. As social relations both presuppose that transferred knowledge and developed relations are continuing and create rational social relations. Network as a technical transmission path and information transferred there do not have these dimensions. Social formations are based on activities and when there exist no absolute definition of social dimensions, information transmission in technical sense does not compose any social formation.

Knowledge transferability is same issue as interaction network where it is functioning; it has social meaning only at this connection, determined by continuity creating rationality of action. With global relations, probable global-history connections, types of interaction which form social formations are networks. Network is the principal form of social relationships.

Network can constitute of interactive relationships of subjects, based on communities or on 'widely connecting' ('disembedding', Giddens, 1990) social relationships. All social forms are based on some conceptualization of knowledge; the form of conceptualization only changes according to existence of social dimensions. Communications network is on the other hand a special case of the wide relationships, on the other hand it is based on probable transferability of knowledge.

Communications network is divisible between several logical networks and processes concurrently (Mäkinen, 2008/13, Mäkinen, 2011/Tr4). Its components are not structurally bound to specific social relationships, as neither conceptual knowledge is. The actual network is build on continuity of global transmission path's logical views. They are social meaningful constitutions - unlimited in number and probable in courses of social action - connections of transferability and continuity in contingent social relations, not 'part of geographically global network' or 'network Inter networks'.

Conceptual knowledge, information in global network has by default no social significance. It is in transmission path as pieces of communications, cell entries in virtual circuits. Without managed social activity it forms rather risks. The actual knowledge presupposes always social and historical formations in network. Modern

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

society is network society (Castells, 2000) but at the same time risk society (Beck, 1986, Mäkinen, 2008/3, Mäkinen, 2009/Tr1, Mäkinen, 2011/Tr4).

Communications networks are ubiquitous. Every relationship is global and possible to deliver into different processes and logical networks. Locality may have, but does not necessarily have, meaning in social relations. In ubiquitous transmission path every relationship can be geographically and socially proximal and global at the same time. In a technical network ubiquity can be realized in various ways and degrees.

Network should be considered from point of view of knowledge constitution in connections of global and history. When knowledge is conceptualized, its meaning is not bound to social relations in empirical experience and interaction. Such knowledge may have relevance in regular social structures or for example in scientific community. In global environment knowledge meaning does not require connection to any structure, but same social relations, same information and same network can be used in several social processes and logical networks building for example organizations. Social relations and knowledge are network relations.

Social relations are always based on probability selections. These create rationality. Continuity of social relations may be based on history, tradition, in communities, in social structures in organizations and 'societies' but also on use and acceptance of global social resources and relations, used in networks by several social units and individuals concurrently.

### 6. Information Security as Foundation for Knowledge Continuity

Forms of knowledge develop in risk management process that creates information security and meaning of knowledge. Meaningful knowledge mediates social action on probability of social relations, their continuity.

Foundation of knowledge meaning is conceptual present that approximates certain. Information security is social processes that are part of interaction. Information is transferable and independent of relative certainty; it includes risk that approximates 1 in global relations. Conceptual knowledge requires risk management developing social relations. These relations are information security formations. When knowledge is global network information, relations for continuing information security structures do not exist but security solutions constitute social relations concurrently. They may be concurrently used in several processes and networks and a constant relations of social dimensions exist not. Network processes, as information society services, may consist on different global dimensions regarding process continuity. Then service network process is unit producing results, not structure like organization.

Transferability of information constitutes networks; it is not an intrinsic property of knowledge. Information is transferred independently of the relative certainty at experience and consciousness. The probable social relations presuppose management of information in activity constituting social relations. The latter ones may be structural relations or based on acceptance of social probabilities.

Information security is balance between trust and accepted risk. These are realized in conscious activities of humans, structural relations in organizations and society, information society services and other network processes. Risk management is based on assessment of risk probabilities and consequences. According to this are planned the measures for application of information security. Assessment of risks

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

and evaluation of security measures according to it can be informal or formal, in the last case based on standards and certification (ISO 27001, ISO 27002, ISO 27005).

