Advanced inter-organisational collaboration for knowledge transfer in educational systems

Christian-Andreas Schumann, Westsächsische Hochschule Zwickau, Germany

ABSTRACT. Inter-organisational collaboration is forced and based on knowledge transfer. Educational systems are fields of application, research subjects as well as training provision domains for knowledge transfer in inter-organisational context. Based on theoretical approaches of knowledge transfer, the various aspects of knowledge management in education as well as related multidimensional and inter-organizational developments are described. The framework for advanced knowledge transfer is derived, and preconditions, barriers and challenges are discussed in detail. The implementation in complex application situations is explained. Three selected and important mainstreams are presented: International Corporation in Knowledge Transfer, Digitalisation of Education, and Job-oriented education based on scientific evidence. At the end, best practice solutions using modern management methods for the domains of study program development as well as inter-organisational collaboration in education, including the diversity of educational offers by inter-organizational and educational networks from the current project development will be disclosed.

KEYWORDS: Advanced inter-organisational collaboration, Advanced inter-organisational and global education networking, Inter-organisational networking for knowledge transfer, Knowledge transfer in educational networks

1. Context of inter-organisational collaboration and knowledge transfer

1.1 Organizational theory approaches

There are many different definitions concerning the objectives and the content of the term “organization”. The issue is that organizations are intangible. Basically, they are only perceivable by the products and services provided by them. If the problem would be considered very
abstract, then organizations are systems consisting through a variety of tangible or intangible objects characterized by the relations among themselves or with objects of other systems representing organizations, too.

Related to the business, organizations are functions, instruments and institutions supporting complex processes of service provision and service utilization in such a way that the achievement of the goals of a group of people can be optimized by reducing the efficiency losses. Permanent or temporary orders are established by long-term, ongoing regulations. The concept of organization includes both a design aspect of the creation and development as well as a form of state description of an organizational and operational structure (Wöhe, 2008).

Organizations are characterized by specialization and coordination. Specialization includes organizational rules for division of labour; coordination involves organizational rules for work integration. Organizations are specialized with regard to operations or functions, due to objects, or according to space and time including combinations of several specializations. They are integrated and coordinated by using structures and measures. Centralization and decentralization have a decisive influence on the organization because they will determine the degree and the level of conscious application of organizational regulations (Schewe, 2005).

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**Figure 1. Generating of value in an educational, organizational system referring to (Jones 2013)**

- Human resources
- Information and knowledge
- Customers and learners
- Financial support

- Human skills and abilities
- Information and knowledge transfer
- Expertise and professionalism
- Ability to learn and to work

- Learners and employees
- Teacher and coaches
- Competitors and partners
- Suppliers and distributors

- Well skilled and trained human-beings
- Learning and training services
- Return of investments
- Value for stakeholders
Already this brief digression into the terminology of the organization demonstrates the diversity and thus the complexity of the term as well as the related concepts. To put it simply, organizations are tools used by peoples to coordinate their actions, to obtain desired results or values, and to achieve their goals. The creation, maintenance and development of organizations only make sense if they are used to generate added value for the actors and stakeholders. Value creation can take place at three stages: input, conversion, and output in accordance to the organizational environment. (Figure 1) This is the set of forces and conditions operating beyond the organizational boundaries but affect the ability to acquire and use resources to create value (Jones 2013).

1.2 Inter-organisational theory approaches

Organizational theoretical approaches have the objective to examine the creation, operation, development, design of organizations as well their behaviour, changes, and transformation. The mainstreams are system-oriented, behavioural, decision-oriented, and situation-sensitive approaches. Different organisational method and instruments are managed under the umbrella of the first-tier of a multi-level architecture of a toolbox system.

Since the organisational environment is constantly changing, organizations have to be constantly developed. The organizational development has been designed for this purpose. Several stages pass through a process. Important points are the organizational culture, organizational learning, special team and group work, quality management, strategy and vision work (Reinecke, Bock 2007). Already by the conceptual definition it becomes comprehensible that the organization and its development are associated with human action. People act normally in several organizations, thereby organizational inter-relationships and processes are implied.