In social relationships on instrumental rationality, development and maintenance of meaningful knowledge is connected with protection of information and knowledge assets. Knowledge as object is basically conceptual. Instrumentality consist of management of global dimensions of social determined by means to be used for achievement of certain ends. Meaningful knowledge is created and developed in a 'fixed' social relationship, social structure, or formation. Global dimensions of social relations continue in a specific form regarding the result social interaction has. Result producing unit is a 'fixed' social formation.

In network processes such relations of means and ends do not exist. Knowledge should be determined by all its forms; active knowledge or network information have never fixed global-history connection. Information security is directly focusing into determination of meaningful knowledge by defining the risk and probability conditions for knowledge existence, also social dimensions that are its presuppositions. These conditions build networks of dimensions connections. This constitution of knowledge meaning presupposes definition of its development process.

The networks to be protected may be for example interaction of people, usage and storage formations of information assets, physical arrangements of working teams environments, or global communications networks where organizations' and processes' activities are situated.

In every environment information security is possible to describe by information security profiles whose acceptance is a presupposition for co-operation in networks. At global relations meaningful social is based on network acceptance processes that may result in different global dimensions of social relations in a continuous information society service. In general social formation, Globalnet, information security must be delivered in totally distributed communications environments (Mäkinen, 2009/7, Mäkinen, 2011/Tr4).

### 7. Organization, Process and Network

In modern society consists important co-existence of

- Instrumental rationality based on selections at sets of means for historical ends,
- Social division of labour creating social relations and institutions based on instrumental rationality,
- Conceptual knowledge that is developed in empirical-structural probability building processes,
- Information security as protection for knowledge at instrumentally rational social units.

In global knowledge relations rationality creates continuing - and also consolidated - social forms as do other knowledge relations. They are however based on different factors than in social formations build in instrumental type of social rationality and corresponding integrity forms. The older forms may disappear but must not, as did not disappear traditional communities in society-type integrity. For example organization is working rationality type that has its functions in global relations too.

## Social Foundations of Knowledge Management

### Knowledge of Society White Papers 9

The main rationality forms in global relations are organization, process and network.

In organization relations of means and ends are formally regulated, evaluated and determined by quite high probabilities. Process is a general element of rationality forms that may be used in organizational and network rationality types. It is based on conceptual components of knowledge and also transferable and applied in several historical process implementations. They may be interpreted in the global rationality concepts where several global components of action are possible to combine in unique historical implementations.

Network may be based on instrumental rationality, for example on co-operation of organizations or other corresponding units. Then network requires a structure and it builds unique social constructions. This is not a necessary or essential element of network but quite improbable special case that does not build global relations in any other case than perhaps geographically.

In network social relations are build by selections at global sets assessed only according to risk management and meaning of knowledge. Global dimensions of social relations may vary in unique continuities of processes and services. Production and services create results, welfare functions, that may consist of several products, services and values (Mäkinen, 2012/11, Mäkinen, 2011/Tr4). They may be evaluated only regarding individual properties. Any constant relationships where means and ends are identified social objects do not exist, neither structural, simple conceptual knowledge. Information security is defined by knowledge meaning.

When knowledge is conceptual and presented in external form where it is transferable independently of empirical experience and individual action, knowledge is able to be used in several processes and networks. It is not owned by some individual or organization. Social interaction mediated by knowledge continuity is created in risk management and information security constituting social relations. Social relations are actually risk management on basis of assessment by probability and consequences.

Process management is a development approach which emphasized the intended results in management of organization's or other interactive formation's activity. Starting point is that result, the actual product or service, is the only interesting matter for a customer, not for example the division of labour, hierarchy or plans in organization. Activity should be arranged in processes producing and serving these results and its development as a continual improvement of processes.

If social division of labour have changed in the way where intended results are crucial, not for example the productive forces or labour force available or product where some utility is connected, requirements for flexibility of production increase. Production or service should be based on knowledge. Rather than of 'process approach' which emphasizes results of production, question is of use of global production resources which do not form historically determined structures or entities. This corresponds to the common experience of information foundation for application in activities for several purposes. The application of production and service resources is furthermore based on scarce knowledge.

Network, which production or service uses, has same properties as process – or actually vice versa: process is a network of knowledge continuity. Production and services on processes are necessarily based on knowledge and network. In this

## Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

foundation division of labour and organizational models based on it – hierarchy in different forms – are possible to overdraw or subordinate to process and network. Service based on process is always information society service using network.

### 8. Knowledge Management and Information Society Services

Information society services consider dissolution of central dominating features of modernity, instrumentality as rationality form, social division of labour, bureaucratic organizational form, conceptual knowledge based on generality and information security as protection of information. None will disappear, but they are not dominating social relations.

Information society services mean a change in the way knowledge is mediating action. Knowledge mediation determines always social action; knowledge is not 'used' in action. Knowledge or information security solutions cannot be moved from empirical probability building processes or organization's processed information pools to be processed in information society services. Knowledge must be created and developed for and at services. The main objective and culture of knowledge handling, the processing of conceptual knowledge in ICT-systems is replaced by a culture which is creating and developing knowledge on basis of active knowledge and network information into meaningful conceptual forms required in types of action. Knowledge use should be based on global resources that are applied according to information security requirements specifying the meaning of knowledge for service in question.

Information society services are based on network rationality and corresponding forms of knowledge probability building. Social connections of means and ends or global and history are not contents of continuity but use of global resources on foundation of continuity based on risk management and service processes.

Information society services constitute of three dimensions (Mäkinen, 2012/11, Mäkinen, 2011/Tr4): activities based on global conceptual knowledge to be transferred in network as assets and managed as network information, activities based on knowledge transferred in interaction, and information security for management of these forms in interaction, social processes and networks. These components do exist together in a form of social interaction. On information may be based formal elements of processes and technological network solutions and on active knowledge their application in action.

Process management, ICT-strategies and information society services are based on socially determined, enlarged Knowledge Management. This does not however mean that the planning concepts developed in those lines of thoughts should be useless. Quite the contrary: processes, ICT-architectures and elements of information society services are social formations which perform special kinds of information security requirements. They however are not socially general forms, but relative to transitional global-history connections between traditional and global social relations.

ICT-strategies are developed according to the ICT-architectures defining the technical solutions of ICT-services and formal information management. General knowledge treatment requires definition of the ways how knowledge is created, developed and transferred in all forms of interaction, in action, processes and networks. The development of ICT-technologies to serve these processes is at least equally important than its development for formal management of information. In this sense development of ICT, processes and interactive networks should proceed

## Social Foundations of Knowledge Management

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besides. It should be more reasonable, instead of ICT – Information and Communications Technologies, to talk about KCS – Knowledge and Communications Services.

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# Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

## History of Modifications

<b>Date</b>	<b>Version</b>	<b>Writer</b>	<b>Modification</b>
30.10.2006	1.0	Heikki Mäkinen	1. version
30.1.2009	2.0	Heikki Mäkinen	Modifications according to 'Yhteiskunnan Tiedon Turvallisuus', Version 2.0 Definition of knowledge based on global-history continuum
26.1.2012	3.0	Heikki Mäkinen	Modifications according to Knowledge of Society Training Papers Numbers 1 - 4

# Social Foundations of Knowledge Management

Knowledge of Society White Papers 9

## The Knowledge of Society White Papers Series

15. **The Moral Judgement**
14. **Knowledge Relation and Social Rationality**
13. **Global, History and Social**
12. **Information Society Services and the Change of Social Rationality**
11. **The Social Foundations of Information Society Services**
10. **The Social Foundations of Information Security**
9. **The Social Foundations of Knowledge Management**
8. **Space, Time, Sociality** (Obsolete, Superseded by No. 13)
7. **Globalnet as Directories of Information Security Profiles**
6. **Knowledge Society or Information Society**
5. **Globalization: Information, Knowledge and Networks** (Obsolete)
4. **For Development of ISMS Standards** (Obsolete, Superseded by No. 10)
3. **Risk Society and Risk Network**
2. **Globalnet and Knowledge of Society** (Obsolete)
1. **Risk, Trust and Security** (Obsolete, Superseded by No. 13)