Figure 2. Selected theories with importance for inter-organisational relationships (Rossignoli, Ricciardi, 2015)
Inter-organisational systems are generated as system of the systems or subsystems. The organisations are strongly influenced by the inter-organisational relations as well as the exchange of information and knowledge between the several organisations. The inter-organisational context and operation is the general and standard case in the recently open and global world of acting and learning. Therefore, special methods for inter-organisational management were derived from the classic approaches of organisational theory and practice (Figure 2).

If educational systems and organizations should be successfully developed, the transfer of knowledge has to be internally improved within the organization and has to externally lead to an advanced inter-organizational collaboration. Starting from a model of knowledge transfer within and between organizations dimensions can be derived and implemented for the development of educational organizations in a wider range of regional, national as well as international cooperation.

1.3 Human capital and knowledge transfer by professionals

The world of economics is characterised by the movement from matter to information, knowledge, and organisation, this means from tangible to intangible. The intangible capital is a set of assets based on expertise and knowledge that could be able to produce results and incomes for an organisation. The knowledge as resource of the human capital will occur in three kinds: Knowledge in tools, knowledge of individuals, and knowledge of organisations. It can be freezed/ fixed or unfreezed/ free circulating in relation to certain objects. The intangible capital is the sum of all kinds of assets of human capital and organisational capital. Human capital includes the ability of individuals to increase their efficiency. It is far limited than physical capital from the viewpoint of innovation, creativeness, and learning (Epingleard, 2006). The development of organisations, including the development of human and organisational capital, depends on the improvement of knowledge transfer in educational systems such as inter-organisational networks.

The education of qualified and universally usable professional staff requires medium-up to long-term training. Because of the extreme growth of some emerging economies and the still ongoing development in the industrialized countries, it is increasingly difficult to provide the necessary quantity and quality of professionals especially for such complex intercultural and transnational job assignments. According to a survey of the World Economic Forum and the Boston Consulting Group from 2011, the deficit of skilled employees put the worldwide economic growth in risk. Million additional highly qualified employees are needed in the coming years (about 45 million in Europe until 2030) to maintain the requested growth. Human capital becomes one of the most important key competitive factors. Well-trained professionals, technicians and managers are urgently needed worldwide in the coming years. Countries and companies will have to compete for world professionals, managers and skilled workers. Education and training are not sufficiently geared for providing the global cooperation in science, technology, business, management and administration. The educational institutions and organizations are often inadequately prepared for the new requirements (Arkless et al., 2011).

The global shortage of skilled labour is a huge challenge. It will be controlled by a systematic procedure. The expert group of the World Economic Forum and BCG suggest going providing a three-dimensional approach including geographic, structural, and professional aspects as the mobility of labour forces, the extension of resources, and the change of education programmes. It assumes that the risk of global labour bottleneck can be defined in the following ways: strategic human resources planning, simplification and transparency of immigration, transnational knowledge transfer,
improvement of the employability, flexibility of individual career and education management, increase of mobility, extension of labour supply. (Arkless et al., 2011) The most important aspect of the study is that all ways for eliminating the shortage of skilled employees, scientists, managers etc. are directly related to knowledge transfer in educational systems. It is important to educate specialists, executive staff, and students, to transfer knowledge and professionals, to improve transitions and interoperability of training systems, to increase real individual and virtual mobility as well as to exploit new target groups for employment. (Schumann et. al., 2014)

1.4 Knowledge networks and transfer related to education

The economy of the information age is also referred to as “Networked Economy” (Shaprio, Varian, 1999). The developments of the networks are mainly driven by aspects of economy, information technology, and organizational changes (Figure 3).

<table>
<thead>
<tr>
<th>Drivers</th>
<th>Characteristics</th>
<th>Examples</th>
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<tr>
<td>Business driver of networking</td>
<td>Change from seller’s to buyer’s</td>
<td>Service orientation</td>
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<td></td>
<td>market</td>
<td>Increasing quality-price-ratio</td>
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<td>Outside-in-orientation</td>
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<td></td>
<td>Globalization</td>
<td>Disintegration</td>
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<td>Deregulation</td>
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<td></td>
<td>Rapid change</td>
<td>Multidimensional organisation</td>
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<td>Process organisation</td>
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<td>Information technology as driver</td>
<td>Performance of information</td>
<td>Performance improvement by micro</td>
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<td>technology</td>
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<td>Performance of communication</td>
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<td>Interoperable systems</td>
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<td>Influence of the web</td>
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<td>Web of everyday things</td>
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<td>Dissemination of standards</td>
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<td>Relationship technologies</td>
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<td>Organisational drivers and</td>
<td>Flexibilisation of organisational</td>
<td>Creation of small and specialised units</td>
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<td>action patterns</td>
<td>structure</td>
<td>Cross-linking of units</td>
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<td>Realignment of tasks, processes, and units</td>
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<td></td>
<td>Focussing on business relations</td>
<td>Individualisation of market services</td>
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<td>Postponement, pull, and planning</td>
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<td>Knowledge management</td>
<td>Virtual Communities</td>
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<td>Interconnected knowledge</td>
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<td>Use of ICT</td>
<td>Semantic technologies</td>
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<td>Productivity of ICT</td>
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<td>Profitability of ICT</td>
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<td>Consumer surplus by ICT</td>
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Figure 3. Drivers and characteristics of network development (Fleisch, 2000)
By applying the theoretical principles of transaction theory, network theory, coordination theory as well as knowledge, information and transformation management special concepts of knowledge networks for the knowledge transfer supporting the delivery of goods and services were developed. They were used for the inter-organisational development in general as well as for the inter-organisational networking in education in particular (Figure 4) (Tittmann, Schumann, 2008).

![Diagram](https://via.placeholder.com/150)

**Figure 4. Delivering of goods and services based on knowledge nodes in knowledge networks**

Every single node is independent knowledge unit operating as a Mealy machine (Holcombe, 2004) and possibly embedded in swarms of nodes comparable operating like neuronal networks (Rojas, 1996). The knowledge nodes will be clustered to generate a certain concept of order. In this way they were make useful and controllable for organisational purposes. At the end, the knowledge nodes or clusters of knowledge nodes reflect the structure of an organisation on the lower level domains, and the knowledge nodes and clusters on the top level domain reflect the organisation of the network of organisations.

### 2. Knowledge transfer and the development of educational organisations

#### 2.1 Approaches for knowledge transfers by organisations

The network management of organisations and between organisations is performed at different levels with different complexity. It is necessary to develop an understanding for network operating under inter- and intra-organisational conditions. Inter-organisational networks represent relationships exceeding the organisations boundaries. Intra-organisational networks are based on
network-like patterns of relationships within an organisation. Since inter-organizational networks must be designed and controlled in the context of diffusing or blurred organisational boundaries, the distinction should be primarily focused on a consideration of strategy and structure. As a result, inter-organisational networks are related to the implementation of cooperation strategies, while intra-organisational networks will become the subjects of consideration of the internal company organisation structures (Zundel, 1999).

Figure 5. Intra-organisational and inter-organisational networks for knowledge sharing and transfer

The approaches for inter- and intra-organisational networks can be connected with the knowledge network and transfer concepts in order to describe the structure and relations of knowledge nodes in intra- or inter-organisational knowledge networks, respectively (Figure 5) (Tittmann, Tittmann, Schumann, 2008).

The organisations are able to receive, evaluate, absorb or reject, and deploy new knowledge. The general procedure model is characterised by learning cycles. Following Sanchez (2001), a multi-level, advanced process model can be developed, which takes into account the specific features of internationally acting organisations (Figure 6).
The main focus for designing the knowledge transfer in organisations should set on the management of the competence dynamics, the cognitive processes, the competence systemic approach, and the holistic competence development including the control of the knowledge transfer as prerequisite of the geneses of the learning and competent organisation.

### 2.2 Different points of view for knowledge transfer in education

Processes for knowledge transfer in education systems have a high complexity. In addition to the classic option to partition the systems in parts and to reassemble the components later on by decomposition and composition, in accordance with the Viewpoint Theory derived from the media world and characterised by space, time, shape, movement, a certain point of view may be taken in order to generate a special story or statement from that specific perspective concerning a particular part or a defined aspect of the system. The mainstreams for using viewpoints for knowledge transfer by education generated on different levels of abstraction are influenced by:

- Organisational indicators
- Knowledge related processes
- Knowledge dissemination

The organisational indicators should provide the desired profile of the “new” organisations in the sense of strategy, structure, style, systems, staff, skills, and goals. The shaping and adaptation of the peculiarities of the indicators will be realised in accordance to the nature of the specific organisation. Self-image, self-concept, relationships, participant’s role, and environmental compatibility are some of the key aspects that are relevant for the development of cognitive structures as well as for the selection of viewpoints for subsequent consideration of the system (Merali, 2001).

The knowledge transfer in educational organisations and their partner networks depends on the...
stage of competence development and knowledge related processes and services. The approach includes a pattern for the geneses of the viewpoints (Figure 7) (Raub, 2001). One or several actions can be combined to produce the desired viewpoint.

<table>
<thead>
<tr>
<th>Know-what</th>
<th>Imagination</th>
<th>Implementation</th>
<th>Integration</th>
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<tr>
<td>Diagnosis</td>
<td>Defining</td>
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<td>Deploying</td>
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<th>Know-why</th>
<th>Innovating</th>
<th>Implementing</th>
<th>Integrating</th>
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| Know-how  | Identifying  | Interrelating  | Improving   |

Figure 7. Viewpoint options based on stage classification for frameworks for competence development

A particular part of the knowledge transfer in the context of the learning organisation is the dissemination of information, content, knowledge up to the experienced knowledge sharing characterised by special viewpoints (Figure 8) (Stein, Riddersträhle, 2001).

<table>
<thead>
<tr>
<th>Dissemination aspects</th>
<th>Issues</th>
<th>Strategies</th>
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<tbody>
<tr>
<td>Know more than we can say?</td>
<td>Articulation</td>
<td>Socialisation &amp; Education</td>
</tr>
<tr>
<td></td>
<td>Monopolisation</td>
<td>Compensation &amp; Documentation</td>
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<tr>
<td></td>
<td>Retaliation</td>
<td>Tolerance &amp; Motivation</td>
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<td></td>
<td>Restriction</td>
<td>Communication &amp; Rotation</td>
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<tr>
<td>Say more than we know!</td>
<td>Extrapolation &amp; Reduction</td>
<td>Communication &amp; Reflection</td>
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<td></td>
<td>Manipulation &amp; Exaggeration</td>
<td>Correction &amp; Selection</td>
</tr>
<tr>
<td>Hear things different from what we said?</td>
<td>Extrapolation &amp; Reduction</td>
<td>Socialisation &amp; Standardisation</td>
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Figure 8. Viewpoints derived from strategies for knowledge disseminations

The number and types of viewpoints generate a huge diversity of possible combinations. They vary as the available objects such as actors and tasks, processes and functions, modules and layers, networks and sub-networks, systems and subsystems, partnerships and collaborations, technologies and products, etc. can be combined. They increase exponentially with growing size of the organisations and organisational networks, especially in the case of inter-organisational cooperation.

2.3 Dimensions of the development of educational organisations

The dynamic firm, in the present understanding the predecessor form of flexible and agile organisation is characterised by three main dimensions: positional structure, knowledge structure, and action structure. The positional structure denotes the ordering of individuals and organisational units in relation to the formal status, location, and authority within the organisation. The knowledge structure is a matter of combining different elements laterally and cross-linked whereby the knowledge is structured by knowledge islands as an archipelago with distinct knowledge nodes but reachable
from each other. The action structure is the dimension for describing the stimulus and the source for acting as well as the pattern of behaviour. It is a challenge of the dialectic between exploitation (administration of the old) and creation (generation of novelty). The transforming of the model to the development of educational organisations, the representatives of an organisation will be able to determine the position of the unit in a three-dimensional space as framework the development stage defined by sense order, knowledge level, and source of the action impulse. (Hagström, Hedlund, 1998)

The application of the theory of knowledge networks consisting of nodes will lead to an internal (intra-organisational) dimensional knowledge concept (micro-structure) as well to an external (inter-organisational) knowledge model (macro-structure).

The intra-organisational dimensions of knowledge are kernel entity, kernel relation, and the knowledge node networking (Figure 9).

![Figure 9. Intra-organisational knowledge dimensions of the development of educational units](image)

The inter-organizational dimensions of knowledge are virtual, social, adaptive and semantic dimensions (Tittmann, Schumann, 2012):

- Virtual Dimension: How can knowledge be represented in contexts (become virtualized)?
- Social Dimension: Which characteristics of individuals influence the interactions between them?
- Adaptive Dimension: How is the influence of economic and societal constellations?
- Semantic Dimension: How the knowledge can be described for all necessary contexts?

A more pragmatic description of the dimensions in the sense of common practice in the modeling of business processes that take place in organizations can be derived from the existing organizational and knowledge-based approaches (Figure 10).
Although each dimension can be viewed individually and improved as a single peculiarity, but ultimately it will always remain a multi-dimensional issue with a multicriteria analysis and optimization.

3. Framework for advanced knowledge transfer

3.1 Preconditions for the entrance into the inter-organisational education

To be able to join an inter-organizational cooperation in education, all educational units involved in the procedure have to meet certain requirements. Many well-intentioned approaches to cooperation between several organizations will fail because the importance of the conditions are ignored and underestimated, respectively. Therefore, it is important to identify timely the factors making it possible to enter into inter-organizational cooperation. Fundamentally, it must be assumed that the inter-organisational orientation is part of the vision & mission statements and of the strategic concept of the organisation. On this basis, a selection of important pre-conditions includes a couple of different aspects derived from the strategic management, the change and transformation theory as well as several other management disciplines (Figure 11).
Each to be established or expanding inter-organizational structure in education will examine these factors in order to ensure that only suitable partnerships will be entered. If significant differences in one or more aspects exist, it is a must for the future survival of the entire network of cooperation that a plan and an implementation concept for reducing deficits in a defined period are available. In this sense, the partners will communicate in the cooperation agreements which parameters in what quantity and quality are needed in order to continue the cooperation programs sustainable. Therefore, the contracts should include sanctions, exclusion rules, and exit clauses.

3.2 Barriers and challenges for progress

If inter-organisational collaborations are not adequately prepared, oppositions will be aroused both within organisations and between organisations. If the problems are not detected in time, massive delay or failure of the cooperation may be the result. Reasons for the emergence of barriers can be:

- The mutual knowledge of or cooperation partners are inadequate.
- The concepts and requirements of one or more partners regarding the cooperation are unrealistic.
- The plans for co-operation of one or more partners are insufficient.
- One or several partners cannot adequately decide for themselves.
- Certain developmental conditions are not fulfilled and cannot be achieved in a reasonable time.
- One or more partners have given insufficient or incorrect information about their performance.
- The conditions for cooperation will be changed for one or more partners.
- The strategic concept of one or more partners is changed.
- There are irreconcilable differences for the further development of cooperation between the partners.
- Paradigm shift in the political and administrative framework are performed.
- The pace of development of the partners is too different.
- The ability to develop and adapt is stretched to one’s limit.
- Etc.

The emergence of barriers can cause the failure of cooperation, but they can also be seen as challenges to be mastered. However, a professional management should be implemented generally, which should include key components of the efficient management of cooperation such as change management, continuous improvement process, quality management, evaluation programs and benchmarks, financing and controlling, management of further education for the involved employees, project and process management, etc.

Today, a magic word is openness. There are open innovation and open courses as well as free access to information and knowledge. Unfortunately, it is partially forgotten that the provider, not only the grantees, have to ensure their further development. They are interested to get some advantages for safeguarding their existence and for staying compatible. In order to master the challenge of a balanced and sustainable development in the inter-organisational collaboration based on knowledge transfer in education and training, a fair value-added approach should be pursued (Figure 12).
This conceptual attempt for improving the chances of cooperation of organisations with varying opportunities and resources includes a fair administrative and legal regulation framework, a fair knowledge acquisition and preparation system for educational organisations and programs, and a fair multichannel distribution of information and knowledge for education and employability (Schumann et al., 2011).

3.3 The entrance into the Inter-organizational education

The access of organizations to co-operation networks of Education requires mastering the complexity of the task. Complexity is closely related to the size of the system considered. Large systems are characterised by a very large number and many different types of interrelated elements. The modelling of such systems is usually difficult because the models must be limited to essential information. Therefore, the analyses can lead to inaccuracies in the prediction of behaviour which are unpredictable. Complexity may occur in manifold manners (Figure 13).
All model-like approaches are connected with mind of human-beings. Therefore, the procedure of forming the explicit knowledge involves a process of objectification, but the subjective factor is always included. The degree of complexity is also dependent on the subjective perception from the perspective of those affected. The ability, to control complexity, will be thus decide, how complexity will be perceived and understood (Bockus, 2010).

The understanding of the complexity of the problem is crucial for a successful entry into inter-organizational educational processes and for making the necessary complexity reduction, for example, by decomposition. This process was performed several times for the present subject matter, and it was resulted in complexity-descriptive characteristics such principles, objectives and attributes (Figure 14).
Figure 14. Characteristics of complexity in inter-organisational educational collaboration (Schumann, 2014)

Organisations and their members have gradually to develop the ability to master complexity based on a variety of principles, objectives and attributes. The temporal, spatial, capacitive, financial, etc. dimensions of complexity concerning the entrance and the expansion of inter-organizational cooperation in education should be done gradually, iterative and consistently controlled. Phase models are suitable for rough planning, but the permanent introduction and post planning should rather be based on agile and flexible methods.

4. Mainstreams of inter-organisational education

4.1 Mainstream: international corporation in knowledge transfer

The international corporation in the knowledge transfer based on training and education is a mainstream of the global development. The complexity of the tasks is growing faster. The single organization is not able to master all different tasks, has to focus on special fields of research and application, and is forced to establish inter-organisational relations. The educational organisations and their partners are supported if they will decide to extend the national and international collaboration.

The new EU programme for education, training, youth and sport reflects the tendency. It is focused on boosting skills and employability, modernising education, training and youth work, gaining work experience, supporting transnational partnerships among education, training and youth institutions and organisations, fostering cooperation and bridging the worlds of education and work, tackling the skills gaps we are facing in Europe. Thus, the new EU programs are the direct motivation, stimulation, demand and obligation to extend knowledge transfer and inter-organizational collaboration.

In addition, educational institutions, firms, associations and government agencies have development constrains to secure their own future viability by increasing cooperation in a progressively connected world. Educational institutions cooperate with each other, with professional and industry
associations, with government agencies, etc. in order to have always the necessary knowledge for their own development and for the geneses of integrated educational offers for third parties. The study and training programs for the knowledge and competence transfer are prepared and developed as well as applied and exploited in multiple inter-organisational manners. Therefore, networks exist in different constellations (Figure 15).

![Figure 15. Growing inter-organisational complexity for the knowledge transfer](image)

The trend in the own working environment was predominantly characterised by inter-organizational projects in training, research and industrial application. Even intra-organizational projects of knowledge transfer have almost a particular part in the inter-organizational fields.

### 4.2 Mainstream: digitalisation of education

The digitisation of products and services provided and generated by organisations has been the state of the art for many years. Now, another direction of digitisation is added: the digital organisation. All elements of organisations including the products and services produced by it are influenced by digitisation. Holistic system digitisation is the result of the pervasive penetration of all sectors of society by ICT. Recently, organisations determine their degree of digitisation, because it can be a key indicator of the performance, efficiency, modernity, and competitiveness of an organisation. Cross-departmental strategies are described in the German Digital Agenda 2014-2017. It includes the different aspects of the digitisation from the infrastructure up to the applications in everyday life. Education, research and science take up a separate field of action. They are of central importance for the Digital Agenda. These fields are both important as promoters of the development as well as significant areas of use. Open information and new forms of communication open up new possibilities of knowledge transfer including the individualisation of learning by location and time independence. New forms of cooperation across the boundaries of organisations, places, times and disciplines will be generated. As the main objectives are formulated (BMBF 2014):

1. Acceleration of the digital change in science
2. Secure the access to knowledge as a basis for innovation
3. Education Campaign for the digital knowledge society
4. Use of the innovation potentials of the digitising
5. Understanding of the digital transformation by research
The digitisation is extended from previous digital products via digital services to digital organisations for the educational systems in particular (Figure 16).

![Digitalisation for tangible and intangible products, services and organisations](image)

**Figure 16. Digitalisation for tangible and intangible products, services and organisations**

More and more data are generated by digitizing. They must be processed performant. Increasing quantities of experts are needed for it. They have to be prepared for their tasks by an appropriate education in a knowledge-based system of qualification. As information and knowledge are becoming increasingly important, the focus is shifting from the tangible to the intangible products, services and forms of organisations. The development is provided by inter-organisational collaboration but on the other hand inter-organisational open and fair knowledge transfer accelerated the process of extension of digitalisation of the society.

The trend is manifested by the increasing number projects based on digitisation in all areas of inter-organisational and smart networking.

### 4.3 Mainstream: Job-oriented education based on scientific evidence

Educational integration is one of the most challenging and most current tasks of the present time. Sub-systems of education are better coordinated: starting with the kindergarten via school, vocational training and higher education up to further education in the lifelong learning process. The combination of theory and practice is important in all phases of lifelong learning as well as the transfer of knowledge and require inter-organizational cooperation. The complexity of the tasks requires the cooperation of many stakeholders in the education sector and with their partners, respectively. The fusion of academic education and Work-oriented training is particularly visible in the context of
dual training, but basically it is applied in many other cases and areas of the education system. Unity of theory and practice are the basis of every educational planning and curricular development. All stakeholders who benefit from knowledge transfer processes by cooperation in open systems, such as government agencies, public institutions, private institutions, firms, associations, etc. are involved in these processes (Figure 17).

![Figure 17. Stakeholder network for integrated planning of practice and work oriented education](image)

There are job-oriented courses based and scientific evidence education offers for each phase of lifelong learning. Additional, the parts can be connected by using the inter-organisational collaboration based on optimised processes of knowledge transfer (Figure 18).

![Figure 18. Theory and practice in each period of training and education](image)
Recently, the complexity of the knowledge transfer explodes and induces an information overflow. Therefore, the integration of educational processes will be eliminated by interoperability of the systems. Independent educational units will coordinate the modular-design system and the related interfaces with other organisations. Aspects such as open badges, freedom to choose, transitions, interlocking and permeability of educational domains, recognitions and transfer management will dominate the further development in advanced inter-organisational collaboration for knowledge networks.

5. Best practice solutions of inter-organisational collaboration

5.1 Best practice: development of educational systems by methods of modern management

The example for using methods of modern management in order to professionalise the modularised course and curricula development in advanced inter-organisational manner will be specified in the final version (Figure 19).

5.2 Best practice: inter-organizational collaboration in education

The example for planning and implementing inter-organisational collaboration in education in order to professionalise international study programs and courses in advanced inter-organisational manner will be specified in the final version (Figure 20).
Figure 20. Advanced modular planning for inter-organisational education program

5.3 Best practice: diversity of educational offers

The example for diversifying inter-organisational collaboration in education in order to professionalise global modularised cooperation in advanced inter-organisational manner will be specified in the final version (Figure 21).

Figure 21. Advanced planning for inter-organisational architecture and diversity of global offers
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La collaborazione tra organizzazioni è basata sul Knowledge transfer ed le istituzioni che si occupano di educazione e formazione in particolare rappresentano ambiti privilegiati di applicazione, ricerca e training per il trasferimento delle conoscenze in ambiente inter-organizzativo. Sulla base degli studi sul Knowledge transfer, vengono descritti i vari aspetti della gestione della conoscenza (Knowledge management) nel settore educativo e i suoi sviluppi multidimensionali e inter-organizzativi. Viene inoltre descritto dettagliatamente il quadro delle precondizioni, ostacoli e obiettivi della trasmissione della conoscenza avanzata, nonché la sua implementazione in situazioni complesse. Vengono presentate tre tendenze primarie del Knowledge transfer: l’International Corporation, la digitalizzazione dell’educazione, e la formazione orientata al mondo del lavoro in base a dati scientifici. A sostegno dell’analisi teorica, vengono presentati dei casi di buone pratiche che si avvalgono dei più aggiornati metodi di knowledge management per la formazione ma anche per la collaborazione tra istituzioni educative orientata a garantire la ricchezza dell’offerta formativa attraverso forme di organizzazione in rete.